

**Enhancing Supply Chain Collaboration Among Mining Companies To Drive
National Manufacturing Growth In South Africa**

04 March 2025

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ABSTRACT

The study explored how supply chain collaboration among mining sector companies can be enhanced to drive national manufacturing growth. The mining sector is one of the sectors contributing significantly to South Africa's economy. At the same time, the sector has the potential and opportunity to actively foster and develop the country's local manufacturing. However, there is a lack of effective collaboration between mining companies in South Africa, negatively impacting their potential to provide local businesses with economic advantages. This reflects the Mining Charter's failure to achieve the desired outcome of ensuring inclusive business deals, where low-income and local suppliers are not marginalised. At the same time, there is an enhanced value chain governance.

Interpretivism beliefs and philosophical assumptions guided the research methodological choice for this study. The qualitative research methodological approach was applied, and purposive sampling was used. The sample included 15 participants, including procurement specialists, regulatory agencies, and policymakers. Interviews were used to collect data, and the data was analysed using thematic analysis.

Significant findings from the research highlights the potential and challenges of intercompany collaboration within the mining sector in South Arica to drive manufacturing at a national level The research revealed that while mining companies do recognise the benefits of collaboration, which vary from enhanced supply chains, operational cost reduction, local supplier development, there is still a high observation of the competitive attitude amongst the industry, infrastructure limitations and regulatory misalignment that hinder effective collaboration.

Keywords: Supply Chain Collaboration; Mining Sector; Manufacturing Growth; Supply Chain Collaboration Challenges

PLAGIARISM DECLARATION

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

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ABBREVIATIONS

AMV	African Mining Vision
BBB-EE	Broad-Based Black Economic Employment
CSR	Corporate Social Responsibility
CSV	Creating Shared Value
ESD	Enterprise and Supplier Development
GDP	Gross Domestic Product
GSCM	Green Supply Chain Management
KBV	Knowledge-Based View
LCPs	Local Content Policies
MPRDA	Mineral and Petroleum Resources Development Act
PGMs	Platinum Group Metals
P2P	Purchase-to-Pay
RBV	Resource-Based View
RMI	Responsible Minerals Initiative
SARB	South African Reserve Bank
SCC	Supply Chain Collaboration
SCM	Supply Chain Management
SDG	Sustainable Development Goal
SLP	Social and Labour Plans
SMMEs	Small, Medium, and Micro Enterprises
PwC	PricewaterhouseCoopers

CHAPTER ONE: INTRODUCTION TO THE RESEARCH PROBLEM

1.1 Introduction

In Chapter One, the researcher presents the purpose of this study and justifies why it was conducted. This chapter also shares the scope of the research and the business and theoretical need for the study, highlighting how the exploration of how collaboration in the mining sector could benefit the local manufacturing industry businesses.

1.2 Background

The mining sector significantly contributes to the global economy by providing building blocks of metals, minerals, and fossil fuels (Infosys Limited, 2024). In 2023, the sector contributed 1.4 per cent to the United States' Gross Domestic Product (GDP), with an estimated growth of \$3.5 trillion by 2032 (Infosys Limited, 2024). The top international mining companies help feed the world while facilitating the path to a low-carbon future, while providing materials used for infrastructure development and meeting consumer needs (PricewaterhouseCoopers [PwC], 2024a). In Southern Africa, the mining sector is central to the social and economic narrative. At the same time, it significantly provides investment, employment, and government revenue and infrastructure (The International Bank for Reconstruction and Development and The World Bank, 2019).

In 2023, South Africa's mining sector played an essential part in the country's economy, contributing about 202.1 billion Rands to the country's GDP while employing 477,000 people (Statista Research Department, 2024a). South Africa's Platinum Group Metals (PGMs) (platinum, palladium, rhodium, ruthenium, osmium, and iridium) mining industry was reported to have employed some 181,806 people, making it the largest employer of all mineral commodities produced in the country (Statista Research Department, 2024a). South Africa's mining sector's income distribution was as follows in 2022: PGMs at R373.2 billion (41.2 per cent); Coal and Lignite at R198.9 billion (21.9 per cent); and Iron Ore at R119.2 billion (13.2 per cent) (Minerals Council South Africa, 2023). This indicates that PGMs, coal, and iron ore dominate the sector's financial performance. When it comes to mining companies, Gold Fields was reported as South Africa's leading mining company in June 2023,

based on market capitalisation (Statista Research Department, 2024b). The company's market capitalisation was about 234 Rand, and Anglo American Platinum was in the second position, with a market capitalisation value of 224 billion Rands (Statista Research Department, 2024b).

However, the mining sector in South Africa faces various challenges, including increased costs, decreased productivity, and environmental and social issues (Singh, 2017). The most prominent challenge is a lack of collaboration between key stakeholders because there is a lack of coordination between the government, stakeholders, and labour unions (Lumadi & Nyasha, 2024). The lack of collaboration has resulted in inefficiencies, delays in policy implementation, and missed opportunities for mutual growth (Lumadi & Nyasha, 2024). Although the sector plays a significant role in South Africa's economy, the absence of a cohesive approach is a barrier to the effective development of sustainable practices, infrastructure improvements, and innovation. This is why actions such as implementing the Mining Charter were taken to reduce significant outcomes of conflicting interests and inadequate dialogue between different stakeholders in the mining sector.

The Mining Charter is a strategic document that seeks to advance the transformation of the mining industry in South Africa (Heyns & Mostert, 2018). The charter is founded on fundamental principles of the Broad-Based Black Economic Empowerment Act (BBB-EE), which seeks to empower individuals disadvantaged by the apartheid system (Pityana, 2015). The transformation of the mining sector in South Africa has enabled previously disadvantaged individuals to benefit from the industry. This is done through contractual agreements with mining operations to source and produce from the raw materials produced in South Africa and other regions of Africa. This project aims to aid the government in alleviating the three biggest challenges, i.e., poverty, unemployment, and inequality. The revenue generated from the mining industry can help play a vital role in alleviating the above-stated challenges. South Africa, like many other African countries rich in resources, has set specific local content requirements to promote economic inclusiveness and ensure sustainable development, in line with the African Mining Vision (AMV) launched by the African Union in 2009 (Compaoré, 2017). The Mining Charter has significantly increased the procurement norms for mining companies, mandating that at least 70 per cent of commodities and 80 per cent of services are locally procured.

The above percentages are contrasted with past targets of 40 per cent for capital goods and 70 per cent for services. The policy promotes local business and empowers economically active historically disadvantaged communities, a fundamental objective supported by facilitating procurement from BBBEE-compliant suppliers. The policy will build relationships with minor suppliers by investing two per cent of Net Profit after tax for supplier development initiatives. The hypothesis that local content targets will enhance the competencies of local suppliers has the potential to increase dramatically the manufacturing potential within the Republic of South Africa.

1.3 Research Problem

There is no meaningful collaboration between mining companies in South Africa in providing local businesses with economic advantages and stimulating the economic participation of historically disadvantaged groups. The absence of collaborative engagement implies that the ideal conditions and results encouraged by the Mining Charter, like equitable business transactions, including low-income and local suppliers, and improving value chain governance, have collapsed at the implementation stage (Khubana et al., 2022). For this reason, this research investigated how supply chain collaboration among mining companies could be improved to stimulate national manufacturing development.

The objectives of the study are as follows:

- To explore how inter-company collaboration within the mining sector can positively contribute to the growth of the manufacturing sector in South Africa.
- To identify the obstacles to effective collaboration within the mining sector and how these might be overcome.

1.4 Research Purpose and Rationale

This study explored strategies for enhancing supply chain collaboration among mining companies in South Africa to stimulate national manufacturing growth. When the current supply chain dynamics are examined and opportunities identified, it will make way for improved integration. This is because, by achieving its research aim and objectives, this study provides actionable insights that will lead to more efficient resource utilisation and reduced operational costs. Therefore, it contributes towards developing a more robust manufacturing sector, promoting supply chain integration for competitive advantage, and sustainable economic growth in South Africa.

The mining sector is one of the most significant contributors to the South African economy. It has barely used a fraction of its potential, indicating an opportunity to actively promote and enhance local manufacturing. In 2023, the sector employed around 477,000 individuals, with the Platinum Group Metals (PGMs) segment of the broader mining industry accounting for 181,806 employees (Statista Research Department, 2024a). The mining sector in South Africa traditionally functions with significant autonomy, with each mining business likewise operating freely. This continual struggle persists despite the transformative prospects presented by the Fourth Industrial Revolution, including the use of new technology and innovations (Zulu et al., 2021).

Different companies do not complement each other when the sector does not consider how collaborations could be beneficial. Consequently, numerous possibilities for jointly creating value or optimising the supply chain are not taken advantage of. The inclusion of local content, as anticipated by the Mining Charter, presents a distinctive and captivating prospect for improved cooperation. This could stimulate the expansion of manufacturing by harnessing the combined capacities of mining enterprises

1.5 Relevance and Evidence

This opportunity is relevant today in the context of an increasing demand for sustainable economic development in South Africa. The mining industry remains a key sector in the economy, and there is overwhelming evidence that collaboration among mining companies would yield tremendous benefits. The gains come from reducing costs, supply chain stability, and stimulating local economic development (McDougall & Davis, 2024a). Also, the AMV is concerned with maximising economic linkages and local content in the extractive industry, which aligns with this research aim (Ackah-Baidoo, 2020).

1.6 Significance of the Study

1.6.1 Significance for Business

Mining companies are faced with growing pressures to reduce their costs and enhance their operating efficiencies while, at the same time, also aiding in economic growth locally, a prerequisite for survival in business (Mancinia & Sala, 2018). This study is significant because it offers insightful perspectives on enhancing the supply chain collaboration among mining organisations, which can potentially be a national manufacturing development driver. When mining companies foster collaboration, they will optimise the utilisation of resources while streamlining logistics and lowering expenditure. The result will be an effective supply chain that enhances the local manufacturing sector's growth, thereby improving South African producers' competitiveness (Cawooda et al., 2024). Secondly, the research will provide valuable insights for policy-making, industrial policy, and business practices that drive national economic development.

1.6.2 Academic and Scholastic Significance

The theoretical need concerns the gap in the literature about how intercompany collaboration in the mining sector affects local manufacturing growth. Odell (2021) emphasises that collaboration between mining stakeholders helps with the effective response to conflict, and it is enhanced through strategies such as Corporate Social Responsibility (CSR) and Creating Shared Value (CSV). This study is significant to academics and scholars because it has the potential to contribute to the growing body of literature about supply chain management and economic development, with a focus on the mining sector and manufacturing industry. This study focused on the

intersection of mining and manufacturing, extending existing theories of supply chain collaboration in the context of developing economies. Added to the above, the findings of this study contribute to the theory of vertical integration and inter-industry collaboration because it highlights the importance of coordination between sectors with distinct value chains. Vertical integration mechanisms in supply chains help company leaders and managers evaluate a company's reconfiguration, while inter-industry collaboration allows for innovation collaboration and sharing of resources, improving efficiency and competitiveness (Partyka & Paiva, 2024; Shi & Xiao, 2024). Furthermore, the findings will help refine current supply chain dynamics models because the study highlights the strategic importance of collaboration for sustainable industrial growth.

1.7 Conclusion

Chapter One discussed the importance of conducting this study, highlighting why the research problem needed to be addressed. The chapter provided a brief discussion of the business and academic significance of this study. In the next chapter, the literature is reviewed, and the existing knowledge is critically evaluated.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

In Chapter Two, the researcher critically evaluated the existing knowledge, focusing on the regulatory context of mining companies and aspects associated with manufacturing growth globally and in South Africa. This critical literature review refers to a comprehensive analysis and evaluation of published secondary data focusing on a particular topic (Write & Michailova, 2022). A critical literature review describes previous studies and critically examines the applied methods while checking for an alignment between the findings and theoretical approaches (Write & Michailova, 2022). The outcome is a contextualisation of the study within the broader academic knowledge, setting a foundation for explaining the choice of the research approach, philosophical assumptions, and research methods. The theoretical framework is discussed below, forming a foundation for understanding the concepts discussed in the literature review.

2.2 Theoretical Framework

A theoretical framework guides research by providing a foundation based on existing theories, concepts, and models (Salawu et al., 2023). Researchers use a theoretical framework to establish the relationships between variables or concepts, providing a lens through which the research problem can be interpreted and analysed (Salawu et al., 2023). Therefore, serving as a blueprint for conducting the study so the explored phenomenon is better understood and the study is comprehensively contextualised. The theories relevant to this study are discussed in the following subsections, including the Supply Chain Collaboration Theory, Stakeholder Theory, and the Porter Diamond Theory.

2.2.1 Supply Chain Collaboration Theory

With the reluctant nature of organisations to collaborate, we interrogate the concept of Supply Chain Collaboration (SCC), which plays a crucial role in combining agility and resilience in the mining sector to enhance national manufacturing growth. Van der Veen (2024) emphasises that companies are expected to be socially acceptable while doing well. SCC can effectively transform companies to experience the above while remaining competitive in their respective markets. Collaboration must be holistic and inclusive of, *inter alia*, internal collaboration, organisational culture, leadership, suppliers, customers, and end-to-end collaboration (Van der Veen, 2024). This is a critical strategy to ensure that all independent companies work cooperatively to create a singularly competitive supply network with the potential to improve overall performance (Osei & Asante-Darko, 2024). The outcome of SCC is the improvement of flexibility, which allows companies to handle fluctuations in demand and increase overall operational efficiency effectively.

The theories on supply chain resilience are relevant and indicate how collaboration may improve the ability of companies to withstand and become more adaptive to the changes brought about by disruptions, a set of attributes critical in the mining sector. Movahed et al. (2023) reviewed the literature concerning collaboration in the supply chain 4.0 era and highlighted that Industry 4.0 technologies and ICT infrastructure enhance collaborations. The findings of the same study indicate that the manufacturer-supplier and manufacturer-customer collaborative relationships are the most important; however, there must also be collaborative communication between the company and the two stakeholders (Movahed et al., 2023). This is because of the importance of information-sharing in supply chain and supply chain management in general.

For instance, one may assume that a business collaborating with a rival to create new joint products will develop market winners. However, such cooperation will result in a waste of funds if the product fails to satisfy customers. Businesses can function more effectively by collaborating to optimise resources, save costs, and innovate. As a result, the literature review discusses past research on cooperation between

companies in the mining industry to ascertain how the cooperation has been used to enhance supply chain efficiency and manufacturing development. Soto-Mendoza et al. (2023) reported that pooling resources to build up local suppliers and infrastructure through cooperation between the mining industry companies can significantly enhance local economic multipliers. However, firms may be afflicted with issues like balance of power and absence of information, discouraging effective coordination.

2.2.2 Stakeholder Theory

Stakeholder theory is a theory of business and management which holds that organisations ought to focus on achieving a balance through consideration and reaction to the interest of all the groups affected or likely to be affected by the activities of the organisation (Parma et al., 2010). The groups are the stakeholders, encompassing the shareholders, employees, customers, suppliers, and communities. The theory aids in comprehending and solving three interlinked business issues: (1) Comprehending how value is produced and exchanged, (2) Uniting ethics and capitalism, and (3) The necessity to assist managers in taking into account the management of the two issues (Parma et al., 2010). In addressing organisational problems of greater cooperation among manufacturing companies and mining companies to improve the manufacturing industry's supply chain, stakeholder theory applies because it systematically acknowledges and solves the complex (and sometimes conflicting) needs of all stakeholders in the mining and manufacturing industries. This theory suggests that stakeholders' interests are not merely to innovate and attain sustainable growth (Ozdemir et al., 2023).

The combination of stakeholder theory and the Resource-Based View (RBV) and the Knowledge-Based View (KBV) demonstrates the important role of stakeholder diversification in open innovation. Peripheral secondary stakeholders like environmental organisations and local communities can influence eco-innovations because mining companies must involve various stakeholders. As per Ozdemir et al. (2023), the customers and suppliers are the major stakeholders responsible for investing in product and process development necessary for enhancing the efficiency and sustainability of the manufacturing industry. Nevertheless, the stakeholder theory's ethical integration dimension incorporates ethical concerns within business processes. A majority of issues occurring as a result of ethical

complications are those dealing with the effects mining activities pose to either the social or natural environment; in this way, by making ethical decisions and taking responsibility for managing stakeholders, a mining company is most likely to offer more contributions to the achievement of a country's manufacturing goals (Valentinov & Roth, 2024). The stakeholder theory of governance also demands that the traditional paradigm of profit-making divert to an alternate path in the direction of its established governance model (Bello & Abu, 2021).

This approach is also in line with classical institutional economics, which focuses on the coordination of social systems of provisioning. With stakeholder-oriented business management, the mining companies will prevent institutional trade-offs and conflicts and make their value chain more efficient. Apart from reversing the trend of manufacturing growth, this phenomenon distributes growth returns to all the stakeholders fairly and equitably (Valentinov, 2022).

2.2.2 Porter Diamond Theory

The Porter Diamond Model provides explanations of the factors that provide a competitive advantage for a national economy or company over another (Porter, 1990). The theory consists of points resembling a diamond, including the company's strategy, structure and rivalry, related industries, demand conditions, and factor conditions (Porter, 1990). Porter's Diamond Theory can improve teamwork amongst mining companies and assist national manufacturing in growing the mining industry through supply chains. The above is achieved by highlighting critical focus areas like how organisations operate and their competition structure and identifying what customers want in related industries that support them. Lejpras et al. (2011) state that frequent cooperation plays a pivotal role in a company's innovativeness, which is developing new production methods and introducing new products to the market. The outcome is that innovativeness will positively impact the company's competitive advantage based on its performance indicators (Lejpras et al., 2011).

Mining companies can realise synergy through mergers by pooling their assets, facilitating exchange of information, and aligning supply chains to enhance delivery efficiency. This improvement in performance serves as a national driver to foster growth in the manufacturing sector. Furthermore, heightened demand for efficient supply chains compels this collective action. It enables mining companies to serve manufacturers' needs more effectively.

Digital transformation is critical because it allows for better communication and coordination between mining companies and their supply chain partners. Adopting digital technologies and tools, including artificial intelligence and process mining designed to support supply chain collaboration and effectiveness, allows mining companies to adhere to Porter's factor conditions. According to Bodendorf et al. (2023), digitalisation will render mining companies more flexible and agile, thus faster to respond or react. This means they can adjust to market developments and enable manufacturing expansion (Prabhu & Srivastava, 2023). In addition, the successful linkage with supporting and allied industries helps mining companies create strong networks. This advantage of collaboration makes companies and the country perform better. Though Porter's Diamond Theory offers a fruitful framework for analysing competitive advantage, its application must be contextually adapted to the particular characteristics of industries or areas. The pliability of the model and the persisting debate about its drawbacks testify to its sustained relevance and the necessity of its ongoing revision.

2.3 The Mining Sector in South Africa

The South African mining sector is significant in the country's economy. This is because of its notable contribution to employment, exports, and economic growth. Mining companies play an essential role in the communities they operate in, and the roles go beyond the employment of community members and driving the economies around them (PricewaterhouseCoopers [Pwc], 2024). The companies are also helpful because of their involvement in Corporate Social Responsibility (CSR) initiatives, such as providing communities with resources and empowering the youth or women (PwC, 2024). For example, the Mineral Council, an organisation that supports employers while promoting the South African mining sector, is concerned with promoting sustainable mineral resource development and ensuring clean water and sanitation for all (Minerals Council South Africa, 2023). This aligns with Sustainable Development Goal 6 (SDG6), which emphasises that all persons must have access to clean water and sanitation globally (Minerals Council South Africa, 2023).

Although the mining sector's contribution to the Gross Domestic Product (GDP) has declined in recent years because of macroeconomic challenges, the sector remains an integral part of South Africa's economy (Cowling, 2024). The sector's contribution

to the country's GDP was estimated at approximately R202.05 billion in 2023 (Cowling, 2024). The decline in the sector's contribution to the GDP is reflected in the contraction of its actual output by a further 0.8 per cent in the second quarter of 2024, which happened regardless of the country not experiencing electricity load-shedding over the same period (South African Reserve Bank [SARB], 2024). There was a production decrease in five of the 12 mineral groups in the same period, especially in iron ore, coal and diamonds; however, the production of Platinum Group Metals (PGMs) and chromium ore increased (SARB, 2024). The above shows that the South African mining sector is experiencing various challenges that might be marginalised. As the mining sector is a significant contributor to GDP, the products derived from the mining sector must be processed and manufactured locally to increase the local GDP.

2.4 The Manufacturing Sector in South African Mining Products

The industry has several system barriers that may deter the growth of the manufacturing sector. The excessive dependence on imports suppresses the development of the local industries, hindering the manufacturing industries' ability to increase, diversify, and modernise (Kloppers & du Plessis, 2008). That is, the poor condition of the local supply chain within the mining industry further skews the overall development of the South African manufacturing industries and makes them vulnerable to any change or fluctuation in the external market or the exchange rate. Establishing better coordination between the supply chain partners in the mining industry is one practical solution that can be introduced to address this problem. This can stimulate local manufacturing growth where mining companies leverage the available mining infrastructure to the best benefit with duly focused Enterprise and Supplier Development (ESD) interventions. This, in turn, can boost the growth of the local industries by developing local content policies. This would, in turn, allow for more domestic supply base growth, reduced import reliance in the industry, and a sustainable manufacturing ecosystem through focused development of local suppliers via the collective model (Ackah-Baidoo, 2020).

2.5 Regulatory Framework in the Mining Sector

The B-BBEE and Mining Charter supplement the AMV to effect transformation in Africa's mining industry through development and empowerment with good governance. Each of these structures deals with a particular aspect of the mining sector, but all assist in advancing common ideals of sustainable development and equitable growth. The Mining Charter was legislated as a response to the Mineral and Petroleum Resources Development Act (MPRDA), which aims to correct the historical imbalances that have defined the mining sector in South Africa. Consequently, it prescribes essential prerequisites that mining businesses should meet to enhance the participation and ownership of Historically Disadvantaged South Africans (HDSA) and afford them opportunities for economic empowerment. The Charter aims to develop local communities, mainly where mining operations are located. It is a tool for applying B-BBEE principles in the mining industry and realising the transformation objective (Heyns & Mostert, 2018). Conversely, the Broad-Based Black Economic Empowerment (B-BBEE) Act serves as a model for the economic transformation, empowerment and integration of Black South Africans into different sectors of the economy, particularly the mining industry. Within the broad legislative framework, the B-BBEE Act employs management control (MC) to impose the B-BBEE policies, particularly in the mining industry. Thus, these elements are deeply intertwined in their emphasis on empowering the previously disadvantaged, equitable distribution of wealth, and encouraging ownership and skills development (Pityana, 2015). However, these policy impediments have been partly removed by the African Union's adoption of the African Mining Vision (AMV) in 2009, which established a long-term vision to harness mineral resources for sustainable development.

This calls for mining policies that raise local content and value addition, even the development of mining communities across Africa. Although the AMV is a continental program, its objective is similar to the MC and B-BBEE in ensuring socio-economic development and that the local communities accrue benefits emanating from mining. Essentially, the African Mining Vision (AMV) is a commitment to inclusive development beyond compliance, emphasising the importance of good local ownership, capacity development, and infrastructural developments (Compaoré, 2017). The Mining Charter is a significant policy instrument confirming this collective action by requiring mining operations to procure goods and services from local

enterprises that align with localisation requirements. Aside from altering consumption habits, such localisation objectives also enhance local businesses, create jobs, and assist in holistic community development initiatives (Heyns & Mostert, 2018).

Mining Charter provisions are strategic levers used to redirect economic benefits to the South African economy and minimise the leakage of revenue that comes with imported goods and services (Makgoba, 2019). Secondly, developing a shared supply chain between mining companies and the local industry is a strategic advantage that will increase domestic production capacities (Dikgwatlhe & Mulenga, 2023). By forming strategic partnerships with local suppliers, mining companies will be able to supplement the capability of these companies, thus enabling them to match the high expectations of the mining sector. This collaboration will drive innovation, boost productive efficiency, and increase the global competitiveness of South African businesses. In addition to strengthening local companies, decreased dependence on imports positions a stronger and more resilient local industry to cushion itself from changes in the global economic situation (McDougall & Davis, 2024b). In the long run, the partnerships can create the impetus for a new era of industrial expansion, sustainable economic growth, and expanded industrial depth in South Africa. Conversely, the B-BBEE Act provides an avenue for economic transformation and involvement of Black South Africans in the economy and mining economy. In the broader legislative framework, the B-BBEE Act employs MC to implement B-BBEE policies, particularly in mining. The two are thus closely complementary, emphasising empowering the previously disadvantaged persons, facilitating equal distribution of wealth, and allowing ownership and skills development (Pityana, 2015).

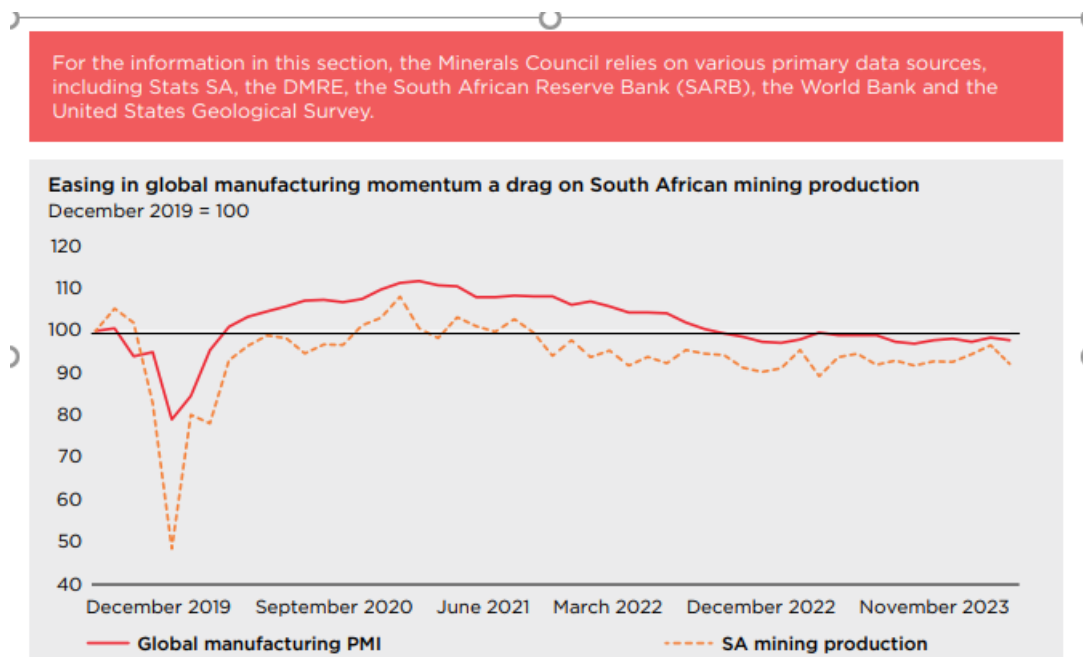
These policy gaps have, however, been partially filled by the African Mining Vision (AMV) adopted by the African Union in 2009, which arrived as a long-term aspiration to utilise mineral resources for sustainable development.

This needs value-adding mining policies that promote local content and even the development of African mining communities. Even though the AMV is a continental policy, its purpose aligns with the MC and B-BBEE in guaranteeing socio-economic growth and the local community sharing the benefits of mining. The AMV represents inclusive growth beyond compliance, with meaningful local ownership, skills, and

infrastructure development (Compaoré, 2017). The Mining Charter is a fundamental policy instrument enabling this collaborative effort by forcing mining companies to procure goods and services from local business organisations through localisation imperatives. Besides changing procurement practice, these localisation goals also aim to empower local business, create jobs, and assist general community development initiatives (Heyns & Mostert, 2018).

The regulations defined in the Mining Charter are strategic levers to redirect economic benefits into the South African economy and reduce revenues outflow in the form of imported commodities and services (Makgoba, 2019). Also, establishing a supply chain relationship between mining and local companies offers a strategic chance to develop domestic manufacturing capacity (Dikgwatlhe & Mulenga, 2023). By working closely with local suppliers, the mining companies can develop the capabilities of such companies and thereby ensure that they can meet the high expectations placed upon them by the mining industry. This kind of partnership can help spur innovation, increase manufacturing competitiveness, and improve the global competitiveness of South African companies. Apart from strengthening domestic enterprises, less reliance on imported goods guarantees a more solid and robust local manufacturing base that will be in a better position to cushion global instability and economic fortunes (McDougall & Davis, 2024b). In the long run, these alliances have the potential to spur a new era of industrial growth, leading to sustainable economic growth and diversifying South Africa's industrial base.

Figure 1. Easing in global manufacturing momentum a drag on South African Mining production



Source: S&P Global. Stats SA. Minerals Council

2.6 The Correlation Between Global Manufacturing Momentum and South African Mining Production

The graph depicts the relationship between South African mining output and international manufacturing activity based on S&P Global, Stats SA, and the Minerals Council South Africa (see Figure 1). The graph shows how South African mining activity and the Global Manufacturing Purchasing Managers' Index (PMI) vary, with December 2019 (100) as a reference point. This data indicates a positive alignment correlation between global manufacturing trends and South African mining industry performance, though with significant deviations in reaction to local industry-specific factors.

2.7 Initial Decline During the COVID-19 Pandemic (Early, 2020)

Both global manufacturing PMI and South African mining production suddenly contracted at the onset of the COVID-19 pandemic. This decline is attributed to supply chain disruption, lockdowns, and a decline in industrial demand (S&P Global et al., 2023). What is of interest is that South African mining production fell more

sharply than global manufacturing, perhaps due to tighter lockdown measures, operational restrictions, and disruptions in the sector's labor force.

2.8 Post-Pandemic Recovery and Divergence (Mid-2020 – 2022)

Following the initial slump, global manufacturing recovered robustly, with PMI stretching beyond pre-pandemic levels. The rebound suggests a rebound in industrial production and raw material consumption (S&P Global et al., 2023). South African mining production, however, failed to recover fully and fluctuated below pre-pandemic levels. This lagging mirrors that domestic problems of power outages, strikes, and logistics inefficiencies slowed down the mining sector from matching higher global demand.

2.9 Slowdown in Manufacturing and Mining (2022 – 2023)

The chart also indicates that from mid-2022, the world manufacturing PMI kept falling steadily, recording an overall drop in worldwide industrial production. In the same vein, South African mining production dropped, affirming that mining production is sensitive to international demand for metals and minerals (S&P Global et al., 2023). The trend also affects companies that weaker manufacturing growth means reduced demand for raw materials, further influencing the production rates in the mines.

2.10 Implications for the South African Mining Industry

The evidence indicates that although world manufacturing activity is an important determinant of South African mining production, structural and operational domestic considerations preclude complete convergence with world trends. The main conclusions of this analysis are:

The sector is susceptible to global industrial cycles: Global manufacturing booms are succeeded by rising demand for mined products, and raids by reducing production.

Local bottlenecks compound mining sector frailties: South Africa's mining industry is beset by chronic problems such as electricity supply shortfalls, labour disputes, regulatory uncertainty, and logistical inefficiencies that prevent it from benefiting from manufacturing growth globally.

- Slowdowns in the large manufacturing economies have immediate implications for mining production: The deceleration in global manufacturing

PMI since 2022 has been accompanied by falling South African mining production, reinforcing the industry's responsiveness to global demand.

The chart was aided by S&P Global, Stats SA, and the Minerals Council South Africa, which shows a strong correlation between global manufacturing and South African mining output. However, even though mining output tends to follow global industrial demand patterns, South African domestic issues have triggered an extended lag inside the sector's performance. Industry players and policymakers must address domestic inefficiencies, improve infrastructure, and stabilise the regulatory environment so that mining output can follow global demand cycles more closely.

Although the graph indicates the correlation between mining and international manufacturing, the criticality of establishing synergies through intentional regulatory frameworks, such as the Mining Charter, and cultivating enduring partnerships between mining corporations and local industries is underscored by the interdependent connection between the mining sector and domestic manufacturing.

2.11 Supply Chain Management in the Mining Sector

Supply Chain Management (SCM) integrates business processes to add customer value, including the end user, original suppliers, services, and information (Oldenburg et al., 2024). In the mining sector, SCM is complex and multifaceted. It involves the efficient movement of raw materials from extraction sites, which are transported to processing plants and then to the manufacturer. The mining supply chain is not limited to one country but global because the various stages (exploration, extraction, transportation, refining, and distribution) are often performed in different countries due to a lack of resources and infrastructure in the countries where raw materials are extracted. The mining sector also has to ensure the resilience of its supply chain, regardless of its complexity, which is important when faced with disruptive events such as natural disasters that cause a halt in the transportation of raw materials and refined products (Frederico et al., 2021; Ryciuk & Zabrocka, 2024).

Effective supply chain management is a prerequisite to business performance and profitability, and sustainability is now also applied to the mining sector supply chain management (Malebana, 2024). There is an association between Green Supply Chain Management (GSCM) and employee job satisfaction, operational efficiency, relational efficiency, and a company's performance, with relational and operational

efficiency influencing performance (Ngcobo et al., 2022). Also, GSCM significantly impacts a company's performance (Ngcobo et al., 2022). This means that mining companies should ensure coordination across the different stages of the mining process to minimise costs while reducing delays and meeting the ever-growing demand for raw materials.

Technological innovations impact mining SCM to improve operational efficiency, including advances in automation, real-time data tracking, and predictive analytics (Sánchez & Hartlieb, 2020; Okwubali et al., 2023). These technological innovations can potentially revolutionise supply chain processes by enabling companies to optimise inventory and manage logistics (Sánchez & Hartlieb, 2020). However, despite these advancements, mining companies face challenges aligning supply chain activities and industries, including manufacturing.

2.12 Significance of Supply Chain Collaboration

The interconnected global economy necessitates supply chain collaboration because of how supply chain collaboration allows companies to enhance operational efficiency and achieve mutual benefits across all involved parties (Baah et al., 2021; Nguyen & Nguyen, 2022). Collaboration between companies and institutions means better information sharing and improved forecasting, demand planning, and inventory management (Baah et al., 2021). This is because data is shared in real-time, making it possible for companies to anticipate disruptions while optimising resource allocation and making more informed decisions that reduce inefficiencies. Added to the above, strong collaboration within the supply chain helps companies contribute to the broader goals of economic growth and stability, for example, by supporting national manufacturing industries (Uwamahoro et al., 2024).

2.12.1 Local Content Policies in the Mining Sector

Local Content Policies (LCPs) are governmental policies utilised to favour locally produced goods and services and labour in foreign investment and international supply chain-dependent sectors and industries (Tordo et al., 2013). The policies aim to ensure that a considerable percentage of economic activities, particularly in resource-abundant sectors like manufacturing and mining, accrue to the local communities and companies. Within the mining industry, LCPs were designed to optimise economic and social returns obtained, particularly from investments (Wilhelm, 2023). LCPs can promote economic growth through job creation and

industrialisation, particularly industries with high reliance on foreign experience and imported inputs, when local companies are stimulated in the supply chain (Acheampong et al., 2016). This is done by mandating conditions for a given percentage of procurement or workforce to be locally sourced and offering incentives to businesses that prefer local services and suppliers, for instance.

Local Content Policies (LCPs) as a tool have thus received increased spotlight in driving the local content agenda in the mining value chain. The policies aim to promote and increase local procurement and supplier development and beneficiation activities to stem the highly reserve-like behavior of the mineral extraction industry in South Africa. LCPs facilitate the integration of mining activities with the economy since they promote the supply chain participation of local traders and manufacturers. This change stimulates manufacturing competition among local content producers and sustains the general competitive mining industry (Maponga & Musa, 2021).

2.12.2 Collaborative Governance in the Mining Sector Transition

Collaborative governance (CG) is a mode of policy and service delivery that entails the transition from the government- or market-centric settings to a setting where public, nonprofit, and private institutions work together and are jointly accountable for policymaking as well as service delivery, focusing on creating public value (Voets et al., 2021). Collaborative Governance can significantly enhance mining companies' supply chain initiatives through increased multi-stakeholder cooperation, regulatory compliance, and social and environmental concerns (Van der Watt & Marais, 2021). This is because CG entails combining diverse interests and resources of all involved, with full participation in the joint achievement of mutually beneficial outcomes, this approach is particularly pertinent in the complex and controversial mining industry. The practical application of the concept of Collaborative Governance in the mining supply chain can be examined.

The Responsible Minerals Initiative (RMI) can be seen as a case demonstrating how collaborative governance may help meet the requirements of global supply chain regulations. Applying risk assessment tools and encouraging human rights due diligence, RMI assists companies in meeting international standards. In this way, it helps achieve compliance and extends legitimacy for companies due to the accountability attached to supply chain practices (Sarfaty & Deberdt, 2023).

While this may be a contribution of Collaboration Governance, the latter is by no means an easy task to implement in mining supply chains. The so-called alignment between Social and Labour Plans (SLP) with municipal development plans in South Africa has so far experienced a problem of distrust and lack of accountability. This indicates that while collaboration is key in such matters, there are much-needed frameworks and trust-building measures before such collaboration can yield actual results (Watt et al., 2021).

2.12.3 Innovation and Resilience

Innovation is one of the key drivers of economies becoming resilient, even when faced with external shocks, it is facilitated by knowledge generation (Rocchetta, 2024). Big data analytics and supply chain predictive modelling are technological advancements that are knowledge-generating strategies from which the mining sector can benefit greatly. Supply chain resilience refers to the capacity of supply chains to revert to their original state (or a better position) after experiencing disruptions (Chu et al., 2020). As Maoela et al. (2024) explained, the COVID-19 pandemic significantly threatened the industry and supply chain. The pandemic disrupted the value chains of the mining industries, leading to revenue collection shortages and the employees' safety. The industry has since had to adopt measures to minimise such effects and develop flexibility to combat emerging challenges in the industry. These technologies enable mining companies to deal with interruptions from sources such as COVID-19 or logistical failures. Thus, the increased supply chain visibility, obtained by sharing real-time data and analysis and sophisticated analytical capabilities, can help with better resource management and reduced operational liabilities, hastening the frequency of the resulting unforeseen supply chain interruptions (Bag & Pretorius, 2022).

2.13 Socio-Economic and Environmental Impacts

The mining sector contributes notably to the global economy and provides essential raw materials for different industries, such as the construction and manufacturing industries. However, the sector has socio-economic and environmental impacts that are complex and multifaceted (Selo & Ngole-Jem, 2022). Although the sector generates jobs (directly in the mining sector and indirectly in associated sectors such as manufacturing), is one of the key drivers of economic growth, and contributes to infrastructure development, mining activities usually have adverse environmental and social consequences (Egunyu & Boakye-Danquah, 2024). The environmental consequences are discussed in subsections to follow, as they affect communities and the economy.

2.13.1 Community Engagement in the Mining Sector

Mining operations affect surrounding communities by creating jobs and stimulating the economy, which raises living standards. Adverse effects of mining include strain on the community's infrastructure, a rise in migration to mining regions, and social tensions between the mining industry and the local populace (Dikgwatlhe & Mulenga, 2023). In communities where communities are engaged, challenges such as power imbalance and information asymmetry limit the effectiveness of community engagement in community development initiatives (Zanini et al., 2023). Effective community engagement is necessary to ensure the long-term sustainability of mining operations and that the unfavourable consequences do not outweigh the benefits.

2.13.2 Corporate Social Responsibility from The Mining Sector

Businesses use Corporate Social Responsibility (CSR) to achieve a balance between profit and a mark in society and the environment to demonstrate that the business is concerned about the environment and society (Nirojan, 2024). In mining, CSR is the flagship activity in its quest for addressing socio-economic and environmental problems (Serfontein-Jordaan & Dlungwane, 2022). Properly established corporate social responsibility initiatives can be utilised by business corporations in the mining sector to engage with government stakeholders and communities, and thereby establish trust. Gaps in corporate social responsibility implementation usually undermine the construction of multi-stakeholder alliances, particularly where firms fail to meet stakeholders' expectations or put short-term gains over long-term benefits (Buddu & Scheepers, 2022). In order to formulate

meaningful CSR programs, they must be contextualised in ongoing dialogue with stakeholders and align themselves within local development priorities. The mining industry remains at the lead of the South African economy. However, its future and sustainability are firmly founded on how partnership and innovation in strategy are galvanised to solve issues.

Further, it can be enhanced through collaborative efforts between supply chains to achieve national production and economic growth. Local content programs and technological advancements could also make the industry more sustainable. Socio-economic and environmental issues, however, must be thoroughly addressed so that the benefits of mining could trickle down to all stakeholders, including the local communities. A balance of economic concerns and social responsibility is the secret to establishing trust and long-term cooperation in the industry.

The mining sector continues to drive the South African economy, but its sustainability and growth rely critically on how strategic collaboration and innovation are applied to solve problems. Further, it can be enhanced through collaboration within supply chains to achieve national manufacturing and economic growth. Local content policies and technological advances could also make the sector more resilient. However, socio-economic and environmental issues have to be carefully dealt with so that the benefits of mining may infiltrate all stakeholders, including local communities. A delicate balance of economic objectives and social responsibilities is key to building trust and long-term collaboration within the industry.

2.14 Challenges Faced in the Mining Sector

The mining sector faces many challenges, including acute labour shortages, underinvestment, sparse project pipelines, geopolitical risks, and low productivity (Berbner et al., 2022). Most of these challenges are barriers to effective collaboration between mining companies and inter-industry collaborations, adding to the complexity of supply chains. In developing countries, mineral depletion due to over-exploitation, limited skilled labour, inconsistencies in power supply, inadequate infrastructure, and political problems pose significant challenges for the mining sector (Chusi et al., 2024). This means transportation and logistics are complex, causing delays and inefficiencies.

A study was conducted to investigate the socio-economic impacts of the COVID-19 pandemic on selected mining companies in Limpopo Province, South Africa. The results show differentiated impacts among occupational groups regarding revenue loss and value chain disruptions, while there were welfare disruptions (Maoela et al., 2024). Although the pandemic worsened challenges faced in the South African mining sector, there are also issues such as cable thefts affecting minerals dispatching. At the same time, there has been destruction of railway infrastructure due to extreme weather events and the negative impacts of electricity load shedding (Maoela et al., 2024). According to Lumadi and Nyasha (2024), the South African mining sector needs to adopt mining technology fully; however, it faces the following commonly identified challenges: inadequate external stakeholder engagement, uncertainties, the mining sector being cyclical, and the high risk associated with the adoption of unproven technology.

The mining sector's challenges in South Africa and beyond require country-specific solutions. These solutions should include increasing local mining and development capacity research, encouraging local equipment manufacturing and associated procurement, and technology and skills transfer (Letsoalo, 2017). These solutions can be effective if mining companies prioritise collaboration and benefit from the outcome of effective collaboration strategies, including collaboration with employees, communities, and other stakeholders.

2.15 Conclusion

The mining industry remains one of the foundations of the South African economy because its contribution is in the form of export earnings, employment, and valuable infrastructure investment. Its contribution remains tightly limited by these systemic obstacles that operate against diversification of the manufacturing sector. Notwithstanding the policy basis of legislations like the Mining Charter, with its calls for accelerated procurement by historically disadvantaged South Africans and local suppliers, there remains a large gap between policy intent and the performance of incorporating such suppliers into the supply chain of the mining sector. This disproportion has not just affected the immediate economic impacts in terms of the creation of employment and indigenous business development. However, it has also circumscribed room for that sector to enhance economic sustainability and resilience. That the Mining Charter has been revised to raise the targets on local

procurement is undoubtedly a move in the correct direction towards realising that goal; fulfilling such aspirations, however, requires structured commitment from mining companies, local suppliers, and various government departments towards ensuring tangible collaboration. That would translate into a stronger manufacturing ecosystem, strategically building local content and supplier bases instead of relying on imports by the industry. At the same time, it is exposed to global economic crises.

CHAPTER 3: RESEARCH QUESTIONS AND PROPOSITIONS

3.1 Introduction

In Chapter Three, the researcher will focus on the research questions triggered by the research problem statements. As stated in the first chapter, two research questions will be presented to direct the engagement in this study. The research propositions will be presented, which will be the measuring tool for the truthfulness of the research data based on observation. The research questions will direct the discussions in the literature review, the choice of the research method, the interview, the observation, and the document analysis. Out of two research questions, two research propositions were derived.

3.2 Research Questions

Two research questions were developed from the literature and shared below.

3.2.1 Research Question 1

How could inter-company collaboration in the mining sector positively affect the growth of the manufacturing sector in South Africa?

3.2.2 Research Question 2

What are the obstacles to effective collaboration within the mining sector and stimulating the manufacturing sector, and how might these be overcome?

3.3 Research Propositions

The following subsections discuss two propositions consistent with the research questions and based on the literature in the preceding chapter.

3.3.1 Proposition 1

Inter-company collaborations in the mining sector will stimulate growth in South Africa's manufacturing through supply chain integration, efficient resource utilisation to enhance value, and competitive dynamics. This is because the collaborations create synergies fostering innovation, enhancing resource efficiency, and improving supply chain integration. Pieroni et al. (2024) emphasise that smaller-sized companies benefit more from inter-company collaborations, especially when

collaborating with larger companies. The benefits emanate from integrating resources that support local procurement of host communities while enhancing local supplier capability and creating sustainable ESD programmes.

Strategic partnerships among mining companies facilitate sharing best practices, enhance logistics efficiency, and ensure a stable supply of raw materials, thereby directly improving manufacturing processes (International Council on Mining and Metals [ICMM] & The Partnering Initiative, 2021). This suggests that collaborations will lead to developing more sophisticated mining technologies and facilitating specialised industries. The outcomes will be due to aligning the interests of mining and manufacturing companies, which means South Africa has the potential to leverage the mining sector's resources to drive downstream industries. Therefore, increasing local value-added production while promoting the transfer of skills and technology results in a more resilient and competitive economy (ICMM & The Partnering Initiative, 2021).

3.3.2 Proposition 2

Barriers to successful collaboration in the mining industry involve imbalances in power, mistrust among stakeholders, competition for scarce resources, and conflicting objectives. In collaborations involving communities, information asymmetry and power imbalance cause extremely low community participation levels, thereby diminishing successful collaboration (Zanini et al., 2023). Regulatory obstacles, poor infrastructure, and absence of transparency in information disclosure can also discourage collaboration. They can be surmounted by establishing a culture of openness and trust, goal congruence through strategic alliances, well-defined communication channels, and enabling policies that promote cooperation. The result is enabling openness while building a culture of cooperation and spearheading the creation of incentives for collaborative initiatives, which will close gaps. Added to the above, knowledge-sharing agreements need to be established, which will be via investment in joint R&D by policy norms to achieve sector objectives.

Moreover, technology and data-sharing systems will help promote streamlined operations, further supporting collaboration activities within the mining sector. Ediriweera and Wiewiora (2021) also add that learning culture, knowledge sharing, and external stakeholder involvement are enablers of technology adoption. The

outcome is a collaboration that is supported and promoted, which can ensure better productivity, innovation, and sustainability in the mining sector.

3.4 Conclusion

In this chapter, the researcher expanded on the questions the study seeks to address and the hypotheses to be confirmed through data gathering. The research approach employed in this study is explained in the following chapter.

CHAPTER 4: RESEARCH METHODOLOGY

4.1 Introduction

Chapter Four shares details and defences about the choice of methodology, indicating why particular methods and techniques were relevant for this study. It also shares information about the population, sampling method, data collection instrument, analysis approach, and quality controls. In addition to the above, the methods' limitations are specified.

4.2 Research Philosophy

Research philosophy is a set of assumptions and beliefs about how knowledge is acquired, and it provides guidance for choosing the research approach and formulating study questions (Creswell, 2007). The dominant research philosophies are positivism and interpretivism, and interpretivism was used in this study because the research focused on obtaining the meanings of participants' experiences (Alharahsheh & Pius, 2020). The selected philosophical position acknowledges that understanding reality is dictated by the meanings and interpretations given to it by people, based on their particular context (Creswell, 2007). The foregoing cognitive strategy is beneficial if research questions touch on subjective perceptions, for example, attitudes and treatment of cooperation among mining professionals, local content policies, and their effects on national manufacturing evolution (Siakwah & Lawer, 2024).

The interpretive analysis enabled detailed examination of the involvement of various players in bringing about supply chain collaboration in mining firms and how stakeholders interpreted problems and obstacles to cooperation in complex supply chains. These include their understanding of how they could trigger or shape their behaviors. This philosophical position permitted the development of the multilayered and contextualised nature of cooperation in the mining sector since it also considers local compliance law and national goals (Alharahsheh & Pius, 2020).

4.3 Methodological Approach

A research methodological approach is the process followed to design a study to obtain valid and reliable results (Firdaus et al., 2021). The process entails choosing research methods for sampling, data collection, and analysis. Accordingly, this study employed the qualitative research methodological approach because the aim was to gather deep insights and an understanding of the evolving aspects of collaboration among mining companies and its impact on the manufacturing industry. Compared to the quantitative research methodological approach that focuses on objectivity, the qualitative research methodological approach allows for a nuanced understanding of complex issues because it allows for meaning-making and the provision of context (Firdaus et al., 2021).

The collaboration of mining companies and its impact on the manufacturing industry is a complex phenomenon that requires the application of meanings and subjectivity. As highlighted by Creswell & Poth (2016), the qualitative research methodological approach is appropriate for understanding phenomena in their natural contexts and effectively responds to enquiries regarding "how" and "why." This corresponds with the aim of this study, which is to investigate collaboration within the mining sector.

The inductive qualitative research method was followed to analyse data so patterns and themes could be identified without preconceived theories (Liu, 2016). This is a bottom-up approach applied when researchers aim to explore new topics and concepts. The inductive method was used in this study to provide an in-depth analysis of the theories and various frameworks. This inductive process ensured enhanced exploratory study, allowing for rich contextual probing of risks and opportunities concerning the mining industry.

4.4 Research Design

A research design is a plan focusing on collecting, analysing, and interpreting data to answer a study's research questions (Hunter et al., 2019). Therefore, A research design serves as the blueprint for the study that helps ensure the research problem is thoroughly addressed. This study utilised a descriptive and exploratory research design to investigate the opportunities, challenges, and intricacies of collaboration within the supply chain of the mining sector and its potential to foster national

manufacturing growth. The exploratory approach facilitates the study's ability to gain comprehensive insights into the intricate relationships among stakeholders in the supply chain, particularly regarding the impact of local content policies on these collaborations. This research design was also appropriate for this study because the state of the collaborations and their impact on the manufacturing industry was described. Then an exploration was performed for challenges and potentially effective mitigation strategies (Hunter et al., 2019).

4.4.1 Time Horizon

The cross-sectional method was adopted and it entails the collection of data from a group of people at a single point in time, aiming to capture people's opinions (Wang & Cheng, 2020). This method was used to collect data on collaboration initiatives in the mining sector at a specific time, allowing for an analysis of their potential impact. This approach is aligned with the study's focus on understanding supply chain resilience and the potential for collaboration (Creswell, 2021).

4.5 Population and Sampling

A population refers to the whole group of individuals sharing common characteristics. In contrast, a target population is a specific subset within the population that is the primary focus of a study (Willie, 2023). The target population was identified based on the study's research questions, and it consisted of senior managers and supply chain professionals within significant mining companies in South Africa as well as the key stakeholders in the manufacturing industry.

4.5.1 Sampling

Sampling involves selecting potential participants from the target population from which data will be collected and inferences made about the entire population (Bhardwaj, 2019). Probability or non-probability sampling can be used, and this study employed non-probability sampling because the sample selection was based on non-random criteria and some individuals had a higher chance of being chosen than others (Bhardwaj, 2023). The non-probability sampling technique applied in this study was the purposive sampling technique. This entailed selecting the participants who had been associated directly with or have a high level of insight towards collaborative practices in the sector regarding supply chains.

The sample consisted of industry experts, including senior managers at the centre of procurement and supply chain operations in the mining industry. The sample also included policymakers and regulatory authorities, government ministries, and trade regulators who provided policy alignment and regulatory compliance advice. Their views were crucial in understanding how mining companies navigate complex regulations to facilitate effective supply chain collaboration.

Procurement and supply chain heads also played key roles in gathering data for the research. These are individuals responsible for procurement strategy, supplier development, and risk management within their companies. Their contribution was mainly on the issue of incorporating local suppliers as part of existing procurement systems, especially concerning stringent compliance demands. Additionally, Enterprise and Supplier Development (ESD) Directors, Managers, and Purchase-to-Pay (P2P) Leads offered valuable insights as participants. ESD practitioners are interested in growing Small, Medium, and Micro Enterprises (SMMEs) and implementing Broad-Based Black Economic Empowerment (BBBEE) policies, indicating the need for capacity-building initiatives that will make local businesses sustainable. P2P Leads manage end-to-end procurement processes, referring to pain points like transactional bottlenecks and the cost to emerging suppliers due to late payment.

4.5.1.1 Access to the Sample

Pre-existing networks and contacts with trade associations were employed to gain access to the sample provided. On these visits, potential participants were sent formal letters inviting them to participate, clearly setting out the particular research objectives of the project and asking for their consent to be included in the study. The data collection exercise employed a combination of in-depth interviewees. In-depth interviews were conducted with the main stakeholders, who had hands-on experience, including SME representatives, procurement experts, regulatory authorities, and policymakers. The data-collection method provided extensive and comprehensive information, enhancing knowledge on the study problems (Creswell, 2021).

4.5.2 Sample Size

The sample size comprised 15 participants, and it was dependent on reaching a saturation point, which was reached when comprehensive and robust data were collected (Kvale & Brinkmann, 2015). According to the findings of a study conducted to determine sample sizes based on saturation in qualitative research, interviews reach saturation at an average sample size of 12 to 13 (Hennink & Kaiser, 2022). This means the sample size of this study is within the recommended range.

4.6 Data Collection Process

Data was collected through the use of semi-structured interviews; this is because the study sought to explore how supply chain collaboration can be enhanced among mining companies so it can drive national manufacturing growth. Semi-structured interviews were suitable because they allowed the researcher to control the direction of the conversations during interview sessions (Creswell, 2014). Semi-structured interviews are an effective data collection method for gaining new insights that help to describe what is observed in reality (Creswell, 2014). In addition to the above, the researcher and participants could ask questions for clarity, which helped the researcher ask probing questions so that participants could elaborate more.

The interview sessions were conducted over team meetings, each lasting for an average of 30 minutes. The interview guide consisted of two sections, where Section 1 focused on gathering data about participants' backgrounds. Section 2 focused on answering the study's research questions, where the researcher asked five questions, including probing questions to encourage participants to explain and elaborate more. This interview guide is attached as Appendix A. According to Robinson (2023), probing questions are essential in research interviews because they facilitate the collection of rich, deep data from participants, which is because the questions help obtain clarity from participants when they elaborate further. The above was achieved in this study when interviews were held.

Although the researcher typed answers during interview sessions, the sessions were recorded. The researcher transcribed the recordings and compared the typed answers to ascertain that no information was missed. Each participant agreed to participate in the study and indicated they understood how their contribution would be valuable, which constituted providing informed consent.

4.7 Data Analysis Approach

Thematic analysis was used to analyse the collected data. It entailed the identification of development patterns, themes, and meanings that arise from the process of data gathering (Creswell, 2021). Furthermore, this method of theme analysis is highly compatible with the interpretivism philosophy, enabling a systematic investigation of developing themes and insights derived from the gathered data (Braun & Clarke, 2023). The reflexive approach to thematic analysis was followed because the researcher played an active role in knowledge production (Braun & Clarke, 2019). This is because the researcher contributed towards identifying meanings across the dataset, which means there was an intersection of the data with the theoretical assumptions of the analysis, and the researcher's analytical skills (Braun & Clarke, 2019).

4.8 Ethical Considerations

Ethical considerations in research are a set of principles researchers follow to ensure they conduct studies responsibly (Mirza et al., 2023). These principles guide how the researchers can ensure the well-being and rights of participants. The actions include obtaining permission to conduct the study, ethical clearance, and minimising potential harm to participants and data integrity (Mirza et al., 2023).

Accordingly, the researcher obtained ethical clearance from the university and permission to collect data. Participants' identities and any information that might lead to their identification are protected by using pseudonyms and not sharing the names of the organisations they are affiliated with. Participants were not given any incentives for participating in the study, and the study's findings will benefit participants and others in the mining sector, therefore ensuring beneficence and not for the researcher's benefit.

4.9 Limitations of the Study

Limitations of a study are the shortcomings beyond the researcher's control, including aspects of the research design and methodology, which influence and restrict the interpretation of the results (Rooss & Zaidi, 2019). Adopting the qualitative research methodology means there was subjectivity in interpreting the data, which personal biases can influence. Using the qualitative research methodology also means the results and findings' generalisability is impossible due to factors such as the small sample size not representing the broader mining sector and manufacturing industry. Added to the above, the researcher's limited experience in qualitative research means there was a level of bias when contextualisation and interpreting the analysed results.

However, to reduce the above limitations, the researcher ensured their beliefs and general views did not influence the interpretation of the results. The researcher also explains the steps taken throughout this study's research process to ensure trustworthiness. Other academics may obtain similar results if studies are conducted within similar contexts and target populations.

4.10

Conclusion

Chapter Three shared information concerning the steps taken throughout the research process, including theoretical reasoning for the choice of specific sampling, data collection, and data analysis methods and techniques. The next chapter shared and discussed the thematic analysis results.

CHAPTER 5: RESEARCH FINDINGS

5.1 Introduction

In Chapter Five, the researcher presents data collection and findings from interviews with 15 participants to prove or disprove the two research propositions presented in Chapter Three. Here, the researcher shares the thematic analysis results of the semi-structured interviews with 15 participants. Overall, this research investigated inter-company collaboration in the mining sector to drive growth within the South African manufacturing industry. The results give an idea of the key stakeholders' perceptions about the barriers to collaboration and possible ways of overcoming these challenges.

5.2 Participant Overview

Table 5.1 below provides an overview of the 15 Interviewed participants in this study. To keep each participant confidential, a unique participant code has been assigned. In addition, pseudonyms were given to the companies or names of business units, which participants revealed in response to several questions.

Table 1: Participants' background information

PARTICIPANT CODE	GENDER	RACE	INDUSTRY	YEARS OF EXPERIENCE IN SUPPLY CHAIN	LEVEL WITHIN ORGANISATION
P01	F	A	Mining	5	Senior Management
P02	F	A	Mining	22	Manager
P03	M	A	Mining	8	Manager
P04	M	I	Manufacturing	21	Vice President
P05	M	I	Mining/Policy Contributor	26	Executive Management
P06	F	A	Mining	5	Mid Management
P07	F	C	Mining	9	Management
P08	M	A	Mining/Policy Contributor	21	Management
P09	F	A	Manufacturing	26	Executive Management
P10	M	A	Mining	26	Executive Management
P11	M	A	Manufacturing	14	Executive management

P12	F	W	Mining	15	Senior Management
P013	M	A	Mining	12	Management
P014	M	A	Mining	14	Management
P015	M	I	Mining	26	Senior Executive

Summary of Participant Profile

The participants comprise fifteen members from various professional backgrounds in manufacturing and mining companies. They hold various leadership positions in their organisations, suggesting a highly experienced and strong supplier network. They have five to twenty-six years of experience in supply chain management, demonstrating a mix of new and veteran professionals.

Twelve out of fifteen suppliers are in the mining industry. The other three are in manufacturing, which means that the supplier network is in a position to tap experience in different industrial settings. Their leadership levels are mixed, with nine in senior and executive management, two as vice presidents, and the rest in management. This mix indicates an even group with strategic decision-making ability.

The supplier group is diverse demographically, with six female and nine male respondents. They belong to African (A), Indian (I), Coloured (C), and White (W) racial groups, which indicates a multicultural composition. The diversity guarantees that diversity of opinion and experience supports a balanced supply chain management process.

This supply chain reflects a dominant leadership presence, extensive industry exposure, and race and gender diversity. The company's overall understanding of manufacturing and mining assures it can comfortably manage the complexity of supply chain operations while promoting innovation and strategic advancement.

Data Saturation

Data saturation is a fundamental principle of qualitative research whereby data collection is stopped when no new information, patterns, or themes arise,

guaranteeing the collected information's sufficiency and reliability (Saunders et al., 2018). In the case of this research, 15 participants who are different stakeholders in the mining sector, such as policymakers, suppliers, and manufacturers, took part in semi-structured interviews. The participants were chosen based on a purposive sampling strategy, which favors experience and expertise in the phenomenon of interest (Palinkas et al., 2015). Guest et al. (2020) argues that data saturation is usually reached when no emerging themes or codes are added with more data, which was noted during the twelve interviews in this research. The final three interviews yielded just two additional codes in the already present themes, suggesting additional data collection would be of little value (Nelson, 2021). In addition, Hennink and Kaiser (2022) describe several types of saturation, including thematic and code saturation, which were considered in this study to determine data analysis completion. Achieving data saturation increases methodological rigour in qualitative research by facilitating adequate depth and description of the research topic without sacrificing efficiency in data gathering.

5.3 Responses from the participants

5.3.1 Comparative Analysis of Research Question 1: Inter-company Collaboration Impact on Manufacturing (With Participant Excerpts)

5.3.1.1 Perceptions of Collaboration Among Mining Companies

Mining companies usually view collaboration as a compliance-oriented activity rather than a strategic project. Many attendees voiced worries about how often regulatory constraints shape cooperation instead of proactive involvement for mutual advantage.

P01 "Collaborating then seems compliant-driven... Does it impact our bottom line or our compliance target? The question is, Are we doing good?"

P08 "If it's a compliance exercise, mining houses will still do the bare minimum."

Some participants underlined that driving cooperation is mostly dependent on outside forces including host community expectations:

(P01) "In communities where there are different mining houses, the community drives that collaboration."

Others underlined how the COVID-19 epidemic made businesses see cooperation as a must:

(P01) "Supply chain has always been in the background in the mining industry. It was only during COVID-19 disruptions that people became concerned about collaboration."

5.3.1.2 Key Contrasts: Compliance-Driven versus Strategic Collaboration

Regulatory frameworks such as the Mining Charter and Broad-Based Black Economic Empowerment (BBBEE) laws often impact inter-company cooperation in the mining industry. Many companies see cooperation as a compliance need rather than a strategic effort to increase competitiveness and long-term sustainability. Frequently resulting in minimum compliance efforts, this regulatory-driven approach causes businesses to satisfy only the minimum criteria needed to keep compliance ratings instead of aggressively looking for cooperative prospects for mutual gain.

(P08) "If it's a compliance exercise, mining houses will still do the bare minimum."

(P01) "Collaborating then seems compliant-driven... Does it impact our bottom line or our compliance target? The question is, are we really doing good?"

From this point of view, several mining corporations find that their requirement to show compliance with industry-specific laws drives collaboration rather than strategic aim. As businesses engage in brief, transactional ties instead of building long-term alliances that can improve local manufacturing growth, such partnerships sometimes lack sustainability.

On the other hand, a different perspective holds that cooperation can be a strategic enabler to improve local production and supply chain efficiencies. Some mining houses have realised that deliberate supplier development and shared procurement policies can help to save costs, maximise resource allocation, and strengthen supply chain resilience.

(P01) "We are intentional about investing in our local economy."

(P02) "Collaboration in ESD programs could lead to more sustainable supplier development."

This viewpoint fits the general objective of building a linked ecosystem where mining corporations use collaborative procurement and supplier development programs to

boost industrial growth outside compliance. However, the differences in these points of view highlight the lack of a consistent industry-wide approach to cooperation; some companies welcome collaboration for strategic reasons, while others stay limited to regulatory-driven methods.

5.3.1.3 Community Influence on Collaboration

With outside stakeholders, especially host communities, playing a significant influence on inter-company collaborations, cooperation within the mining industry is often reactive rather than proactive structured. Many mining houses run within geographically concentrated areas where several companies engage with the same populations. Therefore, the main driving force for cooperation is frequently community needs for enterprise and supplier development (ESD) programs and local procurement projects.

(P01) “In communities where there are different mining houses, the community drives that collaboration.”

(P02) “Host community dynamics as a collaboration driver.”

These results imply that many businesses respond to external pressures rather than establishing long-term strategic alliances. Therefore, they engage in ad hoc, situational collaboration instead of developing coordinated industry-wide projects. Nonetheless, some participants admitted that since community-driven cooperation usually concentrates on social impact projects rather than supply chain integration and manufacturing support, it might be unreliable and narrow in scope.

(P08) “Mainly, it will be a collaboration amongst the mining companies themselves, especially when implementing certain SLP projects.”

This draws attention to a lost opportunity for mining corporations to deliberately create collaborative models motivated by factors other than compliance or community pressure. The lack of organised collaboration models indicates the necessity for industry-wide initiatives, including community expectations that combine with long-term supplier and firm development plans outside immediate regulatory and social compliance needs.

5.3.1.4 Technology as an Untapped Enabler of Collaboration

Technological developments could change mining sector collaboration, especially in real-time data exchange, digital procurement systems, and centralised supplier databases. Digital solutions can increase procurement and resource allocation efficiency, transparency, and supplier interaction simplicity. Still, despite these changes, mining businesses mostly use technology as a collaboration tool.

(P01)“Technology is underutilised for collaboration... having real-time information or quarterly updates could help us see who’s leading the industry.”

(P02)“A centralised supplier database could improve efficiency and reduce redundancy.”

Some companies have admitted the possible advantages of real-time information-sharing systems, particularly in the domains of cooperative logistics, procurement standardising, and supplier visibility. These technologies could enable data-driven decision-making and help lower inefficiencies from scattered supply chain methods.

The more significant industry has yet to embrace such digital solutions due to issues with competitive advantage, data confidentiality, and interoperability between several procurement systems.

(P02)“Companies hesitate to share supplier information due to concerns over intellectual property.”

(P05)“The mining sector operates in silos, making it difficult to implement joint local procurement strategies.”

The difficulty is further exacerbated by the unequal acceptance of technology among mining enterprises since businesses run in silences with different degrees of digital maturity. This lack of standardisation inhibits the mining sector from using technical developments to increase supplier development and procurement effectiveness.

5.3.1.5 Examples of Positive Collaboration in Manufacturing

A few individuals gave instances of effective teamwork that directly affected nearby industries.

(P01)"We intentionally invest in our local economy."

(P01)"We often receive applications from service providers that service other mining houses, and we ask, but if you're working with company A, why are you not going to them? They've reached their cap."

Other panellists related stories of how cooperative efforts enhanced supplier development.

(P02)"Collaboration in ESD programs could lead to more sustainable supplier development."

Still, many mining businesses run in silos, with competitive issues restricting more general cooperation:

(P10)"Mining companies tend to see each other as competitors rather than collaborators."

(P12)"Trade secrets are a major barrier to collaboration."

The participants held a polarised position, with the intention to collaborate, the application for collaboration, and the spirit of competition against collaboration leading to supplier development.

5.3.1.6 Key Contrasts: Successful Versus Limited Collaboration

While some mining businesses have participated in successful joint supplier development projects, many remain reluctant due to worries about competition and perceived threats to their competitive position. Inter-company collaboration inside the mining sector offers a contradiction. Examples of effective teamwork are usually connected to deliberate activities meant to increase the local supplier base.

(P02) "Collaboration in ESD programs could lead to more sustainable supplier development."

(P01) "We are intentional about investing in our local economy." (P01)

These cases show how cooperative supplier development projects could help local manufacturing capacity to grow and improve the general industry competitiveness.

Effective teamwork usually produces more resilient supply chains, economies of scale, and market access for nearby vendors. Distrust, fear of losing a competitive edge and concern about data sharing can lead to cybercrime.

(P10) “Mining companies tend to see each other as competitors rather than collaborators.”

(P08) “If it’s a compliance exercise, mining houses will still do the bare minimum.”

This difference between practical group projects and restricted industry-wide cooperation emphasises the necessity of a more unified approach to support mining house alliances. The possible advantages of cooperation on local manufacturing development remain unrealised without resolving the fundamental competitive concerns and trust problems.

5.3.1.7 Sector-Specific Barriers

The well-established supply chains of the mining industry create a major obstacle to cooperation since many businesses are reluctant to sour ties with reliable suppliers. The inertia generated by current procurement systems makes teamwork less enticing, particularly when it calls for businesses to change their operating methods or share supplier information.

(P07) “Mining companies have established vendor relationships and resist switching suppliers.”

(P07) “Different mining companies follow operational and procurement standards, limiting standardisation.”

The scattered character of the sector, whereby businesses sometimes prioritise their supply chain optimisation over more general, industry-wide cooperation, adds to these sector-specific challenges. Consequently, prospects for shared infrastructure, cooperative supplier growth, or joint procurement for combined procurement remain underdeveloped.

(P05) “The mining sector operates in silos, making it difficult to implement joint local procurement strategies.”

This silo approach prevents the building of linked supply chains that can assist local industrial expansion and drive further efficiencies. Dealing with these sector-specific

obstacles requires changing uniform procurement methods and being more open, strengthening industry-wide cooperation.

5.3.1.8 Competitive Mindset in Mining Sector

In the mining industry, a competitive attitude is a significant obstacle to collaboration. Many businesses worry that disclosing supplier data or working on joint projects may cause a loss of competitiveness. Concerns over intellectual property, trade secrets, and the possibility that competing companies may learn about private procurement techniques motivate this anxiety.

(P12) “There’s always been this stigma around collaboration with other mining houses. I cannot collaborate with you because you can take my ideas.”

(P02) “Companies hesitate to share supplier information due to concerns over intellectual property.”

Particularly in areas like supplier development, collaborative procurement, or data sharing, this fear of losing a competitive edge causes a trust gap that hinders businesses' desire to participate in open collaboration. The lack of clear policies for safeguarding shared data aggravates this problem since enterprises are forced to negotiate teamwork without clear data security and confidentiality rules.

(P05) “Trust issues prevent mining companies from openly sharing data and suppliers.”

Dealing with this competitive attitude calls for a cultural change in the mining industry that emphasises cooperation as a strategic advantage instead of a possible risk. Clear data-sharing policies and developing trust-building tools could allay worries about competitive advantage, opening the path for more successful cooperation projects supporting local manufacturing expansion.

5.3.1.9 Supply Chain Integration Mechanisms Benefiting Local Manufacturing

Although there are various ways to integrate supply chains that would help local industries, problems still exist. Participants noted several such methods.

(P02)"A centralised supplier database could improve efficiency and reduce redundancy."

(P01)"Technology is underutilised for collaboration... Having real-time information or quarterly updates could help us see who's leading the industry."

Many participants did, however, highlight challenges to supply chain cooperation, including trust problems and competitive concerns:

(P02)"Companies hesitate to share supplier information due to concerns over intellectual property."

(P05)"The mining sector operates in silos, making it difficult to implement joint local procurement strategies."

5.3.1.10 Key Contrasts - Data Sharing versus Protectionism

The conflict between protectionism and data sharing is a fundamental stumbling block towards advancing inter-firm cooperation in the mining industry. Other mining houses prefer centralised supplier databases for better procurement effectiveness, redundancy reduction, and improved supply chain transparency. With the shared database, mining houses can find suitable suppliers, minimise the cost of supplier imports, and maintain compliance with local procurement rules to benefit local producers.

(P02)"A centralised supplier database could improve efficiency and reduce redundancy."

(P02)"Technology could assist in procurement standardisation and supplier visibility."

Most companies in the sector shun supplier data-sharing initiatives owing to intellectual property issues, competitive secrecy, and information security. Resistance to supplier information sharing has its foundation in the apprehension that rivals would manage to penetrate strategic supplier bases and thus destroy market leadership.

(P002) “Companies hesitate to share supplier information due to concerns over intellectual property.”

(P012) “Trade secrets are a major barrier to collaboration.”

This protectionist strategy sustains fragmentation in the mining supply chain, as companies hesitate to relinquish exclusive control over their supplier relationships for collaborative procurement initiatives. The absence of a secure, regulated framework for supplier data-sharing intensifies the problem, as companies cannot guarantee protecting sensitive information.

5.3.1.11 Technology Adoption Gaps

Digital technologies like real-time procurement software, data exchange networks, and AI-powered analytics offer mining companies a way to increase transparency in the supply chain and the ability to cooperate with suppliers more effectively. Future technologies can supply real-time performance insights from the suppliers, lower inefficiencies, and enable perfect collaboration among numerous mining houses.

(P01) “Technology is underutilised for collaboration... having real-time information or quarterly updates could help us see who’s leading the industry.”

(P05) “Technology platforms could enhance procurement efficiency and improve supplier visibility.” (P05)

Yet, technology take-up across the mining sector is patchy, with most still using conventional, manual procurement. This patchy take-up of digital solutions discourages industry-wide integration, with companies working from different technological systems that are not standardised.

(P12) “Different mining houses operate with different technological systems, which hinders standardisation and collaboration.”

(P10) “Technology adoption for collaboration is low.”

Lack of standardised digital procurement systems is one of the main obstacles to general acceptance of technology. Common standards help to ensure that systems stay incompatible, without which procurement optimisation and inter-company data sharing are limited. Moreover, many companies lack the internal capacity to thoroughly apply digital supply chain solutions, which results in gradual and scattered acceptance throughout the industry.

(P07) "Companies optimise at their own level rather than an industry-wide level."

To overcome these obstacles, mining businesses must prioritise implementing standardised procurement systems and funding digital transformation initiatives. Using legal frameworks that support cross-company technological integration, government and industry authorities should motivate the acceptance of digital technologies. Furthermore, the cooperative capital outlay towards the industry-wide procurement systems could potentially assist in harmonising digital procurement methods, ensuring that every company gains more efficiency and openness.

5.3.1.12 The Role of Collaboration in Enterprise and Supplier Development (ESD)

While funding limitations and insufficient cooperation efforts hinder development, actors emphasised that cooperation in ESD projects can enhance the capabilities of local suppliers.

(P03) "Enterprise and Supplier Development (ESD) initiatives must focus on sustainable partnerships, not just compliance."

(P07) "ESD vendors sometimes subcontract work, leading to inefficiencies and financial mismanagement."

Other participants pointed out how difficult cooperation in ESD is because of competitiveness issues.

(P01) "We often receive applications from service providers that service other mining houses, and we ask, but if you're working with company A, why are you not going to them? They've reached their cap."

(P05) "Joint ventures often fail to deliver effective skills transfer and economic benefits to local suppliers."

Key Contrasts: Sustainability versus Short-Term Compliance

The way suppliers are developed is a significant difference in mining sector cooperation; some companies prioritise long-term sustainability, while others limit their involvement because of financing constraints motivated by compliance. Those companies that perceive supplier development as a strategic, long-term investment focus on developing local supplier capability, innovation, and sustainable economic engagement beyond mere regulatory compliance.

(P03)“Enterprise and Supplier Development (ESD) initiatives must focus on sustainable partnerships, not just compliance.”

(P02)“Collaboration in ESD programs could lead to more sustainable supplier development.”

In this view, good supplier relationships demand continuous investment, capacity-building initiatives, and knowledge-sharing arrangements beyond minimum requirements. Companies adopting this strategy understand that a robust local supply base supports sectoral competitiveness, supply chain resilience, and long-term cost savings.

However, most mining companies embark on supplier development programs only to meet compliance requirements stipulated in the Mining Charter and Broad-Based Black Economic Empowerment (BBDEE) Act. This sometimes amounts to short-term initiatives with a low impact as money and resources are invested for more compliance reasons than strategic considerations.

(P08)“If it’s a compliance exercise, mining houses will still do the bare minimum.”

(P01)“We often receive applications from service providers that service other mining houses, and we ask, but if you're working with company A, why are you not going to them? They've reached their cap.”

Neglect to pledge to sustainable supplier development leads to a dependency cycle whereby local suppliers cannot sustain development past their initial fiscal stimulus. To resolve this challenge, industry priorities must be realigned, whereby supplier development is viewed as a vital component of corporate strategy rather than a burden.

5.3.1.13 Limited Funding for Supplier Growth

Despite the importance of supplier development, most mining companies find it difficult to offer adequate funds to enable local suppliers to develop and expand. Although some companies fund deliberate supplier growth initiatives, others mention insufficient financial flexibility, economic recessions, and tight budgets as limitations to increased participation.

(P01)“We are intentional about investing in our local economy.”

(P05)“Government incentives could encourage mining companies to collaborate on supplier development.”

Many mining companies, however, cap their supplier development budgets, restricting local suppliers' capacity to rise above a given level. Some suppliers remain caught in early-stage development, unable to broaden or diversify their activities.

(P01)“ESD funding constraints—limited capacity for new suppliers.”

(P12)“At the end of the contract term, suppliers often sit with nothing again.”

Since many mining companies reuse capital amongst new entrants rather than reinvesting further in previously aided suppliers, this funding cap creates a vast supplier development beneficiary turnover. By so doing, the strategy helps companies achieve compliance by serving vast numbers of suppliers and thereby inhibits enormous long-term investment in developing globally competitive local suppliers.

5.3.1.14 Barriers to Skills Transfer in the Mining Sector

The limited flow of technical and managerial skills to local suppliers is one of the main obstacles to efficient enterprise and supplier development (ESD) cooperation in the mining industry. Due to poor collaboration frameworks, mining companies have seen most of these ventures not yield significant skills transfer, the lack of commitment by multinational partners, and inadequate training programs, despite alliances with suppliers being formed to improve local expertise and industrial participation.

(P05) "Joint ventures often fail to deliver effective skills transfer and economic benefits to local suppliers."

(P12) "Collaboration could strengthen enterprise and supplier development by expanding supplier opportunities."

Sometimes, mining companies contract work to local vendors without enough technical or management direction, resulting in low-value supply chain involvement. This leads to restricted capacity-building because local businesses depend on temporary agreements instead of fully integrated supply chain partners.

(P07) "ESD vendors sometimes subcontract work, leading to inefficiencies and financial mismanagement."

(P07) "Enterprise and supplier development vendors struggle with accurate quoting and project completion."

Furthermore, the absence of organised skills transfer initiatives adds to unequal knowledge-sharing dynamics, where multinational companies retain control over high-value supply chain operations. At the same time, local suppliers are limited to low-complexity activities.

5.3.1.15 Impact of Knowledge Sharing and Joint Logistics Initiatives

Participants pointed out that cooperative logistics projects and knowledge-sharing might help to enhance manufacturing techniques.

(P01) "Benchmarking activities help us see how other mining houses are set up regarding their procurement decision-making autonomy."

(P04) "Joint procurement strategies could lower costs and create greater efficiencies."

Still, significant obstacles remain, especially mistrust and opposition to change:

(P07) "Companies optimise at their own level rather than an industry-wide level."

(P12) "There's always been this stigma around collaboration with other mining houses. I cannot collaborate with you because you can take my ideas."

5.3.1.16 Important Contrasts Identified - Limited versus Proactive Knowledge Sharing

Improving supply chain efficiencies and supplier development in the mining industry depend heavily on knowledge sharing. However, mining businesses have different ways of sharing knowledge; some actively participate in benchmarking and best practice exchanges, while others are reluctant because of competitive issues.

Inter-company cooperation offers companies who understand the need for benchmarking a chance to strengthen general supply chain resilience, optimise supplier performance, and change procurement methods. Proactive knowledge-sharing companies participate in industry benchmarks and learn from their peers to pinpoint best practices in supplier management and procurement decision-making.

(P01) "What we've recently embarked on is benchmarking activities, just to see how other mining houses are set up in terms of their procurement decision-making autonomy."

(P14)"Knowledge sharing about product efficiency and supply chain best practices could drive better procurement decisions."

These points of view show how some companies see inter-company information exchanges as a tool to reach operational excellence, stimulate supplier development, and raise manufacturing capabilities. Benchmarking helps businesses find inefficiencies, evaluate procurement strategies, and implement more successful supply chain management techniques.

On the other hand, many mining companies oppose knowledge sharing out of worries about intellectual property protection and competitive secrecy. These businesses see data and knowledge sharing as a possible threat to their market position since exposing information about their procurement systems, supplier ties, or operational policies could provide competitors with a competitive advantage.

(P12)"There's always been this stigma around collaboration with other mining houses. I cannot collaborate with you because you can take my ideas."

(P02)"Companies hesitate to share supplier information due to concerns over intellectual property."

This resistance to knowledge and best practices leads to a fragmented sector in which businesses run in silos instead of gaining from group learning. Although some companies support more openness in procurement policies, others prioritise confidentiality, restricting the overall influence of knowledge-sharing projects. Industry players must create organised benchmarking systems that enable controlled knowledge sharing to solve this problem and ensure companies learn without sacrificing private competitive information.

5.3.1.17 Trust Deficit in Information Sharing in the mining sector

While inter-company knowledge sharing has excellent advantages, mistrust is a natural obstacle to collaboration in the mining industry. Most companies fear sharing operating insights, supplier information, or procurement data will damage their strategic position, resulting in little participation in collaborative ventures.

(P05) "Trust issues prevent mining companies from openly sharing data and suppliers."

(P10) "Mining companies tend to see each other as competitors rather than collaborators."

Concerns about intellectual property rights, competitive advantage, and supplier exclusivity compound this trust deficit. Fears about competitors recruiting important suppliers, negotiating better deals, or upsetting current procurement relationships cause companies to withhold distribution of supplier data routinely.

(P12) "Trade secrets are a major barrier to collaboration."

(P03) "Concerns over supplier data sharing create barriers to industry-wide procurement collaboration."

Consequently, mining businesses restrict their collaboration to compliance-oriented activities rather than participating in strategic, industry-wide procurement alliances. The absence of openness and information sharing hinders the sector from achieving collective efficiency, including reducing procurement costs, optimising supplier skills, and mitigating supply chain hazards.

To address these difficulties, mining corporations must establish trust-building measures, including:

- Establish data-sharing agreements that delineate the parameters and restrictions of shared information.
- Confidentiality frameworks that safeguard competitive intelligence while facilitating collaboration.
- Industry-wide governance frameworks that mandate ethical information-sharing protocols.

Failure to resolve these trust difficulties will perpetuate fragmented supply chain activities within the mining sector, constraining chances for collaborative supplier development and industrial expansion.

5.3.1.18 The Need for Policy Interventions

Some mining corporations support voluntary collaboration, while others contend that government action is essential to promote inter-company information sharing and supply chain integration. The absence of regulatory enforcement has resulted in restricted collaboration, as enterprises are not mandated to participate in collaborative supplier development or procurement transparency programs.

(P12) "There is no government policy driving mining sector collaboration."

(P11) "Government policies do not actively enforce mining sector collaboration."

Without explicit regulatory frameworks or obligatory collaboration incentives, mining corporations prioritise individual cost efficiency over collective industry advancement. Numerous companies contend that legislative misalignment, especially between the Mining Charter and BBBEE rules, engenders ambiguity, inhibiting collaboration.

(P02) "Policy misalignment between BBBEE and the Mining Charter creates uncertainty."

(P02) "Regulations lack clear enforcement mechanisms for collaboration."

Conversely, several participants assert that well-designed government incentives, fines, or regulatory mandates could motivate mining companies to pursue strategic partnerships. Potential policy initiatives may encompass:

- Tax incentives for companies that share supplier development programs.
- Government-led supplier databases to ensure transparency.
- Mandating inter-company collaboration in procurement strategies.

(P05)"Government incentives could encourage mining companies to collaborate on supplier development."

(P09)"Successful collaboration should align with the Mining Charter to be enforceable."

These viewpoints underscore the necessity for more robust policy frameworks to transform collaboration from voluntary participation into a strategic, industry-wide commitment. Government participation may facilitate the standardisation of procurement collaboration, improve supplier development, and establish a more cohesive mining-manufacturing ecosystem.

While several companies promote market-driven collaboration, others acknowledge that policy enforcement is essential to address competitive hesitance, trust deficiencies, and regulatory uncertainties. Implementing explicit policy frameworks, regulatory requirements, and organised incentive programs could promote increased transparency, better supplier development, and heightened procurement efficiency in the mining industry.

The researcher presented the database on research question one; the following discussion was on research question two.

5.3.2 Comparative Analysis of Research Question 2: Obstacles to Collaboration in the Mining Sector

5.3.2.1 Identifying the Main Obstacles to Effective Collaboration

Mining businesses encounter numerous obstacles to effective collaboration, primarily due to power imbalances, resource competitiveness, distrust, regulatory misalignment, and infrastructural deficiencies. These impediments obstruct information dissemination, collaborative supplier development, and supply chain integration, eventually impeding initiatives to enhance local manufacturing via inter-company alliances. A significant impediment noted is the competitive mentality among mining corporations, when companies perceive one another as adversaries rather than prospective collaborators. This competitive mindset undermines transparency and collaborative decision-making.

(P10)"Mining companies tend to see each other as competitors rather than collaborators."

(P05)"Trust issues prevent mining companies from openly sharing data and suppliers."

Moreover, power disparities between larger international businesses and smaller local mining enterprises exacerbate collaboration challenges. Major mining corporations frequently monopolise decision-making processes, resulting in diminished negotiation strength and reduced opportunity for smaller enterprises to engage meaningfully in collaborative projects.

(P15)"The structure of the industry does not promote collaboration across industrial players."

(P15) "Junior miners may have more flexibility in collaboration than large mining houses."

A notable challenge is a regulatory misalignment when discrepancies in policies such as the Mining Charter and BBBEE codes generate ambiguity around collaboration expectations and compliance obligations.

(P02) "Policy misalignment between BBBEE and the Mining Charter creates uncertainty."

(P02)"Regulations lack clear enforcement mechanisms for collaboration."

5.3.2.2 Important Contrasts Identified - Competition versus Cooperation

In the mining industry, the dynamics of inter-company relationships may define themselves as a conflict between collaboration and competitiveness. Some businesses recognise the strategic benefits of teamwork and stress that combined procurement and supplier development can result in cost savings, improved operational efficiency, and a more strong local manufacturing base. As one respondent pointed out.

(P02)“Collaboration in ESD programs could lead to more sustainable supplier development. If we come together, we can create a larger market for local suppliers.”

Notwithstanding these advantages, competitive pressures and questions about market positioning still pose major obstacles. Fears of losing a competitive edge cause companies often to be reluctant to share resources and information:

(P12)“There’s always been this stigma around collaboration with other mining houses. I cannot collaborate with you because you can take my ideas.”

Many times, this competitive mindset leads mining businesses to operate separately and give their strategic aims top priority above industry-wide development. Therefore, even if sure business participants see the benefits of the silo approach, it prevents the possibility of more general, mutually beneficial cooperation.

5.3.2.3 Power Dynamics in the mining sector

Power imbalances within the mining industry significantly impact the effectiveness of collaboration. Within the industry, the Bigger mining companies usually tend to control a large amount of access to vital procurement networks and have more extensive programmes focused on supplier development, restraining the opportunities for smaller companies to benefit from collaborative initiatives. This perspective was brought to light by a participant who indicated that :

(P07) “Mining companies have established vendor relationships and resist switching suppliers. Smaller companies struggle to get a foot in the door.”

In addition, power concentration among leading companies typically leads to unequal bargaining positions in joint ventures and buying alliances. Small mining houses and contractors may not be in a position to bargain for favorable terms or gain access to profitable contracts. Another contributor reasserted this as follows:

(P15)“Infrastructure built by large mining companies is often inaccessible to smaller companies due to regulatory and financial constraints.”

When these power dynamics occur, they perpetuate an environment where mining sector collaboration benefits are not proportioned and are skewed towards the more prominent companies . This limits the overall effectiveness and efficiency of industry-wide initiatives to enhance local manufacturing and supplier development.

5.3.2.4 Regulatory Uncertainty in the Mining Sector

Regulatory ambiguity is a significant obstacle to formal partnerships and coordination among mining enterprises. Companies frequently encounter difficulties interpreting and adhering to overlapping policy frameworks, such as the Mining Charter and BBBEE regulations, leading to a disjointed approach to collaboration. One person articulated this challenge:

(P02)“Regulations lack clear enforcement mechanisms for collaboration. It’s hard to know if we’re meeting the expectations or if we’re overcomplying.”

The lack of coherent and explicit regulatory guidance results in uncertainty and inconsistent execution of collaborative initiatives. Another respondent highlighted the intricacies of conforming to many regulatory mandates:

(P03)“Policy misalignment between BBBEE and the Mining Charter creates uncertainty. Companies are unsure which policies to prioritize, leading to hesitance in engaging in meaningful collaboration.”

This legislative ambiguity frequently leads organisations to pursue a compliance-oriented strategy, fulfilling only the minimum legal requirements instead of seeking strategic, long-term collaborations. Enhanced regulatory clarity and streamlined policy frameworks are necessary to promote more organised and effective collaboration within the mining sector.

5.3.2.5 Regulatory and Infrastructure Challenges Hindering Collaboration

Regulatory and infrastructure-related obstacles further hinder efficient coordination among mining enterprises. The geographical dispersion of mining operations presents a significant infrastructural limitation, complicating logistical coordination and collaborative procurement initiatives.

(P02)“Geographical separation between mines makes collaboration difficult.”

(P15)"Infrastructure built by large mining companies is often inaccessible to smaller companies due to regulatory and financial constraints."

Another issue is the policy enforcement gaps, characterised by vaguely stated or inconsistently implemented collaborative requirements. Although legislative frameworks are established to promote local procurement and supplier growth, enforcement is inadequate, permitting corporations to adhere superficially without participating in substantial collaboration.

(P11)"Government policies do not actively enforce mining sector collaboration."

(P09)"Successful collaboration should align with the Mining Charter to be enforceable."

The infrastructure and policy constraints underscore the necessity for robust regulatory enforcement, superior logistical coordination, and augmented governmental backing for collaborative projects.

5.3.2.6 Important contrast Identified - Regulatory Barriers versus Voluntary Cooperation

Collaboration between companies in the mining sector is frequently dictated by regulatory requirements rather than voluntary cooperation motivated by strategic objectives. According to laws such as the Mining Charter and BBEE codes, numerous mining businesses collaborate as a compliance strategy to fulfil local content mandates. This regulatory-driven strategy often leads to limited engagement beyond legal requirements, as noted by one participant:

(P08)"If it's a compliance exercise, mining houses will still do the bare minimum."

Likewise, apprehensions of insufficient regulatory enforcement exacerbate a disjointed collaborative environment. Several participants noted that whereas policies promote collaboration, they lack definitive enforcement tools, resulting in variable engagement among mining corporations:

(P02)"Regulations lack clear enforcement mechanisms for collaboration."

Conversely, differing perspectives indicate that certain organisations favour market-driven, voluntary collaboration, acknowledging that strategic alliances can enhance

efficiency, competitiveness, and supplier development. Instead of awaiting governmental mandates, these organisations proactively engage in cooperative procurement strategies, collaborative supplier databases, and corporate growth activities:

(P01)“We are intentional about investing in our local economy.”

Furthermore, several respondents assert that excessive dependence on regulatory frameworks impedes innovation, as compliance-driven collaboration is often short-term and transactional rather than strategic and enduring:

(P02)“Collaboration in ESD programs could lead to more sustainable supplier development.”

5.3.2.7 Infrastructure as an Enabler versus Constraint

The presence of infrastructure is crucial in influencing the efficacy of inter-company collaboration in the mining industry. Robust transportation networks, energy provision, and collaborative logistics infrastructure facilitate corporate partnerships, optimise supply chains, and improve local sourcing. Participants highlighting the facilitative function of infrastructure cited successful instances where collaborative investment in logistics and supplier networks yielded operational efficiencies:

(P14)“Common supply chain needs like steel, logistics, and power could be leveraged for joint procurement efforts.”

Likewise, government-mandated infrastructure initiatives have, in certain instances, fostered collaboration by establishing shared resources:

(P15)“The Richards Bay Coal Terminal is a unique example of successful mining collaboration.”

Nonetheless, some participants recognised infrastructure deficiencies as a major impediment to collaboration, especially in areas where transportation, power supply, and logistics facilities are either inadequate or monopolised by certain mining companies:

(P08)“Manufacturing is highly dependent on energy stability... Without stable energy, manufacturing growth is unlikely.”

(P15)"Infrastructure built by large mining companies is often inaccessible to smaller companies due to regulatory and financial constraints."

Smaller mining enterprises and local suppliers frequently suffer from infrastructural inadequacies since larger mining corporations with access to exclusive logistical and energy resources monopolise procurement networks. This disparity in infrastructural accessibility engenders a competitive chasm, wherein well-resourced enterprises capitalise on logistical efficiencies while smaller organisations encounter obstacles to market engagement.

Furthermore, several organisations have decided to enhance infrastructure at the organisational level instead of engaging in collaborative industry-wide projects, thereby impeding collective initiatives and supplier growth endeavours:

(P15)"Mining companies focus on their own operations rather than industry-wide optimisation."

(P04)"Joint procurement strategies could lower costs and create greater efficiencies."

Mining companies operating in areas with sufficient infrastructure gain from improved supply chain coordination, allowing for combined logistics, pooled warehousing, and collaborative supplier growth. These enterprises underscore the significance of utilising existing infrastructure to develop cost-effective procurement approaches and improve local manufacturing capacities.

(P14)"Collaboration could sustain ESD programs by providing a larger market for small suppliers."

(P02)"A centralised supplier database could improve efficiency and reduce redundancy."

Nevertheless, in numerous mining-centric areas, insufficient infrastructure constitutes a substantial obstacle to cooperation. Inadequate road infrastructure, inconsistent electricity provision, and restricted access to communal amenities hinder enterprises' ability to coordinate procurement operations, move raw materials, and integrate suppliers into collaborative supply chains.

(P02)"Geographical separation between mines makes collaboration difficult."

(P15)“Junior miners may have more flexibility in collaboration than large mining houses.”

(P07)“End users resist change, preferring imported products over local alternatives.”

The absence of collaborative infrastructure projects, including shared transportation and logistics facilities, intensifies supply chain inefficiencies, constraining the scalability of local supplier involvement in mining-sector manufacturing.

(P02)“Companies hesitate to share supplier information due to concerns over intellectual property.”

(P05) “The mining sector operates in silos, making it difficult to implement joint local procurement strategies.”

Another respondent said that government-mandated infrastructure projects could compel collaboration. However, they may also provide cost-related issues.:

(P15)“Common infrastructure forced by government can sometimes facilitate collaboration but also introduces cost barriers.”

In contrast, inadequate infrastructure serves as a substantial impediment to supply chain efficiency and collaborative initiatives. Mining enterprises in areas with deficient road networks, inconsistent energy provision, or insufficient logistical infrastructure have elevated expenses and disjointed supply chains, rendering collaborative procurement less appealing or impractical. A participant articulated dissatisfaction with infrastructural obstacles hindering supplier collaboration:

(P08) “Manufacturing is highly dependent on energy stability... Without stable energy, manufacturing growth is unlikely.”

This contrast between well-serviced and underdeveloped locations demonstrates how infrastructure can facilitate or impede collaboration, contingent upon local conditions. Companies in infrastructure-abundant regions utilise logistical coordination to achieve cost efficiencies, whilst those in infrastructure-deficient areas face supply chain constraints that impede collaborative supplier participation.

5.3.2.8 Large versus Small Companies : Infrastructure Access and Competitive Disparities

The magnitudes of a mining company substantially affect its capacity to access and employ collaborative infrastructure. Major mining corporations generally possess the financial means to invest in private infrastructure, including specialised transport routes, private ports, and internal energy solutions, enabling them to circumvent the constraints of public infrastructure.

One respondent from a large mining firm described how access to private infrastructure facilitates independent operations:

(P15) "We have our own logistics network, so we don't really rely on external infrastructure for supply chain collaboration."

Conversely, smaller mining companies and suppliers have challenges due to insufficient infrastructure, hindering their capacity to engage in collaborative efforts. The absence of access to private logistics hubs or specialised transport routes compels these companies to rely on congested and ineffective public infrastructure, resulting in increased costs and operational inefficiencies.

A representative from a smaller company emphasised these discrepancies:

(P15) "Large mining companies have infrastructure that smaller companies cannot access, making it harder for us to compete in supplier development programs."

This fragmentation intensifies collaboration disparities, as larger enterprises can autonomously address supply chain difficulties, whilst smaller companies necessitate external assistance and joint efforts to surmount infrastructure-related obstacles.

5.3.2.9 Logistics Efficiency vs. Supply Chain Bottlenecks

Companies situated in areas with advanced logistics networks can utilise infrastructure for cost efficiency, prompt procurement, and enhanced supplier integration. Efficient supply chains enable companies to establish strategic procurement agreements, minimising redundancy and improving coordination.

One reply highlighted the role of logistical infrastructure in improving efficiency:

(P06) *"Nearshoring could provide benefits for cost reduction and efficiency."*

Another participant recognised that geographic location and logistical efficiency impact purchase decisions:

(P07) *"Companies optimise at their own level rather than an industry-wide level."*

In contrast, companies in undeveloped areas have ongoing supply chain constraints that hinder collaboration. Prolonged lead times, elevated transportation costs, and inconsistent logistics networks augment operating expenditures, rendering collaborative procurement and supply chain integration less feasible.

A participant in a region with inadequate infrastructure remarked:

(P02) *"Geographical separation between mines makes collaboration difficult."*

In the same way, another respondent emphasised the detrimental impact of logistical inefficiencies on supply chain collaboration:

(P07) *"End users resist change, preferring imported products over local alternatives, partly due to inconsistent supply chain infrastructure."*

These insights underscore how logistical disparities influence collaboration feasibility. Companies in well-served regions benefit from cost efficiencies. In contrast, those in underdeveloped areas contend with supply chain bottlenecks that hinder supplier integration and collective procurement initiatives.

The disparity between regulatory-driven collaboration and market-driven partnerships underscores the intricacies of promoting inter-company cooperation in the mining industry. Some corporations support enhanced government mandates to

enforce supplier collaboration, while others contend that voluntary cooperation, driven by market incentives, fosters more enduring partnerships. Infrastructure serves a dual function in influencing collaborative dynamics. Robust transportation, logistics, and power infrastructure facilitate efficient coordination of supplier networks, whereas inadequate infrastructure generates bottlenecks that hinder procurement collaboration and supplier accessibility. Major mining corporations leverage their exclusive infrastructure, while smaller enterprises and local suppliers encounter logistical and operational obstacles that limit their involvement in industry-wide procurement efforts/ To tackle these divergent difficulties, the subsequent strategic proposals should be contemplated:

Develop explicit regulatory frameworks that harmonise governmental enforcement with market-oriented incentives to promote an organised yet equitable meaning environment

Implement explicit regulatory frameworks that harmonise governmental enforcement with market-oriented incentives to promote organised yet adaptable collaboration.

Establish comprehensive infrastructure investment initiatives across the industry, guaranteeing collective access to transportation, logistics, and energy systems to facilitate equitable supplier engagement.

Advocate for hybrid collaboration frameworks, wherein governmental rules establish baseline participation criteria while enterprises maintain discretion in organising procurement alliances.

Enhance infrastructure-sharing agreements to enable smaller mining enterprises to utilise extensive logistical networks, promoting a more equitable mining environment.

By rectifying legislative inconsistencies and infrastructure shortcomings, mining companies can progress towards a more cohesive, collaborative supply chain model, guaranteeing that local manufacturers and suppliers receive equitable growth prospects.

5.3.2.10 Transparency and Communication Barriers

Lack of transparency and conflicting agendas further hinder effective collaboration among mining businesses. The absence of transparency in procurement plans, supplier databases, and operational decision-making procedures fosters distrust among companies.

(P12)"There's always been this stigma around collaboration with other mining houses. I cannot collaborate with you because you can take my ideas."

(P03)"Concerns over supplier data sharing create barriers to industry-wide procurement collaboration."

A notable communication difficulty is the lack of standardised reporting and data-sharing platforms. Numerous companies function in isolation, hindering the coordination of procurement efforts and supplier development initiatives.

(P12)"Different mining houses operate with different technological systems, which hinders standardization and collaboration."

(P10) "Technology adoption for collaboration is low."

These problems underscore the necessity for centralised data-sharing mechanisms, organised governance structures, and enhanced industry-wide transparency norms.

5.3.2.11 Important Contrasts Identified - Transparency versus Protectionism in Data Sharing

A fundamental issue in inter-company collaboration within the mining industry is the conflict between transparency and protectionism over supplier data sharing. Certain mining businesses promote centralised supplier databases and digital procurement systems to improve industry efficiency, reduce redundancies, and establish a more streamlined supply chain ecosystem. These companies contend that data-sharing platforms may enhance real-time decision-making, collaborative procurement tactics, and the advancement of supplier development programs.

(P02)"A centralised supplier database could improve efficiency and reduce redundancy."

(P01)"Technology is underutilised for collaboration... Having real-time information or quarterly updates could help us see who's leading the industry."

Notwithstanding these benefits, several mining companies oppose such activities, citing apprehensions regarding intellectual property, competitive edge, and supplier confidentiality. Companies are reluctant to reveal supplier data due to concerns that competing companies might access private supplier networks or exploit shared knowledge to get exclusive contracts.

(P02)"Companies hesitate to share supplier information due to concerns over intellectual property."

(P12)"Trade secrets are a major barrier to collaboration."

This hesitance results in a disjointed procurement environment, wherein enterprises function independently instead of utilising shared industry advantages. Although transparency in supplier collaboration may enhance procurement efficiency and promote local supplier growth, persistent competitive apprehensions hinder open participation in data-sharing programs.

5.3.2.11 Standardised Communication versus Fragmented Reporting

A significant obstacle to efficient collaboration in the mining industry is the absence of standardised communication and reporting structures. Organisations promoting unified digital collaboration platforms and standardised procurement emphasise the inefficiencies resulting from disjointed reporting frameworks and the lack of universal indicators. Certain mining companies assert that standardised reporting systems could facilitate cross-company benchmarking, enhance collaborative procurement transparency, and improve supplier performance monitoring.

(P01)"Benchmarking activities help us see how other mining houses are set up in terms of their procurement decision-making autonomy."

(P04)"Joint procurement strategies could lower costs and create greater efficiencies."

In practice, most mining businesses utilise distinct reporting methods, complicating the comparison of procurement efficiency or supplier performance among organisations. The lack of digital tools for standardised communication creates data silos, obstructing the possibility for joint procurement initiatives and collaborative supplier development programs.

(P05) "The mining sector operates in silos, making it difficult to implement joint local procurement strategies."

(P07) "Companies optimise at their own level rather than an industry-wide level."

Technological differences among mining companies exacerbate this fragmentation. Most companies possess varying procurement software and reporting mechanisms, limiting the scope for unifying digital platforms for shared logistics, supplier tracking, or procurement benchmarking.

(P12) "Different mining houses operate with different technological systems, which hinders standardisation and collaboration."

(P10) "Technology adoption for collaboration is low."

To address these deficiencies, the mining sector must implement uniform procurement standards and digital instruments that promote secure, transparent, and standardised data-sharing while safeguarding competitive interests. Establishing an industry-wide digital reporting framework could foster increased collaboration in supply chain management, thereby improving local manufacturing capabilities and supply chain resilience.

5.3.2.12 Overcoming Collaboration Challenges

Several approaches are suggested to help overcome these challenges and improve mining industry cooperation. Initiatives involving stakeholder involvement, openness agreements, and ethical governance structures build trust and lower power imbalances, addressing mistrust and competitiveness issues. Standardising industry cooperation rules and shared supplier development goals helps to align corporate objectives and enable more successful relationships. Improving Government Policy and Incentives: Strengthening application of supplier development requirements,

tax advantages, and regulatory incentives might inspire mining companies to participate in coordinated efforts. Using digital procurement systems and centralised supplier databases will help to enhance information-sharing, procurement coordination, and decision-making.

(P05) "Government incentives could encourage mining companies to collaborate on supplier development."

(P02) "Technology could assist in procurement standardisation and supplier visibility."

These techniques provide a road map for turning inter-company cooperation into a value-generating tool, helping local manufacturing expansion.

5.3.2.13 Future Outlook and Recommendations

The following policy and industry-wide projects should be taken under review to improve cooperation inside the mining sector even more: The government should fund, provide tax advantages, and support infrastructure for mining companies participating in supplier development alliances. Adopting sector-wide procurement technologies will help simplify supplier contact and data-sharing mechanisms through standardised digital platforms.

5.3.2.14 Promoting Joint Infrastructure Investments

Projects involving transport and collaboration logistics help to lower running costs and increase supply chain resilience. Industry benchmarking projects and collaborative training programmes, and cooperative skills transfer agreements mandating knowledge sharing programs

(P04) "Industry-wide collaboration is needed to boost the competitiveness of local manufacturers."

(P10) "A cultural shift is needed for mining companies to prioritise long-term collaboration over short-term competition."

Following these suggestions would help mining companies create long-term, lasting alliances that propel industrial development and economic transformation instead of only compliance-driven collaboration.

5.3.2.14 Summary

Inter-company cooperation in the mining industry offers excellent potential and ongoing difficulties. Effective collaboration is hampered by competitive pressures, regulatory misalignment, and infrastructural constraints; nonetheless, successful models such as shared supplier development, combined procurement, and technology-driven supply chain integration—showcase the possibility for significant alliances. Mining businesses have to go from short-term, compliance-based projects to long-term strategic collaborations to realise the advantages of cooperation completely. Encouragement of a more connected, cooperative mining industry supporting sustainable local manufacturing growth would depend critically on government participation, standardised digital platforms, and enhanced trust-building processes.

Although collaboration among mining businesses has the potential to stimulate local manufacturing growth, the research results imply that various structural and operational constraints still significantly limit this possibility. Among the main obstacles limiting the efficacy of inter-company collaboration and supply chain integration are competition among companies, trust gaps, regulatory misalignment, and uneven technology adoption.

Essential for the growth of a strong, sustainable local manufacturing industry, these elements reduce transparency, impede supplier development, and stop the realisation of economies of scale. Notwithstanding these difficulties, the mining sector boasts effective forms of collaboration that show the possible advantages of organised alliances. Notable instances consist of:

Initiated by shared supplier development projects, which concentrate on improving local supplier capacity by employing technical support, financing, and market access; such projects help suppliers to grow their activities and satisfy the procurement requirements of several mining companies, therefore enhancing the local manufacturing sustainability.

By letting mining companies use collective purchasing power, joint procurement strategies which lower prices, maximise resource use, and increase operational

efficiency have their effect. This strategy improves supplier networks, reduces procurement repetitions, and promotes competitive pricing.

Through real-time data-sharing platforms and centralised supplier databases, technology-driven transparency increases supplier visibility, streamlines procurement processes and improves decision-making. Utilizing improved forecasting, risk management, and supply chain coordination, such technologies support more effective industrial integration.

5.4 Conclusion

The researcher has collected, processed and presented the data in this chapter. Participants' responses were categorised according to two research questions, where different responses were received and presented verbatim. A summary of the presentation was provided to guide the discussion of the findings and recommendations.

CHAPTER SIX: DISCUSSION RESULTS

6.1. Introduction

This chapter aims to discuss the results presented in Chapter 5. These results are then integrated with the relevant theoretical frameworks and literature review integrating the themes identified during data analysis. The implications of the present study's results are also discussed. This chapter's purpose is to extensively interpret the results in the context of supply chain collaboration amongst various mining houses. The objective of this study was to investigate the lack of effective collaboration between mining companies in South Africa, which presents barriers inhibiting the potential to drive manufacturing growth throughout the supply chain. The researcher will be led by a thematic discussion of the data presented in chapter five. The results are summarised in table form to give a general view of what was collected from the interview. The chapter will also highlight the implications of these findings for industry practices, policy-making, and future research.

6.2 Summary of Results

The results were collected, classified according to the research study's thematics, and summarised; the discussion of the summarised results will follow the presentation of the following summary of results.

Table 2: Table summary of results

Transcript Excerpt	Initial Code	Category	Theme
Collaboration is minimal because mining companies compete for the same suppliers and resources.	Competition limits collaboration	Barriers to Collaboration	Competitive Constraints on Collaboration
Most collaboration is on social aspects, such as security, rather than procurement or supply chain.	Collaboration mostly in social areas, not procurement	Barriers to Collaboration	Limited Scope of Collaboration in Mining
Indirect collaboration exists because businesses in the mining area establish themselves to serve multiple mining companies.	Indirect collaboration through shared business environment	Collaboration Practices	Indirect Collaboration in the Mining Sector

There are concerns over competition laws, making companies hesitant to collaborate.	Legal and regulatory barriers to collaboration	Policy and Regulation	Regulatory Barriers to Collaboration
Trade secrets and protecting competitive advantage hinder collaboration.	Intellectual property concerns prevent collaboration	Barriers to Collaboration	Trade Secrets and Competitive Concerns
Leadership changes impact collaboration—new leaders may not support previous collaborative efforts.	Leadership changes disrupt collaborative efforts	Barriers to Collaboration	Leadership Influence on Collaboration
Mining Charter does not explicitly support collaboration, making it difficult to enforce.	Lack of policy support for collaboration	Policy and Regulation	Absence of Policy Support for Collaboration
Different mining companies have different processes, making collaboration challenging.	Operational differences between companies hinder collaboration	Operational Constraints	Operational Incompatibility Among Mining Companies
The government should introduce national-level collaboration projects beyond local communities.	Need for broader, national collaboration initiatives	Policy and Regulation	National-Level Collaboration for Broader Impact
Collaboration could support supplier development and help local manufacturers grow.	Collaboration as a tool for supplier development	Enterprise and Supplier Development	Strengthening Supplier Development Through Collaboration
The technology could facilitate information sharing while protecting sensitive data.	Technology as a facilitator of secure collaboration	Technology and Data Sharing	Technology's Role in Secure Collaboration
Collaboration needs to be a strategic initiative rather than a regulatory obligation.	Strategic vs. compliance-driven collaboration	Strategic Approaches to Collaboration	Reframing Collaboration as a Strategic Initiative

6.3 Discussion of the results

The results will be discussed based on the findings from the two research questions presented in chapter five above. The results will be organised according to the themes derived from the questions in the interview guide in Appendix A. These findings will be tested by a literature review, as presented in chapter two. The fascinating aspect of the participants is the experiences of the participants. The experience categories are as follows:

Table 3 : Participants' industry experience

Years of Industry Experience	Overall Percentage Representation
Research Participants with 5 – 10 years of experience	20%
Research Participants with 11 – 20 years of experience	33.3%
Research Participants with 21 – 25 years of experience	26.6%
Research Participants with 26 – 30 years of experience	20%

In this section, while the research presents and discusses the results, the correlation between the responses and experience duration will be considered.

6.3.1 Comparative Analysis of Research Question 1: Inter-company Collaboration Impact on Manufacturing

6.3.1.1 Perceptions of collaboration among the mining companies

Research question one discusses the impact of inter-company collaboration on manufacturing. The participants were tested on the collaboration of mining houses, and the following responses were found based on perceptions of collaboration among the mining companies. Van der Watt and Marais (2021) indicate that multi-stakeholders must collaborate within the mining sector according to collaborative governance. The interview is based on the same sentiment to compare what is in the legislation and practice; it seems there is a difference.

In P01's response, the participant, who has five (5) years of experience, responded that collaboration seems to be complaint-driven. Still, the participant appears to doubt whether they follow the compliance on collaboration. She states: "The question is, are we doing good." she feels that mining houses are not doing enough to enforce collaboration. At the same time, P01 was firmly convinced that the supply chain had been in the background in the mining sector till COVID-19 interrupted almost all services, and the mining sector started to worry about collaboration. Participant P01 illustrates the tendency of the community to drive collaboration in communities with different mining houses. Societal, labour and political structures demand collaboration.

In P08's response, the participant, who has fourteen (14) years of experience in the mining sector management, responded that the mining houses do not fully follow the compliance exercise. The two participants responded to the question based on perceptions of collaboration among the mining companies, illustrating a tendency for minimum collaboration in the mining sector.

6.3.1.2 Compliance-driven versus Strategic Collaboration

The participants were tested on the collaboration of mining houses, and the following responses were found based on Compliance-driven versus Strategic Collaboration. This concept was tested based on the supply chain Collaboration theory literature, which argues that all independent companies need to work together to create a singular competitive network with the potential to improve overall performance (Osei and Asante-Darko, 2024). P01s and P08 provide the same responses as in 6.3.1.1. In P01's response to the question Compliance-driven versus Strategic Collaboration, the participant illustrates the tendency that the intention to invest in the local economy, but the drive to collaborate is very minimal. P02, who has twenty-two years of experience, responded more affirmatively that Collaboration with ESD could lead to more sustainable supplier development. As an experienced senior, P02 sees the ecosystem in which the mining corporations use collaborative procurement and supplier development programs to boost industrial growth outside compliance.

The theory and the responses from the interview do not speak to each other in terms of P01 and P08 responses, while P02, as an experienced senior manager, give hope for industrial growth collaboration and compliance, as according to the Mining

Charter, that must be a strong working relationship among the mining houses to improve the local economy.

6.3.1.3 Community influence on collaboration

In communities where members are engaged, challenges such as power imbalance and information asymmetry limit the effectiveness of community engagement in community development initiatives (Zanini et al., 2023). Effective community engagement is necessary to ensure the long-term sustainability of mining operations and that the unfavourable consequences do not outweigh the benefits.

In P01's response to the question on community influence on collaboration, she acknowledges that the effectiveness of the community enables collaboration to be in place, and the community members are the main drivers of that collaboration, in need of stakeholder participation in the local economy. She responded: "In communities where there are different mining houses, the community actually drives that collaboration." P02 indicates that hosting community dynamics are the driver of collaboration, as he responded: "Host community dynamics as a collaboration driver."

These results imply that many businesses respond to external pressures from the community rather than establish long-term, strategic alliances, therefore engaging in ad hoc, situational collaboration instead of developing coordinated industry-wide projects. Nonetheless, some participants admitted that since community-driven cooperation usually concentrates on social impact projects rather than supply chain integration and manufacturing support, it might be unreliable and narrow in scope.

6.3.1.4 Technology as an untapped enabler of collaboration

Lumadi and Nyasha (2024) suggest that there is a lack of if not limited, mining technology in South Africa. The South African mining sector needs to adopt mining technology fully; however, it faces the following commonly identified challenges:

- inadequate external stakeholder engagement,
- uncertainties, the mining sector being cyclical,
- the high risk associated with the adoption of unproven technology.

Digital solutions can increase procurement and resource allocation efficiency, transparency, and supplier interaction simplicity. Still, despite these changes, mining businesses mostly use technology as a collaboration tool. P01 affirmed that technology is under-used in South African mining, and updates for technology on real-time information or quarterly could assist the mining sector in leading the industry. P02 affirmed that a centralised supplier database play an essential role in improving efficiency in the mining sector. He responded: *“A centralised supplier database could improve efficiency and reduce redundancy.”*

Some companies have admitted the possible advantages of real-time information-sharing systems, particularly in cooperative logistics, procurement standardising, and supplier visibility. These technologies could enable data-driven decision-making and help lower inefficiencies from scattered supply chain methods.

There are dissenting views on the technology because of fear of cybercrime, competitive advantage, data confidentiality, and interoperability between several procurement systems; the more significant industry has yet to embrace such digital solutions completely. Two participants, P03 and P05, highlight intellectual property as a barrier to sharing supplier information and the isolation of the mining sector as a challenge for implementing joint local procurement strategies.

The difficulty is further exacerbated by the unequal acceptance of technology among mining enterprises since businesses run in silences with different degrees of digital maturity. This lack of standardisation inhibits the mining sector from using technical developments to increase supplier development and procurement effectiveness. Standardised digital platforms and trust-building tools that support safe, open information exchange while protecting competing interests will help realise technology's full possibilities in mining sector cooperation. Combining real-time procurement analytics with centralised supplier databases could improve operational efficiency and strategic industry-wide cooperation, therefore strengthening the competitiveness of the nearby manufacturing sector.

6.3.1.5 Example of Positive Collaboration in Manufacturing

There are positive collaborations in manufacturing even though there is technology underused and distrust amongst the mining houses. A few individuals gave instances of effective teamwork that directly affected nearby industries. The response from P01 shows an intention to invest in the local economy, but the actualisation of this intention is challenging to implement. P02 indicates that the mining sector receives applications from local service providers that are serving other mining houses; still, because of competition, as stated elsewhere, competition is one of the stumbling blocks to collaboration. P02 responded: *"We often receive applications from service providers that service other mining houses, and we ask, but if you're working with company A, why are you not going to them? They've reached their cap."* P10 and P12, in their responses, agree with P02 that several mining companies viewed other companies as competitors rather than collaborators in the mining business. Hence, mining companies are operating in isolation from other mining companies. P12 cited trade secrets as the primary barrier to collaboration in the mining sector. This isolation affected local economic growth. Despite the negative responses on cooperation in the mining sector, there are still good stories about possible collaboration, as P03 indicated that cooperation in ESD programs could lead to more sustainable supplier development.

6.3.1.6 Successful versus Limited Collaboration in the mining sector

While some mining businesses have participated in successful joint supplier development projects, others remain reluctant because of worries about competition and perceived threats to their competitive position. Inter-company collaboration inside the mining sector offers a contradiction. Examples of effective teamwork are usually connected to deliberate activities meant to increase the local supplier base.

In their responses, P01 and P02 highlight the intention and end results of collaboration in leading to more sustainable supplier development. They agree that there is a potential for collaboration even though, in operation, there is minimal collaboration. These cases show how cooperative supplier development projects could help local manufacturing capacity grow and improve the general industry's competitiveness. Effective teamwork usually produces more resilient supply chains, economies of scale, and market access for nearby vendors.

There are tendencies of distrust, fear of losing a competitive edge and concern about data sharing, which made mining companies hesitate to enter into cooperation with other mining companies. This reluctance restricts the influence of individual success stories and generates a barrier to more general industry-wide collaboration. P10 responded: *“Mining companies tend to see each other as competitors rather than collaborators.”* While P08 emphasise compliance exercise that results in a bare minimum. He responded: *“If it’s a compliance exercise, mining houses will still do the bare minimum.”*

This difference between practical group projects and restricted industry-wide cooperation emphasises the necessity of a more unified approach to support mining house alliances. The possible advantages of cooperation on local manufacturing development remain unrealised without resolving the fundamental competitive concerns and trust problems.

6.3.1.7 Sector-specific Barriers in the mining sector

The well-established supply chains of the mining industry create a major obstacle to cooperation since many businesses are reluctant to sour ties with reliable suppliers. The inertia generated by current procurement systems makes teamwork less enticing, particularly when it calls for businesses to change their operating methods or share supplier information. P07, in her response, illustrated that there is resistance to switching from vendor relationships to suppliers. Furthermore, she emphasised that mining companies follow operational and procurement standards that are very limited in standardisation, which prevents small businesses from participating in the local economy with mining companies.

The scattered character of the sector, whereby businesses sometimes prioritise their supply chain optimisation over more general, industry-wide cooperation, adds to these sector-specific challenges. Consequently, prospects for shared infrastructure, cooperative supplier growth, or joint procurement for combined procurement remain underdeveloped. P05 re-emphasise the isolation operation of the mining sector, which made it difficult to implement joint local procurement strategies.

This silo approach prevents the building of linked supply chains that can assist local industrial expansion and drive further efficiencies. Dealing with these sector-specific

obstacles requires changing uniform procurement methods and being more open, strengthening industry-wide cooperation.

6.3.1.8 Competitive mindset in the mining sector

In the mining industry, a competitive attitude is a significant obstacle to collaboration since many businesses worry that disclosing supplier data or working on joint projects may cause a loss of competitiveness. Concerns over intellectual property, trade secrets, and the possibility for competing companies to learn about private procurement techniques motivate this anxiety. P12 responded: *“There’s always been this stigma around collaboration with other mining houses. I cannot collaborate with you because you can take my ideas.”* P02 emphasise that intellectual property is a concern for collaboration. P02 responded: *“Companies hesitate to share supplier information due to concerns over intellectual property.”*

Particularly in areas like supplier development, collaborative procurement, or data sharing, this fear of losing a competitive edge causes a trust gap that hinders the desire of businesses to participate in open collaboration. The lack of clear policies for safeguarding shared data aggravates this problem since enterprises are forced to negotiate teamwork without clear data security and confidentiality rules. P05, he is more concerned about trust within the collaboration. He responded: *“Trust issues prevent mining companies from openly sharing data and suppliers.”*

Dealing with this competitive attitude calls for a cultural change in the mining industry that emphasises cooperation as a strategic advantage instead of a possible risk. Clear data-sharing policies and developing trust-building tools could allay worries about competitive advantage, opening the path for more successful cooperation projects supporting local manufacturing expansion.

6.3.1.9 Supply Chain Integration Mechanisms benefiting local manufacturing

Although there are various ways to integrate supply chains that would help local industries, problems still exist. Participants noted several such methods. P02 and P01 highlighted technology as a challenge to supply chain integration mechanisms. They feel that ineffective or underused technology will disturb supply chain integration mechanisms and that local manufacturing will not benefit from the mining sector. P02 indicates: *"A centralised supplier database could improve efficiency and reduce redundancy."* Furthermore, P01 states: *"Technology is underutilised for collaboration... Real-time information or quarterly updates could help us see who's leading the industry."*

Many participants did, however, highlight challenges to supply chain cooperation, including trust problems and competitive concerns. Both P02 emphasise intellectual property as a stumbling block to collaboration. P05 is concerned about the isolation of the mining sector from other companies.

6.3.1.10 Data Sharing Versus Protectionism in the mining sector

The conflict between protectionism and data sharing is a fundamental stumbling block towards advancing inter-firm cooperation in the mining industry. Other mining houses prefer centralised supplier databases for better procurement effectiveness, redundancy reduction, and improved supply chain transparency. With the shared database, mining houses can find suitable suppliers, minimise the cost of supplier imports, and maintain compliance with local procurement rules, to the benefit of local producers.

(P02) "A centralised supplier database could improve efficiency and reduce redundancy."

(P02) "Technology could assist in procurement standardisation and supplier visibility."

Most companies in the sector shun supplier data-sharing initiatives owing to intellectual property issues, competitive secrecy, and information security. Resistance to supplier information sharing has its foundation in the apprehension that rivals would manage to penetrate strategic supplier bases and thus destroy

market leadership. The absence of a secure, regulated framework for supplier data-sharing intensifies the problem, as companies cannot guarantee protecting sensitive information.

To address these challenges, it is essential to develop secure, industry-wide data-sharing tools and mechanisms that safeguard confidentiality while creating awareness for transparency in non-competitive sectors. Supplier verification could be utilised through Blockchain-based verification, creating a controlled environment for digital platforms that allow companies to exchange essential supplier information without compromising proprietary interests.

6.3.1.11 Technology Adoption Gaps

Digital technologies like real-time procurement software, data exchange networks, and AI-powered analytics offer mining companies a way to increase transparency in the supply chain and the ability to cooperate with suppliers more effectively. Future technologies can supply real-time performance insights from the suppliers, lower inefficiencies, and enable perfect collaboration among numerous mining houses.

(P01) “Technology is underutilised for collaboration... having real-time information or quarterly updates could help us see who’s leading the industry.”

(P05) “Technology platforms could enhance procurement efficiency and improve supplier visibility.”

Yet, technology take-up across the mining sector is patchy, with most still using conventional, manual procurement. This patchy take-up of digital solutions discourages industry-wide integration, with companies working from different technological systems that are not standardised.

(P12) “Different mining houses operate with different technological systems, which hinders standardisation and collaboration.”

(P10) “Technology adoption for collaboration is low.”

The lack of standardised digital procurement systems is one of the main obstacles to the general acceptance of technology. Common standards help to ensure that

systems stay incompatible, without which procurement optimisation and inter-company data sharing are limited. Moreover, many companies lack the internal capacity to thoroughly apply digital supply chain solutions, which results in gradual and scattered acceptance throughout the industry.

(P07) "Companies optimise at their level rather than an industry-wide level."

To overcome these obstacles, mining businesses must prioritise implementing standardised procurement systems and funding digital transformation initiatives. Using legal frameworks that support cross-company technological integration, government and industry authorities should motivate the acceptance of digital technologies. Furthermore, the cooperative capital outlay towards the industry-wide procurement systems could potentially assist in harmonising digital procurement methods, ensuring that every company gains more efficiency and openness.

6.3.1.12 The role of collaboration in ESD

P03 and P07's responses show a tendency for a shallow collaboration and ineffectiveness because of compliance but not sustainable partnership. P03 indicated in chapter five: *"Enterprise and Supplier Development (ESD) initiatives must focus on sustainable partnerships, not just compliance."*, while P07 stated in chapter five: *"ESD vendors sometimes subcontract work, leading to inefficiencies and financial mismanagement."*

P01 and P05's responses illustrated that mining companies are reluctant to foster collaboration with other companies, or there is a tendency for collaboration to fail to deliver economic benefits. P01 contends: *"We often receive applications from service providers that service other mining houses, and we ask, but if you're working with company A, why are you not going to them? They've reached their cap."* While P05 concurs with P01 on reluctance to collaborate: *"Joint ventures often fail to deliver effective skills transfer and economic benefits to local suppliers."*

Enterprise and Supplier Development (ESD) initiatives form a key pillar of South Africa's industrial policy designed to ensure increased local supplier involvement in the mining industry (Khubana et al., 2022). The research findings indicate that though ESD initiatives are compulsory, there is no practical cooperation among mining companies in their implementation, thus resulting in inefficiency and

fragmentation. Mining companies participating in joint supplier development initiatives like joint training initiatives, joint incubation facilities, and group procurement contracts would be able to increase supplier competitiveness and long-term viability (Lumadi & Nyasha, 2024). The aligned ESD approach would improve economies of scale, and suppliers would be capable of attaining industry standards and being well-embedded in the mining supply

6.3.1.13 Sustainability versus Short-term Compliance

P01 and P05's responses illustrate that there is a tendency for mining sectors to hesitate to implement the government's policy on collaboration and the mining sector's intention to invest in the local economy. The other direction is that government incentives could have encouraged cooperation in mining. P01 contended: *"We are intentional about investing in our local economy."* Meanwhile, P05 concurred with P01: *"Government incentives could encourage mining companies to collaborate on supplier development."*

The evidence from the research shows that most mining companies are keen on sustaining levels of compliance instead of undertaking long-term supplier development initiatives (Heyns & Mostert, 2018). The short-termism leads to shallow relationships whereby the suppliers are awarded contracts to fulfil local content obligations without being provided with the competencies necessary to build capacity. Collaborative, sustainable supply chains necessitate a change from transactional to strategic partnerships founded on suppliers' long-term growth and stability (Pityana, 2015). Companies that incorporate sustainability imperatives into their supplier development models will, in the long term, accrue real local economic benefits and competitive advantage.

6.3.1.14 Limited funding for supplier growth

There are mixed feelings about collaboration in the mining sector as per responses to this question under this theme. P05 and P07's responses demonstrate that collaboration is not effective in the following aspects of business:

- skill transfer and economic benefits to the local supplier,
- financial management,
- accurate quotation and completion of the project.

P12's response illustrate that there is a positive intention in collaboration in mining sector. P12 indicated: *"Collaboration could strengthen enterprise and supplier development by expanding supplier opportunities."* While (P07) indicated *"Enterprise and supplier development vendors struggle with accurate quoting and project completion."*

Inadequate funds remain a fundamental impediment to supplier development in the South African mining industry. The research validated that even though the Mining Charter prescribes investment in supplier development, most mining companies cannot afford sufficient financial assistance to emerging suppliers due to limited budgets and conflicting priorities (Khubana et al., 2022). The unavailability of accessible sources of finance also worsens the situation, limiting supplier expansion and innovation. A shared funding mechanism through which mining companies create pooled development funds or enable suppliers to access concessional loans can resolve this issue and achieve a more inclusive supply base (Lumadi & Nyasha, 2024).

6.3.1.15 Barriers to skill transfer

P01 and P04's responses illustrated the tendency that there are benefits to mining collaboration on procurement decision-making and strategies; collaboration assists in comparing how other mining companies set up their procurement decision-making and joint procurement strategies. P01 states: *"Benchmarking activities help us see how other mining houses are set up regarding their procurement decision-making autonomy."* Furthermore, P04 contents: *"Joint procurement strategies could lower costs and create greater efficiencies."*

P07 and P12 illustrated the tendency of companies to operate in isolation and distrust information. P07 indicates, *"Companies optimise at their own level rather than an industry-wide level."* While P12 states, *"There's always been this stigma around collaboration with other mining houses. I cannot collaborate with you because you can take my ideas."*

Transfer of skills is an essential problem of supplier development. Still, the study found several barriers hinder effective knowledge-sharing between mining companies and domestic suppliers. They are:

- Limitative mentorship programs where veteran industry participants lack any motivation to train tomorrow's suppliers.
- Insufficient coordination between technical schools and mining companies leads to a mismatch between industry needs and skills.

Limited access to specialised industry training is due to cost and logistical reasons (Heyns & Mostert, 2018). Removing these barriers entails formalized training programs, industry-academia partnerships, and policies that facilitate skills transfer along the mining value chain (Pityana, 2015).

6.3.1.16 impact of knowledge sharing and joint logistics initiatives

P01 and P14's responses are that there is continuous benchmarking rather than fully-blown collaboration in the mining sector; the other flip of the coin is that knowledge sharing about production efficiency and supply chain is the best practice to drive better procurement decisions. Other participants like P12 and P02 emphasise isolation in the mining sector because of the fear of stealing ideas and protection of intellectual property. P012 responded: *"There's always been this stigma around collaboration with other mining houses. I cannot collaborate with you because you can take my ideas."* While P02 concur with P012: *"Companies hesitate to share supplier information due to concerns over intellectual property."*

Collaborative logistics initiatives and sharing knowledge can enhance cost savings and efficiency in the mining industry. The research finding concompanies that mining companies that actively share best practices, market information, and procurement strategies exhibit higher supply chain resilience (Khubana et al., 2022). Collaborative logistics programs, including shared warehousing, collective transport contracts, and shared distribution networks, can lower operating costs and make companies more responsive to suppliers. The research, however, also discovered that competitive issues make companies not want to participate in this kind of program (Lumadi & Nyasha, 2024).

6.3.1.17 Limited versus Proactive Knowledge Sharing

P05 and P10's responses brought forth the tendency to distrust information sharing, and the spirit of competition became a barrier to collaboration in the mining sector. P05 shows: *"Trust issues prevent mining companies from openly sharing data and suppliers."* Meanwhile, P10 states, *"Mining companies tend to see each other as competitors rather than collaborators."*

The research recognises a disparity between reactive, fragmented knowledge-sharing systems and proactive, strategic knowledge-sharing systems. Although ad hoc information sharing occurs among a few mining companies, no industry-wide platform for organised collaboration exists (Heyns & Mostert, 2018). Proactive knowledge-sharing systems like centralised industry databases, joint research, and systematic cross-sector forums can improve supplier capability and encourage innovation (Pityana, 2015). Mining operators must embrace formalised knowledge management systems that enable real-time access to procurement trends, supplier performance metrics, and market data.

6.3.1.18 Trust Deficit in Information Sharing

A significant obstacle to successful collaboration is the widespread trust deficiency between mining companies regarding information disclosure. The study findings recognise that companies are unwilling to disclose procurement data, suppliers' performance, and market projections owing to data security and competitive positioning concerns (Khubana et al., 2022). This lack of transparency restricts the scope for collaborative supplier development and creates supply chain coordination inefficiencies. Having well-established governance structures for data-sharing agreements and creating industry-led collaborative platforms can surmount such concerns and foster a culture of collaboration and trust (Lumadi & Nyasha, 2024).

6.3.1.19 The need for Policy intervention

The study highlights that although policy instruments like the Mining Charter and B-BBEE Act are intended to increase the participation of local suppliers, they fail to actively encourage partnerships among mining companies (Heyns & Mostert, 2018). As revealed by the findings, policy intervention is required to:

- Implement tax credits for cooperative supplier development programs.
- Reduce regulatory obstacles that discourage intra-company cooperation.
- Standardise industry norms for joint procurement and supplier capacity development. More activist policy would push mining companies to form long-term, sustainable partnerships that raise local manufacturing development and deepen South Africa's industrial base (Pityana, 2015).

The next engagement was on the second research question, “Obstacles to collaboration in the Mining Sector.

6.3.2 Comparative Analysis of Research Question 2: Obstacles to Collaboration in the Mining Sector

6.3.2.1 Identifying the Main Obstacles to Effective Collaboration

In research question two, on the obstacles to collaboration in the mining sector, forty per cent (40%) of participants indicated that there are obstacles to collaboration due to the following factors:

- Power imbalances,
- Resource competitiveness,
- Distrust,
- regulatory misalignment,
- infrastructural deficiencies,

These factors affect maximum collaboration in the mining sector and thus negatively influence the country's economic growth, as McDougall & Davis (2024) and Ackah-Baidoo (2020) have already indicated that collaboration will maximise the economic growth of South Africa, while these obstacles minimise this growth. Forty per cent of the participants supported the position of Zanini et al. (2023) on the obstacles to

collaboration in the mining sector; they identified the above factors as the participants have indicated.

Moreover, power disparities between larger international businesses and smaller local mining enterprises exacerbate collaboration challenges. Major mining corporations frequently monopolise decision-making processes, resulting in diminished negotiation strength and reduced opportunity for smaller enterprises to engage meaningfully in collaborative projects. A significant impediment noted is the competitive mentality among mining corporations, when companies perceive one another as adversaries rather than prospective collaborators. This competitive mindset undermines transparency and collaborative decision-making.

6.3.2.2 Identifying the Main Obstacles to Effective Collaboration

Mining companies face various barriers to successful collaboration, mainly caused by power asymmetries, resource competitiveness, mistrust, regulatory mismatch, and infrastructural weakness (Dikgwatlhe & Mulenga, 2023). These barriers discourage information sharing, joint supplier development, and supply chain integration, eventually weakening efforts at scaling up local production through inter-firm partnerships. Among the main obstacles identified is the prevailing competitive culture among mining companies, where companies view each other as competitors instead of potential collaborators (McDougall & Davis, 2024a).

(P10) “Mining companies tend to see each other as competitors rather than collaborators.” (P05). “Trust issues prevent mining companies from openly sharing data and suppliers.”

Moreover, power imbalances between multinational mining giants and small mining companies based locally deepen the obstacles to cooperation. Large mining companies will likely control decision-making structures, which undermines the bargaining position and space for smaller companies to participate effectively in cooperative initiatives (Heyns & Mostert, 2018).

(P15) “The structure of the industry does not promote collaboration across industrial players.” (P15) “Junior miners may have more flexibility in collaboration than large mining houses.”

One of the main challenges is regulatory misalignment, where policy inconsistencies like in the Mining Charter and BBBEE codes cause uncertainty about cooperation and compliance expectations (Makgoba, 2019).

(P02) "Policy misalignment between BBBEE and the Mining Charter creates uncertainty." (P02) "Regulations lack clear enforcement mechanisms for collaboration."

6.3.2.3 Important Contrasts Identified - Competition versus Cooperation

In the mining sector, inter-firm relations swing between cooperation and competition. Some companies note the strategic value of collaboration and argue that joint procurement and supplier development will reduce costs, improve operational efficiency, and create a more substantial local manufacturing base (Soto-Mendoza et al., 2023).

(P02) "Collaboration in ESD programs could lead to more sustainable supplier development. If we come together, we can create a larger market for local suppliers."

In spite of such benefits, competitive pressures and market position issues still present enormous obstacles. The threat of losing a competitive advantage generally discourages companies from exchanging information and resources (Heyns & Mostert, 2018).

(P12) "There has always been this stigma about working with other mining houses. I cannot work with you because you can steal my ideas."

(P12) "There's always been this stigma around collaboration with other mining houses. I cannot collaborate with you because you can take my ideas."

This competitive culture prompts mining companies to act individually, focusing on their strategic objectives rather than industry-wide growth. So, even as some industry players recognise the value of collaboration, a siloed approach still precludes more extensive, mutually rewarding cooperation (McDougall & Davis, 2024a).

6.3.2.4 Power Dynamics in the Mining Sector

The power imbalance in the mining sector heavily impacts the effectiveness of collaboration. The major mining companies tend to dominate access to key procurement chains and run large-scale supplier development programs, holding back the potential for small companies to gain from collaborative efforts (Makgoba, 2019).

(P07) “Mining companies have established vendor relationships and resist switching suppliers. Smaller companies struggle to get a foot in the door.”

Furthermore, the concentration of power among leading companies tends to result in unequal bargaining abilities in purchasing associations and joint ventures. Small contractors and mining houses might not have the bargaining ability to agree on favourable terms or secure profitable contracts (Heyns & Mostert, 2018). *(P15) “Infrastructure built by large mining companies is often inaccessible to smaller companies due to regulatory and financial constraints.”* These power relations set up a situation in which the benefits of collaboration are unevenly distributed in favour of large companies, circumscribing the impact of sector-wide efforts to enhance local manufacturing and supplier development (Dikgwatlhe & Mulenga, 2023).

6.3.2.5 Regulatory Uncertainty in the Mining Sector

Regulatory uncertainty and ambiguity are significant obstacles to formal cooperation and coordination among mining companies. Companies are frequently confronted with difficulties interpreting and adhering to duplicative policy frameworks, such as the Mining Charter and BBBEE law, leading to a fragmented approach to cooperation (Heyns & Mostert, 2018). *(P02) “Regulations lack clear enforcement mechanisms for collaboration. It’s hard to know if we’re meeting the expectations or if we’re over complying.” (P03) “Policy misalignment between BBBEE and the Mining Charter creates uncertainty. Companies are unsure which policies to prioritise, leading to hesitance in engaging in meaningful collaboration.”*

This policy uncertainty drives organisations toward a compliance strategy where they do what is legally necessary and not strive for strategic, long-term partnerships. Greater regulatory certainty and integrated policy frameworks are needed to drive

more organised and productive collaboration in the mining industry (Makgoba, 2019).

6.3.2.6 Transparency and Communication Barriers

Lack of transparency and conflicting agendas further hinder effective collaboration among mining businesses. The absence of transparency in procurement plans, supplier databases, and operational decision-making fosters distrust among companies (McDougall & Davis, 2024b). P12 indicates, *"There's always been this stigma around collaboration with other mining houses. I cannot collaborate with you because you can take my ideas."* Meanwhile, P03 states, *"Concerns over supplier data sharing create barriers to industry-wide procurement collaboration."* This supports that a significant communication difficulty is the lack of standardised reporting and data-sharing platforms. Numerous companies function in isolation, hindering the coordination of procurement efforts and supplier development initiatives (Heyns & Mostert, 2018). P12 also highlights, *"Different mining houses operate with different technological systems, which hinders standardisation and collaboration."*

6.3.2.7 Overcoming Collaboration Challenges

Several approaches are suggested to help overcome these challenges and improve mining industry cooperation. Initiatives involving stakeholder engagement, transparency agreements, and ethical governance structures build trust and lower power imbalances, addressing competitiveness issues (Dikgwatlhe & Mulenga, 2023). Standardising industry cooperation rules and shared supplier development goals helps align corporate objectives and enable more successful relationships. Improving government policy and incentives and stricter enforcement of supplier development requirements, tax advantages, and regulatory incentives could inspire mining companies to participate in coordinated efforts. Using digital procurement systems and centralised supplier databases will help to enhance information sharing, procurement coordination, and decision-making (Makgoba, 2019).

6.3.2.8 Future Outlook and Recommendations

By addressing these structural challenges, the mining sector can establish more sustainable, growth-oriented supply chain collaborations that benefit local suppliers and national manufacturing development (McDougall & Davis, 2024b).

CHAPTER SEVEN: CONCLUSION AND RECOMMENDATION

7.1 Introduction

The mining industry is still a cornerstone of the South African economy and a major driver of employment, fixed investment, and government tax revenues. It significantly contributes to national manufacturing growth, owing to its large supply chains and the scope it offers for inducing local supplier development. However, the mining industry's potential to significantly contribute to industrial growth is constrained by a range of structural and operational issues. The research investigated how improved supply chain coordination between mining companies can enable the development of South Africa's manufacturing industry by overcoming principal bottlenecks and increasing supply chain efficiencies.

The study demonstrates that, although there is potential, supply chain collaboration in the mining sector is rare due to structural barriers. These barriers include competitive orientations, policy incongruence, lack of visibility, asymmetry in power relationships, and infrastructural deficits. The absence of collaborative planning prevents the full adoption of collaborative procurement activities, supplier development programs, and joint logistical platforms among mining companies. The lack of a well-defined supply chain integration strategy makes the mining industry fail to establish sustainable linkages that propel national industrialisation.

A major stumbling block to collaboration is the compliance model most mining companies embrace. Regulative structures like the Mining Charter and Broad-Based Black Economic Empowerment (BBBEE) codes target escalating the levels of local supplier involvement and the socio-economic contributions of mine activities.

However, the ad hoc nature of these policies has companies pursuing compliance-level minimalism instead of making proactive, long-term, value-based supplier development investment partnerships. Consequently, the partnership is viewed as more of a regulatory dictate than a strategic growth opportunity that enhances operational efficiencies and competitiveness in the domestic manufacturing base.

The research reveals that, as much as it holds promise, supply chain collaboration is low among mining companies because of systemic obstacles. Some of them are competitive mentalities, regulatory discord, lack of transparency, power imbalance, and infrastructural weaknesses. The lack of concerted efforts to collaborate hinders mining companies from making the most out of joint procurement initiatives, supplier development initiatives, and everyday logistics infrastructure. Without a well defined strategy towards supply chain integration, the mining industry cannot build sustainable linkages that can spur national industrialisation.

One significant obstacle to partnership is the culture of compliance followed by most mining companies. Government regulatory frameworks like the Mining Charter and Broad-Based Black Economic Empowerment (BBBEE) codes seek to encourage greater local supplier involvement and improve the socio-economic contribution of mining operations.

However, the irregular enforcement of such policies has businesses doing compliance at the lowest level rather than positively investing in long-term value-based supplier development partnerships. Collaboration is thus treated more as a regulatory requirement than as a strategic business development opportunity that can increase operational efficiencies and competitiveness in the local manufacturing base. The power disparity between multinational mining giants and small local suppliers significantly hinders supply chain collaboration. The industry giants possess overwhelming procurement power that restricts market access for small companies. This deters supplier development possibilities and enhances prevailing economic inequalities.

Additionally, the continued dependence on imported inputs further diminishes domestic production capacity as mining companies focus on short-term profits through cost efficiency over the longer-term advantage of building regional supply chains. Notwithstanding the pressure brought to bear by competition and regulation, the absence of coordination among stakeholders presents additional challenges. The fragmented supply chains, few collaboration platforms within the industry, and logistical deficiencies hinder the ability to create improved resource planning and procurement models.

Moreso, structural deficiencies such as poorly developed transport networks, unpredictable power supply, and ineffective logistics systems enhance the fragmentation. Mining companies experience colossal challenges integrating local suppliers into their operations due to the lack of infrastructure to facilitate collaboration.

The research refers to the need for a paradigm shift in how mining companies seek supply chain collaboration. Shifting from mere regulatory compliance to active and strategic collaboration will allow mining companies to open up new opportunities for growth for local manufacturers. The mining industry can drive general economic development by creating a more unified and inclusive supply chain environment. In this regard, intensifying collaboration between mining companies is a regulatory and strategic necessity to drive South Africa's industrialisation agenda.

Mining is still a significant stimulator of the South African economy, providing jobs, investment in infrastructure, and income (Statista Research Department, 2024a).

However, its potential to stimulate local manufacturing expansion is eroded by poor coordination among industry players, regulatory challenges, and the prevalence of foreign-sourced inputs (Lumadi & Nyasha, 2024; Singh, 2017). These issues must be resolved through concerted efforts by policymakers, mining companies, and industry players to develop a uniform supply chain policy harmonised with national economic development goals.

With coordinated policy action, the mining sector can be a driving force towards a more significant and sustainable manufacturing industry in South Africa. The study identifies several enablers that can ease collaboration on these problems.

The regulatory harmonisation, development of infrastructure, increased transparency of procurement processes, and strategic leverage of technology to make information sharing and collaborative supplier development possible. Shifting from short-term compliance to long-term strategic emphasis is key to unleashing the possibility of mining cooperation. By aligning cooperation with national economic and industrial policy goals, the mining sector can contribute significantly towards manufacturing development at a national scale.

The study offers several suggestions to address collaboration obstacles. These include developing bespoke regulatory frameworks that blend compliance demands and market inducements, investing in shared infrastructure to balance operating inefficiencies, and using digital platforms to facilitate real-time supplier engagement and procurement standardisation. Further, building trust through transparent governance structures and cross-industry stakeholder engagement can facilitate collaborative working.

7.2 Recommendations

To strengthen supply chain cooperation and initiate the evolution of manufacturing, the recommendations are as follows:

7.2.1 Move to Strategic Cooperation instead of Compliance-Based

Mining companies should incorporate collaboration into their business strategies instead of treating it as a compliance issue. This can be done by incorporating supplier development programs into long-term business planning and ensuring that procurement plans are aligned with national manufacturing goals (Van der Veen, 2024). Mining companies must understand that supply chain collaboration offers a competitive edge higher than compliance gains. Companies can deliver long-term value creation, cost savings, and supply chain resilience by establishing collaborative supplier relations.

7.2.2 Harness Technology for Efficiency and Transparency

Harnessing digital channels, real-time information sharing, and predictive analytics can enhance supplier transparency and build trust among mining companies (Bodendorf et al., 2023). Blockchain-based procurement platforms and a common supplier database can address competitiveness concerns and simplify local procurement. Incorporating smart contracts and automated compliance audits can also facilitate collaborative initiatives, lower administrative burdens, and enable more responsive decision-making.

7.2.3 Develop Multi-Stakeholder Partnerships

Multi-stakeholder governance arrangements between mining companies, governments, local producers, and communities can render collaboration efforts more sustainable and inclusive (Van der Watt & Marais, 2021; Sarfaty & Deberdt, 2023). Multi-stakeholder platforms must be established to address power imbalance and develop mutually beneficial agreements. Public-private partnerships can also be utilised to develop infrastructure projects, enhancing logistical capacity and supply chain efficiency.

7.2.4 Enhance Local Content Policies and Incentives

Although the Mining Charter and BBBEE policies demand procurement targets, additional incentives must be introduced to foster greater collaboration. Tax rebates, subsidies, and preferential terms for businesses participating in joint supplier development programs can further develop local manufacturing (Makgoba, 2019; McDougall & Davis, 2024b). The incentives must be accompanied by industry performance metrics against which progress is monitored, and accountability is demanded.

7.2.5 Promote Industry Benchmarking and Knowledge Sharing

Best practices in supply chain collaboration in the mining industry must be documented and disseminated. Opportunities for industry benchmarking and peer-learning groups can enable companies to learn from successful models of process transformation and supplier development (Pieroni et al., 2024). Companies must also conduct research studies that assess collaborative procurement and supplier integration's long-term economic value.

7.2.6 Create Sector-Specific Collaboration Models

Due to the specific challenges of the mining industry, sector-specific collaboration models must be created to overcome sector-specific obstacles. These must cover agreements on the standardisation of procurement practices, co-investment in local supplier capacity, and arrangements to enable shared infrastructure (Dikgwatlhe & Mulenga, 2023). Mining companies must consider co-investment opportunities in key

manufacturing capabilities, lowering the dependence on foreign-imported materials and generating new jobs.

7.2.7 Foster Trust and Openness

Mining companies need to bridge the trust gap that works against collaboration. Limited restriction to information flow, collaborative decision-making processes, and legally enforceable agreements that safeguard confidential information can foster a culture of openness

Many supplier development initiatives will remain transactional rather than transformative without defined regulations and organised frameworks to enable talent transfer, restricting their long-term impact on local economic development and manufacturing expansion. This reduces the possibility of industrial upgrading and technological innovation in the domestic manufacturing industry.

7.2.8 Limitations of the study

The research had limitations beyond the researcher's control, including aspects of the research design and methodology, which influence and restrict the interpretation of the results (Rooss & Zaidi, 2019). Adopting a qualitative research methodology means there was subjectivity in interpreting the data, which personal biases can influence. Using the qualitative research methodology also meant that the results and findings' generalisability is impossible due to factors such as the small sample size not representing the broader mining sector and manufacturing industry. Added to the above, the researcher's limited experience in qualitative research means there was a level of bias when contextualisation and interpreting the analysed results.

However, to reduce the above limitations, the researcher ensured their beliefs and general views did not influence the interpretation of the results. The researcher also explained the steps taken throughout this study's research process to ensure trustworthiness. Other academics may obtain similar results if studies are conducted within similar contexts and target populations.

Future Research Ideas

The escalating concerns regarding illegal mining, coupled with the research findings, warrant a deeper exploration of the concept of collaboration. Key factors such as shared interests and aligned objectives could substantiate this investigation. It presents an intriguing opportunity to examine whether collaboration can genuinely occur when similar interests are pursued, using Transnet as a case study for further academic inquiry.

7.3 Conclusion

In conclusion, while the mining sector remains a vital pillar of South Africa's economy, its ability to drive national manufacturing growth depends on overcoming deep-seated collaboration challenges. By transitioning from a compliance-focused approach to a more strategic, value-driven model, mining companies can collectively enhance supply chain efficiencies, support supplier development, and create a more sustainable and competitive manufacturing sector. Future research should explore the implementation of industry-wide digital procurement systems and the role of policy incentives in fostering long-term inter-company collaboration.

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APPENDICES

Annexure 1 – Ethical Clearance



**Gordon Institute
of Business Science**
University of Pretoria

**Ethical Clearance
Approved**

Dear [REDACTED]

Please be advised that your application for **Ethical Clearance** has been approved.
You are therefore allowed to continue collecting your data.
We wish you everything of the best for the rest of the project.

[Ethical Clearance Form](#)

Kind Regards

This email has been sent from an unmonitored email account. If you have any comments or concerns, please contact the GIBS Research Admin team.

ANNEXURE 2 – INTERVIEW GUIDE

Draft Interview Guide: Exploring supply chain collaboration among mining companies as a driver for national manufacturing growth

Section 1: Background Information

1. Could kindly give me a brief description of your role in the mining industry?
2. How long have you been involved in supply chain management or collaboration in the sector?
3. Could you describe your experience with collaboration between mining companies and other sectors (e.g., manufacturing)?

Section 2: Research Question 1 - Inter-company Collaboration Impact on Manufacturing

1. How do you perceive the role of
2. between mining companies in promoting manufacturing growth in South Africa?
 - Follow-up: Can you provide specific examples where collaboration has positively affected the manufacturing sector?
3. What mechanisms of supply chain integration or resource utilization have you observed that benefit local manufacturing?
 - Follow-up: In what ways has collaboration enhanced local supplier capabilities or supported local procurement?
4. How does collaboration among mining companies contribute to enterprise and supplier development (ESD) programs?
 - Follow-up: What role do these collaborations play in ensuring sustainable ESD initiatives?
5. What role does the sharing of best practices or joint logistics initiatives play in improving the manufacturing processes?

Section 3: Research Question 2 - Obstacles to Collaboration

1. What do you see as the main obstacles to effective collaboration within the mining sector?
 - Follow-up: How do factors like power imbalances, mistrust, or competition for resources affect collaboration?
2. Can you share any examples of regulatory or infrastructure challenges that have hindered collaboration efforts?
3. How does the lack of transparency or misaligned objectives create barriers to successful partnerships?
4. What are some of the challenges you've faced in ensuring effective communication and information sharing across the sector?

Section 4: Overcoming Collaboration Challenges

1. In your opinion, what strategies can help overcome power imbalances or stakeholder mistrust in mining collaborations?
2. How could companies align their objectives to foster more effective collaboration?
 - Follow-up: Are there existing examples of successful partnerships where goals were aligned?
3. What role could government policies or incentives play in improving collaboration efforts?
4. In what ways can technology, such as data-sharing platforms, facilitate collaboration across the mining sector?

Section 5: Future Outlook and Recommendations

1. What changes do you think are necessary to enhance inter-company collaboration in the mining sector to further support local manufacturing?
2. What recommendations would you give to policymakers to promote a more collaborative environment in the mining industry?

Conclusion

- Do you have any final thoughts on how inter-company collaboration in mining can be further optimised to benefit South African manufacturing?

ANNEXURE 3 – Consent Letter



|

Dear Sir/Madam,

I am currently a student at the University of Pretoria's Gordon Institute of Business Science, completing my research in partial fulfilment of an MBA.

My research focuses on exploring supply chain collaboration among mining companies as a driver for national manufacturing growth. I would like to invite you to participate in a semi-structured interview as part of this study. The interview will consist of open-ended questions and will last approximately 45 to 60 minutes. Participation is entirely voluntary, and you may withdraw at any time without any penalty.

All data collected will be anonymized, and no identifiable information will be included in the final report. As this study is purely academic, the results will be made publicly available in the University of Pretoria's archives.

If you have any concerns or require further information, please feel free to contact either my supervisor or myself using the details provided below.

Kind regards,

Signature of participant _____ Date _____

Signature of researcher _____ Date _____

ANNEXURE 4 – SUMMARY OF KEY CODED THEMES

Transcript Excerpt	Initial Code	Category	Theme
Collaboration is minimal because mining companies compete for the same suppliers and resources.	Competition limits collaboration	Barriers to Collaboration	Competitive Constraints on Collaboration
Most collaboration is on social aspects, such as security, rather than procurement or supply chain.	Collaboration mostly in social areas, not procurement	Barriers to Collaboration	Limited Scope of Collaboration in Mining
Indirect collaboration exists because businesses in the mining area establish themselves to serve multiple mining companies.	Indirect collaboration through shared business environment	Collaboration Practices	Indirect Collaboration in the Mining Sector
There are concerns over competition laws, making companies hesitant to collaborate.	Legal and regulatory barriers to collaboration	Policy and Regulation	Regulatory Barriers to Collaboration
Trade secrets and protecting competitive advantage hinder collaboration.	Intellectual property concerns prevent collaboration	Barriers to Collaboration	Trade Secrets and Competitive Concerns
Leadership changes impact collaboration new leaders may not support previous collaborative efforts.	Leadership changes disrupt collaborative efforts	Barriers to Collaboration	Leadership Influence on Collaboration
Mining Charter does not explicitly support collaboration, making it difficult to enforce.	Lack of policy support for collaboration	Policy and Regulation	Absence of Policy Support for Collaboration
Different mining companies have different processes, making collaboration challenging.	Operational differences between companies hinder collaboration	Operational Constraints	Operational Incompatibility Among Mining Companies
The government should introduce national - level collaboration projects beyond local communities.	Need for broader, national collaboration initiatives	Policy and Regulation	National-Level Collaboration for Broader Impact
Collaboration could support supplier development and	Collaboration as a tool for supplier development	Enterprise and Supplier Development	Strengthening Supplier Development Through Collaboration

help local manufacturers grow.			
The technology could facilitate information sharing while protecting sensitive data.	Technology as a facilitator of secure collaboration	Technology and Data Sharing	Technology's Role in Secure Collaboration
Collaboration needs to be a strategic initiative rather than a regulatory obligation.	Strategic vs. compliance-driven collaboration	Strategic Approaches to Collaboration	Reframing Collaboration as a Strategic Initiative