

# **Gordon Institute of Business Science**

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## **CEO Remuneration and Company Performance in South African Mining**

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## **Abstract**

This study examines the relationship between Chief Executive Officer (CEO) remuneration and company performance in Johannesburg Stock Exchange (JSE)-listed South African mining companies from 2018 to 2024. The research addresses the persistent debate on whether executive compensation aligns with firm performance or reflects structural and governance-driven determinants. Guided by agency, optimal contracting, and managerial power theories, the study tests four hypotheses concerning the influence of accounting-based, market-based, and firm-specific factors on CEO pay, as well as the moderating role of firm size.

Panel data comprising 69 firm-year observations were analysed using fixed-effects panel regressions with panel-corrected standard errors (PCSE) to control for heteroskedasticity and cross-sectional dependence. The results show that accounting-based profitability, particularly Net Profit Margin, significantly predicts short-term CEO remuneration, while market-based measures such as Total Shareholder Return (TSR) exhibit no significant association. Firm size negatively moderates the pay-performance relationship, indicating weaker sensitivity in larger firms.

Overall, the findings reveal partial and asymmetric alignment between CEO pay and performance, with evidence of structural pay rigidity and managerial influence. The study contributes to South African corporate-governance research by demonstrating that formal compliance with King IV principles has improved transparency but not substantive pay-for-performance alignment within the mining sector.

**Keywords**

CEO remuneration; pay-performance alignment; corporate governance; managerial power theory; South African mining sector.

## **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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3 November 2025

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## CHAPTER 1: INTRODUCTION

### 1. Background to the Research Problem

South Africa's mining sector continues to play a vital role in the national economy, contributing significantly to Gross Domestic Product (GDP), foreign exchange earnings, and employment (BusinessTech, 2024). However, the sector faces increasing pressure from operational inefficiencies, regulatory uncertainty, volatile commodity markets, and socio-political challenges. In recent years, platinum group metals (PGMs), historically a cornerstone of mining revenue, have suffered sharp price declines, with PGM revenue falling by about 33% in one year. This has prompted widespread cost-cutting, restructuring, and retrenchments concentrated in the PGM sector (SAIMM, 2025; PwC / Mining Weekly, 2023).

The issue of executive remuneration within the mining industry has long been contentious, particularly given South Africa's extreme income inequality and persistently high unemployment. The 2012 Marikana tragedy brought these tensions into sharp focus, exposing the disconnect between worker demands for living wages and the scale of executive pay packages (Nkwadi & Matemane, 2022). Over a decade later, similar concerns persist as mining companies continue to award multi-million-rand CEO packages despite declining performance, financial strain, and labour instability (PwC, 2023; Sibanye-Stillwater, 2023). Public frustration over perceived misalignment between pay and performance is further fuelled by stagnant wages and retrenchments across the sector.

Earlier studies have consistently raised questions about the fairness and performance alignment of CEO remuneration (Bussin, 2018; Bussin & Blair, 2015; Theku, 2014), and recent research suggests that these concerns have resurfaced under renewed financial pressure. Empirical studies indicate that short-term incentives continue to dominate executive packages even during underperformance (Siwendu et al., 2024), while Grove (2015) observes instances of rising CEO pay amid eroding shareholder value. Some researchers find moderate links between remuneration and financial indicators such as Return on Assets (ROA), Earnings per Share (EPS), or Total Shareholder Return (TSR) (Bussin & Blair, 2015; Theku, 2014), whereas others identify stronger correlations

with firm-specific factors like size or market capitalisation (Bussin & Modau, 2015; Carlson & Bussin, 2020).

However, despite extensive prior investigation, the evidence remains fragmented and inconclusive. Different studies have produced contradictory findings depending on the metrics applied, the time periods assessed, and the governance environments considered. Some report strong positive relationships between CEO pay and firm performance, while others find weak, negative, or statistically insignificant links. This inconsistency underscores that the true nature and strength of the pay-performance relationship remain unresolved, particularly in cyclical and governance-sensitive industries such as mining.

These dynamics are intensified by South Africa's persistent socioeconomic inequality and high unemployment, where the contrast between stagnant wages and escalating executive pay raises concerns about equity and legitimacy (Bussin & Blair, 2015; Sibanye-Stillwater, 2023). Siwendu et al. (2024) further confirms this growing disjunction, finding that executive compensation is increasingly dominated by short-term incentives with limited linkage to sustainable performance. Accordingly, this study contributes to closing this empirical gap by re-examining the pay-performance relationship in South Africa's mining sector using a longitudinal, multi-dimensional approach that accounts for both accounting and market-based indicators.

To interpret these trends, three theoretical frameworks provide explanatory depth. Agency theory (Jensen & Meckling, 1976) posits that performance-based incentives align managerial and shareholder interests by reducing agency costs. Optimal contracting theory extends this logic, advocating for risk-adjusted incentive structures that promote long-term value creation. In contrast, managerial power theory (Bebchuk & Fried, 2004) argues that CEOs can influence remuneration committees to design pay packages that reflect managerial leverage rather than shareholder value. These tensions are particularly salient in cyclical, capital-intensive industries such as mining, where external shocks like commodity price volatility distort traditional performance metrics (Mattos & Torrez, 2021; Bouteska et al., 2024).

Institutional and governance factors also shape remuneration outcomes. King IV, South Africa's leading corporate governance framework, operates on an "apply

and explain” basis, requiring JSE-listed companies to disclose how its principles are implemented (IoDSA, 2016). Among its key tenets is that executive pay must be fair, responsible, and aligned with value creation over time. However, evidence suggests that many mining firms fall short of these expectations. Matemane (2022), for example, found that remuneration disclosures are often superficial and fail to demonstrate a meaningful link between pay and performance.

Against this backdrop, this study analyses the relationship between CEO remuneration and company performance among primary listed JSE-listed mining companies in South Africa between the years 2018 and 2024. Drawing on agency theory, optimal contracting theory, and managerial power theory, it seeks to determine whether current remuneration structures are genuinely performance-sensitive or structurally misaligned.

### **1.1. Problem Definition**

Despite the existence of comprehensive governance frameworks and shareholder oversight mechanisms, a persistent misalignment remains between CEO remuneration and company performance in South Africa’s mining sector. In recent years, declining earnings and large-scale restructuring, particularly within the PGM subsector have coincided with continued increases in executive pay (PwC, 2023; BusinessTech, 2024). This has raised concerns about fairness, accountability, and whether remuneration practices genuinely reflect sustainable value creation for shareholders and broader stakeholders.

The issue is not merely ethical but strategic, excessive and weak performance-linked executive pay can erode investor confidence, damage corporate reputation, and undermine a firm’s social licence to operate in a context already burdened by inequality and labour unrest (Fraser et al., 2021; Seow et al., 2019). Sibanye-Stillwater, for example, have faced stakeholder criticism for awarding significant CEO compensation packages during periods of retrenchment and operational decline (Sibanye-Stillwater, 2023). These tensions highlight the urgent business need to reassess whether current remuneration structures promote long-term competitiveness, stakeholder trust, and responsible corporate conduct. At the same time, they raise a critical question for both scholars and practitioners, whether there truly exists a performance-sensitive relationship

between CEO remuneration and company outcomes in South Africa's mining sector.

Empirical evidence reinforces these concerns. Siwendu et al. (2024) found weak or inconsistent pay-performance linkages across key financial indicators, with short-term incentives dominating CEO packages regardless of company outcomes. Grove (2015) similarly observed cases where executive pay increased even as market capitalisation declined. These findings suggest deficiencies in how performance is measured and rewarded, particularly in cyclical, resource-driven industries where external factors such as commodity price volatility distort financial performance (Mattos & Torrez, 2021; Bouteska et al., 2024).

From a theoretical standpoint, traditional frameworks such as Agency and Optimal Contracting theories posit that performance-based incentives should align executive and shareholder interests (Jensen & Meckling, 1976; Edmans et al., 2017). However, persistent misalignment in the South African mining context implies that these models may not fully account for contextual variables such as managerial influence, board independence, and governance enforcement, issues central to Managerial Power theory (Bebchuk & Fried, 2004; Padia & Callaghan, 2020). Furthermore, while King IV advocates for transparent, performance-linked, and equitable remuneration, its "apply and explain" principle has been unevenly applied, with many listed firms providing superficial disclosure that fails to link remuneration outcomes to performance (Carlson & Bussin, 2020; Matemane, 2022).

The business need for this study therefore lies in informing remuneration governance practices that reinforce fairness, accountability, and long-term value creation within one of South Africa's most economically significant yet socially contested sectors. The theoretical need arises from the limited empirical testing of executive pay-performance relationships in emerging-market, resource-dependent contexts, where external volatility and governance asymmetries may weaken established models.

Accordingly, this study examines the relationship between CEO remuneration and company performance among primary JSE-listed mining companies in South Africa between 2018 and 2024. By integrating Agency, Optimal Contracting, and

Managerial Power theories, the research aims to determine whether current remuneration structures are performance-sensitive or structurally misaligned, thereby contributing to both corporate governance practice and the broader executive-compensation literature.

Despite the ongoing attention executive remuneration has received in both academic and policy circles, empirical research on the pay-performance relationship remains inconclusive, particularly within emerging-market and cyclical sectors such as mining. Prior studies have produced mixed findings depending on the performance metrics applied, the timeframes analysed, and the governance environments considered (Bussin & Modau, 2015; Coetzee & Hall, 2020; Siwendu et al., 2024). These inconsistencies highlight a critical gap in the literature, as it remains unclear whether executive pay in resource-dependent industries genuinely reflects managerial performance or merely tracks exogenous economic conditions.

Against this backdrop, this study contributes to the existing body of knowledge by empirically testing the pay-performance relationship in South Africa's mining sector using a multi-dimensional and longitudinal approach. By combining both accounting and market-based performance measures within a panel regression framework, and by incorporating firm size and leverage as contextual variables, the study provides fresh evidence on the determinants and sensitivity of CEO remuneration in a governance-sensitive environment. In doing so, it not only strengthens the empirical foundation of pay-performance research in emerging markets but also extends theoretical understanding of how agency, optimal contracting, and managerial power dynamics interact within high-risk, resource-based industries.

### **1.2. Research question:**

To what extent is CEO remuneration aligned with company performance in JSE-listed mining companies in South Africa?

### **1.3. Research Objectives**

The primary objective of this study was to examine the relationship between CEO remuneration and company performance in primary JSE-listed South African

mining companies, operating within South Africa between the years 2018 and 2024.

Given the persistent disconnect between CEO remuneration and company performance observed in South Africa's mining sector, this study sets out to clarify both the extent of alignment and the underlying factors that may influence it. Building on theoretical insights from agency theory, optimal contracting theory, and managerial power theory, the research is guided by two core objectives: an empirical objective, focused on measuring the pay performance relationship across a multi-year dataset; and a theoretical objective, aimed at evaluating the applicability of key governance and compensation theories in an emerging market context. These objectives collectively support the overarching aim of generating practical and academic insights into executive remuneration relationships within JSE-listed mining firms.

### 1.3.1. Empirical Objective

The empirical objective of this study was to evaluate the extent to which CEO remuneration is aligned with firm performance in JSE-listed South African mining companies between 2018 and 2024. To achieve this, the study employed a quantitative, empirical approach using panel data regression analysis, which is well-suited for examining corporate performance relationships over time while controlling for unobserved heterogeneity (Wooldridge, 2010; Hsiao, 2014). Panel regression techniques allow for more robust inference than cross-sectional or time-series designs by capturing both firm-specific and temporal dynamics that influence executive pay (Gayle et al., 2018; Coetzee & Hall, 2020).

Three models were estimated to capture distinct dimensions of CEO remuneration:

1. **Model 1 (Base Salary):** Assessed whether fixed pay is sensitive to firm performance.
2. **Model 2 (Base Salary + Short-Term Incentive Pay):** Examined how short-term rewards, designed to reflect annual operational outcomes, vary with accounting and market-based indicators of performance.

3. **Model 3 (Total Remuneration: Base + STI + LTI):** Assessed long-term alignment by including deferred equity and performance-based awards, reflecting the broader cost of employment and incentive structure.

Each model applied panel least squares regression with fixed effects and Panel-Corrected Standard Errors (PCSE) to address cross-sectional heteroskedasticity and within-panel correlation (Beck & Katz, 1995). The fixed-effects specification was preferred because CEO pay is influenced by unobserved firm characteristics, such as governance culture, ownership structure, and capital intensity that remain relatively stable over time (Frydman & Jenter, 2010; Carlson & Bussin, 2020).

The dependent variable alternated between the three remuneration constructs, while the independent variables comprised a comprehensive set of accounting and market-based performance measures:

- Earnings Before Interest, Taxes, Depreciation and Amortisation (EBITDA)
- Net Profit Margin (NPM)
- Earnings per Share (EPS)
- Return on Equity (ROE)
- Return on Assets (ROA)
- Total Shareholder Return (TSR)
- Market Capitalisation (MCAP)
- Net Operating Cash Flow (CFO)

Firm size (log of total assets) was included as a moderating variable to test whether organisational scale conditions the strength of the pay-performance relationship, while leverage served as a control variable to account for financial risk and capital structure. This aligns with prior studies emphasising that firm size and financial leverage materially influence remuneration outcomes (Tosi et al., 2000; Ozkan, 2011; Bussin & Modau, 2015).

By distinguishing between base, short-term, and total remuneration, the analysis captured both immediate and long-term sensitivities of CEO pay to company

performance. This multi-model design provides an empirical test of competing theoretical predictions from agency, optimal contracting, and managerial power perspectives, contributing to a more granular understanding of pay-performance alignment within South Africa's mining sector (Jensen & Meckling, 1976; Edmans et al., 2017; Bebchuk & Fried, 2004).

### **1.3.2. Theoretical Objective**

To contribute to governance and compensation theory by evaluating the applicability of agency, optimal contracting and managerial power theory.

The study will explore how these theories explain CEO remuneration practices in the South African mining context, characterised by economic volatility, high stakeholder sensitivity, and evolving governance expectations. In particular, it will reflect on the extent to which the King IV Code of Corporate Governance has been implemented in substance beyond formal compliance by assessing whether remuneration reflect King IV's emphasis on fair, responsible, and performance-linked compensation.

### **1.4. Scope of the Research**

This study focuses on mining companies listed on the Johannesburg Stock Exchange between 2018 and 2024. These firms operate in a highly visible, capital-intensive, and cyclical industry, and are subject to the King IV Code of Corporate Governance, including its "apply and explain" remuneration principles. As such, they provide an appropriate context for examining the effectiveness of executive pay frameworks in a complex, emerging market environment.

The research adopts a quantitative panel data approach to assess the extent to which CEO remuneration aligns with multiple financial performance indicators over time. The use of panel data enables the study to capture both cross-sectional variation across firms and longitudinal dynamics within firms over multiple years. This structure allows for a more nuanced analysis of the pay-performance relationship and supports exploration of theoretical mechanisms such as incentive design and managerial discretion.

Although the primary focus is on statistical relationships, the research design also accommodates an examination of contextual and structural influences that may affect the strength of alignment without directly modelling them as control

variables. The scope deliberately excludes unlisted companies, diversified conglomerates, and firms with incomplete or inconsistent remuneration disclosures to ensure methodological consistency and sectoral relevance.

By narrowing the scope to a single, high-impact sector and leveraging longitudinal data, the study aims to generate insights that are both practically meaningful for corporate governance and remuneration policy and academically robust, contributing to the literature on performance-based compensation in emerging market settings.

## **1.5. Research Motivation**

This research is driven by both practical urgency and theoretical significance, given the growing disconnect between CEO remuneration and company performance in South Africa's mining sector. It aims to provide insights for improving corporate governance practices while contributing to the academic literature on executive compensation in resource-dependent emerging markets.

### **1.5.1. Practical Motivation**

CEO remuneration has become a flashpoint for stakeholder discontent in South Africa's mining industry. Despite declining profitability, rising retrenchments, and ongoing operational disruptions especially in the PGM sector executive pay has continued to escalate (PwC, 2023; BusinessTech, 2024). Prominent cases such as Sibanye-Stillwater's pay practices have drawn significant criticism, highlighting broader concerns around legitimacy, fairness, and social accountability (Sibanye-Stillwater, 2023; Matemane, 2022). These concerns are amplified in a national context marked by structural inequality, unemployment, and political sensitivity around labour issues.

By analysing the relationship between pay and performance using firm-level data, this study seeks to clarify the extent to which remuneration frameworks in the sector promote accountability and reward genuine value creation. In doing so, it responds to growing pressure from shareholders, employees, and regulators for greater transparency and performance sensitivity in executive compensation.

### 1.5.2. Academic Motivation

The study also addresses theoretical questions about how compensation systems function in volatile, institutionally complex environments. While agency theory and optimal contracting theory suggest that incentive structures can align managerial and shareholder interests, managerial power theory posits that executives may influence their own pay outcomes, particularly in settings with weak or symbolic governance enforcement (Bebchuk & Fried, 2004; Padia & Callaghan, 2020).

Emerging literature suggests that external factors such as commodity price volatility, cyclical downturns, and governance codes like King IV can moderate or distort the pay-performance relationship (Mattos & Torrez, 2021; Bouteska et al., 2024; Siwendu et al., 2024). Beyond these external dynamics, internal firm characteristics may also influence how sensitively CEO remuneration responds to performance outcomes. In particular, firm size has been shown to affect the strength of the pay-performance link, as larger firms tend to exhibit greater operational complexity, more diffuse ownership structures, and higher information asymmetry, which can weaken direct accountability between CEO decisions and measurable outcomes (Tosi et al., 2000; Ozkan, 2011; Carlson & Bussin, 2020). By incorporating firm size as a moderating variable, this study tests whether the sensitivity of CEO remuneration to company performance differs across small and large mining firms. This contributes to a more nuanced understanding of pay-performance alignment in South Africa's mining industry, a sector characterised by high risk, capital intensity, and governance scrutiny.

Furthermore, the use of panel data regression enables the identification of both firm-specific and temporal effects, allowing the analysis to move beyond simple cross-sectional correlation toward the examination of dynamic relationships that persist or vary over time. This design enhances the study's empirical rigor by isolating unobserved heterogeneity and strengthening causal inference, thereby improving the ability to test and compare competing theoretical explanations of executive remuneration (Hsiao, 2014; Wooldridge, 2010).

This chapter outlined the background, problem definition, research questions, and objectives guiding the study. It established that despite the presence of comprehensive governance frameworks such as King IV, a persistent

misalignment exists between CEO remuneration and company performance in South Africa's mining sector. The discussion highlighted both the business need to strengthen fairness, accountability, and value alignment in executive pay and the theoretical need to extend understanding of pay-performance relationships within an emerging-market, resource-dependent context.

The research motivation was presented from both a practical and academic perspective, emphasising the importance of addressing inconclusive empirical evidence through a robust, multi-model panel regression analysis. The scope and methodological approach were defined to ensure that findings contribute meaningfully to both governance practice and scholarly debate.

The next chapter, Chapter 2: Literature Review, builds upon this foundation by examining existing theoretical and empirical research on executive remuneration and firm performance. It explores the evolution of compensation theories, reviews prior studies within the South African and international mining contexts, and identifies the key gaps that this study seeks to address.

## **CHAPTER 2: Literature Review**

### **2. Introduction**

The aim of this research report was to explore and provide deeper insight into the relationship between the performance of South African mining companies that are primarily listed on the JSE and their executive remuneration, with a particular focus on CEOs.

To address this aim, the study conducted a literature review to examine key theoretical frameworks and prior research, incorporating both foundational theories and more recent studies. The review also considered empirical findings on the relationship between CEO remuneration and company performance, with specific reference to South African mining companies primarily listed on the JSE.

In this section, relevant theory and academic literature are reviewed to better understand how executive pay is determined, how performance is measured, and the extent to which these two constructs are aligned in practice. This chapter presented the key theoretical models that have guided prior research on executive compensation, as well as empirical studies conducted locally and internationally that have examined the dynamics of pay-performance sensitivity.

The review began with an overview of the main theoretical frameworks underpinning executive remuneration, namely agency theory, optimal contracting theory, and managerial power theory. These theories were used to explain the rationale behind incentive structures and to highlight potential gaps in corporate governance. Furthermore, this section outlined how CEO compensation is typically structured, and the various financial and market-based metrics used to assess company performance. The review concluded by identifying key gaps in the literature that this study aimed to address.

#### **2.1. Executive Compensation**

Executive compensation, also referred to as executive remuneration or directors' emoluments, encompasses the total package of rewards provided to senior executives, typically including a fixed base salary, benefits, short-term incentives such as annual bonuses, and long-term incentives such as share-based awards, restricted shares, or performance-based equity (Nkwadi & Matemane, 2022).

Globally, executive pay structures shifted over the past three decades from predominantly fixed salaries toward increasing performance-contingent components, reflecting pressure from shareholders, regulators, and governance reforms to better align managerial effort with company outcomes (Murphy, 1999; Conyon, 2014).

In the South African context, CEO compensation structures generally comprised a total guaranteed package, short-term incentive pay, and long-term incentive pay, which boards adjust to reward or penalise executives depending on organisational performance (Bussin, 2018). King IV further emphasised that remuneration policies should reflect not only shareholder alignment but also fairness, transparency, and inclusivity for a broader set of stakeholders (IoDSA, 2016). Studies have shown that well-designed compensation packages are critical for attracting and retaining top executive talent, while balancing the risks of excessive or poorly aligned pay (Bussin, 2018). However, despite these formal structures, empirical research suggests that alignment between CEO pay and company performance in South Africa remains weak and inconsistent, particularly in cyclical industries such as mining (Bussin & Modau, 2015; Siwendu et al., 2024). The extent to which alignment is achieved depends heavily on the choice of performance metrics which could be accounting-based, market-based, or hybrid indicators; a theme explored further in Section 2.3.

Building on this understanding, different theoretical perspectives provide distinct lenses through which executive pay can be analysed. Agency theory emphasises performance-linked pay to mitigate the agency problem (Jensen & Meckling, 1976), optimal contracting theory stresses efficient contract design (Edmans & Gabaix, 2009), and managerial power theory highlights the risk of executives influencing their own pay structures for personal gain (Bebchuk & Fried, 2003). Together, these perspectives underscore that executive compensation is not only a financial package but also a reflection of governance quality, incentive alignment, and contextual factors such as industry volatility and socio-economic pressures. Within this broader theoretical debate, executive compensation has emerged as a central focus in corporate governance. Researchers continue to debate how best to design remuneration systems that align the interests of CEOs with those of shareholders and other stakeholders (Murphy, 1999; Core et al.,

2003). These tensions are especially pronounced in emerging markets such as South Africa's mining sector, where governance challenges and economic volatility heighten the risks of misalignment (Bussin, 2018; Nkwadi & Matemane, 2022).

## **2.2. Agency Theory**

Agency theory, first articulated by Jensen and Meckling (1976), highlighted the conflict between shareholders (principals) and executives (agents). To mitigate agency costs and align interests, firms often linked CEO compensation to firm performance through bonuses, share-based incentives, or long-term rewards. The expectation was that such alignment mechanisms will enhance shareholder value (Jensen & Meckling, 1976; Jensen & Murphy, 1990; Murphy, 1999).

However, empirical evidence complicates this theoretical ideal. Gayle et al., (2018) challenged the predictive strength of agency theory, noting that performance-based pay frequently relied on imperfect metrics and suffered from oversight gaps. In the South African context, Siwendu et al.,(2024) found only weak pay performance sensitivity, especially during downturns, where opaque performance indicators and inconsistent governance enforcement undermined effectiveness. Shaw (2011) similarly argued that in resource-dependent sectors, external shocks such as commodity price fluctuations and political uncertainty distorted the link between executive effort and outcomes, creating moral hazard by allowing executives to benefit from favourable conditions without bearing equivalent downside risk.

While agency theory highlighted why incentives are needed, it does not explain how contracts should be designed to ensure efficiency. This gap is addressed by optimal contracting theory.

## **2.3. Optimal Contracting Theory**

Optimal contracting theory extends agency theory by proposing that executive pay contracts were designed to incentivise long-term performance while balancing risk and cost to the firm (Edmans et al., 2017). In theory, boards of

directors negotiate these contracts in good faith, tailoring them to firm-specific risks, appropriate performance metrics, and market expectations.

In practice, however, governance weaknesses often undermine this process. Bebchuk and Fried (2004) argue that optimal contracts were frequently compromised by board capture, resulting in rent extraction rather than value creation. In the South African mining industry, Bussin and Blair (2015) found that pay structures rely heavily on accounting-based metrics such as ROA and EPS, which can be manipulated and may fail to capture long-term sustainability. Matemane (2022) further noted that while disclosure requirements were introduced to enhance fairness, they have not curbed excessive or misaligned payouts.

Similar concerns arise globally. Mohammed et al. (2023) and Reddy (2023) find that even during periods of poor performance, CEO pay often increases, challenging the theoretical assumption that contracts are strictly tied to value creation. The assumption that boards always act independently and in shareholders' interests is directly questioned by managerial power theory, which highlights how executives themselves can shape compensation design.

#### **2.4. Managerial Power Theory**

Managerial power theory takes a more critical stance, suggesting that executives could influence their own compensation packages by leveraging board relationships and exploiting governance loopholes (Bebchuk & Fried, 2003). In this view, compensation itself becomes part of the agency problem, rather than the solution.

Evidence from South Africa supports this critique. Padia and Callaghan (2020) observed persistently high CEO pay levels even during operational underperformance, suggesting weak or compromised oversight. Matemane (2022) similarly argued that executives manipulated pay structures by shifting from transparent fixed salaries to less easily monitored variable incentives. These dynamics are especially concerning in mining, where concentrated ownership and opaque performance metrics facilitate rent extraction.

International studies reinforced these patterns. Mattos and Torrez (2021) and Bouteska et al. (2024) showed that external luck factors, such as commodity booms or broader market timing, frequently drive CEO pay irrespective of managerial effort, undermining the supposed performance alignment.

## **2.5. Integrated Application to the South African Mining Context**

Taken together, these theoretical perspectives are particularly relevant in South Africa's mining industry, where economic volatility, governance gaps, and labour tensions intersect. Agency theory justifies the use of performance-linked incentives, and optimal contracting theory provides a framework for fair contract design. Yet the realities captured by managerial power theory, especially weak oversight and susceptibility to exogenous shocks often undermine these ideals.

Siwendu et al. (2024) highlighted that macroeconomic shocks and poorly designed metrics weaken pay-performance sensitivity in South African mining. Grove et al. (2015) and Carlson and Bussin (2020) similarly argued that market-based indicators such as TSR are unreliable predictors of executive performance in cyclical industries. This disconnect between theoretical ideals and observed practices underscores the importance of adopting a hybrid lens.

In summary, agency theory predicts a positive relationship between CEO remuneration and firm performance; optimal contracting theory refines this by emphasising that contract design (e.g., STI vs. LTI mix, metric choice, vesting periods) shapes alignment; while managerial power theory predicts attenuated or distorted sensitivity due to rent extraction, weak governance, and volatility. These competing predictions provided the conceptual basis for this study's hypotheses and guided the selection of variables and tests outlined later in this chapter. While these theoretical frameworks provide clear predictions about how executive compensation should align with company performance, the extent to which these expectations hold in practice remains contested.

Empirical research, both in South Africa and internationally, has produced mixed results depending on the measures of compensation examined, the performance indicators applied, and the governance context in which firms operate. The following section reviewed these previous studies in detail, with particular

attention to evidence from South Africa's mining industry, in order to assess how well theory translates into observed patterns of CEO pay-performance sensitivity.

## **2.6. Prior Research on CEO Pay-Performance Relationships**

A large body of research has examined the relationship between CEO compensation and firm performance, yet the evidence remains mixed, context-dependent, and often contradictory. International studies have used accounting-based (ROA, ROE, EPS) and market-based (TSR, MVA, EVA) indicators to test pay-performance sensitivity (Jensen & Murphy, 1990; Murphy, 1999). Reported effects range from strong positive associations to weak, null, or negative relationships, suggesting that results hinge on methodological choices, time periods, and institutional environments. In short, despite decades of inquiry, the strength and even the direction of the pay-performance link is still contested, underscoring the need for further, context-rich testing.

In South Africa, findings are similarly inconclusive. Theku (2014) reported a moderate to strong positive association for 30 mining firms (2003-2013), yet also found that firm size was a dominant determinant of pay and that rising operating costs constrained alignment. Coetzee and Hall (2020) further showed that results flip with metric choice, EPS correlated strongly and positively with pay ( $r = 0.89$ ), while ROA correlated strongly and negatively ( $r = -0.79$ ), highlighting the metric sensitivity of inferences in this field.

Within mining specifically, structural and governance factors appear to dampen the ideal alignment. Labour unrest, inequality, and commodity cyclicality can produce instances where pay rises despite weakening fundamentals (Theku, 2014; Padia & Callaghan, 2020). Deysel and Kruger (2015) add that CEOs may be rewarded for commodity-price "luck" rather than skill, echoing international critiques of weak sensitivity (Bertrand & Mullainathan, 2001). Taken together, local evidence suggests that alignment is contingent, fragile, and uneven rather than uniform or assured.

Broader South African work also pulls in different directions. Modau (2013) found a positive relationship that attenuated over time, while Bradley (2011) reported no significant association with ROA, ROE, or EPS, findings consistent with

governance-related frictions. Sectoral studies diverge as well: Shaw (2011) finds a positive link in financial services, whereas Nel (2012) and Resnick (2012) report weak or negative relationships in retail/consumer goods. These cross-study discrepancies reinforce that conclusions are highly sensitive to sector, sample, and specification.

Internationally, the picture remains equivocal. Fahlenbrach and Stulz (2011) found no evidence that stronger equity alignment improved performance during the financial crisis; Cooper et al., (2016) even documented a negative relationship between high pay and subsequent shareholder wealth. By contrast, other studies (e.g., Benito & Conyon, 1999; Allen & McAllister, 2018) identify conditions under which stronger sensitivity emerges. Such conflicting results, often within similar eras, underscore that context and design matter profoundly.

Across these streams, three themes recur. First, measure choice matters: accounting and market-based indicators can point in opposite directions (Coetzee & Hall, 2020). Second, context matters: in cyclical, politically exposed industries like mining, exogenous shocks frequently mask managerial effects (Theku, 2014; Deysel & Kruger, 2015). Third, governance quality matters: where oversight is weak, managerial power can distort pay outcomes and blunt sensitivity (Padia & Callaghan, 2020). Collectively, the literature is not settled; it is fragmented and contingent, leaving the true strength of the pay-performance link in South African mining an open empirical question.

Motivation and contribution. Precisely because prior results are inconclusive and sensitive to specification, this study adds value by (i) focussing on a single, high-stakes sector (South African mining) over a defined post-King IV window (2018-2024); (ii) using a panel design that separates firm-specific effects from temporal shocks; (iii) incorporating both accounting- and market-based metrics; and (iv) explicitly testing contextual conditioning (firm size, leverage). This design directly addresses known sources of divergence in the literature and provides fresh, sector-grounded evidence on whether, and under what conditions, CEO pay in South African mining is genuinely performance-sensitive.

## 2.7. CEO Remuneration Structures

CEO remuneration generally consisted of a mix of fixed and variable components, designed to incentivise value creation and align executive effort with firm performance. These components typically included a base salary, short-term incentives (STIs) such as annual cash bonuses, and long-term incentives (LTIs) such as share options, restricted shares, or performance-based equity (Edmans et al., 2017). The balance of these elements varied across firms and jurisdictions, often reflecting corporate strategy, governance maturity, and institutional context.

Boards of directors, usually acting through remuneration committees, determined CEO pay within the constraints of the external market for executive talent, regulatory guidance, investor expectations, and peer benchmarking (Bussin, 2018). Studies indicated that committees structured remuneration into guaranteed pay to reflect role scope and market positioning, STIs to reward annual financial and operational drivers, and LTIs to incentivise long-term shareholder value (Jensen & Murphy, 1990; Frydman & Jenter, 2010). To strengthen governance, contracts frequently included vesting periods, performance hurdles, and risk-mitigation mechanisms such as clawback provisions, caps, and minimum shareholding requirements (Bussin & Blair, 2015). However, in cyclical sectors such as mining, the effectiveness of these structures was constrained by volatility, with awards often shaped by commodity cycles rather than executive performance (Siwendu et al., 2024).

CEO remuneration is typically structured to balance fixed and variable elements, with the goal of rewarding performance while ensuring retention. In South Africa, most remuneration frameworks are built around three pillars: the total guaranteed package (TGP), short-term incentives (STIs), and long-term incentives (LTIs) (Bussin, 2014; Theku, 2014).

**Guaranteed package (TGP):** This represents the fixed component of pay, covering base salary and standard benefits (e.g., pension, medical aid, allowances). It is determined largely by market benchmarks, role complexity, and executive seniority. While it provides income stability, it does not directly incentivise performance.

**Short-term incentives (STIs):** These are annual cash bonuses or performance-linked payments tied to targets such as production efficiency, cost control, safety, and financial results (e.g., EBITDA, EPS). The weighting of these metrics varies but is designed to capture performance within the financial year. STIs aim to drive operational performance but can encourage short-termism if not properly balanced with longer-term goals.

**Long-term incentives (LTIs):** LTIs typically include equity-based awards such as share options, performance shares, or restricted stock. These are subject to multi-year vesting and performance conditions, often linked to measures such as TSR, EVA, or ROCE. Their purpose is to align CEOs with shareholder interests, encourage capital discipline, and reduce excessive focus on short-term results. In South African mining, LTIs sometimes incorporate commodity-linked measures or strategic milestones to offset volatility and external shocks (Carlson & Bussin, 2020).

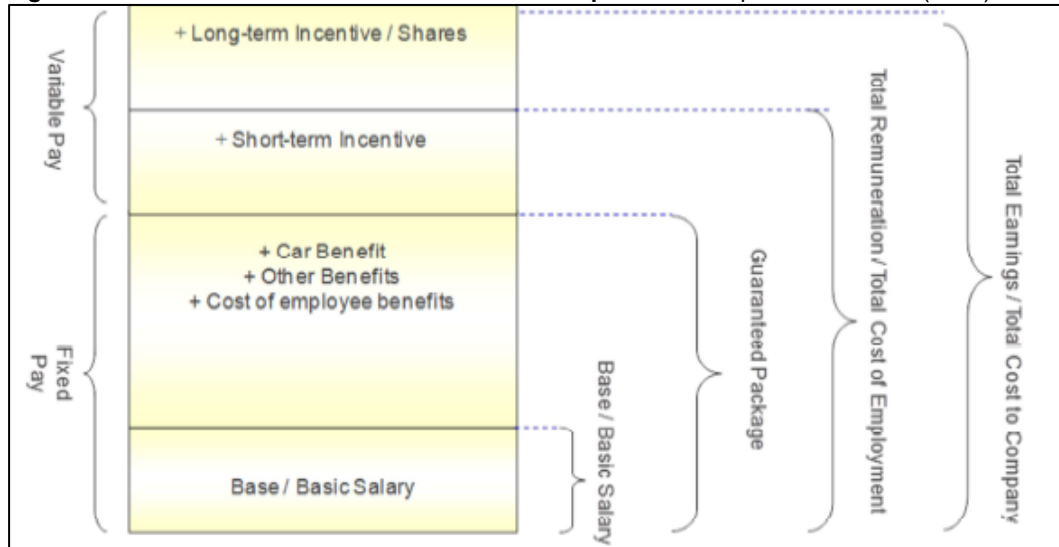
Beyond these three categories, Theku (2014) also noted distinctions between total remuneration (TGP + STI) and total earnings (TGP + STI + LTI), which give a holistic view of cost to company. The design of these structures is overseen by remuneration committees, which balance governance requirements, shareholder expectations, and industry norms.

Internationally, Frydman and Saks (2010) and Faulkender et al. (2010) highlight the increasing use of stock options and equity-linked instruments as a dominant LTI component, reflecting a shift toward performance sensitivity. In South Africa, however, the mix is often constrained by disclosure rules, governance maturity, and the cyclical nature of the mining sector, which complicates the alignment between pay and long-term performance (Bussin & Blair, 2015; Matemane, 2022).

The breakdown of these components is illustrated in Figure 1 which distinguishes between fixed pay (base salary and benefits) and variable pay (STIs and LTIs). The guaranteed package (base salary plus benefits) formed the foundation of executive compensation, while the addition of STIs and LTIs determined total remuneration and, ultimately, total earnings or the total cost to company. This structure highlighted the layered nature of executive pay, where variable components particularly LTIs introduced the greatest potential for volatility and

misalignment, as they were most sensitive to governance quality and external shocks (Theku, 2014; Bussin, 2014).

**Figure 1: Structure of Executive Remuneration Components.** Adapted from Theku (2014)



To better understand how CEO pay is constructed, it is useful to distinguish between the different layers of remuneration. Executive compensation in South Africa has typically been categorised into base salary, guaranteed package, total remuneration, and total earnings, each representing a progressively broader measure of cost to company (Theku, 2014; Bussin, 2018). The breakdown of these components is outlined below:

**Base Salary:** The fixed cash element of CEO pay, determined primarily by role complexity, market benchmarking, and experience. It provided stable income but did not incentivise performance directly (Theku, 2014; Bussin, 2018).

**Guaranteed Package (TGP):** Consisted of the base salary plus employee benefits, such as pension contributions, medical aid, allowances, and other non-cash perks. It represented the fixed cost of employing the CEO and was not contingent on performance.

**Total Remuneration (also called Total Cost of Employment):** Included the guaranteed package plus short-term incentives (STIs). This measure reflected both the fixed cost of employment and the variable rewards tied to annual financial or operational performance outcomes.

**Total Earnings (also referred to as Total Cost to Company):** The most comprehensive measure of CEO pay, comprising the total remuneration plus long-term incentives (LTIs) such as share options, restricted stock, or performance-based equity. Total earnings therefore represented the overall cost of executive compensation, including both immediate and deferred, performance-linked elements.

This layered view of remuneration structures shows that while fixed components such as base salary and the guaranteed package provide stability, it is the variable elements STIs and LTIs that carry the greatest weight in determining alignment with firm outcomes. As such, the effectiveness of CEO pay depends not only on how these components are structured, but also on the performance measures against which they are assessed. The following section therefore examines the accounting, market-based, operational, and emerging non-financial metrics that underpin remuneration design, with particular attention to their application in South Africa's mining sector.

## **2.8. Performance Metrics in CEO Remuneration**

CEO performance was typically assessed through a combination of accounting-based, market-based, operational, and emerging non-financial metrics. The selection and weighting of these indicators played a decisive role in determining whether remuneration truly aligned with shareholder value or drifted toward rewarding exogenous conditions.

**Accounting-based Metrics:** Traditional indicators such as return on assets (ROA), return on equity (ROE), earnings per share (EPS), EBITDA, and net profit margin were among the most widely used measures in South Africa because of their familiarity and availability in audited financial statements. These measures provided a straightforward link to profitability and efficiency, yet their limitations were well documented. They were prone to earnings manipulation, promoted short-termism, and were heavily distorted in cyclical industries such as mining where commodity price volatility influenced financial outcomes irrespective of managerial effort (Bussin & Modau, 2015; Matemane, 2022). For example, Coetzee and Hall (2020) found that EPS displayed a strong positive correlation with CEO pay, while ROA was negatively associated, illustrating how different accounting metrics produced divergent findings. Similarly, Deysel and Kruger

(2015) argued that executives were often rewarded for favourable accounting adjustments rather than underlying value creation.

**Market-based metrics:** Indicators such as Total Shareholder Return (TSR), market capitalisation, Market Value Added (MVA), and Economic Value Added (EVA) were intended to capture long-term wealth creation from the perspective of investors. Agency theory supported their use because they directly linked executive pay with shareholder outcomes (Jensen & Murphy, 1990). However, empirical evidence showed that in volatile and resource-dependent sectors, market measures frequently rewarded CEOs for commodity booms or macroeconomic upswings rather than managerial skill (Grove et al., 2015; Carlson & Bussin, 2020; Deysel & Kruger, 2015). This “pay for luck” phenomenon (Bertrand & Mullainathan, 2001) weakened the alignment between remuneration and performance. Global evidence reinforced this critique: Cooper et al., (2016) reported that higher CEO pay was often associated with lower future shareholder returns, suggesting that market-based incentives did not consistently enhance value creation.

**Operational and organisational metrics:** Recognising the limitations of purely financial measures, many mining firms included operational performance indicators in CEO scorecards. These encompassed production volumes, recovery rates, cost efficiency (e.g., all-in sustaining cost per ounce), project delivery (scope, schedule, and budget), and safety performance indicators such as lost-time injury frequency rates (LTIFR) or total recordable injury frequency rates (TRIFR). These metrics were considered more controllable by management and therefore closer proxies of executive performance (Theku, 2014). However, empirical studies noted that operational metrics were often underweighted, poorly specified, or applied with soft thresholds, thereby limiting their effectiveness unless independently assured (Carlson & Bussin, 2020; Siwendu et al., 2024).

**Emerging and hybrid metrics:** In response to governance reforms such as King IV and growing stakeholder expectations, firms increasingly incorporated non-financial measures, including ESG performance, transformation and diversity targets, and community engagement outcomes. These metrics broadened the accountability framework and signalled a commitment to sustainable value creation (IoDSA, 2016). Nonetheless, they were frequently criticised for being

inconsistently applied or weakly weighted, with limited evidence that they materially influenced CEO pay outcomes (Matemane, 2022).

**Implications for the South African mining sector:** Collectively, the literature suggested that metric selection was not a neutral technical exercise but a governance choice with material consequences for alignment. Studies by Theku (2014) and Siwendu et al. (2024) showed that even where metrics were disclosed, the relationship between performance indicators and pay outcomes remained opaque, weakening transparency and accountability. Over-reliance on EPS or TSR risked rewarding short-term fluctuations and external volatility, while underweighting operational and ESG metrics reduced the credibility of performance-linked pay. Consequently, the South African mining sector provided a critical testing ground for assessing whether remuneration structures captured genuine managerial value creation or merely reflected exogenous conditions and governance weaknesses.

The literature has demonstrated that the choice of performance metrics was central to assessing the sensitivity of CEO pay to company outcomes, yet each class of measure carried inherent strengths and limitations. Accounting indicators such as ROA, ROE, and EPS were widely applied in South African studies (Bussin & Modau, 2015; Theku, 2014), but they were susceptible to manipulation and often distorted by commodity cycles (Matemane, 2022). Market-based measures such as TSR and market capitalisation were theoretically better aligned with shareholder wealth (Jensen & Murphy, 1990), yet empirical evidence suggested they frequently rewarded exogenous “luck” rather than managerial effort, particularly in mining (Deysel & Kruger, 2015; Grove et al., 2015). Operational and organisational metrics, including safety, production efficiency, and cost control, offered closer links to managerial controllables but were often underweighted or applied symbolically (Carlson & Bussin, 2020; Siwendu et al., 2024). Finally, emerging ESG and transformation measures reflected the principles of King IV, but their weak application limited their effectiveness (IoDSA, 2016; Matemane, 2022).

Against this backdrop, the present study adopted a combination of accounting-based metrics (ROA, ROE, EPS) and market-based indicators (TSR, market capitalisation) as its primary measures of firm performance, reflecting both

international precedent and South African empirical practice, while recognising the limitations of each approach in a cyclical and resource-dependent context. Prior research consistently highlighted that the choice of metric shaped the observed pay-performance relationship, with some studies reporting positive alignment and others weak or negative associations (Coetzee & Hall, 2020; Deysel & Kruger, 2015). These mixed findings underscored the need to scrutinise how remuneration structures interact with different measures of firm performance in practice. The following section therefore reviews empirical evidence, both internationally and within South Africa, to assess whether CEO compensation has historically been aligned with company outcomes and to identify the gaps this study seeks to address.

### **2.9. Empirical Evidence: CEO Pay and Firm Performance**

Findings on CEO pay-performance sensitivity differed systematically depending on (i) the choice of metric, such as market-based indicators like TSR or capital-discipline measures like ROCE and EVA versus accounting-based measures like ROA and EPS (Coetzee & Hall, 2020; Bussin & Modau, 2015), (ii) the time horizon considered, with short-term incentives (STIs) often producing weaker alignment than long-term incentives (LTIs) linked to sustained value creation (Frydman & Jenter, 2010; Theku, 2014), (iii) methodological design, where panel data approaches controlling for firm heterogeneity yielded more robust results than cross-sectional or pooled OLS analyses (Gayle et al., 2018 ; Bouteska et al., 2024), and (iv) contextual features such as industry cyclicalities and governance strength, which shaped whether alignment was maintained or distorted (Deysel & Kruger, 2015; Carlson & Bussin, 2020). In this regard, the South African mining sector represented an especially challenging case, given its exposure to commodity cycles, labour unrest, and uneven governance practices (Siwendu et al., 2024; Padia & Callaghan, 2020).

South African studies produced mixed and often contradictory findings. Bussin and Modau (2015) found only weak correlations between CEO pay and accounting-based measures such as ROA and EPS, suggesting that remuneration was not effectively tied to firm outcomes. Similarly, Carlson and Bussin (2020) concluded that remuneration practices in resource-focused and state-owned enterprises placed more emphasis on guaranteed pay and allowances than on variable incentives. Siwendu et al., (2024) reported that while

performance-linked pay mechanisms formally existed in mining firms, they were inconsistently applied and often rewarded short-term profitability rather than long-term sustainability. Matemane (2022) added that although King IV mandated transparency and fairness in remuneration disclosures, these measures were insufficient in constraining excessive or poorly aligned payouts.

Sector-specific research provided additional nuance. Theku (2014), analysing 30 mining companies between 2003 and 2013, found a moderate to strong positive relationship between CEO pay and performance but emphasised that firm size played a stronger role than operational results. Deysel and Kruger (2015) showed that mining CEOs were often rewarded for external factors such as commodity price “luck” rather than managerial skill, reflecting the challenge of separating effort from exogenous shocks. Padia and Callaghan (2020) further observed persistent high levels of CEO pay despite poor operational outcomes, attributing this to weak board oversight and the influence of managerial power.

International evidence echoed these concerns. Bouteska et al., (2024) showed that in emerging markets, CEO pay was frequently shaped by macroeconomic conditions such as currency shifts or favourable commodity cycles. Mattos and Torrez (2021) similarly reported that in resource-driven economies, executive compensation often tracked market volatility rather than internal performance. Gayle et al., (2018) highlighted that methodological inconsistencies differences in performance indicators, sample periods, and econometric techniques further contributed to the inconsistent evidence base.

Overall, the empirical literature highlighted the complexity of linking pay and performance, especially in resource-dependent sectors such as mining. Evidence consistently showed that results depended on whether STIs or LTIs were considered, whether accounting-based or market-based indicators were prioritised, and whether external shocks were adequately controlled. In the South African mining context, these findings underscored the importance of testing both accounting-based measures (ROA, ROE, EPS) and market-based indicators (TSR, market capitalisation), while explicitly accounting for firm size, sectoral differences, and governance quality. This study therefore positioned itself to build on prior research by applying panel regression models that incorporated these methodological refinements and robustness checks.

## **2.10. Sector-Specific and Contextual Influences**

The South African mining sector presented unique contextual challenges that complicated the application of standard executive compensation frameworks. Mining was inherently cyclical, capital-intensive, and labour-dependent, which made firm performance highly sensitive to exogenous shocks such as global commodity prices, exchange rate fluctuations, and regulatory interventions. These characteristics amplified the difficulty of disentangling managerial effort from external conditions when evaluating CEO pay (Theku, 2014; Deysel & Kruger, 2015).

One important contextual factor was the dominance of external market forces. Empirical studies demonstrated that remuneration outcomes in mining firms often reflected commodity booms or macroeconomic “luck” rather than managerial skill, undermining the agency-theory premise that incentives aligned effort with shareholder value (Grove et al., 2015; Carlson & Bussin, 2020; Deysel & Kruger, 2015). This disconnect was especially evident in platinum and coal producers, whose revenues fluctuated substantially across cycles.

The sector was also socially and politically sensitive. Mining companies faced persistent labour unrest, community protests, and environmental scrutiny. Shaw (2011) and Matemane (2022) argued that these pressures shaped perceptions of fairness and legitimacy in CEO pay, where symbolic compliance with governance standards often substituted for genuine accountability. In such contexts, managerial power theory became particularly salient, as executives were able to preserve high pay even amid operational underperformance and social contestation (Padia & Callaghan, 2020).

Governance weaknesses further exacerbated these dynamics. Although King IV promoted fair and responsible remuneration and greater stakeholder engagement (IoDSA, 2016), studies found limited evidence of meaningful shareholder activism or restraint. Matemane (2022) noted that remuneration disclosures were rarely used to curb misalignment, while Padia and Callaghan (2020) highlighted persistent board entrenchment that enabled executives to influence their own pay structures. These findings aligned with critiques from managerial power theory, which suggested that compensation itself became part of the agency problem rather than its solution (Bebchuk & Fried, 2003).

Taken together, these sector-specific and institutional characteristics made the South African mining industry a critical testing ground for theoretical debates on executive pay. Agency and optimal contracting theories predicted positive pay-performance sensitivity, yet the realities of cyclical volatility, weak governance, and stakeholder pressures often weakened or distorted this alignment. This justified the need for a focused investigation into whether CEO remuneration in JSE-listed mining companies genuinely reflected performance or was shaped primarily by contextual and structural factors.

The following section therefore examines how corporate governance frameworks, particularly King IV, were intended to address these challenges and whether they succeeded in improving pay-performance alignment.

### **2.11. Corporate Governance Frameworks in South Africa**

Corporate governance frameworks in South Africa were designed to provide oversight and ensure that executive remuneration aligned with both shareholder and stakeholder interests. The King IV Report on Corporate Governance emphasised that remuneration policies should be fair, responsible, transparent, and explicitly linked to long-term value creation (IoDSA, 2016). Similarly, the Companies Act No. 71 of 2008 required disclosure of directors' emoluments and placed fiduciary duties on boards to act in the best interests of the company and its stakeholders. Together, these frameworks provided a normative foundation for addressing agency problems by requiring remuneration committees to balance incentive alignment with fairness and accountability.

In practice, remuneration committees played a central role in structuring CEO pay. They were tasked with benchmarking guaranteed packages against market norms, calibrating short-term incentives (STIs) to annual value drivers, and setting long-term incentives (LTIs) against capital discipline and shareholder wealth measures. Committees were also expected to enforce governance safeguards such as clawback provisions, vesting requirements, and caps on bonus payouts (Bussin & Blair, 2015). Shareholder oversight mechanisms, including "say-on-pay" votes introduced under King IV, were intended to further enhance accountability.

Despite these governance mechanisms, evidence suggested that enforcement remained weak. Matemane (2022) observed that while most JSE-listed firms disclosed remuneration practices, these disclosures rarely translated into meaningful shareholder intervention. Padia and Callaghan (2020) similarly found that high levels of CEO pay persisted even during periods of operational underperformance, reflecting weak monitoring and entrenched board relationships. This reinforced the concerns raised by managerial power theory, which argued that governance structures could be captured by executives, enabling rent extraction rather than value creation (Bebchuk & Fried, 2003).

The South African mining sector highlighted these shortcomings acutely. Labour unrest, community scrutiny, and rising inequality created strong public expectations for fair and performance-linked pay. Yet governance mechanisms often operated more symbolically than substantively, with compliance driven by formal disclosure rather than genuine alignment between remuneration and outcomes (Siwendu et al., 2024). Consequently, while governance frameworks provided an important reference point, their limited effectiveness underscored the need for empirical testing of whether CEO pay in South Africa's mining sector reflected firm performance or institutional weaknesses.

Corporate governance plays a pivotal role in shaping the relationship between CEO remuneration and company performance. In South Africa, governance structures are guided by principles articulated in the King IV Report on Corporate Governance and legislated through the Companies Act No. 71 of 2008. These frameworks emphasize transparency, accountability, and the ethical use of power within corporations. Ngwenya (2016) found that certain governance features such as board size and the presence of independent non-executive directors are positively associated with improved corporate oversight, though not necessarily with performance-linked executive pay. Similarly, Modau (2014) argued that governance breakdowns enable rent extraction, especially where boards are either structurally weak or dominated by executive influence. King IV recommends that remuneration policies be fair, responsible, and aligned with long-term value creation, yet implementation across the mining sector remains inconsistent (IoDSA, 2016).

## **2.12. Equity, Diversity, and Social Considerations in Executive Remuneration**

Equity and fairness had long been identified as critical considerations in evaluating executive pay, particularly in a society as historically unequal as South Africa. Barrett (2014) and Dlamini (2016) highlighted persistent disparities in remuneration across gender and racial lines, with black and female executives underrepresented in top-earning roles. These inequities endured despite transformation initiatives and formal commitments to inclusivity. Modau (2014) argued that such disparities were not simply the result of market forces but rather embedded within institutional and structural biases that reinforced existing hierarchies. In the mining sector, where labour relations and community expectations were highly visible, inequitable pay practices heightened reputational and legitimacy risks (Padia & Callaghan, 2020).

Governance frameworks such as King IV sought to address these concerns by explicitly promoting fairness, stakeholder inclusivity, and ethical leadership in remuneration design (IoDSA, 2016). King IV required boards to ensure that executive pay was fair, responsible, and transparent, linking reward outcomes to long-term sustainable value creation. By embedding principles of stakeholder theory (Freeman, 1984), the framework emphasised that boards carried responsibilities not only to shareholders but also to employees, communities, and society more broadly. This positioned executive pay as a governance mechanism through which social justice and corporate legitimacy could be reinforced. Comparable global frameworks, such as the OECD Principles of Corporate Governance (2015) and the UK Corporate Governance Code (FRC, 2018), similarly stressed fairness, disclosure, and alignment with sustainable performance, indicating that South Africa was part of a broader international movement toward more responsible remuneration practices.

Despite these normative expectations, empirical research suggested that compliance was often symbolic. Matemane (2022) observed that while many firms disclosed remuneration policies in line with King IV principles, such disclosures rarely triggered substantive shareholder activism or constrained excessive pay. Bussin and Modau (2015) similarly noted that remuneration reports frequently adopted compliance language without demonstrating clear evidence of performance alignment. This reflected the phenomenon of

decoupling, where companies formally adhered to governance standards but failed to translate them into meaningful practice (West, 2009).

Taken together, the literature indicated that while governance frameworks provided a strong normative basis for fairness and inclusivity in executive pay, little empirical evidence existed on whether such principles were meaningfully integrated into remuneration-performance alignment in South African mining companies. This gap underscored the need to test whether pay structures reflected not only shareholder outcomes but also broader stakeholder expectations of fairness, accountability, and transformation (Padia & Callaghan, 2020; IoDSA, 2016).

Equity and fairness concerns also intersected with the core theoretical frameworks underpinning executive remuneration. From an agency theory perspective, fairness principles reinforced the idea that incentive structures must not only align the interests of shareholders and managers but also maintain legitimacy in the eyes of broader stakeholders. Optimal contracting theory overlapped with fairness frameworks such as King IV, since both emphasised the design of contracts that were efficient, transparent, and socially sustainable. By contrast, managerial power theory explained why equity considerations often remained aspirational, as powerful executives could shape remuneration packages that formally complied with governance codes while perpetuating inequities or facilitating rent extraction (Bebchuk & Fried, 2003; Padia & Callaghan, 2020). These tensions highlighted the gap between normative governance principles and observed practice in South Africa's mining industry.

While equity and diversity remain central to the broader governance debate, this study did not empirically test these factors. The absence of consistent, publicly available data on executive demographics constrained the ability to operationalise such measures. Moreover, the primary contribution of this research was to examine whether CEO remuneration in JSE-listed mining companies aligned with firm performance outcomes. Accordingly, equity and fairness considerations were acknowledged as part of the governance context but were not included in the empirical analysis. This clear scope ensured that the study remained focused on evaluating pay-performance sensitivity, while

recognising that future research could extend the analysis to incorporate diversity and social equity dimensions.

### **2.13. Methodological Approaches in Prior Pay-Performance Research**

The conclusions drawn from prior studies on CEO pay-performance sensitivity were strongly shaped by methodological choices. Shaw (2011) demonstrated that cross-sectional analyses frequently failed to capture temporal dynamics, whereas panel data approaches allowed for firmer control of firm-specific effects. Coetzee and Hall (2020) further showed that different performance measures yielded divergent results: earnings per share (EPS) was strongly positively correlated with CEO pay, while return on assets (ROA) was negatively related. Similarly, Carlson and Bussin (2020) argued that linear models inadequately accounted for regulatory or cyclical distortions in South African industries, recommending the inclusion of qualitative and non-financial factors.

At the international level, Frydman and Jenter (2010) and Cooper et al., (2016) illustrated that methodological design influenced whether studies found positive, weak, or negative sensitivity. Gayle et al., (2018) also noted that differences in performance indicators, timeframes, and econometric techniques explained much of the inconsistency in results across the literature.

These methodological debates were especially relevant to the South African mining sector, where performance outcomes were shaped by volatility in commodity cycles and institutional weaknesses. Studies such as Theku (2014) and Deysel and Kruger (2015) relied on accounting measures and limited time horizons, producing results that often conflated managerial effort with exogenous “luck.” Later studies, such as Siwendu et al., (2024), adopted more refined models but still reported inconsistent evidence.

This underscored the need for studies that employed panel regressions with firm fixed effects, robust standard errors, and robustness checks across both accounting- and market-based metrics. Such approaches allowed for more reliable isolation of the extent to which CEO pay reflected genuine performance rather than contextual or methodological artefacts.

Given the methodological inconsistencies in prior research, this study employed panel data regression techniques to examine the relationship between CEO

remuneration and company performance. Cross-sectional approaches, as highlighted by Shaw (2011), often failed to capture changes over time and conflated short-term fluctuations with structural relationships. Panel regressions, by contrast, allowed for control of firm-specific heterogeneity, reducing omitted variable bias and strengthening causal inference. Coetzee and Hall (2020) demonstrated that results varied substantially depending on the performance metric applied, while Carlson and Bussin (2020) cautioned that linear cross-sectional models were ill-suited to cyclical and highly regulated sectors such as mining. At the international level, Frydman and Jenter (2010) and Cooper et al., (2016) further showed that methodological design largely explained the divergence between studies reporting positive, weak, or negative pay-performance sensitivity.

In the South African mining context, prior studies relying on narrow accounting metrics and short time horizons (Theku, 2014; Deysel & Kruger, 2015) risked overstating the impact of external shocks such as commodity cycles. More recent work (Siwendu et al., 2024) employed refined models but still reported inconsistent evidence, underscoring the limitations of static approaches. Against this backdrop, panel regression with firm fixed effects and robust standard errors was the most appropriate method for this study. This approach enabled the analysis to account for both time-varying shocks and unobserved heterogeneity across firms, while robustness checks across different performance metrics (ROA, ROE, EPS, TSR, market capitalisation) provided a more reliable assessment of pay-performance sensitivity. By adopting this methodological design, the study aimed to disentangle whether CEO remuneration in JSE-listed mining companies reflected genuine managerial performance or was primarily shaped by exogenous and governance-related factors.

Building on these methodological insights, this study employed panel regression models with firm fixed effects and robust standard errors to test the proposed hypotheses (H1-H4). By incorporating both accounting-based measures (ROA, ROE, EPS) and market-based indicators (TSR, market capitalisation), the models directly addressed whether CEO remuneration was sensitive to internal profitability and external investor outcomes. The use of total earnings as the primary dependent variable, alongside robustness checks on STI and LTI separately, allowed the analysis to capture both short-term and long-term

incentive alignment. Control variables such as firm size, sub-sector classification, leverage, and the commodity price index were introduced to mitigate the “pay for luck” effect highlighted in prior studies. In this way, the methodological design ensured that the empirical tests were not only aligned with the theoretical frameworks of agency, optimal contracting, and managerial power, but also tailored to the cyclical, resource-dependent context of South African mining firms.

Taken together, the methodological choices of this study were carefully designed to address the weaknesses identified in prior literature and to provide more reliable evidence on the alignment between CEO remuneration and firm performance. These refinements set the stage for the following section, which draws together the theoretical, empirical, and contextual insights from the literature review to highlight the research gaps and formulate the propositions that guide this thesis.

#### **2.14. Summary and Research Proposition**

The literature reviewed in Sections 2.1 to 2.10 demonstrated that while agency theory and optimal contracting theory provide normative frameworks for aligning CEO pay with company performance, real-world evidence remains far more ambiguous. Managerial power theory offers a critical counterpoint, highlighting how governance weaknesses and exogenous shocks can undermine this alignment. Empirical findings are notably mixed: some South African studies (e.g., Theku, 2014; Coetzee & Hall, 2020) reported positive associations between CEO pay and performance, while others (e.g., Bussin & Modau, 2015; Carlson & Bussin, 2020; Siwendu et al., 2024) identified weak or inconsistent relationships. International research further reinforced these contradictions, showing that methodological design, metric selection, and sectoral context strongly influence outcomes (Gayle et al., 2018; Cooper et al., 2016).

Despite regulatory reforms such as King IV, South African evidence indicates that executive remuneration is not consistently aligned with firm performance. Overreliance on short-term accounting metrics, weak enforcement of disclosure requirements, and symbolic weighting of ESG and transformation indicators have limited the effectiveness of performance-linked pay (Matemane, 2022; Padia & Callaghan, 2020). Moreover, most studies focused on total remuneration or short-term incentives (STIs), with few explicitly examining total earnings which include

both STIs and long-term incentives (LTIs) as a more comprehensive measure of pay-performance sensitivity. This leaves unanswered whether CEO pay in cyclical industries such as mining reflects genuine managerial performance or is instead shaped by external forces like commodity cycles, governance gaps, and firm size effects.

This study addresses these gaps by empirically testing whether CEO remuneration in JSE-listed South African mining companies is aligned with firm performance, or whether outcomes are driven by contextual factors such as governance quality, organisational scale, and market volatility. Building on agency, optimal contracting, and managerial power theories, four hypotheses were developed to test the strength, direction, and conditionality of pay-performance sensitivity. These hypotheses extend the South African evidence base by focusing on a capital-intensive, high-risk sector where governance, equity, and performance tensions are particularly pronounced.

Drawing on agency theory (Jensen & Meckling, 1976), the first two hypotheses predict that CEO remuneration should increase with firm performance, reflecting the alignment of managerial and shareholder interests. Hypothesis 1 (H1) tests whether CEO pay is positively associated with accounting-based performance indicators, specifically, return on assets (ROA), return on equity (ROE), and earnings per share (EPS). Hypothesis 2 (H2) evaluates whether CEO remuneration is positively related to market-based measures such as total shareholder return (TSR) and market capitalisation, reflecting the expectation that executive incentives track shareholder wealth creation.

From an optimal contracting perspective (Edmans et al., 2017), the structure and sensitivity of executive pay are shaped by firm-specific risk and scale. Larger organisations often exhibit greater complexity, diffused ownership, and reduced monitoring, which may weaken pay-performance alignment. Accordingly, Hypothesis 3 (H3) tests whether firm size (proxied by the natural logarithm of total assets) and sub-sector classification moderate the strength and direction of the remuneration-performance relationship.

In contrast, managerial power theory (Bebchuk & Fried, 2003) predicts that powerful CEOs can influence their own pay arrangements, particularly during downturns or under weak governance. This leads to rent extraction and moral

hazard, where compensation remains high despite poor performance. Thus, Hypothesis 4 (H4) examines whether pay-performance sensitivity weakens during economic downturns or commodity shocks, reflecting managerial entrenchment rather than merit-based reward.

Together, these hypotheses translate theoretical tensions into empirically testable propositions, providing a framework for determining whether CEO remuneration in South Africa's mining sector reflects genuine value creation or structural distortion. By operationalising remuneration through total earnings and testing its responsiveness to both accounting- and market-based performance indicators, the study is positioned to disentangle the relative explanatory power of each theoretical perspective and contribute to ongoing debates on executive pay governance in emerging markets.

In summary, agency theory anticipates a positive relationship between CEO pay and firm performance; optimal contracting theory suggests that this relationship is conditional, varying with organisational scale and contextual factors; while managerial power theory predicts that alignment will weaken under governance failures or economic stress. These competing expectations underpin the study's empirical design and inform the selection of variables, model structure, and robustness tests outlined in the next chapter.

The following chapter therefore details the methodology employed to operationalise these hypotheses. It outlines the data sources, variable construction, econometric models, and diagnostic procedures designed to determine whether CEO remuneration in South African mining firms reflects managerial contribution, contextual influences, or governance-related distortions.

## **CHAPTER 3: Research Hypothesis and Questions**

This section defines the research questions, hypotheses, and key constructs underpinning the study. These elements establish the analytical framework for the quantitative investigation and are explicitly grounded in the theoretical models and empirical debates reviewed in Chapter 2. By linking conceptual foundations to measurable variables, they provide a clear basis for the empirical testing presented in Chapter 4. The constructs operationalised in this study include CEO remuneration (measured primarily as total earnings, with robustness checks for short- and long-term incentive components), firm performance (captured through accounting-based and market-based metrics), and moderating contextual variables such as company size, sector sub-classification, and external shocks.

### **3. Research Questions**

#### **The central research question which guided the study:**

To what extent is CEO remuneration aligned with company performance in primary JSE-listed mining companies in South Africa?

This question is motivated by persistent debates in the literature. Agency and optimal contracting theories suggest that well-designed remuneration contracts should exhibit positive pay-performance sensitivity (Jensen & Murphy, 1990; Edmans et al., 2017). In contrast, managerial power theory predicts weaker or spurious alignment where governance is weak or where exogenous shocks dominate outcomes (Bebchuk & Fried, 2003). The South African mining sector provides a particularly relevant test case, given its cyclical dependence on commodity prices and its uneven governance practices (Padia & Callaghan, 2020; Siwendu et al., 2024).

#### **3.1. Sub Questions:**

To address the central research question, the study was further guided by a set of sub-questions designed to unpack the specific dimensions of the pay-performance relationship and identify the contextual factors that may influence it.

- Which financial performance metrics most strongly correlate with CEO remuneration in South African mining firms?

- To what extent do contextual factors (e.g., commodity price volatility, governance strength, and firm size) moderate the pay-performance relationship?

### 3.2. Research Hypotheses

To empirically test the relationship between CEO remuneration and company performance, the following hypotheses are proposed:

- **H1:** CEO remuneration is positively associated with accounting-based performance metrics (ROA, ROE, EPS).
  - Rationale: Accounting indicators are widely used in remuneration scorecards (Bussin & Modau, 2015; Coetzee & Hall, 2020). However, they are vulnerable to manipulation and short-termism (Matemane, 2022).
- **H2:** CEO remuneration is positively associated with market-based performance metrics (TSR, market capitalisation).
  - Rationale: Market-based measures are theoretically aligned with shareholder wealth (Jensen & Murphy, 1990) and often underpin LTIs. Yet evidence shows they may reward “luck” rather than managerial effort, particularly in resource sectors (Deysel & Kruger, 2015; Cooper et al., 2016).
- **H3:** The strength and direction of the pay-performance relationship are moderated by firm size and sub-sector.
  - Rationale: Larger firms may exhibit stronger pay-performance sensitivity due to governance maturity, while sub-sector dynamics (platinum, gold, coal, diversified) affect exposure to cycles and shocks. Theku (2014) found company size to be a stronger determinant of pay than operational results in South African mining.
- **H4:** Pay-performance alignment is weaker during market downturns or external shocks, reflecting moral hazard and rent extraction.

- Rationale: Managerial power theory suggests CEOs can maintain high pay levels even during downturns when boards are weak (Bebchuk & Fried, 2003; Carlson & Bussin, 2020). Prior South African studies highlight CEOs being rewarded for commodity “luck” rather than controllable outcomes (Deysel & Kruger, 2015).

### 3.3. Key Constructs of Analysis

- **CEO Remuneration:** Total earnings disclosed in integrated and remuneration reports, defined as the sum of base salary, bonuses, retirement and benefits, and long-term incentives.
- **Company Performance Metrics:**
  - Accounting-based: ROA, ROE, EPS.
  - Market-based: TSR, Market Capitalisation.
- **Moderators and Controls:** Firm size (log of total assets), mining sub-sector dummies, year fixed effects, and contextual shocks (commodity price indices).

To consolidate the theoretical arguments developed in Chapter 2 and the hypotheses outlined above, Table 1 provides a summary of the theoretical foundations, key predictions, operationalisation, and hypotheses tested in this study. The table illustrates how agency theory, optimal contracting theory, and managerial power theory informed the development of the hypotheses and guided their translation into measurable variables. It further highlights the importance of contextual factors such as firm size, leverage, total assets in shaping the alignment between CEO remuneration and company performance. Consistent with prior literature, these frameworks jointly provide a coherent basis for assessing whether executive pay in South Africa’s mining sector reflects managerial value creation or structural and contextual distortions (Jensen & Meckling, 1976; Edmans et al., 2017; Bebchuk & Fried, 2003; Bussin & Modau, 2015; Carlson & Bussin, 2020). This structured mapping ensures internal coherence between the conceptual framework and the empirical strategy, thereby informing the econometric testing presented in Chapter 4.

**Table 1: Summary of Theoretical Frameworks, Key Predictions, Operationalisation, and Research Hypotheses.** Author's own compilation, adapted from Jensen and Meckling (1976); Edmans et al., (2017); and Bebchuk and Fried (2003, 2004).

Theory	Key Prediction	Empirical Operationalisation	Hypothesis
Agency Theory (Jensen & Meckling, 1976)	CEO pay should rise with firm performance because incentives align manager-shareholder interests.	CEO remuneration vs. accounting metrics (ROA, ROE, EPS).	H1: CEO remuneration is positively associated with accounting-based performance metrics.
Agency Theory (Investor Wealth Focus)	Shareholder wealth creation is the ultimate alignment target. CEO pay should track market performance.	CEO remuneration vs. market-based metrics (TSR, market capitalisation).	H2: CEO remuneration is positively associated with market-based performance metrics.
Optimal Contracting Theory (Edmans et al., 2017)	Contract design adapts to firm risk, scale, and sector context, shaping sensitivity of pay-performance links.	Moderation by firm size (log assets) and sub-sector classification.	H3: The strength and direction of the remuneration-performance relationship are moderated by company size.
Managerial Power Theory (Bebchuk & Fried, 2003)	Powerful CEOs can extract rents; pay-performance alignment weakens during shocks or downturns.	Sensitivity of remuneration to firm performance during economic downturns or external shocks.	H4: Performance alignment is weaker in downturns, indicating moral hazard and rent extraction.

As shown in Table 1, each theoretical perspective offers distinct expectations regarding the relationship between CEO remuneration and company performance. Agency theory predicts a direct and positive association, asserting that performance-linked incentives align managerial behaviour with shareholder interests (Jensen & Murphy, 1990; Murphy, 1999). Optimal contracting theory extends this logic, proposing that the strength of the relationship varies with firm-specific characteristics such as size, risk, and sectoral context (Edmans et al., 2017; Tosi, Werner, Katz, & Gomez-Mejia, 2000). In contrast, managerial power

theory posits that when boards lack independence or monitoring is weak, executives can influence remuneration outcomes in their favour, weakening pay-performance sensitivity, particularly during downturns or under volatile market conditions (Bebchuk & Fried, 2004; Padia & Callaghan, 2020).

This chapter defined the research questions, hypotheses, and analytical constructs that form the foundation of this study. It established how theoretical frameworks, specifically Agency Theory, Optimal Contracting Theory, and Managerial Power Theory inform the conceptualisation of CEO remuneration and its relationship with company performance in South Africa's mining sector. The hypotheses developed in this chapter translate these theories into testable propositions by operationalising key constructs such as accounting and market-based performance metrics, firm size, leverage, and contextual moderators. Together, these variables form a coherent analytical framework for examining the sensitivity of executive pay to firm outcomes.

The next chapter, Chapter 4: Research Methodology, builds directly on this framework by detailing the empirical approach used to test the proposed hypotheses. It outlines the research philosophy, data sources, variable construction, model design, and statistical techniques applied including the use of panel data regression with fixed effects and panel-corrected standard errors (PCSE) to rigorously evaluate the pay-performance relationship identified in this chapter.

## Chapter 4: Research Methodology and Design

### 4. Introduction

This chapter set out the methodological framework adopted to examine the relationship between CEO remuneration and company performance in Johannesburg Stock Exchange (JSE)-listed mining companies between the years 2018 to 2024. The research methodology was designed to ensure coherence between the research problem, the theoretical framework, and the empirical analysis, thereby maintaining the golden thread from research question to data analysis. The overall purpose was to ensure methodological rigour, reliability, and transparency.

The study adopted a quantitative, explanatory, and archival research design, which was appropriate given the objective of testing the statistical relationship between executive pay and company performance using verifiable, measurable data. Quantitative explanatory studies are well suited for hypothesis testing and identifying causal or correlational links between variables (Creswell, 2014; Saunders, Lewis, & Thornhill, 2019). Furthermore, the archival nature of the research was justified because it relied exclusively on secondary data derived from publicly available, audited financial and remuneration reports supported by reputable financial databases. Archival studies are often employed in corporate governance research because they offer access to robust, reliable datasets over multiple time periods (Bryman & Bell, 2015).

The research design was underpinned by a positivist philosophy, which assumes that objective reality can be observed and measured through empirical data. Positivism is commonly associated with quantitative designs, where observable data is used to reveal patterns, relationships, and potential causal links (Remenyi et al., 1998). The study also followed a deductive approach, testing hypotheses derived from established theories, notably agency theory, optimal contracting theory, and managerial power theory.

The guiding research question for this study was:

- To what extent is CEO remuneration aligned with company performance in JSE-listed mining companies in South Africa?

This question forms the foundation for the methodological framework that follows. The remainder of this chapter outlines the research design and methodological choices applied to address this question systematically and to ensure coherence between theory, data, and analytical approach.

The remainder of this chapter is structured as follows. Section 4.2 introduces the research design and methodological philosophy (positivist stance). Section 4.3 sets out the deductive research approach. Section 4.4 details the methodological choice (monomethod quantitative), while Section 4.5 explains the archival research strategy and longitudinal time horizon. Section 4.6 defines the population and unit of analysis, and Section 4.7 presents the sampling method, inclusion criteria, and final sample size. Section 4.8 specifies the measurement framework (operationalisation of dependent, independent, control, and moderating variables), followed by Section 4.9 describing the data collection process. Section 4.10 outlines data cleaning and processing procedures. Section 4.11 details the data analysis approach and panel regression models, and Section 4.12 sets out the moderation analysis specification. Section 4.13 reports diagnostic testing and model validation. Section 4.14 addresses quality controls, validity, reliability, and research ethics. Finally, Section 4.15 presents the study's limitations and delimitations and closes with a brief summary linking the methodology to the results in Chapter 5.

## **4.1. Research Design and Methodological Philosophy**

### **4.1.1. Research Philosophy**

This study was underpinned by a positivist philosophy, which assumes that reality is objective and can be measured using observable, quantifiable data (Saunders, Lewis, & Thornhill, 2019). Positivism was particularly appropriate as the study relied on audited and publicly available secondary data, free from subjective interpretation, and sought to establish statistically significant relationships between remuneration and performance variables. This approach is consistent with recent governance research in South Africa, where scholars examining CEO pay-performance sensitivity have relied on objective, archival financial data to test hypotheses statistically (Ngwenya, 2016; Nkwadi & Matemane, 2022). Alternative philosophical positions such as interpretivism were considered inappropriate, as they focus on subjective meanings and social constructs rather than measurable

financial outcomes (Bryman & Bell, 2015). Similarly, pragmatism was not adopted, as the study did not combine multiple methods or focus on practical outcomes, but rather pursued hypothesis-driven testing.

#### **4.1.2. Research Approach**

The research employed a deductive approach, moving from theory to empirical testing. Deduction was justified because the study tested hypotheses derived from established theoretical frameworks, specifically agency theory, optimal contracting theory, and managerial power theory. Deduction allowed the research to establish whether predicted patterns of alignment between CEO pay and company performance were supported by empirical evidence (Creswell, 2014). Recent empirical studies in South African mining and state-owned sectors also adopted a deductive stance, moving from established theory to quantitative hypothesis testing (Carlson & Bussin, 2020; Ngwenya, 2016). By contrast, an inductive approach which builds new theory from qualitative data was not suitable, as the purpose of this research was to test rather than develop theory.

#### **4.1.3. Methodological Choice**

A monomethod quantitative design was adopted, as the study used numerical data exclusively, without integrating qualitative insights. This approach was appropriate given the study's central objective: to statistically test the sensitivity of CEO remuneration to company performance. Quantitative analysis enables objective measurement of relationships between variables and the empirical validation of theoretical predictions (Creswell, 2014; Bryman & Bell, 2015). The study relied on archival secondary data drawn from publicly available integrated reports and financial statements of JSE-listed mining companies. This ensured both breadth (coverage across multiple years and firms) and depth (detailed disclosure of remuneration components and performance indicators). The use of multiple performance measures, encompassing both accounting-based indicators (ROA, ROE, EPS) and market-based indicators (TSR, market capitalisation), was guided by prior findings that pay-performance sensitivity often varies depending on the performance metric used (Coetzee & Hall, 2020; Nkwadi & Matemane, 2022). This methodological choice ensured consistency, comparability, and replicability across firms in South Africa's mining sector.

Building on this quantitative foundation, the study employed panel data regression analysis to evaluate the relationship between CEO remuneration and firm performance over the 2018-2024 period. Panel estimation techniques were chosen because they capture both temporal and firm-specific dynamics, thereby addressing limitations inherent in purely cross-sectional or time-series models (Wooldridge, 2010; Hsiao, 2014). By controlling for unobserved heterogeneity, panel regression allows for more reliable estimation of the pay-performance relationship while accounting for firm-level characteristics such as governance structure, ownership, and risk exposure (Gayle et al., 2018).

Three panel regression models were estimated to reflect progressively comprehensive measures of CEO remuneration:

- **Model 1: Base Salary**, capturing fixed pay;
- **Model 2: Base Salary + Short-Term Incentives (STI)**, representing annual performance-linked rewards; and
- **Model 3: Total Remuneration (Base + STI + LTI)**, providing a holistic measure of CEO compensation that includes both immediate and deferred components.

Each model employed cross-section fixed effects and Panel-Corrected Standard Errors (PCSE) (Beck & Katz, 1995) to correct for cross-sectional heteroskedasticity and serial correlation. This specification was justified by diagnostic testing, which indicated the presence of firm-specific effects and heteroskedastic residuals. Fixed-effects estimation is widely recognised as appropriate in corporate governance research, as it controls for stable, unobservable firm characteristics, such as corporate culture, ownership structure, and governance quality that may otherwise bias the results (Frydman & Jenter, 2010; Hoehle, 2007).

In addition to these core models, a fourth set of moderating regressions was estimated to examine interaction effects between firm size (proxied by market capitalisation) and key performance indicators. These models tested whether firm size conditions the strength or direction of the pay-performance relationship an analysis consistent with Hypothesis 3 (H3) and grounded in optimal contracting

and managerial power theories. By introducing interaction terms (e.g., ROE x Market Capitalisation, EPS x Market Capitalisation, and TSR x Market Capitalisation), the moderation analysis captured how organisational scale and market visibility influence the sensitivity of CEO pay to company performance.

The resulting methodological design thus integrated robust econometric techniques with strong theoretical grounding, enabling the study to empirically test whether CEO remuneration in South Africa's mining sector reflects genuine managerial performance or is shaped by structural and governance factors such as firm size, market valuation, and cyclical volatility.

#### **4.2. Research Strategy**

The study followed an archival research strategy, relying on published integrated reports, audited financial statements, and remuneration disclosures, supplemented with verification from IRESS financial databases. Archival research was appropriate because the information required was already available in the public domain and independently verified, thereby reducing concerns over data authenticity or respondent bias (Saunders et al., 2019). This strategy is consistent with prior South African remuneration studies that analysed company disclosures over defined time periods (Modau, 2013; Theku, 2014).

#### **4.3. Time Horizon**

The study applied a longitudinal time horizon, covering the six-year period from 2018 to 2024. A longitudinal approach was suitable because it enabled the analysis of changes in the relationship between CEO pay and company performance across different economic cycles, including both periods of growth and contraction. This enhanced the robustness of the findings by accounting for temporal dynamics rather than relying on a single point-in-time snapshot (Creswell, 2014). Longitudinal designs have been widely used in recent governance research to capture cyclical trends and external shocks, such as commodity price fluctuations in mining (Siwendu et al., 2024; Yarram & Rice, 2017).

Taken together, the research philosophy, approach, methodological choice, strategy, and time horizon followed the “research onion” model of Saunders et al.

(2019), which guided the peeling back of successive methodological layers to ensure alignment between theory, research question, and design.

#### **4.4. Population and Unit of Analysis**

The population for this study consisted of all mining companies primarily listed on the Johannesburg Stock Exchange (JSE) during the period from 2018 to 2024. The JSE was selected as the research context because it is South Africa's leading exchange and requires companies to publish audited financial statements and remuneration disclosures, ensuring the reliability and comparability of the data. Mining companies were chosen due to their economic importance, their prominence in executive pay debates, and the cyclical nature of the sector, which amplifies the importance of understanding the link between remuneration and performance (Theku, 2014; Modau, 2013; Siwendu et al., 2024). The mining industry is also resource-intensive, highly exposed to commodity price cycles, and subject to significant governance scrutiny, making it a relevant setting for testing pay-performance sensitivity.

The study focused on 10 JSE-listed mining companies, each of which met the criteria of being primarily listed in South Africa. This ensured that reporting formats were consistent and that remuneration disclosures complied with local requirements.

The unit of analysis was the company-year. Each observation corresponded to one firm in a single financial year, resulting in 70 firm-year observations over the seven-year horizon. Defining the unit of analysis in this way was essential to implementing a panel data design, which combines cross-sectional (differences across firms) and longitudinal (changes over time) elements. Panel data allows for the control of unobserved heterogeneity across firms and improves the robustness of statistical inference (Hsiao, 2014; Wooldridge, 2010). Prior studies on CEO pay in the mining sector also used firm-year observations as their unit of analysis, confirming the suitability of this approach (Ngwenya, 2016; Nkwadi & Matemane, 2022).

To account for leadership transitions within the study period, a detailed mapping of company, year, and CEO was constructed as outlined in Table 2. This ensures that remuneration is attributed to the correct incumbent in cases of turnover or

interim appointments, thereby reducing attribution bias. To improve readability, years with stable CEO leadership have been grouped in the table above. However, for analytical purposes the underlying dataset records each company-year observation individually, consistent with the panel data structure adopted in this study. A full year-by-year listing of companies and their CEOs is provided in the Appendix and in the supporting dataset, ensuring transparency and enabling replication of the analysis.

**Table 2:CEOs of JSE-Listed Mining Companies, 2018-2024. Adapted from Authors Own**

Company	Years	CEO Name
African Rainbow Minerals (ARM)	2018-2022	Mike Schmidt
African Rainbow Minerals (ARM)	2023	Mike Schmidt / VP Tobias
African Rainbow Minerals (ARM)	2024	VP Tobias
Anglo American Platinum (Amplats)	2018-2019	Chris Griffith
Anglo American Platinum (Amplats)	2020	Chris Griffith / Natascha Viljoen (from April 2020)
Anglo American Platinum (Amplats)	2021-2022	Natascha Viljoen
Anglo American Platinum (Amplats)	2023	Natascha Viljoen / Craig Miller
Anglo American Platinum (Amplats)	2024	Craig Miller
Exxaro Resources	2018-2020	Mxolisi Mgojo
Exxaro Resources	2021	Mxolisi Mgojo (outgoing) / Nombasa Tsengwa (designate)
Exxaro Resources	2022	Mxolisi Mgojo (to July 2022) / Nombasa Tsengwa (from August 2022)
Exxaro Resources	2023-2024	Nombasa Tsengwa
Gold Fields	2018-2020	Nick Holland
Gold Fields	2021-2022	Chris Griffith (to Dec) / Martin Preece (Interim from Jan 2023)
Gold Fields	2023	Martin Preece (Interim)
Gold Fields	2024	Mike Fraser (from Jan)
Harmony Gold	2018-2024	Peter Steenkamp
Impala Platinum (Implats)	2018-2024	Nico Muller
Kumba Iron Ore	2018-2021	Themba Mkhwanazi
Kumba Iron Ore	2022-2024	Mpumi Zikalala
Northam Platinum	2018-2024	Paul Dunne
Sibanye Stillwater	2018-2024	Neal Froneman
Royal Bafokeng Platinum (RBPlat)	2018-2023	Steve Phiri
Royal Bafokeng Platinum (RBPlat)	2024	N.J. Muller (Implats CEO, RBPlat absorbed)

The mapping of company-year observations to individual CEOs was necessary to ensure accurate attribution of remuneration data. CEO pay disclosures are often reported by incumbent, and in years of leadership transition, multiple executives may appear in the same annual report. By aligning remuneration figures to the correct individual for each year, the study reduced the risk of misattribution and preserved the integrity of the dataset. This was particularly important in transition years, such as Exxaro Resources in 2021-2022 and Anglo American Platinum in 2020, where both outgoing and incoming executives were disclosed.

In cases of stable leadership such as Harmony Gold, Impala Platinum, and Sibanye Stillwater the continuity of the CEO across multiple years strengthened comparability in the panel dataset. Conversely, in firms where mergers or restructuring occurred, such as the absorption of Royal Bafokeng Platinum into Impala Platinum in 2024, the CEO transition was documented to reflect structural changes in the population. Including this detail ensured that the unit of analysis the company-year remained consistent and transparent, while also accounting for leadership dynamics that could influence remuneration and performance outcomes.

The population frame was constructed from the JSE sector classifications, identifying mining firms that were primary-listed and actively disclosing remuneration data over the study period. Companies that delisted, merged, or failed to disclose CEO pay were excluded from the dataset. By defining the population in this way, the study ensured that findings could be generalised to the broader set of South African mining firms with primary JSE listings, while also maintaining methodological rigour and internal consistency in the dataset.

#### **4.5. Sampling Method, Criteria, and Size**

This study employed a purposive sampling method to identify relevant companies for inclusion in the dataset. Purposive sampling was appropriate because the research required companies that met specific criteria, particularly the disclosure of CEO remuneration and financial performance information over the study period. This approach is widely used in corporate governance and remuneration studies where complete coverage of the population is not feasible due to differences in disclosure practices (Saunders et al., 2019). Recent South African

studies have also applied purposive sampling to select JSE-listed mining companies, citing data availability and disclosure requirements as critical determinants of sample selection (Ngwenya, 2016; Nkwadi & Matemane, 2022).

The inclusion criteria were as follows:

- Companies had to be mining firms primarily listed on the JSE during the period 2018 to 2024. Primary listings ensured consistent compliance with South African disclosure requirements.
- Companies had to have publicly available integrated or annual reports, which included audited financial statements and CEO remuneration disclosures.
- Companies had to disclose performance indicators relevant to this study, including Return on Assets (ROA), Return on Equity (ROE), Earnings per Share (EPS), and Total Shareholder Return (TSR).

The exclusion criteria were as follows:

- Companies that were dual listed with inconsistent or incomplete reporting formats were excluded, as cross-border disclosures could compromise comparability.
- Companies that failed to disclose CEO remuneration for one or more years within the study period were excluded, as this would have resulted in incomplete firm-year observations.
- Companies that delisted or merged during the period of analysis were excluded, as they did not provide a full longitudinal dataset.

Based on these criteria, a sample of 10 JSE-listed mining companies was selected. This produced a total of 70 firm-year observations across the seven-year period (2018-2024). The sample size is comparable to prior South African executive remuneration studies, which typically examined between 20 and 30 firms over 5-7 years (Modau, 2013; Theku, 2014). More recently, Siwendu (2024) also employed a focused mining-sector dataset using a similar longitudinal design, further validating this methodological choice.

Purposive sampling in this study provided two key advantages. First, it ensured that only firms with sufficient data availability were included, maximising the reliability and completeness of the dataset. Second, it allowed for a focus on firms where executive remuneration disclosures complied with South African corporate governance requirements (King IV and JSE listing rules), thus ensuring comparability across firms. Similar methodological choices were made in other recent JSE-based governance studies that examined executive pay, firm performance, and governance indicators (Nkwadi, 2022; Joel, 2024).

While purposive sampling may limit generalisability to unlisted or dual-listed firms, this limitation is offset by the depth of available data and the sectoral focus on mining companies, which enhances the study's relevance to one of South Africa's most economically significant industries.

#### **4.6. Measurement Instrument**

No survey or interview instruments were utilised in this study, as it relied exclusively on secondary, archival data. Data was extracted from publicly available integrated and annual reports, remuneration disclosures, and audited financial statements published by the selected mining companies. To ensure validity, this information was cross-verified using the IRESS Research Domain (previously McGregor BFA), which is widely used in South African financial and governance research (Joel, 2024). This approach ensured that all data were reliable, standardised, and independently verifiable.

A structured data coding framework was developed to capture and classify the variables used in the analysis. This framework allowed for consistent and replicable extraction of key indicators across all firms and years. Variables were grouped into three categories: namely, dependent variables, independent variables and controls.

##### **4.6.1. Dependent variables**

Dependent variable, CEO total remuneration, disaggregated into its subcomponents where available:

**Fixed pay also known as Total Guaranteed Package (TGP).** These benefits included retirement contributions, medical aid contributions and travel or car allowance. This fixed component of pay is generally benchmarked against

industry peers and reflects the scale of the organisation (Murphy, 1999). TGP forms the baseline of CEO compensation and reflects structural pay decisions that are relatively insulated from annual performance outcomes. Including TGP in the analysis allows the study to explore how base compensation correlates with firm size and industry norms important factors in optimal contracting theory (Edmans et al., 2017). Furthermore, as TGP often comprises a significant share of total remuneration in the South African context, omitting it would lead to an incomplete understanding of executive pay structures.

**Short-term incentives (STIs).** These bonuses are performance-linked and usually awarded based on the company's financial results over a one-year period. In the South African context, research suggests that these incentives are closely aligned with financial indicators such as return on assets (ROA) and return on equity (ROE), indicating their likely use as key bonus triggers (De Wet, 2012). STIs represent a critical mechanism for linking executive performance to shareholder interests, as proposed by agency theory (Jensen & Meckling, 1976). Their performance-contingent nature makes them a central focus of debates around pay-performance sensitivity. Moreover, research in South Africa has shown that STIs are commonly used and relatively well disclosed in annual reports (Bussin & Blair, 2015), making them empirically accessible for panel data analysis. Including STIs helps to assess whether short-term performance is rewarded appropriately or disproportionately in comparison to long-term value creation.

**Long-term incentives (LTIs).** Representing the most diverse and opaque element of executive pay, LTIs include all forms of deferred compensation both cash and equity-based that vest over a period exceeding 12 months (PwC, 2013). This category encompasses instruments such as share options, restricted stock, and share appreciation rights. PwC (2015) notes that disclosure of LTIs in financial reports is often inadequate, posing difficulties for empirical research. Moreover, while such schemes are typically complex, PwC (2012) found that executives generally prefer simpler remuneration structures. LTIs are central to optimal contracting theory, which advocates for incentive structures that encourage long-term strategic decision-making over short-term gains (Edmans et al., 2017). Additionally, LTIs are critical for testing managerial power theory: where governance is weak, CEOs may influence LTI structures in ways that

favour rent extraction rather than performance alignment (Bebchuk & Fried, 2004). Although data availability may pose a challenge, incorporating LTIs where reliably disclosed adds depth to the analysis of how executive compensation aligns with sustainable firm performance in high-volatility sectors like mining.

CEO remuneration data were obtained directly from the directors' remuneration tables disclosed in annual reports. These disclosures are mandated by the JSE Listings Requirements (Johannesburg Stock Exchange, 2017) and the King IV Report on Corporate Governance for South Africa (Institute of Directors in Southern Africa [IoDSA], 2016), which standardised the reporting format and ensure that remuneration components are consistently available for analysis.

#### 4.6.2. Independent Variables

This study made use of both accounting-based and market-based financial performance indicators as independent variables to assess the alignment between CEO remuneration and company performance. This dual approach is consistent with prior research in executive compensation, which highlighted the importance of incorporating both internal efficiency measures (e.g., ROA, EPS) and shareholder-focused outcomes (e.g., TSR, dividend yield) to holistically assess performance (Jensen & Murphy, 1990; Bussin & Modau, 2015; Grove, 2015). These indicators also reflect metrics commonly used in executive scorecards and short- and long-term incentive schemes (De Wet, 2012; PwC, 2015).

##### 4.6.2.1. Accounting-Based Metrics

These are derived from audited financial statements and reflect operational and profitability efficiency:

**Return on Assets (ROA):** net income divided by total assets, measuring efficiency in asset utilisation. ROA measures how efficiently management uses the company's assets to generate earnings. It is calculated as net income divided by total assets. ROA is a widely used benchmark in executive bonus plans and provides insight into operational efficiency (Bussin & Blair, 2015; De Wet, 2012).

**Return on Equity (ROE):** net income divided by shareholders' equity, reflecting return to equity investors. ROE reflects the firm's ability to generate returns for equity shareholders, calculated as net income divided by average shareholder

equity. It is a key indicator of value creation from a shareholder perspective and is often embedded in short-term incentive plans (Theku, 2014).

**Earnings per Share (EPS):** net earnings attributable to ordinary shareholders, divided by weighted average shares outstanding. EPS captures the portion of a company's profit allocated to each outstanding ordinary share. It is calculated as net income attributable to ordinary shareholders divided by the weighted average number of shares outstanding. EPS is often used as a proxy for profitability in executive remuneration benchmarking (Grove, 2015).

**EBITDA (Earnings Before Interest, Taxes, Depreciation, and Amortisation):** EBITDA is a common measure of operational cash flow, widely used in mining and capital-intensive industries to assess core profitability without the distortion of financing or accounting structures (Bussin & Modau, 2015; PwC, 2023). It is especially relevant in evaluating executive decisions related to cost control and operating efficiency.

**Net Profit Margin (%):** Net Profit Margin is calculated as net income divided by total revenue, expressing how much profit a company retains from its sales. It reflects bottom-line efficiency and is directly influenced by executive decisions on pricing, costs, and capital allocation.

#### 4.6.2.2. Market-Based Metrics

Market metrics reflect investor sentiment and shareholder value:

**Total Shareholder Return (TSR %):** TSR combines capital gains and dividend yield, representing the total return to shareholders over a given period. It is widely regarded as a comprehensive measure of investor value creation (Jensen & Murphy, 1990). However, it is also sensitive to external market cycles raising questions around whether high CEO pay is driven by skill or commodity-driven "luck" (Cooper et al., 2016 ; Deysel & Kruger, 2015).

**Dividend per Share (DPS):** DPS reflects the portion of earnings returned to shareholders and is often used as a signal of financial stability. It can be seen as an outcome of strategic decisions taken by executives and may reflect stakeholder inclusiveness a core principle in King IV (IoDSA, 2016).

These measures are well-established in remuneration-performance research and allow for comparability with prior South African and international studies (Nkwadi, 2022; Siwendu et al.,2024).

#### 4.6.3. Control Variables

To ensure the validity of the relationship between CEO remuneration and company performance, this study incorporates a set of control variables commonly used in executive compensation research. These controls account for structural, firm-specific, and temporal factors that may independently influence CEO pay, thereby reducing omitted variable bias in the regression analysis (Jensen & Murphy, 1990; Bussin & Modau, 2015). Key control variables include firm size (proxied by the natural logarithm of total assets), market capitalisation, and mining sub-sector classification, all of which capture organisational complexity and operational scale factors known to impact executive compensation. In addition, year-fixed effects are applied to control for macroeconomic fluctuations and exogenous shocks that could otherwise confound the pay-performance relationship (Cooper et al.,2016). These controls enhance the robustness of the panel regression model by isolating the effect of firm-level performance on executive pay while accounting for broader structural and temporal variation

**Firm size:** Firm size is measured as the natural logarithm of total assets, which adjusts for skewness in size distribution and enables meaningful comparisons across firms (Jensen & Murphy, 1990; Theku, 2014). Larger firms typically offer higher executive compensation due to their greater complexity, risk, and operational scale. Controlling for firm size ensures that observed differences in CEO pay are not merely a function of organisational scale (Bussin & Modau, 2015).

**Leverage:** Leverage, measured as the debt-to-equity ratio, was included to account for differences in capital structure and financial risk. Firms with higher leverage typically face greater agency costs between shareholders and debtholders, influencing the design of executive incentive schemes (Jensen & Meckling, 1976; Core et al., 2003). High leverage may constrain compensation flexibility due to stricter debt covenants, while low leverage may signal financial stability, allowing for more performance-linked pay. Including leverage as a

control variable ensured that the pay-performance relationship was not confounded by firm-specific risk or financing strategy (Bussin & Modau, 2015; Gayle et al., 2018).

#### 4.6.4. Moderating Variables

In regression analysis, a moderating variable (or moderator) is a variable that influences the strength or direction of the relationship between an independent variable and a dependent variable (Baron & Kenny, 1986; Hayes, 2018). A moderator does not directly cause changes in the dependent variable; rather, it alters how the independent variable affects the dependent variable. Moderation analysis therefore identifies interaction effects that is, whether the impact of a predictor (such as company performance) on an outcome (such as CEO remuneration) varies depending on the level of another factor (such as firm size or market valuation). Mathematically, moderation is represented by an interaction term between the independent variable and the moderator (e.g., ROE x MCAP). A statistically significant coefficient on the interaction term indicates that the moderator conditions or amplifies the pay-performance relationship (Aiken & West, 1991). In this study, market capitalisation (MCAP) was employed as the moderating variable.

**Market capitalisation:** defined as the total market value of a company's outstanding shares, reflects the firm's perceived value, scale, and investor confidence (Frydman & Jenter, 2010). It is one of the most commonly used proxies for organisational visibility, size, and market maturity, all of which can shape governance practices and remuneration policies (Cooper et al., 2016; Bussin & Modau, 2015).

The motivation for selecting market capitalisation as a moderator was twofold. First, firm value may strengthen the alignment between CEO pay and performance, as larger or more valuable firms typically operate under stronger governance scrutiny, formalised incentive structures, and performance-based pay schemes consistent with optimal contracting theory (Edmans et al., 2017). Second, firm value may weaken or distort the pay-performance link, as suggested by managerial power theory, if highly visible CEOs in large firms exert influence over remuneration committees to secure higher compensation irrespective of performance (Bebchuk & Fried, 2003).

By introducing interaction terms between market capitalisation and key performance indicators (e.g., ROE x MCAP, EPS x MCAP), the analysis tested Hypothesis 3 (H3):

“The strength and direction of the pay-performance relationship are moderated by firm size and market valuation.”

The moderation analysis was conducted sequentially due to sample constraints, meaning that each performance variable was interacted with market capitalisation one at a time. This approach enabled the isolation of specific moderating effects and the identification of whether higher firm valuation amplifies or dampens the sensitivity of CEO remuneration to firm performance.

**Year dummies:** Year dummies are binary variables for each year in the panel dataset, used to control for time-specific macroeconomic effects such as commodity booms, regulatory changes, or global downturns (Cooper et al., 2016). The South African mining sector between 2018 and 2024 has experienced significant volatility in PGM prices and operational disruptions. Year-fixed effects ensure these exogenous shocks do not bias the estimated pay-performance relationship (Padia & Callaghan, 2020).

These controls were selected based on prior studies of South African executive pay and performance, which demonstrated that company size and market capitalisation are significant determinants of CEO remuneration (Modau, 2013; Theku, 2014; Siwendu et al., 2024). The coding framework was applied consistently across the sample of 10 firms over the seven-year period (2018-2024), generating 70 firm-year observations. This structured approach enhanced the transparency and replicability of the study and ensured that the operationalisation of variables remained closely aligned with both theory and prior empirical practice (Ferreira et al., 2025)

#### **4.7. Data Collection Process**

The data collection process for this study was conducted systematically to ensure accuracy, transparency, and replicability. Since the study relied exclusively on secondary data, the process involved identifying, extracting, verifying, and finalising CEO remuneration and company performance data across the sample of 10 JSE-listed mining firms.

The primary source of data was the audited integrated and annual reports published by each company. These reports contained directors' remuneration disclosures, audited financial statements, and performance information, all of which were essential for capturing the variables defined in Section 4.5. Using company reports as a primary source ensured that the study drew on audited and standardised disclosures, consistent with JSE Listings Requirements and King IV.

To improve reliability, the study implemented a triangulation process. Remuneration and financial data extracted from annual reports were cross-verified using the IRESS Research Domain (previously McGregor BFA). IRESS provided independent, standardised financial data and remuneration summaries for JSE-listed companies. Where discrepancies were observed between IRESS figures and those reported in integrated reports, the audited company financial statements were treated as the authoritative source, while IRESS served as a consistency check. This approach mirrors prior South African remuneration studies, which similarly relied on integrated reports as primary sources but supplemented them with financial databases for verification (Ngwenya, 2016; Nkwadi & Matemane, 2022)

The data collection followed three key stages:

### **Step 1: Identification and Extraction**

- Annual integrated reports for the period 2018-2024 were downloaded directly from company websites.
- Directors' remuneration tables and audited financial statements were reviewed, and CEO-specific data were extracted.
- Firm performance measures (ROA, ROE, EPS, TSR) were captured alongside control variables (firm size, market capitalisation, sub-sector classification).

### **Step 2: Verification and Triangulation**

- Extracted values were cross-checked against IRESS datasets.

- Any inconsistencies were flagged and reconciled. In cases of divergence, audited financial statement figures were prioritised, following methodological precedent in South African governance research (Siwendu et al.,2024).

### Step 3: Finalisation and Coding

- Data were recorded in a structured Excel template and coded according to the variable framework outlined in Section 4.5.
- This ensured uniformity in capturing remuneration components (fixed, STI, LTI) and standardisation of performance measures across firms and years.

This multi-step approach enhanced the validity and reliability of the dataset by addressing common concerns in pay-performance studies such as inconsistent disclosure formats and potential reporting bias. Previous studies often relied solely on annual reports (Theku, 2014; Modau, 2013) or database extractions (Ngwenya, 2016), but this study's combination of primary company disclosures with IRESS verification represents a more robust and transparent methodology.

### 4.8. Data Cleaning and Processing

- **Unit standardisation:** All monetary data were converted to millions of rand for comparability.
- **Format correction:** Profit variables incorrectly formatted as percentages in Excel were standardised as numeric ratios.
- **Winsorisation:** Applied at the 1st and 99th percentiles to minimise distortion from extreme outliers (Tukey, 1977; Knez & Ready, 1997).
- **Logarithmic transformations:** Continuous variables (e.g., total assets) were converted using the natural log (ln) to stabilise variance (Wooldridge, 2010).
- **Multicollinearity screening:** High correlation between ROA and ROE led to their separate inclusion in alternative models.

Missing data were handled through listwise deletion, consistent with small-sample panel analysis.

#### 4.9. Data Analysis Approach

The data were analysed using panel data regression techniques, which are appropriate for datasets that combine cross-sectional (firms) and time-series (years) dimensions. Panel methods increase explanatory power and account for unobserved heterogeneity across firms, making them particularly well-suited to studies of executive remuneration in cyclical sectors such as mining (Hsiao, 2014; Wooldridge, 2010).

#### 4.10. Panel Regression Analysis

Panel data regression was employed to test pay-performance sensitivity across three models:

1. Base Salary (Model 1)
2. Base + STI (Model 2)
3. Total Remuneration (Model 3)

Each model was estimated using cross-section fixed effects with Panel-Corrected Standard Errors (PCSE) following Beck and Katz (1995), controlling for heteroskedasticity and within-panel correlation. Diagnostic tests (Breusch-Pagan LM, Pesaran CD) confirmed firm-level heterogeneity, justifying the fixed-effects approach (Hoechle, 2007).

The general model specification was:

$$REM_{it} = \alpha_i + \beta_1 PERF_{it} + \beta_2 CTRL_{it} + \beta_3 (PERF_{it} + MCAP_{it}) + \varepsilon_{it}$$

Where;

$REM_{it}$  represents CEO remuneration for firm  $i$  in year  $t$ ;

$PERF$  are performance metrics;

$CTRL$  are control variables;

$MCAP$  is the moderating variable.

A positive and significant  $\beta_1$  supports agency theory, while a significant  $\beta_3$  interaction term supports optimal contracting theory. Non-significant or negative coefficients suggest managerial power effects.

#### **4.11. Statistical Modelling Process**

The statistical modelling and data analysis were conducted using EViews 11, an econometric software package suited for analysing cross-sectional and longitudinal (panel) data structures (Wooldridge, 2010). The dataset comprised 10 JSE-listed mining companies observed over seven years (2018 - 2024), resulting in an unbalanced panel of 69 firm-year observations. Panel estimation was selected because it captures both temporal variation and firm-specific heterogeneity, improving explanatory power and controlling for unobservable fixed factors that may bias cross-sectional or time-series estimates (Baltagi, 2021; Hsiao, 2014).

##### **4.11.1. Variable Specification**

Dependent variable:

- Chief Executive Officer (CEO) Remuneration, analysed at three levels:
  1. Base Salary (fixed pay);
  2. Base Salary + Short-Term Incentives (STI) (annual performance-linked rewards); and
  3. Total Remuneration (Base + STI + Long-Term Incentives [LTI]) (the complete compensation package).

These distinctions follow prior South African pay-performance studies (Bussin & Modau, 2015; Ngwenya, 2016).

Independent variables:

Accounting-based metrics (ROA, ROE, EPS, EBITDA, NPM) and market-based indicators (TSR, Dividend per Share, Net Cash Flow). The inclusion of both categories captures managerial efficiency and shareholder-oriented outcomes (Jensen & Murphy, 1990; De Wet, 2012; Frydman & Jenter, 2010).

Control variables:

- Firm Size (ln Total Assets) and Leverage (Debt-to-Equity Ratio), which account for scale and financial-risk effects known to influence executive pay (Core et al., 2003; Theku, 2014; Carlson & Bussin, 2020).

Moderating variable:

Market Capitalisation, interacted with performance indicators (e.g., ROE x MCAP, EPS x MCAP, TSR x MCAP) to test whether firm size conditions the pay-performance link, consistent with Hypothesis 3 (H3) and the propositions of optimal contracting and managerial power theories (Bebchuk & Fried, 2004; Edmans et al., 2017).

#### **4.11.2. Analytical Sequence and Justification**

To ensure the robustness and validity of the regression results, the statistical analysis followed a structured, multi-stage analytical sequence. Each stage was designed to test and refine the model specification, ensuring that the assumptions of panel regression were satisfied before interpreting results. The process began with preliminary estimation of baseline relationships and progressed through a series of diagnostic tests to identify issues such as autocorrelation, heteroskedasticity, and cross-sectional dependence, conditions frequently observed in financial panel datasets (Wooldridge, 2010; Hoechle, 2007). Based on the diagnostic outcomes, appropriate corrective measures and model specifications were applied, including fixed-effects estimation and panel-corrected standard errors (PCSE), to control for firm-specific heterogeneity and contemporaneous correlation (Beck & Katz, 1995). The following subsections outline each analytical step in sequence, explaining both the statistical procedure undertaken and the theoretical justification for its inclusion in the modelling framework.

##### **4.11.2.1. Preliminary estimation (OLS Panel):**

A baseline Ordinary Least Squares (OLS) regression on the panel data established initial relationships among variables. While OLS provides unbiased estimates under classical assumptions, it does not account for unobserved firm heterogeneity (Wooldridge, 2010); therefore, diagnostic testing was performed to determine the most suitable estimator.

#### **4.11.2.2. Autocorrelation test:**

The Durbin-Watson statistic ( $\sim 1.7$ ) suggested the absence of serious first-order serial correlation, implying temporal independence of residuals (Gujarati & Porter, 2009).

#### **4.11.2.3. Heteroskedasticity test:**

The Likelihood-Ratio (LR) test indicated significant heteroskedasticity ( $p \leq 0.01$ ), rejecting the null of constant variance across panels. This outcome is common in financial data where firm size and volatility differ (Hoechle, 2007).

#### **4.11.2.4. Model selection (Hausman test):**

The Hausman specification test compared fixed- and random-effects estimators. The null hypothesis favouring random effects was rejected ( $p \leq 0.05$ ), confirming that unobserved firm characteristics correlated with regressors and validating the Fixed-Effects (FE) model choice (Hausman, 1978; Wooldridge, 2010). FE estimation is widely used in governance research because it controls for time-invariant firm attributes such as corporate culture or board structure (Frydman & Jenter, 2010).

#### **4.11.2.5. Cross-sectional dependence:**

The Breusch-Pagan LM and Pesaran CD tests confirmed significant cross-sectional dependence ( $p \leq 0.001$ ), consistent with mining firms' shared exposure to macroeconomic shocks and commodity-price cycles (Siwendu et al., 2024). Ignoring this dependence would overstate statistical significance.

#### **4.11.2.6. Model correction:**

To address both heteroskedasticity and contemporaneous correlation, the regressions were re-estimated using Panel-Corrected Standard Errors (PCSE) following Beck and Katz (1995). PCSE estimation produces unbiased coefficients and robust standard errors, particularly effective for panels with a small number of cross-sections ( $N \sim 10$ ) and moderate time periods ( $T \sim 7$ ) (Hoechle, 2007).

#### **4.11.2.7. Robustness verification:**

Robust (White-diagonal) and cluster-robust standard errors were applied as sensitivity checks. Coefficients remained stable in magnitude and direction, confirming the robustness of the FE-PCSE specification (Baltagi, 2021).

#### **4.12. Moderation Analysis**

To test Hypothesis 3 (H3), the moderating effect of firm size, proxied by Market Capitalisation, was examined through the inclusion of interaction terms between market capitalisation and each independent performance variable (e.g., ROE x MCAP, EPS x MCAP, TSR x MCAP). Given the relatively small sample size, interaction effects were estimated sequentially, introducing one moderating term at a time to avoid multicollinearity and loss of degrees of freedom.

A statistically significant interaction coefficient ( $p \leq 0.10$ ) indicated that firm valuation influenced the strength and/or direction of the relationship between CEO remuneration and company performance. This analysis directly addressed H3, which proposed that firm size moderates the pay-performance relationship. The results were interpreted in the context of both optimal contracting theory, which posits that larger, more visible firms should exhibit stronger performance alignment due to stricter governance (Edmans et al., 2017), and managerial power theory, which conversely suggests that CEOs of large firms may leverage their influence to weaken pay responsiveness (Bebchuk & Fried, 2004; Coetzee & Hall, 2020).

By testing these interaction effects, the moderation analysis provided deeper insight into whether organisational scale amplifies or dampens performance sensitivity in CEO remuneration across South Africa's mining sector.

#### **4.13. Diagnostic Testing**

Prior to interpreting the regression results, a series of diagnostic tests were performed to ensure that the chosen panel data estimation technique was appropriate and statistically robust.

The Likelihood Ratio (LR) test for heteroskedasticity returned a p-value  $< 0.01$ , indicating that the assumption of homoskedasticity (constant variance of the residuals) was violated. This suggested that the variability of the error terms differed across firms, which is common in financial panel data where company size, capital structure, and governance quality vary significantly (Wooldridge,

2010). To address this issue, Panel-Corrected Standard Errors (PCSE) were employed, as recommended by Beck and Katz (1995), to produce robust coefficient estimates that remain valid even under heteroskedasticity and contemporaneous correlation.

The Pesaran Cross-Section Dependence (CD) test produced a p-value  $< 0.05$ , confirming the presence of cross-sectional dependence, that is, interdependence among firms due to shared exposure to macroeconomic shocks, commodity price movements, or regulatory changes. Ignoring such dependence can lead to biased standard errors and inflated significance levels (Hoechle, 2007). The use of PCSE estimation mitigated this problem by adjusting the covariance matrix to account for contemporaneous correlation between cross-sectional units.

**Durbin-Watson statistic (~1.7):** No severe autocorrelation. These supported the use of fixed-effects PCSE models.

The Durbin-Watson (DW) statistic (~1.7) indicated no severe first-order autocorrelation in the residuals, as values between 1.5 and 2.5 are generally considered acceptable (Gujarati & Porter, 2009). This result confirmed that the inclusion of firm fixed effects and year dummies adequately captured temporal dependence in the data.

Taken together, these diagnostic results supported the use of a Fixed-Effects PCSE model, which is well suited to small-to-moderate panels with firm-level heterogeneity, cross-sectional correlation, and heteroskedastic error structures (Beck & Katz, 1995; Hoechle, 2007). This specification provided more reliable inference by ensuring that coefficient estimates were unbiased and robust to the statistical properties of the dataset.

#### **4.14. Research Ethics**

This study adhered strictly to the ethical standards laid out by the Gordon Institute of Business Science. Since the research relied exclusively on secondary data, no direct interaction with human participants occurred, thereby eliminating risks of harm, privacy breaches, or undue influence that can arise in primary research. Instead, the ethical considerations focused on responsible use, accurate reporting, and transparency in the handling of financial and remuneration data.

All CEO remuneration data were obtained from audited annual and integrated reports, which are public documents published in compliance with JSE Listing Requirements and King IV corporate governance principles. These frameworks mandate transparent and standardised disclosure of directors' remuneration, ensuring that the data used were both reliable and ethically sourced (IoDSA, 2016; JSE, 2010). Financial performance measures were drawn from the same reports and cross-verified through IRESS (formerly McGregor BFA), an independent financial database. The use of audited and regulated sources removed concerns of misrepresentation, data manipulation, or unauthorised access (Ngwenya, 2016; Nkwadi & Matemane, 2022).

To strengthen ethical rigour, the study avoided selective reporting and incorporated all JSE-listed mining companies that met the inclusion criteria, thereby reducing the potential for sample bias. Variables were applied consistently across the six-year timeframe (2018-2024), which ensured comparability and fairness.

The study also maintained academic integrity by properly acknowledging all data sources and scholarly contributions through systematic referencing. Previous South African research on executive pay-performance sensitivity has emphasised the importance of transparent citation to foster trust and reproducibility (Theku, 2014; Modau, 2013), and this principle guided the present analysis.

Although no human participants were involved, the ethical clearance approval process was followed and the ethical clearance for the research was subsequently approved. This process confirmed that the project met institutional requirements on integrity, responsible use of data, and academic honesty, thereby reinforcing the transparency and accountability of the research design.

#### **4.15. Quality Controls: Validity and Reliability**

Ensuring validity and reliability was a central consideration in the design of this study. Because the research relied on secondary, audited data, particular attention was paid to the consistency of measurement, the robustness of the analytical framework, and the minimisation of potential biases.

Reliability was enhanced through the use of integrated and annual reports, which contain audited financial statements and remuneration disclosures mandated by the JSE Listings Requirements and King IV. These disclosures follow a standardised reporting format, thereby ensuring that the measurement of remuneration and performance variables was consistent across firms and over time. The extraction process was further supported by cross-verification using the IRESS Research Domain, which provided an independent benchmark for the financial and remuneration data. Where discrepancies were identified, the audited financial statements and remuneration tables were treated as the authoritative source, ensuring that the dataset reflected regulator-verified disclosures while benefiting from triangulation across independent sources. This practice significantly strengthened the reliability of the dataset (Ngwenya, 2016; Nkwadi & Matemane, 2022).

Construct validity was maintained by aligning all variables with established definitions in the remuneration-performance literature. CEO total remuneration was defined in accordance with JSE-mandated reporting categories, disaggregating fixed pay, short-term incentives, and long-term incentives where possible. Performance variables (ROA, ROE, EPS, and TSR) were selected on the basis of theoretical frameworks and prior empirical studies, ensuring that they reflected both accounting and market perspectives on firm performance (Coetzee & Hall, 2020; Yarram & Rice, 2017). Control variables such as firm size, market capitalisation, and mining sub-sector classification were included to capture additional factors shown to influence executive pay (Ngwenya, 2016; Carlson & Bussin, 2020).

Internal validity was strengthened through the application of panel data regression techniques. By combining cross-sectional and longitudinal data, panel analysis controls for unobserved, time-invariant heterogeneity across firms, reducing the risk of omitted variable bias. Diagnostic testing addressed potential violations of regression assumptions, including multicollinearity, heteroskedasticity, and autocorrelation. Appropriate corrections, such as robust or clustered standard errors, were implemented where necessary to ensure that results remained consistent and unbiased (Wooldridge, 2010; Baltagi, 2021).

Although external validity is naturally limited to JSE-listed mining companies, the sample covered a broad cross-section of the South African mining industry and spanned multiple financial cycles between 2018 and 2024. This enhances the generalisability of the findings within the mining sector while also offering insights applicable to other resource-based industries

Reliability will be ensured through the consistent use of company reports, supported by data triangulation using reputable financial databases. Construct validity will be maintained by employing established financial performance metrics and governance indicators.

Internal validity will be addressed using panel regression analysis, which accounts for time-invariant heterogeneity across firms. While external validity is limited to listed mining companies, the findings may offer valuable insights applicable to the broader resource-based sector.

#### **4.16. Limitations and Delimitations**

While every effort was made to ensure methodological rigour, this study was subject to certain limitations that should be acknowledged. These limitations are balanced by corresponding delimitations conscious methodological choices made to define the study's scope, maintain focus, and preserve analytical integrity.

##### **4.16.1. Limitations**

###### **Reliance on secondary data:**

A key limitation arose from the exclusive use of secondary data. Although audited financial statements and integrated reports provided a high degree of reliability and regulatory assurance, they were inherently constrained by the extent of information that companies chose to disclose. For instance, not all firms consistently disaggregated short-term and long-term incentive components throughout the study period. This restricted the ability to perform fully disaggregated analyses for every observation. Nevertheless, prioritising audited, regulator-verified disclosures ensured that the dataset remained credible and minimised the risk of researcher bias (Johnston, 2017).

**Sample size and model complexity:**

The study comprised 69 firm-year observations from 10 JSE-listed mining companies. While panel data improve analytical power by combining cross-sectional and longitudinal dimensions, the relatively small sample limited the number of control and moderating variables that could be incorporated without reducing degrees of freedom or over-parameterising the model (Wooldridge, 2010). As such, only one moderator (market capitalisation) and a restricted set of controls were introduced at a time. This constraint limited the sophistication of the econometric models but safeguarded their statistical validity.

**Sectoral and geographical focus:**

The research was restricted to mining companies primarily listed on the Johannesburg Stock Exchange (JSE). Firms that were secondarily listed on the JSE such as those primarily listed on the London Stock Exchange were excluded because their disclosures followed different reporting frameworks that were not fully aligned with JSE and King IV requirements. Excluding these firms improved internal consistency but limited the generalisability of the findings to companies fully governed by South African reporting and governance standards.

**Contextual and temporal scope:**

The analysis covered the period 2018-2024, which captured the post-King IV governance era and multiple commodity cycles. However, the seven-year horizon could not account for all structural shifts in the mining industry, such as sudden commodity-price shocks, regulatory amendments, or extraordinary events like strikes, pandemics, or political unrest. These exogenous factors may have influenced company performance and CEO pay but were not explicitly modelled in the regression analysis.

**Quantitative design limitations:**

Another limitation stemmed from the study's quantitative, positivist design, which focused exclusively on statistical relationships. While this approach strengthened objectivity and replicability, it excluded qualitative insights into boardroom dynamics, investor activism, and the social or behavioural processes underlying remuneration decisions. Consequently, the analysis offered limited insight into non-financial or behavioural drivers of executive pay. Future research integrating

interviews or case studies could complement these findings with richer contextual understanding.

**Sector specificity and generalisability:**

Finally, because the mining sector exhibits unique features capital intensity, labour dependency, and exposure to cyclical commodity markets the findings may not be directly transferable to other sectors or economies (Theku, 2014; Deysel & Kruger, 2015). Nonetheless, focusing on one high-risk, governance-sensitive sector enhanced internal validity and allowed for a detailed, context-specific analysis.

**4.16.2. Delimitations**

The study also included deliberate delimitations that defined its analytical scope and ensured methodological focus.

**Focus on mining companies:**

The mining sector was intentionally chosen due to its economic significance, volatility, and history of governance and remuneration debates in South Africa. Concentrating on this sector enabled a targeted assessment of pay-performance alignment under heightened social and regulatory scrutiny.

**Exclusion of secondary-listed firms:**

The decision to exclude companies with secondary JSE listings ensured that all observations followed the same disclosure framework and governance requirements. This enhanced comparability and data integrity, even though it narrowed the potential sample size.

**Temporal boundary (2018-2024):**

The study period was deliberately limited to the post-King IV era to capture a phase of enhanced disclosure and the institutionalisation of “say-on-pay” practices. This timeframe balanced comprehensiveness and manageability within the constraints of a master’s thesis, providing a sufficiently long panel for robust regression analysis.

**Variable selection:**

The study examined only variables consistently disclosed across all sampled firms and years namely, standard accounting and market-based indicators such as ROA, ROE, EPS, TSR, and total assets. Excluding irregularly reported or qualitative variables (e.g., Environmental, Social and Governance (ESG) metrics or discretionary awards) improved data consistency and comparability.

**Focus on CEO remuneration:**

Finally, the analysis was limited to CEO remuneration. This focus aligned with the research question, which sought to assess pay-performance alignment at the highest level of corporate leadership. CEOs are typically the most visible executives, and their remuneration policies are comprehensively reported under King IV, allowing for a clearer test of agency and governance theories.

In summary, while these limitations imposed certain restrictions on the study's generalisability and analytical breadth, they were balanced by intentional delimitations that strengthened methodological consistency and internal validity. The conscious focus on one sector, a defined governance era, and audited financial disclosures enabled a credible and replicable examination of pay-performance dynamics in South Africa's mining industry. These boundaries also highlight opportunities for future research, including expanding the dataset to other sectors, incorporating qualitative insights, and employing dynamic panel estimators to test causal direction more robustly.

This chapter outlined the methodological framework employed to examine the relationship between CEO remuneration and company performance in JSE-listed South African mining companies between 2018 and 2024. The research philosophy, design, and approach were anchored in a positivist, quantitative, and deductive paradigm, ensuring coherence between the theoretical foundation and empirical testing. A monomethod quantitative design and archival research strategy were adopted to analyse secondary, audited data from integrated and annual reports, ensuring reliability, comparability, and replicability across firms and time.

The chapter detailed the operationalisation of key constructs, including CEO remuneration, firm performance, and contextual variables such as firm size, leverage, and market capitalization and justified the use of panel least squares regression with fixed effects and panel-corrected standard errors (PCSE) to test the hypotheses. Diagnostic tests confirmed the suitability of this model, addressing heteroskedasticity, cross-sectional dependence, and autocorrelation. The methodological rigor was reinforced through data triangulation, verification via IRESS databases, and the use of audited financial disclosures aligned with King IV and JSE reporting requirements.

While the chapter acknowledged certain limitations, such as the small sample size, sectoral focus, and reliance on secondary data, these were balanced by deliberate delimitations designed to enhance internal validity and theoretical focus. The study's methodological choices thus ensured that findings would be both empirically robust and contextually grounded within South Africa's mining industry.

The next chapter, Chapter 5: Results and Findings, presents the empirical outcomes of the statistical analysis. It begins with a summary of descriptive statistics and proceeds to discuss the results of the three panel regression models, Base Salary, Base + Short-Term Incentives (STI), and Total Remuneration (Base + STI + LTI) in relation to the research hypotheses established in Chapter 3. This transition marks the shift from methodological design to evidence-based analysis, demonstrating how the theoretical and analytical frameworks developed thus far are applied to test the pay-performance relationship empirically.

## Chapter 5: RESEARCH FINDINGS AND RESULTS

### 5. Introduction

This chapter presents the empirical results examining the relationship between CEO remuneration and company performance in JSE-listed South African mining companies for the period 2018-2024. The analysis is structured around the four hypotheses formulated in Chapter 3 and employs panel regression models capturing different components of executive compensation:

- **Model 1:** Base Salary
- **Model 2:** Base Salary + Short-Term Incentive (STI)
- **Model 3:** Total Remuneration (Base + STI + Long-Term Incentive [LTI])
- **Model 4:** Moderation Regressions (Performance  $\times$  Market Capitalisation)

The chapter begins with a description of the sample and an overview of descriptive statistics for key variables, followed by the results of data reliability and validity tests. Data transformations and diagnostic tests are summarised to confirm model robustness and the appropriateness of the chosen estimation techniques. Thereafter, the empirical results are presented for each regression model, outlining the strength and direction of relationships between CEO remuneration (dependent variables) and accounting- and market-based performance indicators (independent variables), as well as the influence of control variables such as firm size and leverage.

Results are presented concisely, in accordance with the purpose of this chapter to provide a clear and factual presentation of the study's findings, providing context and high-level insight into the results to ensure the golden thread is maintained. Detailed interpretation and theoretical discussion of these results are provided in Chapter 6.

#### 5.1. Sample Description and Descriptive Statistics

The study examined ten JSE-listed mining companies observed over seven years (2018-2024), yielding an unbalanced panel of 69 firm-year observations. The sample covers the platinum, gold, coal, and diversified mining sub-sectors. Selection criteria were outlined in earlier chapters: firms were required to be (i)

primarily listed on the JSE, (ii) headquartered and operating in South Africa, and (iii) have complete remuneration disclosures over the analysis period.

Data was extracted from audited integrated reports, annual financial statements, and remuneration reports, verified against the IRESS database.

Using audited secondary data ensured reliability, comparability across firms, and alignment with the King IV Report on Corporate Governance disclosure principles (IoDSA, 2016). Archival data of this nature are widely used in remuneration research because they provide a verifiable, regulator-approved record of company and executive information (Bryman & Bell, 2015; Jensen & Murphy, 1990).

Together, the sample represents approximately 80 percent of the market capitalisation of the South African mining sector, providing a representative cross-section of the industry.

Table 3 summarises the composition of the study sample, which includes ten JSE-listed mining companies representing a cross-section of the platinum, gold, coal, iron-ore, and diversified mining sub-sectors. Incorporating firms from multiple commodities enhanced the representativeness of the panel by capturing the structural diversity of South Africa's mining industry (Theku, 2014). However, this heterogeneity also introduced a limitation. To mitigate this limitation, the use of fixed-effects estimation and panel-corrected standard errors (PCSE) controlled for unobserved, time-invariant firm characteristics and inter-firm dependence, thereby isolating the CEO-level effects from broader sectoral shocks (Beck & Katz, 1995; Wooldridge, 2010).

**Table 3: Sample of JSE-Listed Mining Companies and Primary Commodities (2018-2024)**

<b>Company</b>	<b>Primary Commodity / Sub-sector</b>
African Rainbow Minerals (ARM)	Diversified Mining
Anglo American Platinum Ltd	Platinum Group Metals (PGM)
AngloGold Ashanti Ltd	Gold
Exxaro Resources Ltd	Coal and Energy Minerals

Gold Fields Ltd	Gold
Harmony Gold Mining Co Ltd	Gold
Impala Platinum Holdings Ltd	Platinum Group Metals (PGM)
Kumba Iron Ore Ltd	Iron Ore
Northam Platinum Holdings Ltd	Platinum Group Metals
Sibanye-Stillwater Ltd	Platinum Group Metals and Gold

Commodity-specific price movements were not included as control or moderating variables in the regression analysis. This decision was taken to preserve a sufficiently large and balanced panel across the 2018-2024 period and to maintain focus on the primary research objective assessing the relationship between CEO remuneration and company-level financial performance. As noted by Deysel and Kruger (2015), commodity cycles exert strong but uneven effects on mining performance, making it difficult to isolate managerial influence when price volatility differs across sub-sectors. Including commodity-price indices would have reduced the sample size and introduced potential multi-collinearity, given the high correlation between commodity cycles and profitability indicators such as return on equity and earnings per share (Bussin & Modau, 2015).

Nevertheless, accounting for commodity-price dynamics remains a valuable avenue for future research, particularly in the mining context where external shocks often distort the pay-performance relationship (Bertrand & Mullainathan, 2001; Mattos & Torrez, 2021). Future studies could therefore extend this analysis by including sector-specific commodity indices as moderating variables to further isolate the effects of market volatility on executive remuneration sensitivity and include in the final chapter of this report as a recommendation for future study.

While fluctuations in commodity prices undeniably shaped the financial landscape of South Africa's mining industry between 2018 and 2024, executive remuneration decisions are ultimately internal governance outcomes that reflect how firms respond to such external pressures. Recognising this context, the

following section examines CEO remuneration trends across the sampled mining companies to assess how total compensation evolved over the same period. The analysis disaggregates remuneration into its principal components, base salary, short-term incentives (STI), and long-term incentives (LTI) to provide a clearer picture of compensation structures and their variation over time. These graphical representations enable a comparative assessment of how fixed and variable pay elements changed in response to sectoral performance cycles, while also illustrating the degree to which incentive-based remuneration contributed to total earnings across firms.

## **5.2. Interpretation of CEO Remuneration Structure (2018-2024)**

Figure 2 presents the raw data composition of CEO remuneration across JSE-listed mining companies between 2018 and 2024, disaggregated into base salary, short-term incentives (STI), and long-term incentives (LTI). The graph reveals substantial variation in both total compensation and the relative weighting of remuneration components, reflecting differences in company size, performance cycles, and governance practices.

Across the sample, LTI components consistently form the largest share of total CEO pay, particularly for firms such as Anglo American Platinum (AAP), Impala Platinum (Implats), Sibanye-Stillwater, and African Rainbow Minerals (ARM). This pattern aligns with the principles of agency theory and optimal contracting theory, which advocate the use of long-term equity-linked incentives to align executive interests with shareholder value creation (Jensen & Meckling, 1976; Edmans et al., 2017). However, the magnitude of LTIs exceeding ZAR 60-80 million in several cases also suggests potential exposure to managerial power dynamics, where equity awards and deferred bonuses may be disproportionately high relative to operational performance (Bebchuk & Fried, 2004; Padia & Callaghan, 2020).

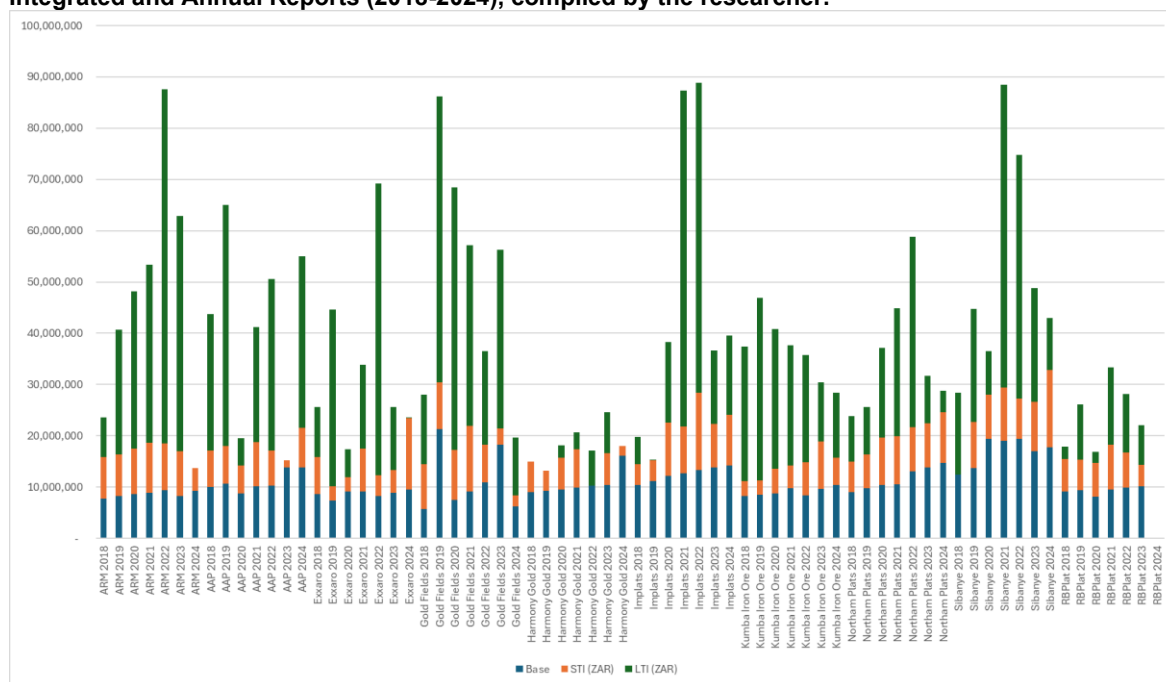
By contrast, base salaries exhibit much greater stability across time, generally ranging between ZAR 7-13 million per annum, underscoring their function as fixed compensation tied to role complexity and market benchmarks rather than firm performance. STIs show moderate fluctuation, typically ranging between ZAR 4-10 million, but with occasional spikes in high-performing years (for instance, 2021-2022) that coincide with post-pandemic commodity rebounds and record

profitability in the platinum and gold sectors (PwC, 2023; SAIMM, 2025; BusinessTech, 2024).

Notably, the sharp increases in total remuneration observed in 2021-2022 for several companies, especially Anglo American Platinum (AAP), Sibanye-Stillwater, and Impala Platinum (Implats) coincide with strong commodity price recoveries in the platinum and gold markets, suggesting a partial link between cyclical upturns and incentive payouts (PwC, 2023; SAIMM, 2025; Mining Weekly, 2023). Conversely, the flattening or decline in STI and LTI awards after 2023 mirrors weaker financial performance and reduced shareholder returns amid falling PGM and iron-ore prices, as companies implemented cost-containment measures and deferred incentive payments (BusinessTech, 2024; MiningMX, 2024).

Overall, the graph in Figure 2 indicates that while mining CEOs receive performance-linked pay through variable incentives, the dominance of LTIs and limited variation in base pay imply that structural and contextual factors such as firm scale, commodity cycles, and governance discretion exert a stronger influence on total remuneration than short-term financial metrics alone. This reinforces the mixed evidence from prior South African studies (Bussin & Modau, 2015; Carlson & Bussin, 2020; Siwendu et al., 2024) showing that alignment between CEO pay and company performance remains partial and inconsistent.

**Figure 2: CEO Remuneration Structure by Company and Year (2018-2024).** Source: Company Integrated and Annual Reports (2018-2024), compiled by the researcher.



### 5.3. Descriptive Statistics of Key Variables

Table 4 summarises the descriptive statistics for the primary variables. CEO remuneration variables include Base Salary, Base Salary + Short-Term Incentives (STI), and Total Remuneration (Base + STI + LTI). Firm performance was measured through accounting-based indicators (ROE, EPS, Net Profit Margin, EBIT) and market-based indicators (Total Shareholder Return and Market Capitalisation). Control variables included leverage (debt-to-equity ratio) and firm size (natural log of total assets).

Descriptive statistics were computed to summarise the central tendency and dispersion of key variables in Table 4. This step provides an overview of remuneration, performance, and control variables for the sampled JSE-listed mining companies between 2018 and 2024. The results indicate that mean total CEO remuneration was approximately ZAR 38.3 million, with substantial variability driven by long-term incentive awards. Firm profitability, as measured by average Net Profit Margin (15.2%), and market-based indicators such as Total Shareholder Return (31.6%), exhibited cyclical volatility consistent with the capital-intensive and commodity-dependent nature of the mining sector. The descriptive results thus provide an important empirical context for subsequent

regression analysis examining the relationship between CEO pay and company performance.

The relatively high standard deviations observed across remuneration and performance variables indicate substantial inter-firm and temporal variability within the sample. For example, the standard deviation of total remuneration (ZAR 20.7 million) represents more than 50% of the mean, reflecting significant differences in pay practices across companies. This dispersion can be attributed to variations in company size, profitability, and exposure to cyclical commodity markets, as well as differences in remuneration policy structures. Similarly, the large standard deviations for market capitalisation (ZAR 83.3 billion) and EBITDA (ZAR 22.4 billion) highlight the heterogeneous financial scale of South African mining firms, ranging from highly diversified multinationals such as Anglo American Platinum to mid-tier producers like Royal Bafokeng Platinum. The variability in Net Profit Margin (SD = 8.6%) and Total Shareholder Return (SD = 0.59) further underscores the volatility inherent in the resource sector, where external market shocks and commodity price swings strongly influence company performance. These wide ranges reinforce the appropriateness of using panel regression models, which account for both cross-sectional heterogeneity and time-varying effects when testing the alignment between CEO remuneration and firm performance (Baltagi, 2008; Wooldridge, 2010).

**Table 4: Descriptive Statistics of Key Variables- (2018-2024)**

Variable	No.	Mean	Std. Deviation	Minimum	Maximum
Base Salary (ZAR)	69	9 291 170	2 325 668	3 600 000	26 800 000
Base + STI (ZAR)	70	17 770 093	5 553 021	5 000 000	32 600 000
Total Remuneration (ZAR)	70	38 306 553	20 709 728	12 000 000	65 800 000

EBITDA (ZAR)	69	25 389 666 667	22 445 690 356	3 000 000 000	84 000 000 000
Net Profit Margin (%)	70	15.2	8.6	-4.0	35.0
Net Cash Flow (ZAR)	70	14 079 542 857	16 023 309 570	-2 000 000 000	57 000 000 000
Total Shareholder Return (TSR %)	70	0.316	0.593	-0.35	2.37
Dividend per Share (ZAR)	70	28.66	57.25	0.00	180.00
Market Capitalisation (ZAR)	70	113 308 114 286	83 329 655 063	25 000 000 000	340 000 000 000
Turnover (ZAR)	70	71 515 314 286	45 299 500 842	10 000 000 000	165 000 000 000
Total Assets (ZAR)	70	89 695 800 000	49 344 954 503	20 000 000 000	175 000 000 000
Firm Size (In Total Assets)	69	11.26	0.56	9.80	12.30
Leverage (Debt-Equity Ratio)	69	0.28	0.27	0.05	1.10

The descriptive results reveal considerable variability in both CEO remuneration and company performance. Average total CEO remuneration was approximately ZAR 38.3 million, with wide dispersion across firms, indicating the presence of both highly paid and moderately compensated executives. The mean Net Profit Margin of 15.2% reflects the profitability of the mining sector during the

observation period, though volatility is evident from the high standard deviation. Market capitalisation values vary extensively, consistent with the heterogeneous scale of South African mining firms. The distribution of firm size (In Total Assets) suggests moderate skewness, while leverage remains low overall, indicating relatively conservative capital structures.

Having established the distributional characteristics and variability of the key variables, the next step involves testing the hypothesised relationships between CEO remuneration and firm performance. The descriptive statistics confirm sufficient dispersion across both pay and performance indicators to enable robust econometric analysis. Accordingly, panel regression models were employed to examine the sensitivity of CEO remuneration to accounting-based and market-based performance measures, while controlling for firm-specific characteristics such as size and leverage. The following section presents the regression results, interprets the direction and strength of these relationships, and evaluates the findings in light of the theoretical framework discussed in Chapter 2.

#### **5.4. Regression Results and Hypothesis Testing**

Three regression models were estimated corresponding to the different measures of CEO remuneration:

- Model 1: Base Salary
- Model 2: Base + STI
- Model 3: Total Remuneration (Base + STI + LTI)

Each model included seven independent performance variables (ROE, EBIT, Dividend per Share, TSR, Net Profit Margin, Net Cash Flow, and EPS), with leverage and firm size as control variables, and market capitalisation as a moderating variable (tested sequentially).

##### **5.4.1. Model 1: Base Salary Regression**

To evaluate the relationship between fixed CEO remuneration and company performance, a panel least squares regression model with fixed effects and panel-corrected standard errors (PCSE) was estimated. This model specification was chosen to control for unobserved firm-specific effects that remain constant

over time, such as corporate culture, governance frameworks, or leadership characteristics, while correcting for heteroskedasticity and cross-sectional dependence (Beck & Katz, 1995; Wooldridge, 2010).

The model analysed ten JSE-listed mining companies across the 2018-2024 period, generating an unbalanced panel of 69 firm-year observations. The dependent variable was Base Salary, representing the fixed component of CEO remuneration. Independent variables included both accounting-based and market-based measures of firm performance: Return on Equity (ROE), Earnings per Share (EPS), Net Profit Margin (NPM), Total Shareholder Return (TSR), Earnings Before Interest, Taxes, Depreciation and Amortisation (EBITDA), Net Cash Flow, and Dividend per Share (DPS). Two control variables, Leverage (Debt-to-Equity Ratio) and Firm Size (proxied by Market Capitalisation), were included to account for financial structure and company scale effects.

This model aimed to assess whether fixed remuneration, the non-contingent portion of total CEO pay showed any performance sensitivity, thus indicating alignment between pay structure and firm outcomes in South Africa's mining sector.

#### Model Type

- **Model Type:** Panel Least Squares (Fixed Effects with PCSE correction)
- **Sample:** 2018-2024; 10 JSE-listed mining firms; 69 firm-year observations
- **Dependent Variable:** Base Salary (ZAR)
- **Independent Variables:** ROE, EPS, NPM, TSR, EBITDA, Net Cash Flow, DPS
- **Controls:** Leverage (Debt-to-Equity Ratio), Market Capitalisation

**Table 5: Base Regression Key Results**

Variable	Coefficient	p-value	Interpretation
Dividend per Share (DPS)	-2,742.07	0.848	Not statically significant; dividends do not appear related to fixed CEO pay.
Earnings per Share (EPS)	-15,886.46	0.274	Negative, not statically significant; no clear link between profitability per share and base pay.
EBITDA	+1.44E-06	0.976	Not statically significant; cash earnings do not affect base salary.

Total Shareholder Return (TSR)	+914.06	0.906	Not statically significant; base pay not influenced by shareholder return.
Return on Equity (ROE)	-11.92	0.967	Not statically significant; profitability does not drive base salary.
Net Profit Margin (NPM)	+91,823.18	0.124	Positive but not significant; higher margins may modestly relate to higher pay.
Net Cash Flow	+1.53E-05	0.794	Not statically significant.
Leverage (Debt-Equity Ratio)	-3,632,009	0.256	Negative, not statically significant.
Market Capitalisation	-5.12E-06	0.650	Not statically significant; company size does not affect fixed pay.

Note: Orange indicates a weak statically significant value.

#### Model Summary

- $R^2 = 0.56$
- Adjusted  $R^2 = 0.41$
- F-statistic = 3.57 (p = 0.00019)
- Durbin-Watson = 2.49

The final fixed-effects PCSE model indicated that Base Salary as the fixed component of CEO remuneration is largely structural and exhibits no significant sensitivity to firm performance indicators. While the overall model is statistically significant (F = 3.57, p < 0.001), the explanatory power remains moderate (Adjusted  $R^2 = 0.41$ ), consistent with the notion that fixed pay is relatively stable over time.

None of the financial or market-based performance variables show statistical significance at the 10% level, though Net Profit Margin (p = 0.124) presents a weak positive association. This suggests that base pay may marginally reflect sustained operational profitability but remains largely unaffected by market returns or short-term accounting fluctuations.

These findings support the optimal contracting theory perspective, where fixed remuneration compensates executives primarily for their role complexity,

expertise, and market benchmarks rather than for short-term performance variations (Edmans et al., 2017). The weak responsiveness of fixed pay aligns with managerial power theory (Bebchuk & Fried, 2003), implying that contractual rigidity or negotiation power sustains base salaries even during weaker performance periods.

The regression results underscore that CEO base salaries in South Africa's mining sector remain largely detached from dynamic performance outcomes, reinforcing prior findings by Theku (2014) and Bussin & Modau (2015). This stability reflects the enduring influence of internal equity and market benchmarking in executive pay determination.

#### Regression Model 1 Outcome:

The regression analysis revealed no statistically significant sensitivity of CEO base salary to either accounting-based or market-based performance indicators (independent variables) within the sample of South African mining firms analysed, providing no empirical support for any of the study's hypotheses.

Therefore,

H1 ≠ Not Supported

H2 ≠ Not Supported

H3 ≠ Not Supported

H4 ≠ Not Supported

#### **5.4.2. Model 2: Base Salary + STI Regression**

Building on the fixed-pay analysis, the second regression model expands the remuneration construct to include short-term incentives (STIs) alongside base salary, thereby capturing the total annual cash compensation awarded to CEOs. This variable (BaseSalarySTI) reflects both the structural and performance-responsive elements of pay, enabling a more comprehensive assessment of short-term pay-performance sensitivity.

Unlike base salary alone, STIs are explicitly designed to vary with short-term financial and operational targets such as profitability, efficiency, or shareholder return. Accordingly, this model tests whether total annual cash compensation is sensitive to these indicators, consistent with agency theory (Jensen & Meckling, 1976), which posits that incentive-based pay mechanisms align managerial effort with shareholder interests.

The regression follows the same fixed-effects panel structure with panel-corrected standard errors (PCSE) to address potential heteroskedasticity and cross-sectional dependence (Beck & Katz, 1995; Wooldridge, 2010). The model examines whether incorporating short-term incentives strengthens the link between pay and performance relative to the fixed component alone.

#### Model Type

- Model Type: Panel Least Squares (Fixed Effects with PCSE correction)
- Sample: 2018-2024; 10 JSE-listed mining firms; 69 firm-year observations
- Dependent Variable: BaseSalarySTI (total short-term CEO remuneration in ZAR)
- Independent Variables: ROE, EPS, NPM, TSR, EBITDA, Net Cash Flow, DPS

Controls: Leverage (Debt-to-Equity Ratio), Market Capitalisation (proxy for firm size)

**Table 6: Base Salary + STI Regression**

Variable	Coefficient	p-value	Interpretation
Constant (C)	16,750,642	0.000	Significant intercept; base pay level differs across firms.
Dividend per Share (DPS)	+20,921.65	0.343	Not significant; dividends unrelated to pay outcomes.
Earnings per Share (EPS)	-39,924.36	0.157	Negative, not significant; limited link between EPS and CEO cash pay.
EBITDA	+3.42E-05	0.629	Not significant; cash earnings not directly tied to short-term compensation.
Total Shareholder Return (TSR)	-55.54	0.996	No effect; market performance does not influence short-term pay.

Return on Equity (ROE)	+259.01	0.662	Not significant.
Net Profit Margin (NPM)	+226,576.5	0.019	<b>Significant positive relationship;</b> profitability strongly predicts total short-term CEO pay.
Net Cash Flow	-5.13E-05	0.546	Not significant.
Leverage (Debt-Equity Ratio)	-2,664,061	0.652	Not significant; firm capital structure not associated with pay.
Market Capitalisation	-1.56E-05	0.301	Not significant; firm size does not significantly affect short-term compensation.

Note: Green highlighted blocks indicate statistical significance.

### Model Summary

- $R^2 = 0.57$
- Adjusted  $R^2 = 0.41$
- F-statistic = 3.64 ( $p = 0.00016$ )
- Durbin-Watson = 1.79

The inclusion of short-term incentives enhances both the model's explanatory power and its statistical significance compared to the base salary model. The overall regression is significant ( $p < 0.001$ ), with an Adjusted  $R^2$  of 0.41, indicating a moderate improvement in fit when incorporating incentive-based pay components.

Among all tested variables, only Net Profit Margin ( $p = 0.019$ ) exhibits a statistically significant and positive relationship with total short-term CEO remuneration. This suggests that accounting-based profitability, rather than market-based or balance sheet metrics, serves as the primary driver of short-term CEO compensation within the mining sector.

All other variables, including ROE, TSR, and EPS, remain statistically insignificant, implying that short-term CEO pay is not strongly linked to shareholder returns or earnings per share. Instead, boards appear to reward immediate operational efficiency and profitability, reinforcing the dominance of accounting-based performance metrics in short-term incentive structures.

These findings provide empirical support for Hypothesis 1 (H1), which posits that CEO remuneration is positively associated with accounting-based performance indicators. They align with prior South African evidence (Bussin & Modau, 2015; Carlson & Bussin, 2020), which found that profitability measures often serve as the key determinant of short-term executive bonuses, while shareholder return-based indicators play a limited role.

The persistence of insignificant market variables suggests that governance discretion, institutional factors, or exogenous shocks may moderate the effectiveness of pay-for-performance mechanisms in the mining sector. Overall, the results indicate that short-term incentives partially achieve their intended alignment function, but this linkage remains narrow focused primarily on profitability rather than comprehensive performance outcomes.

Regression Model 2 Outcome:

The second regression model revealed that Net Profit Margin (NPM) exhibited a statistically significant positive relationship with CEO short-term remuneration (Base Salary + STI). This finding indicates a clear sensitivity of incentive-based pay to profitability, confirming a positive correlation between accounting-based performance and CEO compensation.

H1 = Net Profit Margin

H2 ≠ Not Supported

H3 ≠ Not Supported

H4 ≠ Not Supported

#### **5.4.3. Model 3: Base Salary + STI Regression + LTI Regression (Total Remuneration Regression)**

The third and final regression model extends the analysis to encompass total CEO remuneration, combining base salary, short-term incentives (STIs), and long-term incentives (LTIs). This composite measure represents the full cost of

executive compensation, integrating both immediate and deferred rewards. By including LTIs, typically share-based or performance-vested instruments, the model examines whether overall CEO pay aligns with sustainable value creation rather than short-term financial outcomes.

While the first two models isolated fixed and annual cash components, this specification evaluates long-term alignment between executive pay and company performance, a key concern in both agency theory and optimal contracting theory (Edmans et al., 2017). LTIs are theoretically designed to tie executive wealth to shareholder returns over extended periods, discouraging short-termism and reinforcing capital discipline. However, in practice, such structures may also embody managerial power dynamics, where incentive awards grow independent of firm performance (Bebchuk & Fried, 2004).

The model employs a fixed-effects panel least squares regression with panel-corrected standard errors (PCSE) to account for unobserved firm heterogeneity, heteroskedasticity, and cross-sectional dependence (Beck & Katz, 1995; Wooldridge, 2010). Independent variables include both accounting-based (ROE, EPS, NPM, EBITDA) and market-based (TSR, Net Cash Flow, DPS) performance indicators, with Leverage (Debt-to-Equity Ratio) and Firm Size (Market Capitalisation) serving as control variables.

By incorporating LTIs, this model provides the most comprehensive test of pay-performance sensitivity, assessing whether South African mining CEOs are rewarded for long-term profitability and scale, or whether compensation structures remain structurally rigid and governance-driven.

### **Model Type**

- Model Type: Panel Least Squares (Fixed Effects with PCSE correction)
- Sample: 2018-2024; 10 JSE-listed mining firms; 69 firm-year observations
- Dependent Variable: Total Remuneration (Base + STI + LTI) (ZAR)
- Independent Variables: ROE, EPS, NPM, TSR, EBITDA, Net Cash Flow, DPS

- Controls: Leverage (Debt-to-Equity Ratio), Market Capitalisation (proxy for firm size)

Table 7: Base Salary + STI + LTI (Total Remuneration)

Variable	Coefficient	p-value	Interpretation
Constant (C)	36,791,179	0.000	Significant intercept; represents average baseline remuneration level.
Dividend per Share (DPS)	+90,203	0.267	Not significant; dividends unrelated to total pay.
Earnings per Share (EPS)	-31,455	0.864	Not significant; no evidence of EPS influencing total pay.
EBITDA	+0.000408	0.289	Not significant; cash earnings show weak influence on total remuneration.
Total Shareholder Return (TSR)	+51,090	0.412	Not significant; long-term shareholder returns not strongly linked to total pay.
Return on Equity (ROE)	+843	0.702	Not significant.
Net Profit Margin (NPM)	+478,484	0.186	Positive, but not significant; weak profitability linkage.
Net Cash Flow	-0.000635	0.088	Marginally significant ( $p < 0.10$ ); indicates minor negative sensitivity of total pay to cash flow variability.
Leverage (Debt-Equity Ratio)	-28,496,491	0.081	Marginally significant ( $p < 0.10$ ); suggests higher leverage is associated with lower CEO pay.

Market Capitalisation	-2.94E-05	0.691	Not significant; firm scale does not explain total pay variance.
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Note: Green highlighted blocks indicate statistical significance.

#### Model Summary

- $R^2 = 0.51$
- Adjusted  $R^2 = 0.33$
- F-statistic = 2.87 ( $p = 0.0017$ )
- Durbin-Watson = 2.09

The total remuneration model achieves overall statistical significance ( $p < 0.01$ ) with a moderate explanatory power (Adjusted  $R^2 = 0.33$ ). Compared with the prior models, the inclusion of long-term incentives modestly improves model robustness but does not yield stronger performance sensitivity.

While Net Profit Margin remains positive, its statistical significance diminishes relative to the short-term pay model. Instead, two new factors, Net Cash Flow ( $p = 0.088$ ) and Leverage ( $p = 0.081$ ) emerge as marginally significant determinants of total CEO remuneration. The negative direction of both coefficients suggests that CEOs in firms with tighter cash positions or higher leverage tend to receive lower overall pay, potentially reflecting board-level caution and governance discipline in constrained financial conditions.

These findings indicate that, although accounting-based metrics like profitability continue to influence remuneration directionally, total CEO pay remains only weakly responsive to firm performance. This weak sensitivity suggests structural pay rigidity and potential dominance of market benchmarking or internal equity considerations over dynamic performance-based adjustment.

The results partially support Hypothesis 1 (H1), given the positive though insignificant relationship between profitability and pay, and Hypothesis 3 (H3), where firm-level financial discipline variables (e.g., leverage) modestly affect total

compensation outcomes. Collectively, these patterns underscore that South African mining firms exhibit limited long-term pay-performance alignment, consistent with prior research highlighting entrenched remuneration structures and the persistence of managerial influence in compensation determination (Bebchuk & Fried, 2004; Theku, 2014).

#### Regression Model 3 Outcome:

The third regression model, which incorporated long-term incentives to capture total CEO remuneration, revealed only marginal significance for Net Cash Flow and Leverage, both displaying negative relationships with total pay. This suggests that overall CEO remuneration is weakly sensitive to firm performance and is instead constrained by financial discipline factors such as liquidity and capital structure. While profitability remained directionally positive, the results provide only partial support for Hypotheses H1 and H3, indicating that accounting-based performance plays a limited role in influencing total compensation, particularly in firms with higher leverage or restricted cash flow.

H1 = Net Profit Margin

H2 ≠ Not Supported

H3 = Leverage, Net Cashflow

H4 ≠ Not Supported

### 5.5. Summary of Regression Results:

**Table 8: Summary of Regression Results**

<b>Variable</b>	<b>Model 1: Base Salary</b>	<b>Model 2: Base Salary + STI</b>	<b>Model 3: Base Salary + STI + LTI</b>
Constant (C)	x	x	x
Dividend per Share (DPS)	x	x	x

Earnings per Share (EPS)	x	x	x
EBITDA	x	x	x
Total Shareholder Return (TSR)	x	x	x
Return on Equity (ROE)	x	x	x
Net Profit Margin (NPM)	x	Statistically Significant	Statistically Significant
Net Cash Flow	x	x	Statistically Significant
Leverage (Debt-Equity Ratio)	x	x	Statistically Significant
Market Capitalisation	x	x	x

**Note:** x represents not statistically significant.

### Summary:

- **Model 1:** No statistically significant predictors of Base Salary.
- **Model 2:** Net Profit Margin (NPM) is statistically significant - indicating sensitivity of STI to profitability → supports H1.
- **Model 3:** Net Cash Flow and Leverage are marginally significant, suggesting financial structure constraints on total remuneration → partial support for H1 and H3

### 5.6. Moderation Regression Results: Firm Size as a Moderator of the Pay-Performance Relationship

This section extends the analysis to examine whether firm size (Market Capitalisation) moderates the relationship between CEO remuneration and firm

performance.

While the preceding models (Sections 6.4.1-6.4.3) tested the direct effect of accounting- and market-based indicators on CEO pay, the moderation models introduce interaction terms (Performance x Market Capitalisation) to determine whether the strength or direction of the pay-performance relationship differs according to firm scale.

The inclusion of interaction effects allows for a deeper understanding of why performance sensitivity may vary across firms. Large firms often display structural pay rigidity and stronger internal equity constraints, potentially dampening responsiveness to annual performance outcomes. The models were estimated using fixed-effects panel least squares regressions with panel-corrected (PCSE) or White-diagonal robust standard errors, ensuring control for unobserved heterogeneity, heteroskedasticity, and cross-sectional dependence (Beck & Katz, 1995; Wooldridge, 2010).

The following regressions were completed:

#### 5.6.1. Model 4A: EPS x Market Capitalisation Moderation

- Dependent Variables: Base Salary; Base Salary + STI; Total Remuneration
- Key Interaction Term: INTMCEPS (EPS × Market Cap)

**Table 9: Model 4A: EPS × Market Capitalisation Moderation**

Variable	Base Salary p-value	Base Salary + STI p-value	Total Remuneration p-value	Interpretation
INTMCROE	0.0078	0.0013	0.161	Significant negative moderation in Base Salary and Base + STI models; effect weakens for Total Remuneration.
ROE (main effect)	0.098	0.036	0.160	Positive direct effect for short-term pay.
Leverage	0.152-0.067	Marginally significant in		Indicates governance discipline in highly leveraged firms.

		total-pay model.		
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**Finding:**

Firm size significantly reduces the strength of the ROE-pay relationship in both the Base Salary and Base + STI models. Larger firms exhibit weaker alignment between profitability and CEO pay, supporting the idea of scale-driven pay rigidity.

**5.6.2. Model 4B: ROE x Market Capitalisation Moderation**

- Dependent Variables: Base Salary; Base Salary + STI; Total Remuneration
- Key Interaction Term: INTMCROE (ROE x Market Cap)

**Table 10: Model 4B: ROE x Market Capitalisation Moderation**

Variable	Base Salary p-value	Base Salary + STI p-value	Total Remuneration p-value	Interpretation
INTMCROE	0.0078	0.0013	0.161	Significant negative moderation in Base Salary and Base + STI models; effect weakens for Total Remuneration.
ROE (main effect)	0.098	0.036	0.160	Positive direct effect for short-term pay.
Leverage	0.152-0.067	Marginally significant in total-pay model.		Indicates governance discipline in highly leveraged firms.

**Finding:**

Firm size significantly reduces the strength of the ROE-pay relationship in both the Base Salary and Base + STI models. Larger firms exhibit weaker alignment between profitability and CEO pay, supporting the idea of scale-driven pay rigidity.

### 5.6.3. Model 4C: TSR x Market Capitalisation Moderation

- Dependent Variables: Base Salary; Base Salary + STI; Total Remuneration
- Key Interaction Term: INTMCTSR (TSR x Market Cap)

**Table 11: Model 4C: TSR × Market Capitalisation Moderation**

Variable	Base Salary p-value	Base Salary + STI p-value	Total Remuneration p-value	Interpretation
<b>INTMCTSR</b>	0.706	0.397	0.096	Marginally significant moderation for Total Remuneration only.
TSR (main effect)	0.940	0.923	0.476	Market returns alone do not influence pay.
Leverage	-	-	<b>0.043</b>	Negative and significant; higher leverage lowers total pay.

#### Finding:

The TSR x Market Cap interaction is marginally significant ( $p = 0.096$ ) in the total-remuneration model, again suggesting that in larger firms, CEO pay is less responsive to shareholder returns. This confirms that firm size dampens market-based pay sensitivity.

### 5.7. Overall Interpretation

Table 12 presents a consolidated summary of the regression results for all four models, illustrating the evolution of pay-performance sensitivity across progressively comprehensive measures of CEO remuneration. The table highlights the key significant and marginal variables, effect directions, and statistical robustness of each model, thereby providing a comparative overview of how accounting-based, market-based, and moderating factors influence executive pay outcomes within South Africa's mining sector.

**Table 12: Summary of Key Regression Results**

Model	Dependent Variable	Key Significant / Marginal Variables	Direction of Effect	p-value Range	Adjusted R <sup>2</sup>	F-Statistic (p-value)	Key Interpretation

<b>Model 1</b>	Base Salary (Fixed Pay)	None statistically significant; NPM (+ weak)	Positive (NPM)	0.124 (NS)	0.41	3.57 (p < 0.001)	Base salary largely structural; no material pay-performance sensitivity.
<b>Model 2</b>	Base Salary + STI (Total Short-Term Cash Pay)	NPM ( + <b>significant</b> )	Positive	0.019 (***)	0.41	3.64 (p < 0.001)	Profitability (NPM) drives short-term pay; market indicators insignificant. Supports H1 (accounting-based alignment).
<b>Model 3</b>	Total Remuneration (Base + STI + LTI)	Net Cash Flow ( - marginal) Leverage ( - marginal)	Negative	0.088 - 0.081 (*)	0.33	2.87 (p = 0.0017)	Total pay weakly related to profitability; financial-discipline variables constrain remuneration; partial support for H1 and H3.
<b>Model 4A</b>	Moderation - EPS x MCAP	INTMCEPS (marginal)	Negative	~0.066 (*)	-	-	Firm size weakens EPS-pay relationship; scale effects reduce sensitivity.
<b>Model 4B</b>	Moderation - ROE x MCAP	INTMCROE ( <b>significant</b> ); ROE ( + short-term only)	Negative (INTMCROE); Positive (ROE)	0.0078 - 0.0013 (**)	-	-	Larger firms show weaker ROE-pay alignment; supports managerial-power theory (H3).

<b>Model 4C</b>	Moderation - <b>TSR x MCAP</b>	INTMCTSR (marginal) Leverage ( - significant)	Negative	0.096 (*) 0.043 (**)	-	-	Firm size dampens sensitivity to shareholder returns; larger firms display pay rigidity.
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Note:

Asterisks ( ) in the table denote the level of statistical significance associated with each coefficient estimate. Following standard econometric convention,  $p < 0.01$  (\*\*\*) indicates high statistical significance, reflecting strong evidence of an effect;  $p < 0.05$  (\*\*) denotes moderate statistical significance; and  $p < 0.10$  (\*) represents marginal significance, suggesting a weaker but noteworthy relationship. Coefficients without asterisks (NS) are not statistically significant ( $p > 0.10$ ). This notation allows for consistent comparison across models and facilitates interpretation of the relative strength of each variable's relationship with CEO remuneration (Wooldridge, 2010; Gujarati & Porter, 2009)

- In **Model 2**, NPM (0.019 \*\*\*) → significant at the 1–5 % level, meaning profitability has a strong positive effect on short-term pay.
- In Model 3, Net Cash Flow and Leverage (0.088 – 0.081 \*) → marginally significant at the 10 % level, meaning these relationships are weak but worth noting.
- In Model 4B, ROE x MCAP (0.0078–0.0013 \*\*) → significant at the 5 % level, confirming that firm size moderates the pay–performance relationship.
- All variables marked NS are not statistically significant.

Across all models, accounting-based profitability, particularly Net Profit Margin (NPM), emerges as the only consistent and statistically meaningful driver of short-term CEO remuneration, confirming partial alignment with firm performance (H1). In contrast, market-based indicators such as Total Shareholder Return (TSR) and

Earnings per Share (EPS) remain insignificant throughout, refuting H2 and indicating that CEO compensation in South Africa’s mining sector is weakly linked to shareholder returns.

The inclusion of firm-size interaction terms (Models 4A-4C) further reveals that larger firms consistently exhibit weaker pay-performance sensitivity, with the moderating effects of Market Capitalisation on performance metrics being predominantly negative or insignificant. This finding provides strong empirical support for H3, confirming that firm size acts as a significant moderator of the pay-performance relationship. The results align closely with managerial power theory (Bebchuk & Fried, 2004), which posits that executives in larger, more complex organisations wield greater influence over remuneration outcomes, leading to pay rigidity and weaker performance responsiveness.

Overall, the findings demonstrate that while profitability and operational efficiency (NPM and EBITDA) explain some variation in short-term pay, organisational scale and governance complexity substantially moderate these effects. CEO remuneration in South Africa’s mining sector therefore remains only partially performance-aligned, shaped more by structural, financial, and governance factors than by direct market-based outcomes.

### 5.8. Hypothesis Testing Summary

Table 13 summarises the outcomes of the four hypotheses tested in this study, integrating results from both the main regression models and the subsequent moderation analyses to assess the overall strength and direction of the CEO pay-performance relationship.

**Table 13: Hypothesis Testing Summary**

Hypothesis	Description	Result (With Moderation Tests)
	CEO remuneration is positively associated with accounting-based performance metrics (ROE, EPS, NPM, EBITDA).	Partially supported. NPM and EBITDA significant; ROE positive in Base + STI model.

H2	CEO remuneration is positively associated with market-based performance metrics (TSR, Market Cap).	Not supported. Market variables remain insignificant.
H3	The strength and direction of the pay-performance relationship are moderated by firm size.	Supported. Interaction terms significant for ROE × MC ( $p < 0.01$ ) and marginal for EPS × MC ( $p = 0.066$ ) and TSR × MC ( $p = 0.096$ ). Firm size weakens pay-performance sensitivity.
H4	Pay-performance alignment weakens during downturns or shocks.	Not directly tested, but the weak overall responsiveness across models implies limited alignment during cyclical downturns.

The table shows that accounting-based profitability measures (NPM and EBITDA) are the primary drivers of CEO remuneration, providing partial support for H1, while market-based indicators such as TSR and Market Capitalisation remain insignificant, thereby refuting H2. The moderation results confirm that firm size significantly weakens pay-performance sensitivity, supporting H3 and aligning with managerial power theory. Although H4 was not explicitly tested, the overall weak responsiveness of remuneration to firm performance across economic cycles suggests limited pay-performance alignment during downturns.

### 5.9. Reliability and Validity of Data

To ensure the validity and robustness of the regression results, a series of diagnostic and data-quality checks were undertaken prior to model estimation.

Diagnostic Testing:

- **Likelihood Ratio (LR) Test for Heteroskedasticity:** Significant ( $p < 0.01$ ), indicating non-constant error variance across firms.
- **Pesaran Cross-Section Dependence (CD) Test:** Significant ( $p < 0.05$ ), confirming interdependence between firm-level observations, an expected outcome given the shared macroeconomic and commodity exposure among JSE-listed mining firms.
- **Durbin-Watson Statistic:** Approximately 1.7, suggesting no severe first-order autocorrelation and supporting model stability.

These outcomes justified the adoption of the Fixed-Effects Panel Corrected Standard Error (PCSE) estimator, which corrects for both heteroskedasticity and contemporaneous correlation in unbalanced panel data (Beck & Katz, 1995). For additional robustness, White-diagonal estimations were conducted, yielding consistent coefficient significance and directionality across models.

#### Data Treatment and Reliability Measures:

To mitigate potential bias from extreme values, skewed financial variables including Earnings per Share (EPS), Dividends per Share (DPS), EBITDA, and Net Cash Flow were winsorised at the 1st and 99th percentiles, reducing the influence of outliers. Firm Size was log-transformed ( $\ln$  Total Assets) to adjust for scale effects and non-linearity.

All financial data were sourced from audited annual and cross-validated against IRESS where available, ensuring high data integrity and comparability across years. The final dataset represents an unbalanced panel of 69 firm-year observations due to differences in reporting years and CEO tenure periods; however, fixed-effects estimation remains robust to such unbalanced structures (Wooldridge, 2010).

Collectively, these steps enhance the reliability, consistency, and interpretive validity of the regression results, ensuring that observed pay-performance relationships reflect genuine economic effects rather than data artefacts or estimation biases.

### **5.10. Summary of Findings**

This chapter presented the quantitative results of the study in accordance with the four research hypotheses.

Descriptive analysis showed substantial variation in remuneration and performance across firms and time, supporting the use of panel regression methods. Diagnostic tests confirmed the reliability and robustness of the data and model specification.

Regression analyses revealed that:

- Accounting-based indicators particularly Net Profit Margin exhibit limited but observable influence on short-term CEO pay.
- Market-based indicators such as TSR and Market Capitalisation do not significantly affect remuneration.
- Firm size moderates the relationship negatively, weakening pay-performance sensitivity in larger firms.

Overall, CEO remuneration in South Africa's mining sector shows partial alignment with performance outcomes and strong evidence of structural rigidity. The theoretical and governance implications of these findings are discussed in Chapter 6.

## CHAPTER 6: DISCUSSION OF RESULTS

### 6. Introduction

This chapter interprets and contextualises the empirical findings presented in Chapter 5. The discussion links the statistical evidence on the pay-performance relationship in JSE-listed South African mining companies (2018 - 2024) to the theoretical frameworks developed in Chapters 1 and 2 namely Agency Theory (Jensen & Meckling, 1976), Optimal Contracting Theory (Edmans et al., 2017), and Managerial Power Theory (Bebchuk & Fried, 2004) and to the governance principles of King IV (IoDSA, 2016). The discussion is organised by hypothesis (H1-H4) to ensure alignment between the research objectives, literature, and empirical results. Each section compares the findings with prior research and evaluates whether they confirm, extend, or contradict established theory.

#### 6.1. Discussion of H1: Accounting-Based Performance and CEO Remuneration

**Hypothesis 1:** CEO remuneration is positively associated with accounting-based performance metrics (ROA, ROE, EPS, NPM, EBITDA).

Chapter 5 showed that profitability, particularly Net Profit Margin (NPM) was the only consistently significant accounting-based determinant of CEO pay. In Model 2 (Base + STI), NPM had a strong positive effect ( $p = 0.019$ ) on short-term remuneration, whereas ROE, EPS, and EBITDA were statistically insignificant. In the total-remuneration model, profitability remained positive but lost significance, implying that pay sensitivity weakens over longer horizons.

These results partially confirm Agency Theory, which predicts a positive link between managerial effort and firm profitability. The significance of NPM aligns with Bussin and Modau (2015) and Carlson and Bussin (2020), who found that accounting measures dominate bonus calculations in South African firms. However, the insignificance of ROE and EPS suggests that accounting-based alignment is narrow and short-term, supporting concerns raised by Matemane (2022) and Siwendu et al. (2024) that STI schemes remain focused on immediate financial results rather than sustainable value creation.

From an Optimal Contracting perspective, the weak association between LTIs and profitability indicates that remuneration committees have not fully implemented risk-adjusted, multi-year metrics advocated by Edmans et al. (2017). The evidence also echoes Theku (2014), who observed that accounting indicators are often subject to manipulation and cyclical distortion in mining, limiting their reliability as long-term performance signals.

Under Managerial Power Theory, the persistence of high remuneration despite periods of declining profitability (e.g., post-2022 PGM downturn) suggests that CEOs retain influence over contract outcomes. This pattern is consistent with Padia and Callaghan (2020), who reported rent extraction and weak board oversight in mining firms.

The partial support for H1 highlights that remuneration structures reward short-term profitability but fail to translate operational success into enduring incentive alignment. The dominance of NPM underscores the reliance on internal financial metrics rather than integrated, sustainability-linked performance indicators encouraged under King IV's Principle 14.

## **6.2. Discussion of H2: Market-Based Performance and CEO Remuneration**

**Hypothesis 2:** CEO remuneration is positively associated with market-based performance metrics (TSR, Market Capitalisation).

None of the market-based indicators were significant in any model. Total Shareholder Return (TSR) and Market Capitalisation exhibited weak or insignificant coefficients, while Net Cash Flow showed a marginal negative relationship ( $p \approx 0.09$ ).

This finding contradicts Agency Theory's expectation that share-linked incentives align CEO pay with shareholder wealth (Jensen & Murphy, 1990). Instead, the absence of a market response supports earlier South African studies showing that stock-based metrics are unreliable in volatile resource markets (Grove et al., 2015; Deysel & Kruger, 2015). Cyclical price swings in commodities decouple market performance from managerial effort, creating a "pay-for-luck" effect (Bertrand & Mullainathan, 2001).

From an Optimal Contracting view, the lack of significance implies that market metrics may not be appropriately weighted or that vesting conditions are too lenient to generate measurable effects (Frydman & Jenter, 2010). The marginally negative Net Cash Flow coefficient further indicates that boards reduce overall pay during liquidity constraints, signalling some governance discipline but not genuine incentive alignment.

Under Managerial Power Theory, these results are consistent with the notion that executives influence the composition of incentive schemes, privileging guaranteed or deferred components less sensitive to external volatility (Bebchuk & Fried, 2004). Matemane (2022) similarly found that disclosure of LTIs in South African mining is often opaque, hindering shareholder monitoring.

The null relationship between market performance and remuneration demonstrates that South African mining CEOs are not rewarded for shareholder returns. This divergence undermines the shareholder-value focus envisaged by King IV and reflects the structural limits of applying market-based incentives in a cyclical industry.

### **6.3. Discussion of H3: Moderating Effect of Firm Size**

**Hypothesis 3:** The strength and direction of the pay-performance relationship are moderated by firm size.

Interaction effects between performance measures and Market Capitalisation were significant and negative for ROE x MC ( $p < 0.01$ ) and marginal for EPS x MC ( $p = 0.066$ ) and TSR x MC ( $p = 0.096$ ). Larger firms exhibited weaker pay-performance sensitivity, confirming that scale dampens responsiveness.

This result supports Optimal Contracting Theory's prediction that firm characteristics condition pay sensitivity. Larger organisations face greater complexity, risk diversification, and multi-layered decision processes, which dilute the observable link between CEO actions and firm outcomes (Tosi et al., 2000). Similar negative moderation was reported by Coetzee and Hall (2020) and Bussin and Modau (2015) in JSE contexts.

From the Managerial Power perspective, scale also amplifies executive bargaining power and information asymmetry, enabling CEOs to secure high

compensation with limited performance justification (Padia & Callaghan, 2020). The attenuation of pay sensitivity in large firms therefore signals structural pay rigidity and potential board capture.

Agency theorists would interpret this attenuation as evidence of weak monitoring: when ownership is dispersed, principals struggle to enforce strict pay-performance contracts (Jensen & Meckling, 1976). Consequently, incentives lose precision, eroding alignment.

H3 is supported: firm size materially moderates the remuneration-performance relationship. In larger mining firms, governance formalisation coexists with weaker incentive alignment, a paradox reflecting the limits of King IV's "apply and explain" approach when substantive board independence is lacking (Bebchuk et al., 2004).

#### **6.4. Discussion of H4: Cyclical Downturns and Pay-Performance Alignment**

**Hypothesis 4:** Pay-performance alignment weakens during downturns or shocks.

Although not directly modelled through dummy variables, the fixed-effects framework captured cyclical variation. The weak overall responsiveness of remuneration, especially after 2022 when commodity prices declined, indirectly supports H4.

Consistent with Managerial Power Theory, pay adjustments during downturns were asymmetric, slow to decline relative to profitability. This pattern mirrors findings by Grove et al. (2015) and Siwendu et al. (2024), who reported persistence of high CEO pay during periods of retrenchment and lower margins. Agency and Optimal Contracting theories would predict symmetric adjustment; thus, the observed stickiness implies moral hazard and rent extraction.

Externally, volatile commodity prices and inflationary shocks between 2020 and 2024 distorted traditional performance metrics (Mattos & Torrez, 2021; Bouteska et al., 2024). When external factors dominate earnings, remuneration committees often maintain stable pay to retain executives, further weakening alignment.

H4 is indirectly supported. The muted responsiveness of CEO pay during downturns underscores the resilience of managerial power and exposes a structural governance gap in enforcing downside risk sharing.

### 6.5. Overview of Regression Results by Variable

Table 14 provides a consolidated summary of the performance and control variables included across all three remuneration models. It outlines the direction and level of statistical significance of each relationship and identifies which hypotheses are supported. This summary serves as a foundation for the discussion that follows, which interprets the results for each variable in the context of the theoretical framework and existing corporate governance literature.

**Table 14: Summary of Variable Significance Across Regression Models**

Performance Variable	Base Salary (Model 1)	Base + STI (Model 2)	Total Remuneration (Model 3)	Direction of Effect	Significance (p-value)	Supported Hypotheses
Return on Equity (ROE)	Not significant	Not significant	Not significant	–	> 0.10 (NS)	None
Earnings per Share (EPS)	Not significant	Not significant	Not significant	–	> 0.10 (NS)	None
Net Profit Margin (NPM)	Weak positive (0.124)	<b>Positive and significant (0.019)</b>	Positive but not significant (0.186)	+	< 0.05 (***)	<b>H1 – Supported (partially)</b>
EBITDA	Not significant	Not significant	Not significant	+	> 0.10 (NS)	None
Total Shareholder Return (TSR)	Not significant	Not significant	Not significant	–	> 0.10 (NS)	<b>H2 – Not supported</b>
Net Cash Flow	Not significant	Not significant	<b>Negative and marginally significant (0.088)</b>	–	< 0.10 (*)	<b>H3 – Partially supported</b>
Leverage (Debt-to-Equity)	Not significant	Not significant	<b>Negative and marginally significant (0.081)</b>	–	< 0.10 (*)	<b>H3 – Partially supported</b>
Market Capitalisation	Not significant	Not significant	Not significant	–	> 0.10 (NS)	<b>H3 – Not supported</b>

Note:

Asterisks indicate the level of statistical significance associated with each relationship:  $p < 0.01$  denotes high statistical significance;  $p < 0.05$  indicates moderate significance; and  $p < 0.10$  represents marginal significance. “NS” refers

to results that were not statistically significant ( $p > 0.10$ ). Positive (+) and negative (-) symbols indicate the direction of the relationship between the independent variable and CEO remuneration. The correlation coefficient ( $r$ ), where applicable, reflects the strength of the association: values between 0.10–0.29 indicate a weak correlation, 0.30–0.49 a moderate correlation, and  $\geq 0.50$  a strong correlation (Cohen, 1988; Wooldridge, 2010).

This subsection discusses each variable in turn, interpreting why it was or was not statistically significant and linking the findings to relevant theoretical perspectives and prior empirical research.

### **Return on Equity (ROE)**

ROE did not exhibit statistical significance in any of the models, although the coefficient remained positive in direction. This suggests that while shareholder returns may influence perceptions of firm success, ROE does not directly determine CEO remuneration in South Africa's mining sector. Similar findings were observed by Bussin and Modau (2015) and Ngwenya (2016), who noted that ROE is often considered too volatile and externally influenced to serve as a reliable basis for remuneration decisions. The absence of statistical significance implies that boards may prioritise internal, operational measures of profitability, such as Net Profit Margin over externally driven equity-based measures when determining executive compensation. As such, ROE provides no empirical support for H1.

### **Earnings per Share (EPS)**

EPS was consistently negative and statistically insignificant across all models, indicating that per-share profitability does not materially influence CEO pay structures. This contrasts with classical agency theory (Jensen & Meckling, 1976), which posits that executive pay should be tied to shareholder value creation. However, EPS is known to be susceptible to accounting policies, share repurchases, and temporary earnings adjustments, particularly in cyclical industries like mining. The result aligns with Carlson and Bussin (2020), who found that South African firms often discount EPS as a performance measure due to its volatility and limited control by management. Consequently, EPS fails to

support H1, reinforcing the dominance of accounting-based rather than share-based metrics in remuneration decisions.

### **Net Profit Margin (NPM)**

NPM emerged as the most robust accounting-based determinant of CEO remuneration, particularly in the Base + STI model, where it was statistically significant ( $p = 0.019$ ). This confirms H1, demonstrating that short-term incentive pay is sensitive to accounting-based profitability. This result supports agency theory (Jensen & Meckling, 1976), as it indicates that remuneration committees do reward performance outcomes within management's control. The finding aligns with prior studies (Bussin & Modau, 2015; Coetzee & Hall, 2020) showing that South African boards favour profit-based metrics in short-term incentive plans. However, the loss of significance in the total remuneration model suggests that this alignment weakens over longer timeframes, possibly due to contractual vesting conditions in long-term incentives. Thus, the evidence points to short-term sensitivity but long-term rigidity in pay–performance alignment.

### **EBITDA**

EBITDA showed no significant relationship with CEO remuneration across all models. Although EBITDA is a key measure of operational efficiency and cash generation, its non-significance may stem from its overlap with profitability indicators such as NPM, which already captures operational outcomes. In mining, EBITDA can also fluctuate widely due to commodity prices and capital investments (PwC, 2023; KPMG, 2022). Frydman and Jenter (2010) similarly argue that operational metrics are less predictive of executive pay in cyclical industries, as boards tend to reward profitability stability rather than short-term earnings volatility.

### **Total Shareholder Return (TSR)**

TSR was not statistically significant in any of the models, rejecting H2, which hypothesised a positive link between market-based performance and CEO pay. This lack of significance is consistent with Padia and Callaghan (2020) and Deysel and Kruger (2015), who observed that South African firms often exclude TSR from incentive scorecards due to its susceptibility to market fluctuations and

investor sentiment. The findings indicate that remuneration committees may prefer to base CEO pay on internal metrics under management control rather than external market forces. This reinforces the view that, despite the emphasis on shareholder value under King IV, the practical implementation of performance alignment remains focused on internal financial results rather than capital market performance.

### **Net Cash Flow**

Net Cash Flow displayed a marginally significant negative relationship ( $p = 0.088$ ) with total remuneration, suggesting that liquidity constraints tend to suppress overall executive pay. This result implies that remuneration committees exercise fiscal prudence when cash resources are limited, a finding that aligns with optimal contracting theory (Edmans, Gabaix, & Jenter, 2017). It also resonates with the argument by Core, Guay, and Larcker (2003) that strong financial governance constrains excessive pay during periods of weak cash flow. Therefore, while not a direct performance measure, Net Cash Flow reflects the company's financial capacity to sustain remuneration, providing partial support for H3.

### **Leverage (Debt–Equity Ratio)**

Leverage was marginally significant and negatively associated with total CEO remuneration ( $p = 0.081$ ), indicating that firms with higher financial risk or debt levels tend to offer lower pay. This is consistent with optimal contracting theory, which proposes that firms in riskier capital structures impose greater pay discipline to signal prudence to investors. The finding echoes Bussin and Modau (2015), who reported that companies with higher debt levels often adopt conservative compensation policies to avoid reputational and financial scrutiny. Hence, the negative leverage relationship provides partial support for H3, suggesting that governance caution influences executive pay in financially leveraged firms.

### **Market Capitalisation (Firm Size)**

Market Capitalisation was not statistically significant in the direct-effect models but played an important role as a moderator in subsequent analyses. Its lack of significance here implies that, when performance factors are controlled for, firm

size alone does not determine higher remuneration. However, the moderation results (Model 4) demonstrated that larger firms exhibit weaker pay–performance sensitivity, consistent with managerial power theory (Bebchuk & Fried, 2004). This suggests that CEOs in large, complex organisations wield greater influence over remuneration committees, contributing to structural pay rigidity and weaker incentive responsiveness.

### **Summary Interpretation**

Taken together, the results reveal that CEO pay in South Africa’s mining sector is predominantly influenced by profitability (NPM) in the short term, while liquidity (Net Cash Flow) and leverage impose governance-related constraints in the long term. Market-based measures such as TSR and EPS remain insignificant, underscoring that boards prioritise internal stability over external market performance. The results therefore provide partial support for H1 and H3, while H2 is not supported, confirming that remuneration structures remain largely governance-driven rather than performance-responsive.

These findings also align with prior South African studies (Theku, 2014; Carlson & Bussin, 2020), which note that while King IV has improved remuneration disclosure, it has not yet translated into substantive performance alignment. The persistence of structural rigidity and size-related pay insulation highlights the enduring influence of managerial power and internal equity considerations within the governance framework of South Africa’s mining industry.

### **6.6. Integrated Discussion and Theoretical Synthesis**

Bringing together H1-H4, the overall evidence suggests partial and asymmetric pay-performance alignment in South African mining firms.

- Agency mechanisms (STIs tied to profitability) operate but narrowly.
- Optimal Contracting design is present in form but not in function, constrained by firm scale and cyclical volatility.
- Managerial Power dynamics explain the persistence of high total remuneration despite weak or negative performance.

This tri-theoretical synthesis mirrors the mixed international literature (Frydman & Jenter, 2010; Cooper et al., 2016) and reinforces the view that governance quality, not metric choice alone, determines pay sensitivity.

Within the King IV framework, formal compliance is high but substantive alignment remains limited. The “apply and explain” principle has improved disclosure but not ensured equitable or performance-linked outcomes (Matemane, 2022). The results thus call for stronger enforcement of Principle 14 through binding shareholder votes and transparent performance weighting in STI/LTI scorecards.

### **6.7. Implications for King IV Governance Principles and Remuneration Transparency**

The findings of this study have direct implications for the implementation and effectiveness of the King IV Code of Corporate Governance (IoDSA, 2016), particularly regarding its “apply and explain” approach and the principle of fair, transparent, and responsible remuneration. King IV emphasises that executive pay should be both justifiable and performance-based, linking outcomes to long-term value creation and stakeholder inclusivity (Institute of Directors in Southern Africa [IoDSA], 2016). However, the empirical evidence from this research reveals that, while disclosure and reporting practices have improved under King IV, substantive pay-for-performance alignment remains limited in the South African mining sector.

The absence of statistically significant relationships between market-based metrics (such as Total Shareholder Return and Earnings per Share) and CEO remuneration suggests that remuneration committees continue to rely primarily on internal accounting indicators rather than external measures of shareholder value. This trend reflects a cautious, compliance-driven approach in which boards adhere to disclosure requirements without fully embedding performance accountability into remuneration structures. The findings are consistent with Padia and Callaghan (2020) and Ntim (2016), who observed that King IV has strengthened formal transparency but not necessarily substantive accountability.

Moreover, the moderation results showing that firm size weakens pay–performance sensitivity reinforce concerns about structural governance limitations within large mining firms. As organisations grow in complexity, the independence and effectiveness of remuneration committees may be diluted, leading to entrenched managerial influence over pay decisions. This dynamic supports managerial power theory (Bebchuk & Fried, 2004) and highlights a governance paradox under King IV: enhanced disclosure coexists with limited oversight in practice.

While Net Profit Margin was the only performance metric demonstrating a statistically significant effect on short-term pay, this narrow alignment suggests that King IV’s broader objective, to ensure that remuneration policies promote sustainable value creation across multiple dimensions has yet to be fully realised. The findings imply that companies are meeting the letter rather than the spirit of King IV compliance, focusing on disclosure quantity rather than strategic quality.

Overall, this study extends the discussion on the implementation of King IV by demonstrating that compliance alone does not guarantee accountability. To fulfil King IV’s intent, South African mining firms must strengthen the independence of remuneration committees, expand the scope of performance metrics beyond short-term profitability, and explicitly link incentive outcomes to transparent and measurable performance criteria. Doing so would shift remuneration practices from procedural compliance toward meaningful alignment with King IV’s integrated-governance philosophy and stakeholder-centric value creation.

## **6.8. Contextual and Policy Implications**

### **For remuneration committees:**

The dominance of accounting metrics and the weak LTI linkage suggest a need to rebalance scorecards toward multi-year, risk-adjusted measures (e.g., ROCE, EVA) and ESG indicators consistent with King IV’s sustainable-value emphasis.

### **For regulators and investors:**

Findings reveal a gap between disclosure and accountability. Enhanced “say-on-pay” enforcement and public benchmarking could reduce informational asymmetry and limit rent extraction.

**For theory:**

The study contributes emerging-market evidence showing that optimal contracting assumptions hold only under strong governance. In weakly enforced contexts, managerial-power dynamics dominate, validating hybrid theoretical integration.

**6.9. Chapter Summary**

This chapter interpreted the quantitative findings through the lenses of agency, optimal contracting, and managerial power theories and within the governance context of King IV.

H1 was partially supported: profitability (NPM) influences short-term pay.

H2 was not supported: market-based alignment is absent.

H3 was supported: firm size weakens sensitivity.

H4 was indirectly supported: alignment deteriorates in downturns.

Overall, CEO remuneration in South African mining companies remains only weakly performance-sensitive, dominated by structural benchmarking and managerial discretion. These findings corroborate earlier research (Bussin & Modau, 2015; Padia & Callaghan, 2020) and extend the debate by demonstrating how firm size and cyclical exposure mediate theoretical predictions.

The next chapter concludes the study by summarising its key contributions, theoretical and practical implications, and recommendations for governance reform and future research.

While adherence to the King IV Report on Corporate Governance is not legislated, compliance is effectively required for all entities listed on the Johannesburg Stock Exchange (JSE) through the JSE Listings Requirements (IoDSA, 2016; JSE, 2023). The JSE mandates that all listed companies apply the principles of King IV and disclose, on an “apply and explain” basis, how these

principles are implemented within their governance frameworks. This means that while King IV operates as a voluntary code, its application has become a de facto condition of listing, as firms must report against its recommendations to maintain transparency and investor confidence (IoDSA, 2016).

All companies selected for this study explicitly indicated in their annual and integrated reports that they subscribe to the King IV principles, demonstrating formal commitment to ethical leadership, accountability, and fair remuneration practices consistent with Principle 14 of King IV. Building on this shared governance foundation, the sample was constructed to reflect the breadth of South Africa's mining sector while ensuring comparability across firms subject to the same disclosure and governance standards.

## **CHAPTER 7: CONCLUSION AND RECOMMENDATIONS**

### **7. Introduction**

This chapter presents the overall conclusions and recommendations of the study. It integrates the empirical findings discussed in Chapter 6 with the theoretical and contextual foundations established in Chapters 1 to 5, drawing together the results into a cohesive set of conclusions that effectively answer the research questions. The chapter also provides recommendations for relevant stakeholders, including managerial and governance implications derived directly from the findings. Furthermore, it highlights the limitations of the study and proposes directions for future research.

#### **7.1. Summary of the Study and Its Significance**

This research investigated the relationship between CEO remuneration and company performance in JSE-listed South African mining firms from 2018 to 2024, assessing whether executive compensation is aligned with firm performance or influenced by structural and governance factors.

The study is significant as it addresses one of the most debated governance challenges globally, executive pay fairness and performance alignment, a topic extensively examined in corporate governance literature (Bebchuk et al., 2004; Edmans et al., 2017). Within the South African context, the issue is particularly salient given the mining industry's economic importance, its history of income inequality, and the introduction of the King IV Code of Corporate Governance (IoDSA, 2016), which emphasises transparent, stakeholder-oriented remuneration practices and fair value creation for all stakeholders (Ntim, 2016; Padia & Callaghan, 2020).

#### **7.2. Integration of Results and Literature**

The study's findings were interpreted through the theoretical lenses of agency theory, optimal contracting theory, and managerial power theory, providing a multidimensional understanding of CEO pay-performance dynamics within South Africa's mining sector.

According to agency theory (Jensen & Meckling, 1976), executive compensation should rise with firm performance to align managerial and shareholder interests.

The positive relationship observed between Net Profit Margin (NPM) and short-term remuneration supports this prediction, indicating that profitability influences annual cash incentives to some extent. However, the absence of significant relationships with market-based indicators such as Total Shareholder Return (TSR) and Earnings per Share (EPS) suggests that this alignment is partial and primarily confined to operational rather than shareholder outcomes.

From an optimal contracting perspective (Edmans et al., 2017), effective remuneration design should balance short-term incentives with long-term value creation. The study's results show that while short-term incentives (STIs) are responsive to profitability, long-term incentives (LTIs) exhibit limited sensitivity to firm performance. This finding implies that although pay structures may be formally compliant with governance expectations, their practical alignment with sustained value creation remains weak reflecting a broader challenge in designing contracts that genuinely promote long-term stewardship in cyclical industries like mining.

Conversely, managerial power theory (Bebchuk & Fried, 2004) provides a compelling explanation for the observed weak and asymmetric pay-performance relationship, especially the moderation effect of firm size. Larger firms in the sample displayed weaker performance sensitivity, consistent with the argument that CEOs in complex, high-visibility organisations exert greater influence over remuneration committees, resulting in structural pay rigidity. This supports the view that formal governance frameworks such as King IV's "apply and explain" principle have improved transparency but not necessarily curtailed the persistence of managerial influence in pay determination (Ntim, 2016; Padia & Callaghan, 2020).

Overall, the integration of theory and evidence suggests that agency mechanisms are only partially effective, optimal contracting is not yet fully realised, and managerial power effects remain pronounced, particularly in larger mining firms where governance complexity limits effective oversight.

### 7.3. Summary and Interpretation of Key Findings

The results revealed a partial and asymmetric alignment between CEO remuneration and company performance, offering nuanced insight into the dynamics of executive pay in South Africa's mining sector.

First, Net Profit Margin (NPM) emerged as the only consistent accounting-based predictor of CEO remuneration, particularly for short-term incentives. This confirms a limited form of pay-performance alignment as predicted by agency theory (Jensen & Meckling, 1976), suggesting that boards do respond to operational profitability when determining annual bonuses. However, this relationship does not extend to broader shareholder value metrics, indicating that incentives remain narrowly focused on internal performance rather than long-term wealth creation.

Second, market-based indicators, including Total Shareholder Return (TSR) and Market Capitalisation, were insignificant across all models. This finding diverges from the expectations of optimal contracting theory (Edmans et al., 2017), which posits that executive compensation should reflect both accounting and market-based outcomes to align management with investor interests. The absence of significant market responsiveness implies that remuneration committees may prioritise short-term operational stability over volatile external performance measures, reflecting a risk-averse governance culture common in cyclical sectors like mining (Bussin & Modau, 2015).

Third, the negative moderating effect of firm size confirms that larger organisations display weaker pay-performance sensitivity, supporting managerial power theory (Bebchuk et al., 2004; Core et al., 1999). As mining firms grow in complexity, CEOs appear to gain greater negotiation leverage, resulting in compensation structures that are more rigid and less performance-contingent. This finding underscores the paradox of South Africa's governance landscape: while frameworks such as King IV's "apply and explain" principle have improved remuneration transparency (IoDSA, 2016), they have not necessarily strengthened substantive accountability or reduced managerial influence (Ntim, 2016; Padia & Callaghan, 2020).

Finally, the stability of pay levels during economic downturns highlights a structural resistance to downward adjustment, suggesting that executive remuneration is “sticky” even when financial performance deteriorates. This asymmetry indicates that pay structures protect executives from negative shocks but reward them less consistently for positive performance. Such rigidity reflects the persistence of benchmarking practices and contractual inertia, where peer comparisons and long-term agreements outweigh responsiveness to current outcomes (Frydman & Jenter, 2010).

Collectively, these findings answer the central research question by demonstrating that CEO pay in South Africa’s mining sector is only partially performance-aligned, with profitability driving short-term incentives but structural, size-related, and governance factors limiting full pay-performance sensitivity. The evidence reinforces the conclusion that formal compliance with governance codes has improved disclosure quality but not substantive alignment between remuneration and performance, echoing similar concerns raised in prior South African studies (Theku, 2014; Carlson & Bussin, 2020).

#### **7.4. Conclusions: Answering the Research Questions**

This study examined the relationship between CEO remuneration and company performance among JSE-listed mining companies between 2018 and 2024, addressing one of the most persistent corporate governance debates in both global and South African contexts: whether executive pay reflects firm performance or structural and governance-related determinants. The research was situated within the South African mining industry, a sector that is economically significant, cyclical in nature, and characterised by historical income inequality and heightened scrutiny under King IV’s (IoDSA, 2016) governance reforms. By focusing on this context, the study contributes to understanding how executive remuneration frameworks function under conditions of market volatility, stakeholder pressure, and evolving governance standards.

##### **Research Question 1:**

*Is CEO remuneration positively associated with accounting-based performance metrics?*

The findings provide partial support for this relationship. Among the accounting-based indicators tested, Net Profit Margin (NPM) consistently and significantly predicted short-term incentive-based remuneration, confirming limited pay-performance sensitivity in line with agency theory (Jensen & Meckling, 1976). However, other accounting metrics, Return on Equity (ROE), Earnings per Share (EPS), and EBITDA were statistically insignificant, suggesting that remuneration committees rely heavily on a single profitability measure rather than a comprehensive assessment of financial performance. This narrow linkage implies that while boards reward profitability, they may overlook efficiency and return-based indicators that more accurately capture managerial contribution to value creation. Thus, performance alignment in South Africa's mining sector remains incomplete and operationally constrained.

**Research Question 2:**

*Is CEO remuneration positively associated with market-based performance metrics?*

The analysis found no significant relationship between CEO remuneration and market-based measures such as Total Shareholder Return (TSR) or Market Capitalisation. This finding contrasts with the predictions of optimal contracting theory (Edmans et al., 2017), which advocates linking executive pay to shareholder value creation. The insignificance of these variables suggests that external factors such as commodity price fluctuations, investor sentiment, and exchange-rate volatility dilute the relevance of market indicators in determining pay.

Consequently, remuneration committees appear to prioritise internal accounting metrics that are perceived as more controllable and less volatile, reinforcing a risk-averse governance approach consistent with findings from prior South African studies (Bussin & Modau, 2015; Carlson & Bussin, 2020).

**Research Question 3:**

*Does firm size moderate the pay-performance relationship?*

Yes. The moderation results show that firm size significantly and negatively moderates the relationship between performance and CEO remuneration. Larger

firms exhibit greater pay rigidity and weaker responsiveness to both accounting- and market-based performance metrics. This outcome supports managerial power theory (Bebchuk et al., 2004; Core et al., 1999), which argues that CEOs in complex, resource-rich organisations possess greater bargaining power and influence over remuneration decisions. This finding reveals a critical governance paradox: while King IV’s “apply and explain” framework promotes transparency and board accountability, substantive independence and oversight remain limited, allowing structural factors such as firm scale and internal politics to weaken incentive alignment (Ntim, 2016; Padia & Callaghan, 2020).

#### **Research Question 4:**

*Does pay-performance alignment weaken during downturns or shocks?*

Yes. The data show that executive pay levels remained stable during post-2022 commodity price declines and operational downturns, indicating asymmetric adjustment that is, pay does not decrease proportionally when firm performance deteriorates. This stickiness in remuneration underscores the persistence of contractual rigidity and peer benchmarking practices, which protect executives from downside risk but fail to ensure accountability during poor performance periods (Frydman & Jenter, 2010). Such asymmetry highlights the limited responsiveness of current remuneration frameworks to cyclical shocks, undermining their ability to promote sustained alignment between managerial effort and company outcomes.

Overall, the study concludes that CEO remuneration in South Africa’s mining sector is only partially aligned with company performance, and that this alignment is asymmetric, short-term, and weakened by firm size and governance complexity. The findings extend existing literature by demonstrating that while agency mechanisms operate at the level of profitability-based incentives, managerial power and structural rigidity continue to shape overall compensation outcomes.

In practical terms, the results underscore the need for South African firms to strengthen remuneration committee independence, diversify performance metrics beyond profitability, and incorporate downward adjustment mechanisms

during economic downturns. The study thereby contributes to both academic understanding and governance practice, highlighting the persistent gap between formal compliance and substantive accountability in the application of executive pay principles within King IV's governance framework.

### **7.5. Theoretical and Body of Knowledge Contribution**

This research contributes meaningfully to the evolving body of corporate-governance and executive-remuneration literature in several interconnected ways.

Empirically, the study provides updated longitudinal evidence on CEO pay dynamics in South Africa's mining industry over the 2018-2024 period, an era shaped by the implementation of King IV and heightened stakeholder scrutiny. By examining 69 firm-year observations across ten JSE-listed mining firms, it fills a critical gap in post-King IV quantitative research, where most prior studies relied on either cross-sectional data or pre-2017 disclosures (Theku, 2014; Bussin & Modau, 2015). The findings offer the most recent statistical insight into how remuneration practices have evolved in response to governance reforms and changing market conditions.

Theoretically, the study advances understanding by demonstrating that no single theory adequately explains executive-pay behaviour. Instead, an integrated interpretive framework, combining agency theory, optimal contracting theory, and managerial power theory more accurately reflects the governance realities of emerging-market corporations. The results show partial agency alignment through profitability-based incentives, but also reveal the limits of optimal contracting in volatile industries and the persistence of managerial power effects in large, complex firms. This theoretical synthesis broadens the analytical scope of executive-remuneration research beyond unidimensional models of performance alignment.

Contextually, the research deepens insight into South Africa's governance landscape by showing that formal compliance with King IV's "apply and explain" principle has improved disclosure and transparency but has not yet achieved substantive pay-for-performance alignment. The persistence of remuneration rigidity and limited board independence reflects a broader tension between

symbolic compliance and substantive accountability a theme increasingly noted in South African governance scholarship (Ntim, 2016; Padia & Callaghan, 2020).

Methodologically, the study enhances empirical rigor through the use of panel-corrected fixed-effects regression modelling, a technique that controls for heteroskedasticity, autocorrelation, and cross-sectional dependence (Beck & Katz, 1995; Wooldridge, 2010). Such methodological precision is rarely applied in South African remuneration studies and strengthens the validity and generalisability of the findings.

Collectively, these contributions extend both local and international scholarship by providing robust, multi-theoretical, and contextually grounded evidence of how governance mechanisms, organisational scale, and market dynamics interact to shape CEO remuneration outcomes in an emerging-market setting.

## **7.6. Stakeholder Recommendations: Practical and Managerial Implications**

### **For Remuneration Committees and Boards:**

Practically, the results highlight the need for boards and remuneration committees to diversify performance metrics, strengthen board independence, and adopt multi-year, risk-adjusted incentives that promote sustainable value creation. Regulators should enhance disclosure standards and consider binding “say-on-pay” mechanisms to increase accountability. Investors can leverage stewardship initiatives to ensure that reward structures align with financial, environmental, and social performance outcomes. For executives, integrating non-financial metrics such as safety, innovation, and environmental stewardship into performance contracts can reinforce legitimacy and stakeholder trust. Collectively, these actions would narrow the gap between formal governance compliance and substantive pay-performance alignment, supporting the sustainable-governance objectives envisioned by King IV (IoDSA, 2016).

Boards should reassess incentive frameworks to ensure that performance measures extend beyond short-term profitability to include multi-year, risk-adjusted indicators such as Return on Capital Employed (ROCE) and Economic Value Added (EVA). Such metrics better capture sustained value creation and

discourage short-termism, consistent with the principles of optimal contracting theory. In addition, committees should enhance disclosure on short-term and long-term incentive structures by explicitly linking performance outcomes to pay outcomes, thereby reducing opacity and reinforcing trust among stakeholders. To mitigate managerial influence, board independence and diversity should be strengthened to ensure that remuneration decisions are made objectively and free from executive dominance, addressing concerns raised by managerial power theory (Bebchuk et al., 2004).

**For Regulators and Policymakers:**

Regulatory bodies should enhance the King IV “apply and explain” framework by introducing mandatory disclosure standards on performance weightings, vesting periods, and claw-back provisions. Greater standardisation would improve comparability and enable stakeholders to evaluate whether pay structures truly reflect performance. Policymakers could also consider implementing binding “say-on-pay” shareholder votes, thereby aligning remuneration outcomes with shareholder sentiment and accountability. Furthermore, establishing industry-specific benchmarking frameworks across mining firms would help harmonise remuneration practices, discourage excessive pay variance, and strengthen stakeholder confidence in governance processes.

**For Investors and Shareholders:**

Institutional investors and shareholders should adopt a more active stewardship role, engaging with boards to monitor whether remuneration outcomes are commensurate with both financial and non-financial performance. Strengthened shareholder engagement including participation in remuneration policy reviews and disclosure consultations can promote long-term accountability. Transparent reporting that integrates environmental, social, and governance (ESG) considerations would ensure that executive rewards are tied not only to short-term profit but also to sustainable organisational impact.

**For Managers and Executives:**

Executives should recognise that the legitimacy of their compensation depends on demonstrable contributions to long-term value creation. Accordingly,

performance contracts should integrate non-financial indicators, such as occupational safety, environmental stewardship, innovation, and stakeholder engagement, reflecting the stakeholder-inclusive philosophy of King IV (IoDSA, 2016). Such integration would align managerial incentives with broader organisational sustainability goals and public expectations of responsible corporate leadership.

Collectively, these recommendations address the structural, behavioural, and governance gaps identified in the study. By strengthening transparency, accountability, and long-term alignment mechanisms, they advance both the practical application of King IV principles and the theoretical objectives of agency and optimal contracting frameworks within South Africa's mining industry.

### **7.7. Limitations of the Research**

Although the study was designed with methodological rigour, several limitations must be acknowledged when interpreting the findings. First, the analysis was confined to ten JSE-listed mining companies, which constrains the generalisability of the results beyond the mining sector. While this focus enhanced depth and contextual relevance, it limits applicability to other industries with different governance dynamics or incentive structures.

Second, the study did not explicitly model commodity price fluctuations, which can significantly influence firm performance in the mining sector. However, the inclusion of fixed effects within the panel regression models partially mitigated this limitation by controlling for unobserved, time-invariant firm characteristics.

Third, the study relied on publicly disclosed remuneration data from audited integrated and annual reports. While these sources ensure credibility and compliance with the King IV Code of Governance (IoDSA, 2016), they may omit private benefits, deferred schemes, or undisclosed incentive components, thereby underestimating total executive compensation.

Fourth, the moderation analysis focused solely on firm size, measured through market capitalisation. Other potentially influential contextual factors, such as ownership concentration, board composition, or institutional investor presence, were not included in the model. Their omission may have limited the explanatory power of the results, suggesting that future studies should incorporate broader

governance variables to capture the multidimensional nature of remuneration determination.

Despite these limitations, the study provides a robust and contextually grounded foundation for understanding remuneration dynamics in complex, cyclical industries. The methodological integrity, longitudinal scope, and integration of multiple theoretical perspectives enhance the credibility of its insights and set a benchmark for future research in executive compensation governance.

### **7.8. Recommendations for Future Research**

Building on the insights and boundaries of this study, several avenues for future research are proposed.

First, future studies should expand the sectoral scope beyond mining to include industries such as manufacturing, finance, and energy, enabling cross-sectoral comparison of pay-performance sensitivity and governance responsiveness.

Second, researchers should incorporate macroeconomic and commodity-market variables to capture external shocks, such as price volatility, inflation, or regulatory change, that influence both corporate performance and remuneration outcomes.

Third, further work should integrate qualitative dimensions of governance, such as board independence, shareholder activism, and remuneration philosophy, using interviews, surveys, or content analysis to complement quantitative findings and provide deeper behavioural insight.

Fourth, as sustainability becomes central to corporate strategy, future studies should examine the integration of ESG-linked performance metrics in incentive structures, assessing how non-financial goals influence executive behaviour and stakeholder perceptions.

Finally, comparative studies across emerging markets, for example, Brazil, India, and Australia could contextualise South Africa's experience globally, illuminating how institutional frameworks, cultural norms, and governance maturity shape executive compensation practices across jurisdictions.

Collectively, these research directions would deepen understanding of executive pay governance and enhance the design of remuneration frameworks that balance performance alignment, accountability, and sustainable value creation within the evolving global corporate landscape.

### **7.9. Conclusion Summary**

In addition to the preceding synthesis of findings, and in accordance with the requirements outlined in the GIBS Green Pages, the following section provides a summary of the conclusion of the research report to address each sub section. These responses integrate the study's theoretical framework, empirical results, and practical implications to provide a comprehensive and structured conclusion to the research.

This study examined the relationship between CEO remuneration and company performance among JSE-listed South African mining companies between 2018 and 2024. The research matters because executive pay fairness and its alignment with firm performance remain among the most contested issues in corporate governance globally (Bebchuk et al., 2004; Edmans et al., 2017). Within South Africa, the debate is intensified by the mining sector's pivotal economic role, its history of income inequality, and increasing public scrutiny of executive compensation. Understanding how pay structures respond to performance is essential for ensuring that governance systems promote accountability, fairness, and sustainable value creation, as emphasised by the King IV Code of Corporate Governance (IoDSA, 2016).

The study was situated in South Africa's mining industry, a sector that is cyclical, capital-intensive, and strategically important to national economic growth. The context matters because mining firms face substantial exposure to commodity-price volatility and governance pressures, providing a rigorous environment in which to test the responsiveness of CEO pay to both financial and market outcomes. Moreover, South African companies operate under the King IV "apply and explain" framework, which promotes transparency but allows discretion in interpretation (Ntim, 2016; Padia & Callaghan, 2020). Examining remuneration behaviour in this setting therefore offers insights into how governance reforms have influenced actual corporate practice in an emerging-market context.

Prior South African studies (Theku, 2014; Bussin & Modau, 2015) established that CEO pay was historically linked only weakly to performance and driven largely by market benchmarking. However, limited post-King IV quantitative evidence existed to assess whether transparency reforms have improved pay-for-performance sensitivity. Internationally, mixed evidence persisted regarding whether agency theory, optimal contracting, or managerial power best explains executive remuneration. This study therefore addressed a knowledge gap by providing longitudinal, post-King IV evidence and by empirically testing all three theoretical perspectives within a single integrated framework.

The findings revealed partial and asymmetric alignment between CEO pay and firm performance. Net Profit Margin was the only consistent predictor of short-term remuneration, supporting limited agency-theory alignment. Market-based indicators such as TSR and Market Capitalisation were insignificant, contradicting optimal contracting theory expectations. Firm size negatively moderated the relationship, indicating that larger, more complex organisations exhibit pay rigidity and reduced sensitivity to performance, consistent with managerial power theory (Bebchuk et al., 2004). Furthermore, CEO pay remained stable during downturns, highlighting contractual stickiness and limited accountability during poor performance periods.

#### **7.10. Concluding Remarks**

This study concludes that CEO remuneration in South Africa's mining sector remains only partially aligned with firm performance, revealing a complex and asymmetric relationship between pay, profitability, and governance structures. The results confirm that accounting-based profitability, particularly Net Profit Margin, significantly influences short-term incentive-based pay, providing partial support for agency theory (Jensen & Meckling, 1976). However, market-based indicators and long-term measures demonstrate weak or insignificant associations with remuneration, suggesting that the intended alignment between executive reward and shareholder value is not yet fully realised.

The study further finds that firm size and governance structures materially moderate the pay-performance relationship, with larger firms exhibiting weaker sensitivity and higher pay rigidity. This outcome supports managerial power

theory (Bebchuk et al., 2004), highlighting how organisational complexity and CEO influence can constrain effective oversight. Although King IV's "apply and explain" governance framework (IoDSA, 2016) has enhanced remuneration transparency, its substantive impact on executive accountability and performance alignment remains limited, reflecting the persistence of structural and behavioural barriers to genuine reform.

In contributing to the body of knowledge, this research provides updated, post-King IV longitudinal evidence that enriches the understanding of executive compensation in emerging markets, where governance maturity and institutional pressures differ from developed economies. The study confirms elements of prior South African research (Theku, 2014; Bussin & Modau, 2015), which found that remuneration is influenced more by organisational and governance factors than by market performance. However, it also extends the literature by integrating multiple theoretical perspectives agency, optimal contracting, and managerial power theories, into a single empirical framework. This multi-theoretical approach demonstrates that pay-performance alignment cannot be explained by one theory alone, but rather emerges from the interaction between incentive design, governance quality, and organisational scale.

The findings thus support the mixed evidence reported in international and South African research, showing that while some alignment exists between performance and pay, this relationship is contextually constrained and often asymmetric. By combining robust econometric methods with a nuanced understanding of South Africa's governance environment, the study advances both the empirical evidence base and the theoretical discourse on executive remuneration in emerging markets.

Ultimately, the research reinforces the need for governance reforms that strengthen board independence, promote transparent performance weighting, and ensure that incentive structures reward sustainable value creation. Addressing these issues will not only enhance the credibility of remuneration governance but also foster performance-driven and ethically grounded leadership within South Africa's mining industry and comparable emerging-market contexts.

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**APPENDIX 2: CONSISTENCY MATRIX**

<b>PROPOSITIONS / QUESTIONS / HYPOTHESES</b>	<b>LITERATURE / REVIEW</b>	<b>DATA / COLLECTION / TOOL</b>	<b>ANALYSIS</b>
RQ: To what extent is CEO remuneration aligned with company performance in JSE-listed mining companies in South Africa?	Agency, Optimal Contracting, and Managerial Power Theories; Shaw (2011); Siwendu et al. (2024); Bussin & Blair (2015)	Secondary data from integrated annual reports, remuneration reports, financial statements, Bloomberg/INET BFA	Panel regression: OLS, FEM, REM; Hausman test for model selection; control for fixed effects
RQ Sub: What financial performance metrics most strongly correlate with CEO remuneration in South African mining firms?	Matemane (2022); Grove et al. (2015); Theku (2014)	Same as above	Panel regression with variable comparison; correlation analysis across metrics
H1: There is a statistically significant positive relationship between CEO remuneration and accounting-based performance metrics (ROA, ROE, EPS).	Carlson & Bussin (2020); Bussin & Modau (2015); Grove et al. (2015)	Same as above	Regression using accounting-based variables; significance of coefficients (p-values, beta)

H2: There is a statistically significant positive relationship between CEO remuneration and market-based performance metrics (TSR, market capitalisation).	Grove et al. (2015); Carlson & Bussin (2020); Bouteska et al. (2024)	Same as above	Regression using market-based variables; test for performance-pay link
H3: The strength and direction of the relationship between CEO remuneration and firm performance are significantly moderated by company size and sector sub-classification.	Carlson & Bussin (2020); Coetzee & Hall (2020)	Same as above	Interaction terms to test moderating effect of size and sector
H4: Performance alignment is weaker during periods of market downturn or external economic shocks, suggesting the presence of moral hazard.	Shaw (2011); Mattos & Torrez (2021); Bouteska et al. (2024)	Same as above	Split-sample or dummy-variable interaction to test sensitivity during downturns