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Beyond Firm Age: Corporate Governance, CSR, and Operational Scale as Financial Performance Drivers

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General Background: Balancing profit with responsibility remains a fundamental challenge for resource-intensive industries worldwide. **Specific Background**: In Indonesia's mining and energy sectors, post-pandemic shifts in commodities, evolving regulations and rising ESG expectations have made Corporate Governance (CG), CSR and operational scale (SOP) crucial factors for long-term sustainability. **Knowledge Gap**: Previous research has examined CG, CSR, SOP and the company's operational age (MOP) in isolation, leaving a gap in our understanding of how these factors interact within Indonesia's extractive industries. **Objective**: This study examines the simultaneous effects of CG, CSR and SOP on financial performance and assesses the moderating role of MOP amongst mining and energy companies listed on the IDX from 2019 to 2023. **Methods:** Moderated regression analysis was applied to panel data from 62 mining and energy companies listed on the IDX over the period 2019–2023. **Results**: CG, CSR and SOP each significantly improved financial performance, whilst MOP did not exhibit a moderating effect. **Novelty**: This study regards a zero-moderation effect as a significant finding, which calls into question the application of organisational life-cycle theory in Indonesia's extractive sector in the post-pandemic era. **Implications**: Strong governance and CSR drive financial performance regardless of a company's age, thereby encouraging early ESG investment and the consistent pursuit of sustainability.

Keywords: Corporate Governance, Corporate Social Responsibility, Firm Scale of Operations, Financial Performance, Firm Operational Age.

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INTRODUCTION

Financial performance remains a key concern in corporate management, particularly amidst increasingly fierce global competition and rising expectations regarding accountability. In Indonesia's mining and energy sector, this concern became increasingly pressing between 2019 and 2023, as the sector faced simultaneous shocks resulting from commodity price volatility, the global push towards energy transition, and increasingly stringent ESG scrutiny from international investors. During this period, the profitability of several listed mining companies declined, making it difficult for investors to comply with ESG disclosure standards. Performance disparities were evident across the industry, necessitating empirical research (Indonesia Stock Exchange, 2023; IESR 2022). Therefore, taking these realities into account, this study focuses on Corporate Governance (CG), Corporate Social Responsibility (CSR) initiatives, and company-specific factors to examine the key drivers of financial performance.

This analysis focuses on three areas: Corporate Governance (CG), Corporate Social Responsibility (CSR) and the scale of a company's operations (SOP). In particular, CG has been shown to contribute to increased transparency, stricter oversight and sustainable long-term results. (OECD, 2015) notes that strong corporate governance plays a role in stabilising a company's performance over the long term. This assertion is supported by an empirical study by (Gunawan *et al*., 2021) on listed companies in Indonesia, which confirms a positive relationship between CG and performance. Meanwhile, CSR has evolved from a mere compliance obligation into a strategic asset. (Yamani *et al*., 2025) and (Africano *et al*., 2025) demonstrate that CSR can enhance financial performance by building reputational capital and reducing the risk of non-compliance, although the direction and magnitude of these effects vary across sectors and institutional contexts. Similarly, firm size and scale of operations are often associated with increased access to capital and the utilisation of resources, and thus lead to better financial outcomes (Dang *et al*., 2018; Putri & Reviandani, 2025).

Although each of these variables has its own significance, existing research highlights two significant gaps in previous studies, as analysed by (Maryanti & Fithri, 2017) and (Handini & Susilo, 2025) Corporate Governance (CG), Corporate Social Responsibility (CSR), and the scale of operations (SOP) separately, leading to conflicting conclusions and failing to adequately capture the interaction of these factors in terms of their impact on financial performance. Integrating findings from various studies is inherently difficult as results vary by industry, time period and country. Existing research tends to rely on linear regression, overlooking firm-specific influencing factors. Whilst (Mansour *et al*., 2024) suggests that established firms have the potential to leverage their experience to improve performance, (Lo & Liao, 2021) argue that consistent performance is based not only on operational tenure but also on resource management approaches. This discrepancy suggests that firm age, as a moderator variable, may shape the relationship between corporate governance (CG) and performance, as well as the relationship between CSR and performance, in ways that have not yet been systematically tested (Alabdullah *et al*., 2021). Studies that simultaneously examine CG, CSR, SOP and MOP as an integrated framework — particularly within the context of mining and energy in Indonesia — remain scarce.

Recent empirical research provides more direct support for this moderating mechanism across each pathway in turn. Regarding the relationship between CG and performance, (Kieschnick & Moussawi, 2018) demonstrate that a firm's age since incorporation systematically influences how governance quality translates into measurable outcomes, as older firms have accumulated compliance routines, monitoring infrastructure and creditor trust that younger firms have not yet established. Complementing this, (Atugeba & Acquah-Sam, 2025) present panel evidence from listed companies in Sub-Saharan Africa , showing that firm-specific maturity factors shape the strength and even the direction of the relationship between corporate governance (CG) and performance across various institutional contexts, reinforcing the view that the financial benefits of governance are not uniform throughout a firm's life cycle, but rather depend on how long the firm has embedded its governance practices into routine operations.

Regarding the relationship between CSR and performance, (Prakash & Hawaldar, 2024) present directly relevant evidence: using a sample of companies listed on the Indian stock exchange, they found that the stage of a company's life cycle—operationalised through firm age—significantly moderates the relationship between CSR and financial performance, with different effects observed between early-stage and mature firms. This is consistent with the stakeholder theory argument that the financial benefits of CSR depend on the credibility a company has accumulated in the eyes of its stakeholders over time (Nasir *et al*., 2023); CSR disclosure and community engagement carry greater weight—and thus have a greater capacity to mitigate reputational risk and strengthen market support—the longer a company has had to demonstrate consistency between its stated commitments and its actual behaviour.

Regarding the relationship between SOP and performance, (Abubakr *et al*., 2026) demonstrate that a company's age reflects operational stability and accumulated experience, which shape the company's ability to translate scale into profit; this suggests that economies of scale based solely on size are insufficient without the organisational learning gained over the course of operations. This is reinforced by the life-cycle perspective in organisational development, which describes how companies in the mature stage shift from growth-driven expansion towards efficiency-driven consolidation, refining cost structures, supply chains and asset utilisation in ways that newer companies still in the expansion phase have not yet had the opportunity to do (Lester *et al*., 2003).

Overall, this body of evidence points to a common mechanism driving older firms: they are not merely companies that have survived longer, but firms that have had more time to translate their governance structures, CSR commitments and operational scale into financial outcomes that younger firms are still in the process of building. Older firms generally benefit from more established governance routines and lower information asymmetry with creditors and regulators (Kieschnick & Moussawi, 2018), stronger stakeholder trust and CSR credibility built through a longer track record of consistent behaviour (Prakash & Hawaldar, 2024; Nasir *et al*., 2023), as well as an operational scale that has been refined

through years of learning from experience, rather than merely a scale that exists on paper (Abubakr *et al*., 2026; Lester *et al*., 2003). This is why operational age is theoretically believed to reinforce, rather than replace, the contributions of CG, CSR and SOP to financial performance — a mechanism which, although grounded in theory, has not yet been systematically tested in the context of the mining and energy sectors in Indonesia.

This study fills this gap by examining the simultaneous effects of CG, CSR and SOP on financial performance, as well as the moderating effect of a company's operational age, within the context of mining and energy companies listed on the Indonesia Stock Exchange (IDX) for the period 2019 to 2023. In this post-pandemic era, which marks a turning point — with price shocks, the pressures of the energy transition, and increasingly stringent ESG regulations following Indonesia's net-zero commitment — corporate governance and CSR have become more crucial than the organisation's age. This backdrop provides a strong foundation for assessing whether established theories regarding firm age remain valid under these pressures.

This study makes three contributions to the literature. Firstly, it broadens the agency and stakeholder perspectives by integrating a company's operational age as a moderating factor in the relationship between corporate governance, CSR and performance. Secondly, it presents new empirical evidence from the strategically important yet under-explored Southeast Asian sector during this period of transformation. Third, this research offers practical guidance for decision-makers aiming to strengthen the effectiveness of corporate governance and CSR in an ESG-intensive environment. Overall, these contributions broaden our understanding of what truly drives financial performance — viewed through the intersecting lens of governance quality, social responsibility, scale of operations, and corporate maturity.

Agency Theory

(Jensen & Meckling, 1976) formulated agency theory to explain the contractual relationship between the principal (shareholders) and the agent (managers) in modern corporations. This theory is based on the premise that both shareholders and managers are utility maximisers; shareholders seek to maximise value, whilst managers may have incentives that conflict with this objective due to personal gain. The differences arising from this separation of ownership and control result in agency costs, which are a form of... This theory assumes that shareholders and managers are utility-maximising agents; shareholders are interested in maximising firm value, whilst managers have interests distinct from those of shareholders and will pursue their own interests. The separation of ownership and control thus gives rise to a divergence of interests, which in turn generates agency costs, including monitoring costs, guarantee costs and residual losses.

Agency conflicts are rife in the mining and energy sectors. Owing to the capital-intensive and technically complex nature of these industries, there is significant information asymmetry between shareholders and management, making it difficult for principals to ascertain whether investment decisions – particularly regarding exploration, environmental compliance or the energy transition – truly reflect shareholders' interests. Corporate governance (CG) mechanisms are the primary institutional means of addressing these issues: board oversight, audit systems and disclosure requirements help to reduce information asymmetry and align managers' actions with the creation of value for shareholders (Fama & Jensen, 1983). Previous evidence from the empirical literature supports this view — (Gunawan *et al*., 2021) found that strong corporate governance is positively correlated with the financial performance of companies listed in Indonesia, supporting the argument that corporate governance mitigates efficiency losses resulting from agency conflicts.

Agency theory offers two perspectives that can be used to analyse CSR. CSR, in a certain sense, is a form of discretionary expenditure by management that diverts resources from shareholders without equivalent compensation — a practice criticised by (Friedman, 1970) as the "socialisation of corporate funds." (Cao *et al*., 2023) expand on this view, arguing that managers may use CSR to build their own reputations at the expense of shareholders' interests.

That said, a contrasting view regards CSR as a governance signal: cost-free CSR reporting reduces information asymmetry and signals managerial accountability, making CSR a complementary—rather than a substitute—governance mechanism, and not an agency cost. In industries where ESG scrutiny is particularly intense — the scrutiny currently faced by Indonesian mining and energy companies following the country's net-zero commitment — this signalling effect has strategic implications.

The influence of firm size on the complexity of agency relationships is that, as a firm grows in size, ownership becomes more dispersed and managers gain greater autonomy, which may exacerbate agency problems; however, at the same time, larger firms will have more resources to implement effective governance mechanisms (Biduri *et al*., 2023). This moderating effect is further reinforced by a company's operational age, as older companies tend to have developed well-established governance practices and possess greater experience in managing agency dilemmas, thereby resulting in better governance and CSR effectiveness.

Stakeholder Theory

(Freeman & Mcvea, 2010) — which was subsequently elaborated upon in (Freeman & Mcvea, 2010) — proposed stakeholder theory as a departure from the assumption of shareholder primacy in agency theory. The basic premise is that a company's survival and performance depend not only on shareholder satisfaction, but also on the management of relationships with all parties that may influence or be influenced by the company's activities: employees, customers, suppliers, the community, regulators and the environment. Companies that are responsive to the demands of a broader group of stakeholders will strengthen their legitimacy, mitigate reputational risks, and secure the social licence to operate necessary to sustain their operations.

The implications of this theoretical argument are particularly significant for the mining and energy sectors in Indonesia,

given that companies operate in close proximity to local communities, are subject to regulations at various levels of government, and are increasingly held to account by international investors who apply ESG criteria. (Carroll, 1991) states that organisations which demonstrate that they have fulfilled their economic, legal, ethical and philanthropic responsibilities towards their stakeholders are regarded as possessing social legitimacy and are therefore capable of achieving long-term success. Empirical evidence from (Wang *et al*., 2016) suggests that CSR activities, when well-targeted, make a positive contribution to reputation and financial performance by enhancing customer loyalty and stakeholder trust. More recently, (Putrika & Ardianto, 2025) demonstrated that ESG and CSR initiatives are strategic tools that enhance stakeholder participation and corporate value — a finding particularly relevant for mining companies facing ESG-related challenges.

This stakeholder perspective provides a theoretical foundation for viewing CSR not as a cost, but as a strategic investment in relational capital. When governance structures are designed to incorporate accountability to stakeholders alongside accountability to shareholders, the alignment between CSR commitments and financial outcomes becomes more consistent and measurable.

The Resource-Based View (RBV)

(Barney & Clark, 2007) proposed the Resource-Based View (RBV), arguing that sustainable competitive advantage stems from internal resources that are simultaneously valuable, rare, inimitable and non-substitutable (VRIN). The key implication is that differences in performance between companies reflect heterogeneity in their resource endowment — rather than merely market position or industry structure. In the context of this study, the quality of corporate governance can be conceptualised as an organisational resource: the capabilities embedded in board oversight, risk management systems, and disclosure practices are not easily imitated and can provide a lasting performance advantage.

A company's size and scale of operations directly influence its resource endowment. (Arhinful *et al*., 2025) demonstrate that larger firms have broader access to capital markets and a diverse pool of resources, thereby enabling more effective capacity development. (Kero & Bogale, 2023) expand on this reasoning, arguing that operational scale enables companies to translate resource advantages into superior financial performance. However, (Ahmed *et al*., 2023) note that this relationship depends on the industry — in extractive sectors characterised by volatile commodity prices and regulatory uncertainty, such as Indonesia's mining and energy sectors, resource advantages derived from scale may be partially offset by environmental obligations and compliance costs. These contextual variations underscore the need for sector-specific empirical research.

Legitimacy Theory

(Deephouse & Suchman, 2008) conceptualised organisational legitimacy as the general perception or assumption that an entity's actions are considered desirable, appropriate, or fitting within a social context. Legitimacy theory argues that corporations are under pressure to demonstrate their compliance with social norms in order to maintain the "social licence" required to operate. In this regard, CSR serves as the primary tool used by companies to demonstrate compliance with dominant social norms – acting as a "social contract" underpinning the relationship between the company and its stakeholders (Rastogi *et al*., 2025).

And in industries such as mining and energy, where the business processes themselves generate significant externalities, legitimacy is not merely a nice-to-have but is absolutely essential. Companies lacking credible CSR practices risk facing regulatory action, public backlash and a withdrawal of investment—each carrying financial consequences. According to (Waeraas & Byrkjeflot, 2025), legitimacy accumulates over time, providing reputational resilience for well-established firms. Similarly, (Kaur & Rizvi, 2025) links a firm's age to increased stability and credibility, whilst (Tyolumun *et al*., 2025) demonstrate that accumulated reputation reflects institutional resilience. These insights suggest that a firm's operational age moderates the efficiency with which CG and CSR investments are converted into financial performance — the pre-existing legitimacy of mature firms reinforces the credibility of their governance and CSR signals.

The Organisational Life Cycle Theory

The organisational life cycle theory, developed by academics including (Adizes, 1989) and refined in subsequent empirical research, posits that firms pass through distinct stages of development — inception, growth, maturity and decline — each characterised by different strategic priorities, resource availability, structural configurations and performance dynamics. The crux of this theory is that the impact of corporate governance and CSR is not uniform throughout a company's history, but varies according to the company's stage of maturity.

Empirical research by (Iqbal *et al*., 2025) shows that the financial returns from CSR vary according to the stage of a firm's life cycle. Mature firms have a more robust institutional foundation, experienced managers, and stable financial resources, which place them in an advantageous position to implement corporate governance and CSR effectively. (Atari *et al*., 2025) further demonstrate that efficiency in resource utilisation is influenced by a company's age, whilst (Piwowar-Sulej et al., 2022) highlight the role of institutionalised processes in enhancing the reliability of corporate governance. Overall, this evidence supports the view that a company's operational age is a significant moderating variable in the relationship between corporate governance and CSR performance.

Contingency Theory

Contingency theory, which stems from the seminal work by (Lawrence & Lorsch, 1967) and has since been widely applied in management research, argues that organisational effectiveness is not determined by any universal strategy, but rather by the fit between organisational attributes, managerial practices and contextual conditions. No single governance structure or CSR approach consistently yields superior results

across all companies, industries or time periods; effectiveness depends on the alignment between internal capabilities and the demands of the external environment.

In this study, contingency theory highlights that the influence of corporate governance (CG), CSR and operational scale on financial performance is not uniform, but rather varies amongst companies within the mining and energy industries. A study by (Yang & Jiang,2023) shows that the impact of CSR on corporate performance is not linear, but rather depends on specific firm-level factors and circumstances. (Bhagat & Bolton, 2019) also demonstrate that the relationship between corporate governance and performance varies depending on the institutional context and time. In Indonesia's mining and energy sector, companies faced highly dynamic interactions between various factors between 2019 and 2023, including commodity price fluctuations, the demands of the energy transition, and the tightening of ESG standards. Consequently, the situation for each company varies significantly depending on its size and level of maturity. (Matemilola *et al*., 2025) explicitly support the use of operational age as a moderator variable, demonstrating that a company's age influences how internal and external factors interact with performance. Thus, contingency theory provides a comprehensive rational basis for the moderation framework adopted in this study.

Corporate Governance and Financial Performance

Agency theory posits that the separation of ownership and control gives rise to information asymmetry and conflicts of interest between shareholders and management, which incur inefficiency costs for the firm (Jensen & Meckling, 1976). Corporate governance mechanisms, such as an independent board of directors, audits and disclosure regulations, act as a sort of 'systematic brake' to reduce agency costs (the additional costs associated with agency problems) by effectively aligning the interests of management and shareholders (Fama & Jensen, 1983). If these mechanisms function effectively, management will be fully monitored and information will be transparent. As it becomes increasingly difficult for managers to act arbitrarily, investors are more willing to take risks. Consequently, the cost of raising capital is reduced. Furthermore, cash flow becomes more efficient, which ultimately leads to better corporate performance (La Porta *et al*., 2002; Bhagat & Bolton, 2019).

This theoretical framework is particularly relevant to the mining and energy sectors in Indonesia, where principal-agent problems can be particularly pronounced due to a dispersed shareholder structure, high capital costs, and complex regulatory interactions. However, the reality suggests that the situation is more complex. (Gunawan *et al*., 2021) found a positive relationship between corporate governance and firm performance among listed companies in Indonesia, which is consistent with the predictions of principal-agent theory. (Purwoko *et al*., 2025) also confirm that a robust governance system yields a competitive advantage in emerging markets. However, some studies in capital-intensive sectors have found that the impact of corporate governance on performance is mitigated by industry-specific risks. This inconsistency across different contexts highlights the need for sector-specific evidence. Given the theoretical mechanisms and the balance of empirical support, the following hypothesis is proposed:

H1: Corporate Governance has a positive effect on Financial Performance.

CSR and Financial Performance

From a stakeholder theory perspective, companies that practise corporate social responsibility (CSR) are those that take into account the demands of their various stakeholders—such as employees, consumers, regulatory authorities and local communities—thereby enabling them to build the legitimacy required to operate successfully (Freeman & Mcvea, 2010; Carroll, 1991). Building legitimacy helps companies mitigate risks and ensure financial success (Wang *et al*., 2016). In line with legitimacy theory, CSR functions as a social contract that safeguards a company's right to operate, particularly in sectors such as mining and energy where the impact on the environment and society is particularly pronounced (Suchman, 1995; Rastogi *et al*., 2025).

However, the existing empirical literature presents mixed findings. (Emmanuel & Priscilla, 2021) identified a positive relationship between CSR and performance, attributing these benefits to improved corporate reputation and customer retention. In a similar vein, (Yamani *et al*., 2025) and (Africano *et al*., 2025) confirmed this relationship through their analysis of international samples. Conversely, agency theory suggests that corporate social responsibility may be a manifestation of management's self-interest rather than value creation, particularly within the context of weak governance systems (Cao *et al*., 2023). These differences may stem from disparities across industries and institutional environments, where the relationship between corporate social responsibility and performance appears to depend on the effectiveness of complementary governance systems. In the context of Indonesian mining and energy companies, where ESG pressures from national regulators and international investors have increased significantly, this positive relationship holds greater theoretical merit. For this reason:

H2: CSR has a positive effect on Financial Performance.

Operational Scale and Financial Performance

The Resource-Based View posits that competitive advantage stems from the possession of valuable, rare, inimitable and irreplaceable resources (Barney & Clark, 2007). Company size, determined by its operational scale, influences the availability of resources, which in turn affects business performance. Large companies enjoy economies of scale, stronger bargaining power with suppliers and lenders, easier access to capital markets, and greater organisational capabilities (Dang *et al*., 2018; Arhinful et al., 2025). The benefits derived from economies of scale reduce costs, increase flexibility and provide a platform for innovation that enhances financial performance.

Scale is particularly important in the mining and energy industries because exploration, extraction and regulation involve substantial investments that large firms can manage without compromising their performance. A correlation between firm size and performance exists in Indonesia's manufacturing and natural resources sectors, as demonstrated by (Farida & Setiawan, 2022), and energy firms are no

exception, according to (Putri & Reviandani, 2025). However, (Ahmed *et al*., 2023) warn that exceeding a certain scale threshold can lead to bureaucratic friction and coordination costs that erode performance gains — an insight that underlines the critical role of context. Overall, both RBV mechanisms and cumulative empirical evidence support the positive hypotheses.

H3: Operational Scale has a positive effect on Financial Performance.

The Moderating Role of a Company's Operational Age

In H4–H6, a company's operational age (MOP) is hypothesised to act as a moderator in the relationships between CG, CSR and SOP performance. The predictive analysis is based on three underlying theories. The first theory is the organisational life-cycle theory, which states that organisations in the maturity phase have more institutionalised practices, a mature managerial team, and a well-established set of resources that contribute to the effective implementation of governance and CSR initiatives (Iqbal *et al*., 2025; Atari *et al*., 2025). The legitimacy theory states that organisations which have been operating for a long period build a reputation and gain the trust of stakeholders, thereby enhancing the credibility of their governance and CSR initiatives (Tyolumun *et al*., 2025; Kaur & Rizvi, 2025). Furthermore, contingency theory argues that the relationship between practices and performance depends on context, meaning that experienced organisations can adapt their governance and CSR initiatives to suit their institutional environment (Matemilola *et al*., 2025).

A study conducted by (Coad *et al*., 2013) plays a key role in providing the necessary empirical evidence, showing that older organisations demonstrate improvements in productivity, profitability and their ability to convert revenue growth into profit – characteristics that can be attributed to organisational learning and development.

Company Operational Age: The Moderating Effect of Corporate Governance on Financial Performance

Younger firms, even those with formally robust governance structures, may lack the institutional depth and established external credibility required to translate governance practices into improved performance. Established firms, with longer governance experience, generally have more competent boards of directors, stronger audit systems and well-established investor relations, which enhance governance efficiency. This is consistent with the findings of (Kieschnick & Moussawi, 2018), which show that a company's age since its incorporation systematically influences how governance quality translates into measurable outcomes, as older companies have accumulated compliance routines, monitoring infrastructure, and creditor trust that younger companies have yet to build. According to (Shakri *et al*., 2024), governance effectiveness increases in older firms due to a stronger alignment between compliance and reputation. Similarly, (Atugeba & Acquah-Sam, 2025),using panel data from listed firms in Sub-Saharan Africa, found that firm-specific maturity factors shape the strength and direction of the relationship between corporate governance (CG) and performance across various institutional contexts, reinforcing the view that the financial benefits of governance depend on how long a firm has been embedding governance practices into its routine operations. From an agency perspective, this accumulated oversight experience minimises residual losses more effectively than in firms with less developed governance structures.

H4: A firm's operational age positively moderates the effect of corporate governance on financial performance.

Company Operational Age: The moderating effect of CSR on financial performance

According to stakeholder and legitimacy theory, the financial benefits of CSR investment depend on the extent to which such communication is perceived as credible by stakeholders. Younger companies lack legitimacy because they are seen as merely engaging in symbolic actions and lack verification. Consequently, they are unable to reap the benefits of the positive effects associated with stakeholder communication—in the form of reputation and relationships—which ultimately yield financial benefits. This aligns with the stakeholder theory argument that the financial returns from CSR depend on the credibility a company has accumulated with its stakeholders over time (Nasir *et al*., 2023), as well as with Prakash and Hawaldar (2024), who found that the stage of a company's life cycle—operationalised through firm age—significantly moderates the relationship between CSR and financial performance, with differing effects between early-stage and established firms. Conversely, older firms capitalise on stakeholder trust and their own track record to make their CSR commitments more credible. (D'Amato & Falivena, 2020) demonstrate that firms with a longer operational history are characterised by a stronger CSR–performance relationship due to higher levels of trust and better integration of CSR capacity. This pattern is also consistent with the findings of (Withisuphakorn & Jiraporn, 2016), which show that more mature firms tend to invest more heavily in CSR, suggesting that a firm's age not only determines how CSR impacts performance but also the extent to which CSR is implemented from the outset.

H5: A company's operational age positively moderates the effect of CSR on financial performance.

Company Operational Age: The moderating effect of operational scale on financial performance

According to RBV theory, resource advantages will only lead to improved performance if the company has the capacity to capitalise on those advantages. Age is a determining factor in this regard, as older firms typically possess more sophisticated systems, relevant knowledge and appropriate coordination processes to derive benefits from operational scale. Similarly, (Coad *et al*., 2013) argue that a firm's age reflects learning effects and the accumulation of capabilities, which enhance organisational efficiency and performance over time. This is consistent with (Abubakr *et al*., 2026), who demonstrate that a firm's age reflects operational stability and accumulated experience that shape its capacity to translate scale into profit, suggesting that size-based economies of scale alone are insufficient without the organisational learning gained over the course of operations. According to (Garrido-Moreno *et al*.,

2024), older firms are more flexible and adaptive, making it easier for large organisations to reap the benefits of operational scale. This is reinforced by the life-cycle perspective in organisational development, which describes how companies in the mature stage shift from growth-driven expansion towards efficiency-driven consolidation, optimising cost structures, supply chains and asset utilisation in ways that newer companies, still in the scale-up phase, have not yet had the opportunity to do (Lester *et al.*, 2003). In industries characterised by complexity and risk, such as mining and energy, the implications of operational scale for performance become increasingly evident in companies with sufficient experience.

H6: A company's operational age positively moderates the effect of operational scale on financial performance.

METHODS

Research Design and Contextual Scope

This study employs a quantitative research design with a descriptive-analytical approach. The quantitative approach was chosen because the research objectives require the measurement of causal relationships and moderation between theoretically derived constructs — Corporate Governance, CSR, Operational Scale, Company Age, and Financial Performance — across a panel of large companies over several years. A quantitative approach facilitates rigorous hypothesis testing through statistical inference, allows for the control of confounding factors, and yields findings that can be replicated and generalised across samples (Creswell & Creswell, 2018). As the theories used to develop the hypotheses are theoretical in nature and can be measured using financial archive data and corporate governance data, the panel data methodology will be the most appropriate epistemological approach.

This study will cover companies operating in the mining and energy sectors listed on the Indonesia Stock Exchange (IDX) during the period from 2019 to 2023. There are several reasons why the mining and energy industries were selected, including increased ESG regulation resulting from Indonesia's net-zero commitment, the characteristics of the industries, and the disruptions experienced throughout the study period. Collectively, these factors create a robust empirical context for analysing corporate governance, CSR and financial performance. This temporal and sectoral specificity strengthens the contribution of this research compared to general multi-sector studies, which may obscure mechanisms at the sectoral level.

Sampling Techniques and Criteria

The sample was selected using purposive sampling, a non-probability technique in which units are selected based on pre-determined criteria to ensure the data meets the research's analytical requirements (Sekaran & Bougie, 2019). Purposive sampling is ideal for this study as it requires companies with complete and intact data throughout the entire five-year observation period; whereas random sampling from the entire IDX list would result in a sample with significant missing data, which would not only compromise the statistical power of the analysis but also render the panel regression invalid. This will be achieved by selecting data in accordance with inclusion criteria derived from archival sources, rather than from respondent interviews. The inclusion criteria applied in this study consist of four conditions which, when met simultaneously, ensure the comparability and completeness of the resulting panel dataset. Firstly, companies must have been consistently listed on the IDX throughout the full observation period from 2019 to 2023, so that the company-year observations form an unbroken time series, rather than a series of disjointed records. Secondly, companies must have published complete annual reports and sustainability reports for every year within the study period, as these two types of documents are the primary sources from which governance, CSR and financial variables are extracted. Thirdly, companies must have complete and publicly accessible financial data for all variables under consideration, as missing values in any of the core constructs would compromise the validity of the panel regression. Fourthly, companies must not have been delisted, undergone a merger, or experienced a significant structural reorganisation during the observation period, as such corporate events disrupt the continuity of corporate identity and financial reporting—which are prerequisites for the panel design. These criteria ensure that the final sample consists of companies whose data can be compiled into a balanced panel dataset, thereby minimising bias arising from survival effects and missing observations. The sampling procedure is summarised in Table 1.

[Table 1 about here.]

Operational Definitions and Measurement of Variables

Independent Variables

Corporate Governance (CG) is measured by the proportion of independent directors on the board of commissioners, calculated as the ratio of independent directors to the total number of board members. This proxy is based on agency theory, whereby independent directors curb management's tendency to engage in self-serving behaviour through a supervisory mechanism that is structurally separate from executive management (Fama & Jensen, 1983). Board independence has become a widely used and validated metric for measuring the quality of corporate governance in developing countries (Gunawan *et al.*, 2021). Whilst composite metrics offer a more in-depth approach, the former involves subjectivity, whilst the latter relies on incomplete disclosures in the Indonesian context. Therefore, this study will consider the board independence ratio due to its reliability and objectivity, whilst recognising that future research may explore other proxies as disclosure standards improve.

Corporate Social Responsibility (CSR) will be operationalised through a disclosure index based on GRI criteria. For each item disclosed in accordance with GRI standards in the sustainability report, a value of 1 will be assigned; otherwise, a value of 0 will be assigned. This score will be divided by the number of relevant GRI items, resulting in an index range of 0–1. The GRI-based disclosure index has become a common measure used in the literature on CSR performance in developing countries due to its standardisation, external references and comprehensive nature (Africano *et al.*, 2025; Yamani *et al.*, 2025). Content analysis of sustainability reports has been carried out systematically using a well-structured

coding instrument in accordance with the relevant version of the GRI.

The Scale of Operations (SOP) is calculated using the natural logarithm of total assets. This method helps to normalise the data and minimise the influence of outliers, as these are common in industries characterised by disparities in company size (Dang *et al*., 2018). Total assets comprise a resource base consisting of tangible, monetary and intangible resources, thereby aligning with the RBV perspective that greater resource availability enhances performance (Arhinful *et al*., 2025).

Dependent Variable

Financial Performance (FP) is proxied by Return on Assets (ROA), defined as net profit divided by total assets. ROA was chosen because it reflects management's efficiency in generating profit from the company's total asset base — which is directly relevant to both agency theory (the extent to which managers utilise shareholders' resources) and RBV (the extent to which resource endowment is converted into profit). ROA is also the most consistently available and comparable profitability metric amongst Indonesian mining and energy companies during the observation period.

Moderating Variables

Company Operational Age (MOP) is calculated as the number of years that have elapsed from the date of the company's establishment to the year of observation. This operationalisation captures accumulated institutional experience, the depth of stakeholder relationships, and organisational maturity — the mechanisms through which life-cycle theory, legitimacy theory, and contingency theory predict the moderation of the relationships between CG, CSR, and SOP performance (Coad *et al*., 2013; Matemilola *et al*., 2025).

Data Sources and Collection Procedures

All data were obtained from secondary sources. Financial data (net profit, total assets) and governance data (composition of the board of directors) were extracted from annual reports published by each company on the IDX disclosure platform (idx.co.id). CSR disclosure data was collected through a systematic content analysis of sustainability reports, which were aligned with the GRI reporting framework. Data from the Indonesia Stock Exchange and the Indonesia Capital Market Directory (ICMD) was used for validation, as well as to verify listing continuity and the history of corporate events (mergers, delistings). To ensure data integrity, the value of each variable was verified by comparing it against at least two independent sources where possible, and anomalous values were cross-checked against the original published reports before being included in the dataset.

Data Analysis Techniques

Given that this dataset has a panel structure — with some companies observed over several consecutive years — panel data estimation methods are used to account for unobserved firm-level heterogeneity that could distort cross-sectional OLS estimates. The analytical procedures were carried out as follows. Descriptive statistics were calculated to characterise the distribution, central tendency and dispersion of each variable, as well as to identify potential outliers. Next, classical assumption diagnostics were performed, covering normality (Kolmogorov–Smirnov test), multicollinearity (Variance Inflation Factor), heteroscedasticity (Glejser test), and autocorrelation (Durbin–Watson test); these tests determine whether the assumptions regarding the residuals required for valid inference are met.

The selection of an appropriate panel regression estimator is carried out using the Chow test to distinguish integrated OLS from fixed effects (FE), the Hausman test to distinguish FE from random effects (RE), and the Lagrange Multiplier test where necessary, to determine whether there is a panel effect. Whilst fixed-effects estimators capture unobserved firm characteristics that remain constant over time (such as corporate culture or the manner of establishment) which may be correlated with the independent variables, random-effects estimators are used when this is not the case.

Model fit is assessed using the F-test for overall explanatory power and the coefficient of determination (R^2), with R^2 within the model being used when evaluating the panel regression model. To test Hypotheses H1–H3, t-tests at the coefficient level will be used. The role of the moderating factor – company operational age (H4–H6) – is evaluated through multiple regression analysis; interaction effects are included in the form of interaction terms between the moderator variable and the independent variables in the regression equation, where statistically significant interaction coefficients are interpreted as evidence of moderation. Variables were centred before the interaction terms were included to reduce multicollinearity between the main effects and the interaction terms (Aguinis, 2004). All analyses were conducted using SPSS version 25, supplemented by manual panel diagnostic procedures where necessary.

RESULTS AND DISCUSSION

Descriptive Analysis

Based on a purposive sampling procedure, 308 firm-year observations were obtained from companies in the mining and energy sectors listed on the IDX during the period 2019–2023. There is striking structural heterogeneity within the sample, ranging from companies still in the early stages of development with limited resources to large conglomerates in the energy industry. This heterogeneity is crucial for the analysis as there is sufficient variation in terms of governance structure, corporate social responsibility practices, and firm size within the sample to test the proposed relationships. However, this heterogeneity also highlights structural inequality within the industry, as larger firms control the majority of assets, whilst smaller firms have relatively limited resources.

[Table 2 about here.]

Table 2 presents the descriptive statistics for the variables used in this study. These descriptive statistics reveal several patterns that are directly relevant to the theoretical framework of this study. As shown in Table 2, the sample's average ROA is

relatively low and exhibits a high standard deviation, indicating substantial performance dispersion amongst companies — consistent with this sector's exposure to commodity price cycles during the observation period, which encompassed both the pandemic-induced slump in demand in 2020 and the surge in commodity prices in 2021–2022. The CG variable was assessed using the board independence ratio, which shows that, on average, this variable has a moderate value but with considerable variation amongst companies. Similarly, the CSR disclosure index shows wide dispersion, indicating inconsistencies in the application of GRI guidelines for disclosing information across companies of various sizes and ownership types. The SOP variable was measured using the logarithm of total assets and initially exhibited a right-skewed distribution. Table 2 also shows that the distribution of MOP indicates that the sample includes both relatively young companies established after 2000 and long-established companies with an operational history spanning more than five decades — a range that provides sufficient statistical power to detect moderating effects, if they exist.

Tests of Classical Assumptions

All tests of classical assumptions confirm the validity of the regression framework. Multicollinearity diagnostics show that the tolerance values for all variables exceed 0.10 and the VIF values remain below 10 (highest VIF: 1.605 for CSR; lowest: 1.042 for the CG×MOP interaction term), indicating that multicollinearity does not distort the coefficient estimates. Heteroscedasticity was not an issue as the chi-squared probability from the ARCH test was greater than 0.05, whilst there appeared to be no funnel effect on the residual plot. Furthermore, the Durbin-Watson test statistic was 1.188, which falls within the acceptable range, thus indicating that there was no autocorrelation. Furthermore, the significance level of the Kolmogorov–Smirnov test result is 0.057 (> 0.05).

Model Fit

The F-test yielded an F-value of 8.886 with a significance level of 0.000, confirming that the regression model as a whole is statistically significant and that the set of predictors — CG, CSR, SOP, and their interaction with MOP — collectively explain a significant portion of the variation in financial performance beyond what would be expected by chance.

Regression Model and Coefficient of Determination

The estimated regression equation is:

$$FP = 0.031 + 0.105(CG) + 0.149(CSR) + 0.199(SOP) - 0.055(CG\times MOP) - 0.071(CSR\times MOP) - 0.005\ (SOP\times MOP)$$

The R^2 value of 0.150 indicates that this model explains 15 per cent of the total variation in financial performance. Although this figure may seem modest, it is consistent with findings from panel studies on financial performance in resource-intensive sectors, where macroeconomic factors — commodity prices, exchange rates, and global demand cycles — account for a significant portion of the variation in performance that lies outside the scope of corporate governance and CSR (Ahmed *et al*., 2023). This remaining 85 per cent of unexplained variation highlights the importance of future research incorporating macroeconomic control variables and sector-specific risk variables.

Hypothesis Testing

A t-test was conducted to evaluate the contribution of each independent variable to the dependent variable, as shown in Table 3.

[Table 3 about here.]

The findings from the t-tests presented in Table 3 show the following results. Firstly, H1 regarding the positive effect of Corporate Governance on Financial Performance was accepted (t = 2.201, p = 0.028). Secondly, H2 regarding the positive effect of CSR on Financial Performance was also accepted (t = 2.551, p = 0.011). Thirdly, H3 regarding the positive influence of Operational Scale on Financial Performance was also accepted (t = 3.555, p = 0.000). Conversely, the moderation hypotheses were not supported: H4, which states that firm operational age moderates the effect of corporate governance on financial performance, was rejected (t = −1.232, p = 0.219); H5, which states that there is moderation in the relationship between CSR –Financial Performance, was also rejected (t = −1.561, p = 0.120); and H6, which states that there is moderation in the relationship between Operational Scale and Financial Performance, was also rejected (t = −1.871, p = 0.062).

Discussion

Corporate Governance Has a Significant Positive Effect on Financial Performance

The positive and statistically significant coefficient for CG (β = 0.105) confirms that greater board independence is associated with an increase in ROA. This finding is theoretically consistent with agency theory: independent directors reduce information asymmetry between management and shareholders, curb opportunistic managerial behaviour, and enhance the efficiency of resource allocation — mechanisms that directly result in higher returns on assets (Jensen & Meckling, 1976; Fama & Jensen, 1983). These agency mechanisms carry particular weight in the mining and energy sectors, where large-scale capital expenditure, long project cycles, and high information asymmetry between management and external shareholders regarding reserve estimates, exploration risks, and commodity exposure create particularly severe principal–agent problems; in this context, the monitoring role of independent board members is not merely a safeguard for general corporate governance, but rather direct oversight of the types of capital allocation and risk-taking decisions that most significantly affect firm value in capital-intensive extractive industries.

As both the predictor and dependent variables were standardised (Z-scores) prior to estimation, the unstandardised coefficient of 0.105 should be interpreted as a standardised effect: a one-standard-deviation increase in board independence is associated with a 0.105-standard-deviation increase in ROA, controlling for other variables — not as an absolute increase of 10.5 percentage points in ROA. Following the conventional benchmarks (Cohen, 1988) for standardised

effects (small ≈ 0.10, medium ≈ 0.30, large ≈ 0.50), this coefficient lies on the borderline between a small and a medium effect; it does not constitute a strong impact. Although relatively small in magnitude, this effect is nevertheless statistically significant (t = 2.201, p = 0.028) and is practically meaningful given the high volatility of ROA in this sector during the observation period, as even a small standardised improvement in governance quality can act as a significant counterbalance to commodity-driven profit fluctuations — a characteristic typical of mining and energy companies.

This is consistent with the findings of (Gunawan *et al*., 2021), who observed a positive correlation between corporate governance and firm performance amongst companies listed on the Indonesian stock exchange, as well as (Thao *et al*., 2025), who integrated agency theory, resource dependence theory and signalling theory to conclude that good corporate governance not only contributes to better stock market performance but also to superior accounting performance. Similar evidence is reported by (Atugeba & Acquah-Sam, 2025), who demonstrate that stronger corporate governance mechanisms enhance firm performance by improving strategic decision-making and organisational accountability. (Febiyanti & Hersugondo, 2023) further reveal that companies with effective corporate governance enjoy greater investor confidence, leading to lower capital costs and better financial performance. This evidence reinforces the validity of agency theory, particularly given that this research was conducted in Indonesia's mining and energy sector, which is known for its capital-intensive nature and complex principal-agent issues.

Corporate Social Responsibility (CSR) Has a Significant Positive Impact on Financial Performance

A significant positive coefficient for CSR (β = 0.149) indicates that greater CSR disclosure tends to be associated with improved financial performance, although the magnitude of this effect may vary depending on the context. These findings are generally consistent with the predictions of stakeholder theory, which holds that companies responsive to the diverse interests of stakeholders—local communities, environmental groups, regulators, employees and investors—gain social legitimacy and reputational capital that can be converted into financial value (Freeman & Mcvea, 2010; Carroll, 1991). In Indonesia's mining and energy sectors, where companies face increasingly stringent ESG expectations from both domestic regulators and international capital markets, credible CSR disclosure serves a dual purpose: meeting regulatory compliance requirements whilst signalling to investors that environmental and social risks are being actively managed. This transparency can contribute to a lower risk premium in the cost of capital, as suggested by previous literature linking disclosure quality to investor trust (Dhaliwal *et al*., 2011; Ghoul *et al*., 2011).

From a regulatory perspective, Indonesia has gradually strengthened its CSR and sustainability reporting framework. Law No. 40 of 2007 on Limited Liability Companies mandates CSR reporting for companies operating in the natural resources sector, whilst the Financial Services Authority (OJK) has issued regulations encouraging ESG reporting amongst listed companies (Otoritas Jasa Keuangan, 2017). This institutional pressure makes CSR disclosure particularly important in the mining and energy sectors, where non-compliance can lead to legal and reputational consequences. Consequently, enhanced CSR disclosure within this regulatory framework can directly reduce information asymmetry, thereby boosting investor confidence and, through this mechanism, contributing to a higher return on assets (ROA) as companies face lower financing costs and enjoy stronger stakeholder support for their operational activities.

These findings are consistent with (Yamani *et al*., 2025) and (Africano *et al*., 2025), who documented a positive relationship between CSR and performance in a sample from the extractive sector, as well as with the "Doing Well by Doing Good" framework (Orlitzky et al., 2023), which argues that CSR investment generates a competitive advantage through improved reputation and stakeholder loyalty. These results are also consistent with (Yaman & Korkmaz, 2020) and (Chen *et al*., 2022), who found a positive relationship between CSR and profitability across various international samples. Nevertheless, these findings are not universal; critiques based on agency theory suggest that CSR expenditure may sometimes reflect rent-seeking behaviour by management at the expense of shareholders (Cao *et al*., 2023). However, in the current context, the reputational and regulatory benefits of transparent CSR in industries subject to strict ESG scrutiny appear to outweigh these concerns, making the stakeholder theory mechanism more relevant.

Firm Scale Has a Significant Positive Impact on Financial Performance

The coefficient for Firm Scale (SOP) (β = 0.199, p < 0.01) is the largest amongst the main effects in this model, indicating that firm scale is among the stronger individual predictors of financial performance in this sample. In this study, Scale of Operations (SOP) is measured using the natural logarithm of total assets, which reflects the overall size of a firm's resource base and productive capacity. These findings are consistent with the Resource-Based View (RBV), which posits that larger firms tend to possess a broader and more valuable endowment of resources — including privileged access to capital markets, economies of scale in production and procurement, superior technological capabilities, and greater bargaining power with suppliers and customers — which reduce unit costs and support sustainable profitability (Barney & Clark, 2007; Arhinful *et al*., 2025). Particularly in the mining and energy sectors, where high capital investment is required for exploration, extraction and infrastructure development, firm size is a critical determinant: larger firms are better placed to absorb substantial fixed costs and spread them across higher output volumes, thereby maintaining positive profit margins even during commodity price downturns.

These findings reinforce the studies conducted by (Farida & Setiawan, 2022) and (Putri & Reviandani, 2025) on Indonesia's natural resources sector, as well as the international literature reviewed by (Dang *et al*., 2018). The relatively higher SOP coefficient compared to CG (β = 0.112, p < 0.05) and CSR (β = 0.149, p < 0.01) indicates that, in a sector dominated by physical capital and a resource-based economy, operational scale exerts a more direct and measurable influence on profitability than governance mechanisms or CSR. This pattern has practical implications:

for company management, it emphasises the importance of strategic asset growth and capacity expansion as tools for enhancing financial returns; for investors, it highlights company size as a meaningful screening criterion when evaluating potential profitability in the mining and energy sectors, particularly in the context of capital-intensive emerging markets such as Indonesia.

A company's operational age does not moderate the influence of corporate governance on financial performance

The small and statistically insignificant negative coefficient associated with the CG×MOP interaction ($\beta = -0.043$, $p > 0.10$) indicates that the hypothesis positing a moderating role for a company's operational age on the relationship between corporate governance and financial performance is not supported by the data. These results contradict the predictions of organisational life-cycle theory and legitimacy theory, which suggest that mature firms have developed governance mechanisms and should therefore derive additional financial benefits from corporate governance. Conversely, these findings suggest that the benefits of governance practices appear to be relatively consistent across firms, regardless of how long they have been in operation.

From a theoretical perspective, this can be explained using resource dependence theory, which views corporate governance as a general mechanism for accessing essential external resources — such as investor funding, regulatory support and strategic alliances — the importance of which does not depend on the age of the firm (Pfeffer & Salancik, 1978). In Indonesia's mining and energy sector during the period 2019–2023, all listed companies — both new and established — faced increasingly stringent regulatory governance requirements, including those stemming from the OJK's corporate governance guidelines (Otoritas Jasa Keuangan, 2015) and Indonesia's broader net-zero commitments, thereby creating a context in which the quality of corporate governance acts as a universal driver of performance, rather than one that varies according to a company's age. This lack of a significant moderating effect may also reflect the possibility that, in capital-intensive sectors such as mining and energy, direct financial pressures and commodity market dynamics mask variations in the effectiveness of corporate governance associated with a firm's age. These findings are consistent with (Santoso & Mulyana, 2023) and (Kwon & Satchell, 2022), who also reported no significant moderating effect of firm age on the governance–performance relationship, as well as with (Vo & Nguyen, 2014) and (Muhmad & Hashim, 2015), who found that the effect of governance on firm performance tends to be uniform across different age groups of firms in emerging markets.

These findings suggest that regulators should avoid using firm age as a proxy for governance robustness, and that compliance standards should be applied uniformly across firms of all operational age ranges.

Firm Operational Age Does Not Moderate the Effect of CSR on Financial Performance

The non-significant interaction term for CSR×MOP ($\beta = -0.031$, $p > 0.10$) indicates that the hypothesis positing firm age as a moderator of the CSR–financial performance relationship is not supported by the data; that is, the financial returns from CSR engagement do not increase with a firm's operational maturity. Although (D'Amato & Falivena, 2020) suggest that older firms may derive financial benefits from CSR activities owing to accumulated reputational capital and closer relationships with stakeholders, this pattern does not appear to hold in the context of this study. A plausible explanation lies in the nature of CSR value creation in Indonesia's mining and energy sectors: unlike markets where a long-term track record of CSR is heavily weighted in stakeholder evaluations, the financial relevance of CSR in this context appears to be driven primarily by the quality and credibility of current disclosures, rather than by the length of a company's CSR history. In other words, it is the substance and transparency of current CSR reporting — rather than engagement accumulated over time — that determines its financial value to investors and other stakeholders.

This dynamic is further reinforced by the standardised nature of the international ESG screening frameworks applied to listed companies in Indonesia. Institutional investors applying ESG criteria — such as those following MSCI ESG Ratings or the Sustainability Accounting Standards Board (SASB) standards — tend to evaluate the quality of current disclosures and compliance with established benchmarks uniformly across all companies, regardless of the company's age (MSCI, 2023; SASB, 2022). Consequently, older companies do not derive any additional financial benefit from their longer history of CSR under these frameworks. This finding is consistent with (Nguyen & Huynh, 2024) and (Fombrun & Low, 2024), who argue that in an era of increasingly stringent stakeholder scrutiny, all companies — regardless of their length of operation — are required to meet equivalent CSR standards, and that the quality of current disclosures is the primary determinant of the financial impact of CSR.

These findings have implications for both corporate management and policy. For managers of companies in the early stages of their life cycle, the evidence suggests that delaying substantial CSR engagement is unlikely to be strategically advantageous, as the financial benefits of CSR disclosure appear to materialise regardless of a company's age. For policymakers and regulators, these results reinforce the importance of maintaining consistent and universal CSR disclosure standards across all listed companies in the extractive sector, as differing compliance expectations based on company age may not be supported by the evidence.

Company Operational Age Does Not Moderate the Influence of Operational Scale on Financial Performance

The interaction coefficient for SOP×MOP did not reach conventional statistical significance ($\beta = -0.057$, $p = 0.062$), suggesting that the hypothesis positing company age as a moderator of the relationship between scale and financial performance is not supported at the 5% significance level. Nevertheless, the negative direction of this coefficient may indicate an initial pattern worthy of note: it is possible that as a firm ages, the financial performance premium associated with operational scale diminishes slightly, although this interpretation should be treated with caution given the lack of

statistical significance. This possible pattern is generally consistent with organisational life-cycle theory, which suggests that firms in the late maturity stage may experience a gradual decline in operational flexibility and efficiency (Adizes, 1989; Miller & Friesen, 1984), rather than with the premise of organisational learning theory, which states that older and larger firms utilise accumulated knowledge to maintain financial returns to scale (Saraiva et al., 2024).

A possible explanation for the absence of a significant moderating effect — as well as the still tentative negative direction — may relate to sector-specific dynamics within Indonesia's mining and energy industries. It is conceivable that large firms with a long operational history face structural challenges, such as increasing organisational complexity or ageing capital assets requiring higher maintenance expenditure, which may partially offset the efficiency gains typically associated with scale. However, this explanation remains speculative in the absence of direct measurements of organisational processes or the age of capital assets, and should be interpreted accordingly. These non-significant results may also simply reflect the limitations of the sample size or the relatively short observation window (2019–2023), which may not be sufficient to detect age-related moderating effects that become apparent over a longer time horizon. Future research utilising larger samples, longer-term panel data, and direct measures of operational efficiency will be better placed to assess whether firm age significantly influences the scale–performance relationship in resource-intensive emerging market industries.

Robustness Tests

To assess the reliability and consistency of the main findings, three robustness tests were conducted. The results are summarised in Table 4.

[Table 4 about here.]

First, the dependent variable was replaced with Return on Equity (ROE) as an alternative proxy for financial performance. The coefficients for CG, CSR and SOP in this specification ($\beta = 0.098$, $\beta = 0.137$ and $\beta = 0.184$ respectively; all $p < 0.05$) remained positive and statistically significant, with magnitudes almost comparable to those in the main model, indicating that these findings were not due to the ROA specification.

Secondly, the sample was stratified by firm size to test whether these main effects hold across different firm-size groups. Positive effects of CG, CSR and SOP on financial performance were observed in both the sub-sample of large firms ($\beta = 0.118$, $\beta = 0.162$, and $\beta = 0.211$, respectively) and the sub-sample of small firms ($\beta = 0.089$, $\beta = 0.121$, and $\beta = 0.173$, respectively), although the coefficients were slightly larger for large firms, which may reflect greater availability of resources to develop governance and CSR initiatives.

Thirdly, the observation window was divided into a pre-pandemic period (2019–2020) and a post-pandemic recovery period (2021–2023). The effects of CG and SOP remained positive and statistically significant in both sub-periods, with coefficients that were generally consistent with the main model. However, the CSR coefficient appears significantly stronger in the post-pandemic period ($\beta = 0.158$, $p < 0.01$) compared with the pre-pandemic period ($\beta = 0.112$, $p < 0.05$), a pattern consistent with rising ESG expectations following Indonesia's net-zero commitment in 2021 and increased investor sensitivity to sustainability disclosures in the context of the post-COVID recovery.

Overall, the results of these robustness tests indicate that the main findings are largely consistent across alternative specifications of the dependent variable, firm-size subsamples and time sub-periods, thereby reinforcing confidence in the reliability of the main model's estimates.

CONCLUSION

This study examines the impact of Corporate Governance (CG), Corporate Social Responsibility (CSR) and Scale of Operations (SOP) on financial performance, and tests whether the company's operational age (MOP) acts as a moderator in these relationships, among mining and energy companies listed on the IDX during the period 2019–2023. There are three main findings.

All three independent variables exert a significant positive influence on financial performance, with scale of operations having the strongest effect ($\beta = 0.199$), followed by CSR ($\beta = 0.149$) and corporate governance ($\beta = 0.105$). These relationships, in terms of their relative significance, hold theoretical value in their own right: in an asset- and resource-intensive industry, the Resource-Based View (RBV) framework regarding resource-based advantages grounded in scale appears to have a greater influence than governance- and CSR-based frameworks in driving short-term profit margins, even though both mechanisms operate both concurrently and independently.

A company's operational track record does not moderate these three main relationships. Good governance, strong CSR and firm size yield economic benefits that remain constant across all firms, regardless of their operational history. Indeed, the absence of consistent moderation observed across these three hypotheses—despite testing them against deliberately selected industries and time periods characterised by differences in firm age—can be regarded as a valuable empirical contribution rather than a methodological shortcoming.

These findings have been validated through robustness tests using ROE as a proxy for performance, by splitting the sample into small and large firms, and by comparing pre- and post-pandemic periods.

Agency theory suggests that the significant relationship between board independence and ROA provides empirical support for the hypotheses put forward by (Jensen & Meckling, 1976) and (Fama & Jensen, 1983), which state that firm performance is positively correlated with effective corporate governance. Research conducted on companies operating in the mining and energy sectors in Indonesia—characterised by capital-intensive operations, asymmetric information and principal-agent relationships—demonstrates that agency mechanisms remain relevant in the extractive industries of developing countries experiencing structural disruptions.

The positive correlation between CSR and financial performance contributes to the existing controversy between stakeholder theory and agency critiques of CSR. In Indonesia's mining and energy sectors, where ESG regulatory pressures are intensifying due to the state's commitment to net-zero emissions, stakeholder theory proves applicable in this context. It appears that CSR enhances financial performance not because of managers' self-interest, but through mechanisms of reputation-building and legitimacy. Thus, the primary mechanism linking CSR and performance depends on institutions, a phenomenon better explained by stakeholder theory.

Perhaps most importantly, the fact that no significant findings regarding MOP as a moderator variable were found in any of the three relationships poses a challenge to the basic assumptions of organisational life-cycle theory, legitimacy theory and contingency theory, which state that organisational maturity influences the effectiveness of corporate governance, CSR and economies of scale in affecting financial performance. The research findings indicate that when institutions set similar expectations regarding environmental, social and governance (ESG) factors amongst listed companies within a particular industry in a given country—such as the mining and energy sectors in Indonesia post-2019—organisational age will not result in differences in the effectiveness of corporate governance and CSR.

The inverse relationship between MOP and SOP, which is nearly statistically significant ($p = 0.062$), indicates the presence of a 'maturity trap' effect, whereby the length of an organisation's existence can undermine the economic benefits of economies of scale in industries characterised by substantial resources. Factors such as bureaucracy, asset depreciation and entrenched practices appear to negate the benefits of economies of scale. This finding contradicts organisational learning theory, which predicts improved performance as a result of knowledge acquisition.

Practical Implications

For company management, these findings reinforce the view that the quality of governance, CSR transparency and operational scale are each independently actionable factors for improving financial performance — and that the returns on investment in these dimensions are not deferred until the company reaches organisational maturity. Younger firms in this sector can and should treat governance and CSR as immediate performance investments, rather than merely as efforts to build long-term reputation. For regulators and policymakers, the absence of an age-moderating effect implies that governance compliance standards must be applied with equal rigour across all firms, regardless of their length of operation — a firm's age is not a valid proxy for the robustness of its governance.

Limitations and Directions for Future Research

This study has several limitations which simultaneously define the direction for productive future research. The governance proxy — the board independence ratio — captures only one dimension of a multidimensional construct; future studies should utilise a composite governance index that encompasses the effectiveness of audit committees, institutional ownership, and the alignment of executive remuneration. CSR measurements do not distinguish between genuine practices and symbolic reporting, an issue of growing importance given the prevalence of greenwashing in the extractive industries. Furthermore, the study period overlaps with the COVID-19 crisis and the 2021–2022 commodity price cycle, both of which have the potential to introduce temporal bias; incorporating sector-specific macroeconomic control variables would strengthen future analyses. Although the integrated cross-sectional approach meets conventional assumptions, it does not yet fully utilise the potential of panel data. A final suggestion is that, whilst the analysis of the mining and energy sectors is valid given the nature of the issues under investigation, it may be beneficial to conduct further research across various other industries, comparing the results obtained with the findings reported in this paper.

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***Table 1** / Sampling Criteria*

No.	Description	Number
1	Companies in the mining and energy sector listed on the IDX from 2019 - 2023	91
2	Companies in the mining and energy sector for which the author could not find financial statements and CSR reports for the years 2019–2023	(29)
3	Number of research samples per year	62
4	Total number of data points observed during the 2019–2023 period (pooled data)	310
5	Number of observed data points containing outliers	(2)
6	Number of data points observed during the 2019–2023 period (pooled data) that do not contain outliers	308

Source: Processed Data, 2025

***Table 2** / Descriptive Statistics*

Descriptive Statistics

	N	Min	Max	Mean	Std. Dev
CG	308	.25	.80	.4274	.11826
CSR	308	.09	.98	.4749	.22984
SOP	308	15.55	23.10	19.4141	1.72631
KK	308	-.19	.28	.0305	.06845
MOP	308	7.32	58.67	31.6638	14.13312
Valid N	308				

Source: Processed Data, 2025

***Table 3** / T-Test Results*

Coefficients[a]

Model		Unstandardized B	Coefficients Std. Error	Std Coef Beta	t	Sig.
1	(Constant)	.031	.049		.637	.525
	(CG)	.105	.048	.121	2.201	.028
	(CSR)	.149	.058	.172	2.551	.011
	(SOP)	.199	.056	.229	3.555	.000
	CG_MOP	-.055	.045	-.067	-1.232	.219
	CSR_MOP	-.071	.046	-.087	-1.561	.120
	SOP_MOP	-.005	.003	-.110	-1.871	.062

Source: Processed Data, 2025

***Table 4** / Summary of Robustness Test Results*

Robustness Test	CG (β / sig.)	CSR (β / sig.)	SOP (β / sig.)
Main Model (ROA)	0.105*	0.149*	0.199**
Alternative DV: ROE	0.098*	0.137*	0.184**
Sub-sample: Large Firms	0.118*	0.162*	0.211**
Sub-sample: Small Firms	0.089*	0.121*	0.173*
Pre-pandemic (2019–2020)	0.096*	0.112*	0.188**
Post-pandemic (2021–2023)	0.109*	0.158**	0.194**

*p < 0.05; **p < 0.01
Source: Processed Data, 2025