Industrial Mining Policy, Innovation, and Firm Business Performance in Indonesia: A Literature Review

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Abstract—This study uses a qualitative approach in the form of a literature review to explore existing scholarly sources, identifying the most important themes and points of view related to mining policy, innovation and firm performance in Indonesia. The study aims to identify how these factors contribute to sustainable development, improve mining operations, and enhance overall company performance. Existing scholarly sources form the basis of the analysis, which identifies key themes and insights. The results reveal the prominent role of innovation as a mediating link between policy and firm business performance. It is because innovation can help create new methods and technical developments that fill the gap between policy stipulations for mining companies’ success. However, more empirical verification is needed to support these findings. From a practical point of view, companies in the mining sector should target process and product innovation to achieve sustainable competitive advantage. Highlighting technological advancements and environmentally friendly ways of operation can improve operating efficiency and reduce environmental impact while helping one survive in a competitive international market. In sum, this model gives an encompassing view of the link between mining policy, innovation, and company performance; it shows that regulation is a factor in promoting sustainable development.  

Keywords: Industrial Mining Policy; Innovation; Firm Business Performance; Sustainable Development; Competitive Advantage

1. INTRODUCTION

Mining is important in many countries, providing much for the economy and creating many jobs. Sustainable mining means considering many different things (Hilson & Maconachie, 2020; Zvarivadza, 2018). This paper reviews a vast body of research by reviewing the connection between industrial mining policy, innovation, and performance. It can be useful information for different groups, such as governments and mining executives, to help improve the various companies. The problem is in how they all work together.  

Legal and policy aspects set boundaries for mining, which must be done following prescribed standards. Having clear rules and bright regulations is important to make everyone responsible for following the rules. However, just having rules does not mean a company will be successful. Innovation is a big help to make the rules work and get good results (Hou et al., 2019). By generating new ideas, cool solutions, and fancy technology, innovation allows companies to adapt how they do things and stay ahead of the competition while following rules and standards. So, this paper looks at how mining policy and innovation influence business outcomes over time.  

According to Tui and Adachi (2021), mining contributes greatly to the Indonesian economy. It is one of the main export industries and makes much money from foreign investors and the government. However, like most industries that take goods from the land, it has many environmental, societal, and economic problems. So, it is necessary to develop a smart plan for the long term to ensure everything remains balanced and sustainable. The Indonesian government has made laws and changes over the years to improve mining. They want to make sure it helps the economy and does not hurt the people who live there or the environment. At the same time, mining companies must continue to generate new ideas to make things work better. They have to follow the rules and follow what the government wants. In addition, they must remain competitive even when goods are expensive to make and prices fluctuate. Indonesia is very important in the world for mineral mining. Furthermore, the government has changed many things recently. So, this review will look at what happened in Indonesia.  

The mining policy for the industry sets out the basic rules and framework for carrying out mining work legally and responsibly (Heffron et al., 2021). The main things included in this policy are ensuring the government gets the most money from taxes and royalties, dealing with impacts on local communities well, having excellent environmental standards, and ensuring mines are closed properly and cleaned up afterwards. In Indonesia, they recently changed policy to get more money into the local economy from mining while still ensuring it is good for the environment and society in the long term (De Sa, 2019). Now, they have rules that say more goods must be processed locally, and there must be better safety standards. Small-scale mining is also important but needs to be well-regulated and supported to avoid problems. How companies develop new ideas to meet these policy changes and make them work will greatly impact how well they do in the long run.  

In the mining industry, innovation plays a role in improving sustainability and competitiveness. Management techniques and business processes can gradually be transformed through the creation and use of technologies. Process innovation focuses on making extraction, mineral processing, and production methods while also enhancing resource and waste management (Wang et al., 2021). On the other hand, product innovation aims to create mining machinery, advanced technologies, value-added services, and downstream opportunities. The level and pace of innovation vary
among mining companies based on their resources, technical capabilities, strategic priorities, and risk tolerance. Collaborative research partnerships are essential to overcoming barriers and sharing knowledge effectively in developing breakthrough innovations. Additionally, supportive government policies that offer incentives like tax breaks or purchasing programs can encourage investment in research and development or the commercialization of technologies (Wonglimpiyarat, 2018). A comprehensive understanding of the dimensions of innovation guides fostering competitive advantages crucial for the mining sector’s long-term sustainability and resilience.

Fostering a culture of continuous innovation requires carefully balancing inevitable technical and commercial risks against potential opportunities for significantly improving operational efficiency, productivity, safety, and environmental sustainability (Hopkinson et al., 2018). Mining companies judiciously integrate new processes, equipment, and technologies incrementally based on comprehensive due diligence, technical evaluations, and consideration of available financial resources. Nevertheless, there is work to gather data that quantifies the precise impacts of innovation, examines the dynamic interactions with evolving policy regimes, and establishes connections to measurable business performance metrics. As a result, this paper aims to offer a framework through analysis of significant themes, relationships, and insights found in current academic literature. In particular, the following section will delve into mining policy frameworks. Explore their diverse implications in greater detail. Succeeding sections will then focus on categorizing major innovation types and factors influencing companies’ decisions around innovation uptake. Finally, the conclusion will aim to synthesize the most important findings on interdependencies between policy evolution, innovation strategies, and resulting strategic implications revealed through this comprehensive literature review.

2. RESEARCH METHODS

The primary objective of development is to emphasize the importance of mining companies operating responsibly and socially equitably while ensuring economic profitability (Laing et al., 2019). To achieve development, mining firms must differentiate themselves from competitors and create value for stakeholders. Innovation plays a role in facilitating the relationship between mining policy and business performance, enabling mining companies to adapt to market changes, improve operational efficiency, and minimize environmental impact. The theoretical framework of this study incorporates mining policy, innovation, and firm business performance (Figure 1).

In this study, information and insights from existing sources are gathered using a systematic literature review (SLR) approach to ensure the inclusion of perspectives and comprehensive coverage of the research topic (Snyder, 2019). The planning phase involved exploring various databases and search engines that collected information from literature in all fields. The keywords used in the searches were industrial mining policy, innovation, and business performance. In both theoretical frameworks and through empirical studies, this literature review aimed to discover some void in existing knowledge about that topic. It solicits the relationship between policy measures or innovative activities for mining and final firm-level outcomes.

In the conducting phase, data was gathered via literature compilation. Keywords like industrial mining policy, innovation, and firm business performance have also been used to search the databases. In addition, articles and reports were gathered from libraries and institutional repositories. Inclusion criteria for the selection of the literature were as follows: It must be relevant to the topic under study and has been published in peer-reviewed journals or reputable sources with a recent publication date (Toronto & Remington, 2020). The choice of literature was based on the credibility and authoritativeness of its authors, as well as regarding research quality.

Data was divided into topics and categories during the reporting phase based on the important concepts honed from this theoretical scheme (Chun Tie et al., 2019). Patterns and trends related to industrial mining policy, innovation, and firm business performance were searched for by reading through the literature. The analysis consisted of sifting
out the critical findings, arguments, and insights from research work. Studies of the problem were reviewed, their strengths and weaknesses were identified, and research vacancies or opportunities for further studies. The report explored the implications of the findings for mining companies. Means by which firms can better their performance and promote sustainable development in this session were put forward.

This research on the mining industry in Indonesia recognizes limitations that should be considered. It relies on existing publications as a basis for the literature review. It may have unintentionally excluded studies. Further empirical research is necessary to confirm the findings. Additionally, it is important to note that the focus on the Indonesian context may restrict the generalizability of these results. Understanding the interconnections between policy, innovation, and firm performance and how they affect sustainability in extraction industries is crucial. This research focused on establishing a framework and thoroughly examining existing literature to delve into these relationships. The findings shed light on the implications for businesses, policymakers, and future research. The review comprehensively synthesized knowledge, but future work could address limitations.

### 3. RESULTS AND DISCUSSION

#### 3.1 Industrial Mining Policy

Gerber and Grogan (2020) noted that it is crucial to create well-defined legal frameworks to develop a policy for mining that guarantees adherence and responsibility while maximizing the positive impact on society and the economy. The need to create jobs and generate income must be balanced with ensuring that the benefits are fairly distributed among all stakeholders. It is crucial to have regulations that minimize harm while allowing for development. According to Worlanyo and Jiangfeng (2021), planning for the term is essential, including considering uses for land after mining activities cease and considering artisanal and small-scale mining. These smaller operations provide livelihoods and require policies that formalize and integrate them into larger industries to enhance safety measures. Policymakers can establish rounded regulations by addressing frameworks that optimize benefits, promote environmental stewardship planning for mining transitions, and recognize the role of artisanal mining. When the needs of all stakeholders are met can mining fully realize its potential, at regional levels in terms of economic growth and social/environmental well being.

All parties should have equal access to data to make well-informed decisions. Mining organizations must understand the importance of updating codes and standards to keep pace with industry changes and ensure compliance (Frederiksen, 2018). Engaging in consultations with communities during the permitting process is crucial as this helps build positive relationships and address any concerns they may have. Thorough assessments of impacts are also vital to assess effects and protect the environment. Emphasizing resource use highlights the significance of preserving these resources for generations. Effective management can be facilitated through coordinated governance across ministries, while partnerships with data owners ensure the availability of information. Transparency in implementing mining laws fosters trust and accountability. Upholding these principles navigates the industry intricacies while championing responsible practices.

The establishment was intended to strengthen government revenues through various taxation procedures and royalties. Financial participation supported public services and development. Skills in negotiating mining contracts thus improved, making them scholars and ensuring both sides gained. These strategies also served to smooth out the volatility in commodity prices, thereby allowing the government to stabilize revenues and establish predictability. Another focus was the transparency of financial distributions with a fair system so people could trust and have faith in the mining part. Legalizing artisanal and small-scale mining could raise revenues but with better conditions for miners. The organization, however, helps local communities to attain financial benefits for the sustainable development of their economic life through revenue generation and contract negotiation between enterprises in order to respond suitably to changing prices; it also ensures fair benefit sharing with citizen participation as well as the legalization of informal mining activities (Najam et al., 2022).

Occupational health and safety (OHS) legislation protects workers and improves overall community well-being by establishing high standards (Jain et al., 2021). The socioeconomic benefit is further optimized by considering social impacts within legally mandated environmental assessments. It is imperative for organizations to proactively address potential social issues from industrial activities through thorough assessments to understand better and mitigate conflicts with locals. While attention to worker health, safety, and social impacts is perhaps a necessary starting point for demonstrating company community commitment, investment in long-term prosperity and quality of life through education or healthcare support has been crucial. Since many industrial activities affect local land and resources, external security questions must also be resolved through honest dialogue, understanding each other’s situations, and settling things out by compromising parties being bonded. Previous research points to several key areas companies must manage carefully to maximise socioeconomic outcomes. These include occupational health and safety, social impact review (SIR), community services, and proactive security personnel management (Plagerson et al., 2019). By volunteering rigorous attention in these areas, organizations show how committed they are to the welfare of workforces and hometown people.

For example, mining’s environmental impact requires careful effluent discharge monitoring to maintain water quality and equilibrium among species (Agboola et al., 2020). Effluents should be carefully directed and regulated so...
as not to have harmful effects. They also need to make efforts towards preserving biodiversity at the same time. That involves taking preventative action by assessing and adopting sustainable measures before damage occurs. In addition, responsible management ultimately requires that emergency preparedness is an integral part of this. Establish an all-encompassing emergency plan to deal with the unexpected and paras, speed a rapid clean up. Fundamentally, organizations are required to make a comprehensive and stalwart effort in multiple areas of environmental protection. This term is ‘effluent management,’ preventing water and biodiversity problems, and emergency plans are robust. Only with resolve on these principles can organizations play a constructive role towards sustainable, responsible environmental oversight for mining activities.

By maintaining comprehensive mine closure plans, responsibility for environmental protection is completed when mining activities end. These detailed blueprints include environmental, safety, and community relations steps for land reinstatement. Reviews are undertaken every five years, making it possible to introduce new and developing regulations or best practices. Also, the financial assurances guarantee that there will be an adequate budget set aside for closure work. With increasing focus on sustainability stewardship beyond operations, proactive plan development becomes a cradle-to-grave responsibility emphasizing mitigation, remediation, and continued accountability (Young et al., 2022). Through their planning and preparations for closures, forward-looking organizations have already shown that responsible closure is not simply a task to be undertaken after mining has finished; it is an operational necessity.

The organization has made laudable efforts to transform artisanal and small-scale mining (ASM) into an area with legal control and a regulated system aimed at making miners’ livelihoods endure. Because of the widespread pollution and land degradation caused by mining, many people call for mine operations to introduce environmentally friendly practices in all aspects, from cultivation to processing. Socially, mining takes its toll on miners. In particular, more financing access programs to strengthen communities and provide innovation opportunities in this exceedingly complex industry are needed (Gallaher et al., 2018). Initiatives to phase in formal legalization for informal mining demonstrate efforts made on behalf of stakeholders, but the environmental and social impacts of mining call for more rigid legislation and comprehensive assistance programs. Forging financing opportunities could be a means to boost ASM’s economic prosperity, with benefits for miners and the environment. At the same time, a balanced and comprehensive approach that encompasses mining in all its forms seems most likely to promote responsive development over the long run.

3.2 Innovation

Azem et al. (2021) felt that reinventing one’s internal procedures and external products or services is essential for long-term success in today’s highly competitive international business environment. Meanwhile, technological innovation by companies means adopting new technologies or technical standards, streamlining workflows in and between departments and institutions to remove redundant steps from the process chain, and reconstructing whole systems through basic system re-engineering. All this can lead firms to improve operational efficiency over all facets of business operations performance management to prompt a sharp, and by allowing the delivery of higher-quality value to customers, it forms a crucial competitive edge. Nevertheless, product and service innovation is also essential for long-term differentiation, revenue growth, and success in the marketplace. Through generating innovative new ideas, features, and solutions for the market, companies can anticipate customer needs before they arise and keep them ahead of competitors. High-tech products breathe new life into commercial assets and enable them to demand high prices.

Importantly, process and product innovation are highly interdependent. Strong process innovation allows for smooth internal operations with standardized and computer-chip automated workflows that reduce production costs. It serves to power the development and distribution of new products and services. On the other hand, ambitious new product visions push design efforts to find optimized and revamped methods of production in order to produce them efficiently at scale. Therefore, the organizations that can win at continuing improvements in internal processes through new technology and from outside with customer-centred product development have the greatest chances of perpetuating a long-run competitive advantage. They add higher value to operations and constantly adapt solutions to different customer requirements. Besides innovation in products (or services), process innovations are also necessary for organizations to survive and prosper amidst an ever-changing external environment (J. Lee et al., 2019). However, taking the initiative to adopt leading-edge technologies such as artificial intelligence, cloud computing, and blockchain or IoT could help companies see a large reduction in operating costs while becoming highly efficient; they can also offer customers far greater value than ever. Furthermore, it lets them see around the market’s corners and keep ahead of changes in consumer tastes.

Innovation also means researching, testing, and refining one or more new products, services, and business models that allow market reach to expand into unexplored customer segments (Keiningham et al., 2020). However, this requires strategic allocation of resources and investment planning to succeed in commercialization. Process innovation must go beyond industry megatrends to actively adapt changes to internal systems before competitors (Park, 2018; Purwanto et al., 2023). In addition, despite the digital transformation, leaders will need to guide employees through constant skill training in order for them to play an ever-changing game well. When a company comes up with new technologies and workflows to implement pioneering novel processes, customers are shown to be seriously committed to continuous improvement, solidifying its competitive differentiation in customers’ eyes. Visionary organizations can succeed and continuously thrive by doing things the old way, blending these with the
new, investing in emerging high-potential offerings, responding nimbly to transformations in their industries; taking disruptive approaches while maintaining traditional excellence at the heart of it all.

3.3 Firm Business Performance

A company’s overall assessment is based on financial and non-financial indicators. Although often-cited financial indicators such as revenue, profits, and revenues only give a limited view of fiscal health, leaving others out equally important. Non-financial indicators, such as customer satisfaction, employee engagement, and environmental impact, also have a powerful bearing on the brand’s ability to survive and thrive long into the future. Businesses must understand these financial dimensions and learn how to manage them to attain sustainable growth and maintain a competitive edge. Finding That Balance Now is Critical Striking a balance between monetary prosperity and the other factors shaping a company’s reputation and success determines its standing. Omran et al. (2021) observe that the best understanding of corporate performance includes both financial and non-financial elements. In doing so, financial health can be evaluated quantitatively; customer loyalty and workplace culture cannot fall behind in assessing long-term accomplishments. As to social accountability, it is everywhere. Balancing these factors positions a solid foundation for sustainable growth and marketing differentiation.

According to Alshehhi et al. (2018), financial performance is decisive for any organization’s success. Performance indicators include sales growth, revenue growth, return on investment, return on assets, and return on equity. Sales growth shows whether the company has increased output over time by expanding markets and customer loyalty programs. Revenue amplification, which optimizes pricing and costs and increases share in new products or geographic markets, has an equal impact on profits. Return on investment is the ratio of profits generated to capital invested, which shows how effective resource allocation and investment decisions are. Return on assets examines how well an enterprise uses factories, equipment, and inventory to produce profits. Higher returns are achieved by greater utilization of assets and more efficient operations. According to Nukala and Prasada Rao (2021), return on equity is a measure of shareholder value, which considers net income growth arising from adaptations in costs, expenses, and capital efficiency as affected by the debt-to-equity ratio. However, by carefully following these financial indicators, people see an organization’s growth and profitability. They also demonstrate its return on the stakeholders’ investment, providing management with guidance on how it can strengthen performance or strategy in the future.

In the competitive business world, companies must focus on more than just profits to thrive over the long run. Non-financial indicators like employee headcount, market share, productivity, and asset base also demonstrate an organization’s underlying health and future potential for success (Panno, 2020). By expanding the workforce through strategic hiring, a firm shows it can attract and retain top talent needed to take on new challenges and opportunities for growth. Growing market share through new customers or increased share of existing customers’ budgets displays a product or service’s appeal and competitive advantage, cementing the leadership position in an industry or segment. Even with resource constraints, enhancing productivity optimizes core business processes and operations for amplified efficiency and customer satisfaction. Profits allow reinvesting in research and development, geographic or capacity expansion plans, and improving employee benefits and training to create a more rewarding and engaging workplace that attracts and retains top talent. Consistent asset accumulation in facilities, infrastructure, and technology assets over time contributes to an organization’s overall value and long-term adaptability to changing market conditions (Yuan et al., 2022). Carefully monitoring these crucial non-financial performance facets provides a comprehensive view of a company’s capabilities and future growth potential. To stay ahead amid economic uncertainty and competitive threats, organizations must strengthen these important non-financial areas through strategic initiatives and continuously refine operations.

3.4 Extended Theoretical Framework

Industrial mining is a complex realm, an intricate interplay between various factors. The effects of mining operations on the economy and environment depend on a fine balance between policy, innovation, and firm performance. Mining policy sets the legal and regulatory environment within which mining firms must operate. Governments hope to get the most economic benefit from mining operations while taking steps to minimize negative effects and preserve environmental integrity. However, there are also policies to guide the transitions after mining stops, and lands need to be restored and communities supported (Everingham et al., 2020). Formalizing important operations is one objective of regulating artisanal and small-scale mining.

Mining policy is a tapestry woven of many different threads. Within this, innovation is the key intermediary impacting business results. Businesses employ creative ways to adjust to the changes brought about by changing policies and market conditions. New processes and products increase efficiency in operations and lower costs (M. Lee et al., 2018). It enables firms to raise financial and technical performance. The complex interaction between changing policies and strategic innovation has a far-reaching influence on the multi-faceted concept of firm performance. The term performance refers to measurable financial metrics and broad non-financial achievements. Traditional financial measures of profitability, revenue growth, and return on investment are indications that the company is successful economically. Nevertheless, a business enterprise’s impact on society and the natural world are conditions for maintaining its ability to do business. Furthermore, nothing will be left for the next generation without them.

An interesting dance between policy, innovation, and performance outcomes is underlying the observable dynamics. As the interrelationships depicted in Figure 2 show, policy changes can profoundly change an industry’s
innovation space. These technological and process breakthroughs are reflected in a wide spectrum of firm outcomes, financial and non-financial. By understanding these interrelationships and feedback loops, stakeholders across government bodies, companies, and communities can get a clearer picture. In the long run, this important economic sector can create sustainable growth strategies that exploit positive synergies between industry and society. However, to attain a win-win situation, stewardship of mining must consider the complex interplay between these elements.

![Figure 2. Extended theoretical framework](image)

4. CONCLUSION

This literature review considers the relationship between industrial mining policy, innovation, and firm business performance in Indonesia. The results indicate that innovation plays an important role in policy and performance. So, innovation can bring together regulations and mining companies’ successes. However, further empirical validation is still needed to strengthen these results. Empirical research through surveys and case studies can provide more concrete evidence and insights into how specific policies, types of innovation, environmental practices, and collaboration influence performance metrics, including productivity, profitability, and sustainability. Some limitations of this review include the narrow scope of focusing only on the Indonesian context and the lack of quantitative analysis. Future research could adopt a comparative, cross-country approach and utilize statistical techniques to examine the magnitude and direction of relationships. The review also only considered a subset of policy areas and innovation types due to scope. More expansive investigations considering additional contextual factors could yield richer perspectives. Nevertheless, this study offers a comprehensive understanding of the linkages between policy environments, innovative behaviour, and business outcomes in the mining sector. It guides policymakers seeking to design supportive frameworks and companies aiming to strengthen competitive advantages through strategic innovation. Forthcoming studies should thoroughly assess the complex relationships between industrial mining regulations, innovation activities, and firm performance. Collecting data from mines spread over different geographical regions would help researchers closely observe how particular policies affect companies’ inventive activities and results. Such an approach allows a full understanding of the complex dynamics of mining. Since mining is such an important industry, closely examining the challenges and opportunities facing Indonesia warrants attention. Untangling complexities such as the effectiveness of existing rules, inhibiting factors preventing novelty, and their impact on corporate results should be future work. Comprehensively investigating this sector could provide answers to Indonesia’s nuanced problems. Previous work also pointed out analyzing stakeholders’ multi-layered points of view, the governments, aborigines, and environmentalists to understand mining’s tangledness—intersections between rules, breakthroughs, and stakeholders’ understandings of operational success shape perspectives. Future research needs to look into this closely. However, new studies can increase understanding of policy innovation and its effects on business performance by attentively undergoing rigorous empirical examination, especially in light of Indonesia’s diversity and stakeholder analysis, which is comprehensive.

REFERENCES


Centre for Social Responsibility in Mining, University of Queensland.


