Gordon Institute of Business Science
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The pursuit of a competitive advantage: Multinational organizations' value perceptions of a circular economy strategic partnership

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ABSTRACT

Mineral extraction is required for progress, contributing to economies, new technology development, and the materials that sustain modern societies. Yet, more than 50 percent of the global greenhouse gas emissions are produced by mining, directly contributing to global warming. Current consumption levels are pushing the planetary boundaries beyond the Earth's regenerative capacity and the estimated population growth will continue to drive demand. A sustainable approach is required that will promote responsible extraction and usage of resources whilst addressing the growing waste concerns.

Circular economy, a phenomenon not yet embedded in global mining practices, could be a significant enabler for mining companies and their suppliers to assist in addressing the carbon reduction and sustainability challenges. This research set out to gain insights into the value perception of a circular economy strategic partnership between two multinational companies operating in the mining industry, if such a partnership will contribute to a competitive advantage and how such a partnership framework will be construed.

A qualitative research methodology was used to gather the data. Twenty-three interviews were held to gain the perspectives of global participants knowledgeable in the fields of sustainability, partnership development, and global account management. Participants included mining and supplier professionals based at their respective corporate offices and on the mine sites.

The key outcome of the research is a conceptual framework for developing circular economy strategic partnerships. The framework incorporates the key constructs identified in the literature combined with the findings from the research, to present a user-friendly model that incorporates circular economy into a strategic partnership that can create a competitive advantage through the value perception of this partnership for all role players.

Keywords

Competitive advantage, organizations' value perceptions; circular economy, multinational strategic partnerships; mining industry

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 Philosophy in International Business 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.

Signed: Date

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CEO	chief executive officer
CSI	corporate social investment
CSR	corporate social responsibility
EMF	Ellen MacArthur Foundation
ESG	environmental, social, and corporate governance
IPCC	Intergovernmental Panel on Climate Change
OEM	original equipment manufacturer
OTR	off the road
RBV	resource-based view
SDG	Sustainable Development Goals
UN	United Nations
WCED	World Commission on Environment and Development
WWF	World Wide Fund for Nature

CHAPTER 1: PROBLEM DEFINITION AND PURPOSE

1.1. Introduction

It has been over 30 years since the call for action by the World Commission on Environment and Development (WCED) to protect our environment and adapt our consumption levels, predicting dire consequences should we fail (Brundtland, 1987). By 2050, the world's population will be 9.7 billion people, and global material and resource consumption is expected to double from 2015 to 2050 (Bringezu et al., 2017). Since 1970, the global human population doubled, calculating the human population at 7.8 billion in 2021 (Bradshaw et al., 2021). It is further anticipated that by 2050, global municipal solid waste generation will reach 27 billion tons (Arora, 2018). There is a finite quantity of resources that can be mined, and once completed, the earth cannot regenerate these non-renewable resources (Freedman, 2018).

A vicious cycle of unsustainable extraction and processing of natural resources continues, with these activities contributing more than half the total global greenhouse gas emissions (UN, 2019). Therefore, currently, planetary boundaries are being pushed beyond their limits. Humanities' consumption as a percentage of the Earth's regenerative capacity has increased from 73 percent in the 1960s to 170 percent in 2016. The 2020 COVID-19 pandemic caused a significant shift in our consumption levels, reducing the Earth's overshoot to 56 percent in 2020 (Bradshaw et al., 2021). What this translates into, is that from January 2020 to August 2020, people consumed everything the earth can renew in one year, meaning every natural resource used from September onwards, cannot be regenerated.

With population growth and the anticipated consumption of material to increase to 190 billion tons by 2060 (UN, 2019), waste management should become a more prevalent topic for discussion. Unfortunately, various barriers, including cost, existing business models, fragmented policies, regulations, old or limited infrastructure, and outdated technologies prevent companies, governments, and consumers from aptly addressing the waste problem (Bartram, Hou & Kim, 2021; Stanislaus, 2018). The 2020 COVID-19 pandemic resulted in global social and economic disruption. The pandemic negatively contributed to the delivery of commitments made by world leaders during the *2030 Agenda for Sustainable Development* held in 2015, and the subsequent Sustainable Development Goals (SDG) Summit held in September 2019, where alarming evidence was presented that the environment, our only home, is unraveling (Min & Perucci, 2020).

Resolving this problem and attempting to slow down and reverse environmental degradation cannot be done in isolation. Rather, partnerships should be formed to increase the impact of efforts. Jamie Dimon, Chairman, and CEO for JP Morgan Chase, a global financial services firm with assets of $3.7 trillion noted, “Climate change and inequality are two of the critical issues of our time… Business, government, and policy leaders must work together to support long-term solutions that advance economic inclusion, bolster sustainable development and further the transition to a low-carbon economy...” (JPMorgan, n.d. para 4).

Truth is, that “companies, investors, governments and civil society offer unique financial, intellectual and operational assets that can be strategically deployed to solve big problems” (Stanislaus, 2018, para. 14). These cross-sector collaborations, where partners agree to leverage their resources, can better identify, address, and accelerate progress on issues of climate change, poverty, and inequality (Resonance, n.d.). The need to collaborate is an imperative, and no longer an option. Leveraging partnerships can unlock new technologies to help the fight against climate change. It is time for companies to recognize the Davos Manifesto 2020, that "A company serves society at large through its activities, supports the communities in which it works, and…acts as a steward of the environmental and material universe for future generations. It consciously protects our biosphere and champions a circular, shared and regenerative economy” (World Economic Forum, 2019, para. 4)

1.2. Background to the predicament

Mineral extraction from mining and the flow of material’s contribution to greenhouse gas emissions are between 55 and 65 percent per annum (OECD, n.d.). Greenhouse gas emission increase, driven by human activities, culminating in the atmosphere, and this results in warming the climate. These changes have both positive and negative effects on people, societies, and the environment as it contributes to climate change (EPA, n.d.).

There is an urgent need to fulfill commitments made to address climate change, as it is occurring much faster than anticipated, evident by the fact that 2019 was the second warmest year on record, closing off the warmest decade ever recorded (UN, 2019). It is expected that climate change will lead to severe drought, flooding, ocean acidification and melting glaciers, and more severe and frequent weather events (WWF, n.d.).

The need to act on climate change, mitigate the problem of joblessness and the resource squeeze that the world is bound to experience in the foreseeable future, has been globally recognised. The Intergovernmental Panel on Climate Change (IPCC) and the

World Wide Fund for Nature published independent reports in 2018 about the dire state of the planet, with Sir David Attenborough echoing the sentiment that too little work has been done (Dowd, 2019).

A fundamental shift in how companies approach their effort to implement sustainable solutions are required. Mining as an industry contributes to 45 percent of the world's economy and is not going to discontinue (Slater, 2021). There is a need to manage its global footprint on the environment whilst supplying the minerals and materials required to drive a green economy. Mining companies cannot solely focus on decarbonising their energy sectors to mitigate their carbon footprint. A holistic view, incorporating circularity is required (Ishii, 2021). It has been proposed that an applied circular economy could contribute to reducing new resources required by major companies for operational purposes (Ellen MacArthur Foundation [EMF], n.d.). A circular economy creates a systemic shift in the role of business in society, developing economic opportunities whilst enhancing the environment and creating societal benefits (Schroeder, Anggraeni & Weber, 2018). Mining activities have an impact on the environment, societies, social structures, and the economy, with repercussions of mining being felt both regional and internationally (Pons et al., 2021). Mining companies could therefore become a crucial driving force to instigate a circular economy (Kinnunen & Kaksonen, 2019).

Mining generates various streams of waste. These waste streams include natural materials, crushed waste rock that will be deposited at a designated waste dump site, and processed material, slurry, and slimes, which will typically be deposited as tailings in a regulated slimes dam. Figure 1 illustrates a simplified mine to mill value chain.

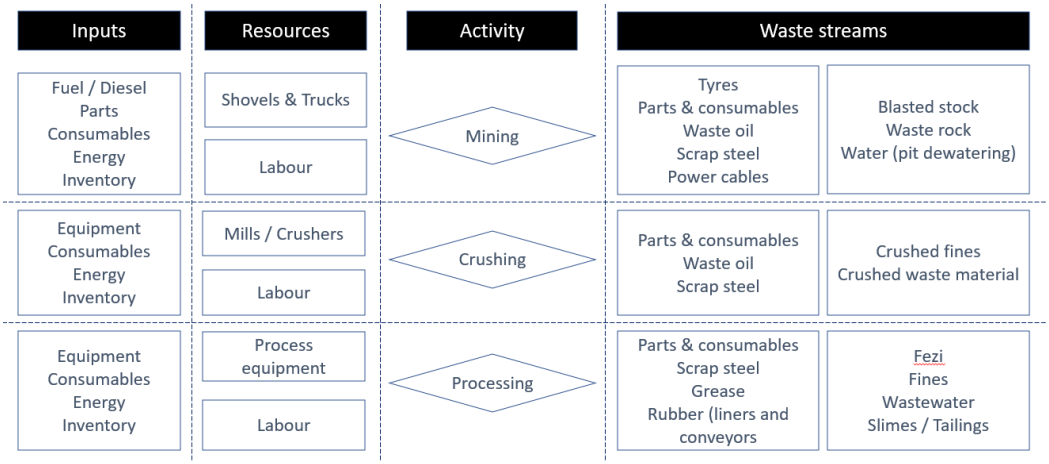


Figure 1: Mine to mill value chain
Source: Developed by the author

Equipment and machinery are required to mine and process the ore, and there are various waste streams derived from the equipment.

Mining companies procure large off-the-road (OTR) tyres to support their heavy mobile fleet that transports the ore and waste mined in open cast mines. These tyres are manufactured by large multinational suppliers, a market currently dominated by original equipment manufacturers (OEMs) Michelin and Bridgestone (Tire Deets, 2020). Supply contracts are generally transactional-based, with forecasts locked in and price escalations determined by pre-negotiated indices and formulas (International Mining, 2013). The management of the life cycle of the tyres is shared between the OEMs and the mining houses that consume these tyres.

The OEM manages the value chain of OTR tyres, focusing on the sourcing of raw materials, manufacture, sales, and after-sales services consisting of road condition monitoring, pressure tests, and thread design tests. The mining companies are responsible for the optimal use and disposal of these tyres. The relationship between the OEMs and mining companies follows the contract structure, as predominantly transactional, with clear roles and responsibilities allocated to each of the role players. It is only recently that OEMs started exploring product as a service type agreement, but few have come to fruition (Buntz, 2020).

Earthmover tyre sizes vary from 15 inch to 63 inch (per the traditional measurement and technical description). Depending on the size of the mining haul truck, OTR tyres used on mines vary from 39 inch upwards with the most common tyre the 63-inch used on the large Komatsu and CAT dump trucks. These tyres weigh just under 4 tons each (Michelin Technical Data, 2019). Used tyres create several problems, including space constraints, as well as environmental- and legislative risks. As an example, in South Africa, Anglo America's Kumba mines in the Northern Cape had more than 20 000 tyres in 2017 (Kumba, 2017), equating to more than 80 000 tons of rubber and steel waste. Historically, used tyres were buried under the mine waste dumps, shredded, burned, or stored wherever there was space for it (Creagh, 2019). Currently, there are limited commercial and sustainable viable solutions leading to the responsible management of these used tyres in South Africa.

Unequivocally, sustainable solutions for managing waste OTR tyres are required. Mines are mostly operational in rural areas where unemployment is rife and alternative means for job creation should be explored. The creation of a circular economy using OTR tyres, can create jobs (contributing to social upliftment), manage the business risk of waste tyres and drive GDP growth (Ringwood, 2016). Subsequently, mining companies can leverage a circular economy to contribute to their sustainability goals, enforcing environmental sustainability and social responsibility. These attributes contribute to

sustainable competitive advantage (Ferro de Guimarães, Severo & Maia de Vasconcelos, 2017), conducive to making mining companies more attractive to current and potential shareholders (Lal Yadav, Hun Han & Kim, 2017). However, they cannot do this in isolation. To date, sustainability considerations for a waste tyre management solution that incorporates a circular economy are not yet clear. Neither is the value perception of multi-national role players when proposing such solutions within a strategic partnership framework.

1.3. The research problem

An exploratory internet search for mining OTR tyre recycling technologies indicate a multitude of companies advertising their services combined with practical technical solutions. However, none of these technologies have proven commercially viable to reduce mining companies' waste tyre stockpiles globally. Waste tyre volumes are estimated at one million tyres per annum globally, resulting in the generation of over four million tons of tyre waste, which takes over 1000 years to break down (Pitto, 2021). Current waste management strategies include storing the tyres in multiple areas where fire risks are minimal (Creagh, 2019). Licenses are being issued to bury mine tyres as part of waste management strategies, however, with limitations in place. These limitations attempt to ensure “this practice does not cause an unacceptable fire risk or compromise mine safety. Disposing of scrap tyres in spoil emplacements is acceptable, provided tyres are placed as deep in the spoil as possible but not directly on the pit floor. Placement should ensure scrap tyres do not impede saturated aquifers and do not compromise the stability of the consolidated landform.” (Randell Environmental Consulting, 2020, p. 16, 2.4 c, d, para 5).

Tyres can be a valuable commodity in a circular economy. Thermal conversion, one of the technologies being developed for waste tyre recycling, can extract 1600 kg of carbon black, 750 kg steel, 1900 liters of oil, and 350 cubed meters of gas from a single 63-inch tyre (Creagh, 2019). The amount of material quoted that can be recovered and reused per tyre is significant. Reusing this waste will reduce the requirement for new resources, thus reducing the depletion of natural resources. However, limited effort has gone into making circular economy operational on mine sites and a significant recycling opportunity is lost by the inaction of the industry.

Mining companies and tyre OEMs are disconnected in their approach to solving the waste problem generated by scrapped OTR tyres. Collaborating with the OEMs, mining companies can create opportunities to resolve the environmental problems created by

waste tyres. At the same time, OEMs' value chain of OTR tyres which focuses on the sourcing of raw materials, manufacture, sales, and after-sales services (Hsiao & Hsu, 2018) could shift to become more responsible and inclusive of a green economy. Ultimately, leveraging its core competencies and technological know-how, OEMs could assist mining companies to responsibly transition their tyre usage from a linear model to a circular model. Current waste management solutions are driven by legislation (Burger, 2021).

There is significant value in strategic alliances for mining multinationals and suppliers (Lavie, 2006). However, critical fundamentals need to be in place for a partnership to succeed. Collaboration and trust should exist between the parties and their supply chains (Tolmay & Badenhorst-Weiss, 2015), which allows for a deeper understanding of where the opportunities could reside. Incorporating sustainability elements into the relationship, creating environmental alliances, could create market opportunities, establish competitive advantage, and address the heavily burdened environmental constraints (Niesten & Jolink, 2020).

To enable circular solutions may require flexibility in the partnership approach and different partnership structures between the companies to support the selected solutions (De Leeuw, Lokshin & Duysters, 2014). These partnerships, where successful, have the potential to create value, internally and for external stakeholders (Niesten & Jolink). A level of cooperation to address sustainability and carbon reduction is required that has never been seen before as if some nations fail, it will affect every nation. The fundamental principles of civilisations are being challenged, as nations want growth, but actions are demanded to reduce carbon emissions (Sunter, 2021).

Circular economy has been proven to offer a cost-effective solution to addressing carbon reduction, directly linked to climate change (Material Economics, 2020). Shareholders globally are recognizing the importance of addressing climate change, with preference given to companies who act responsible and environmentally sound (JPMorgan, n.d.).

The research problem, therefore, is to gain an understanding of how a circular economy strategic partnership between two cross-sector, independent, multinational companies can create a value perception that will act as a competitive advantage for the parties associated with the strategic partnership.

While extant literature focuses on environmental alliances to address market opportunities whilst addressing environmental concerns (Niesten & Jolink, 2020), this research will focus specifically on circular economy alliances and the value perception

of such an alliance in the mining industry. The focus will be on multinational companies, as opposed to corporate-entrepreneur collaborations (Veleva & Bodkin, 2018), which aims to advance the circular economy value proposition.

The study depended on the resource-based view (RBV) to analyze the sustained competitive advantage (Ferro de Guimarães et al., 2017,) of such circular economy strategic partnership and its value perception. It sought to understand what frameworks would be required within the companies to establish a circular economy strategic partnership, leveraging each company's unique resources.

1.4. Research questions

Due to the restructuring of economic driving forces, multinational organizations are put under pressure to re-evaluate their global value chains and to re-consider strategic alliances or partnerships (Petricevic & Teece, 2019). Circular economy, a conversation where mining companies should play a crucial role (Kinnunen & Kaksonen, 2019) can become a significant driving force in changing the value chains of the mining companies and their suppliers, shifting from a linear to a circular economy and change the environmental degradation trajectory (Maitre-Ekern, 2021)

Subsequently, the main research question defined to address the research problem for this study is:

How can a circular economy strategic partnership among multinational organizations create value perceptions that will develop a competitive advantage for all role players?

Adopting circular business models into companies has been low (Guldmann & Huulgaard, 2019) with few companies recognizing the potential benefit of incorporating circular economy to reduce waste throughout their business and introduce alternative value streams for affected stakeholders where mining companies operate (MacLellan, 2019). The RBV emphasizes that competitive advantage should realize value for multiple role players (Kahupi et al., 2021).

Five sub-questions were used to refine the main research question, namely:

i. How well are the principles of circular economy established/understood in the mining sector?
ii. Within the principles of a circular economy, how established is a company's strategy to embed circular economy as part of business as usual?

iii. How can a strategic transactional relationship between two selected multinational companies transform into a circular economy strategic partnership?
iv. How can a circular economy strategic partnership enhance role players' value perceptions?
v. How can partnering companies' circular economy strategic partnership value perceptions act as a competitive advantage?

1.5. The purpose of the research

Existent research indicated the benefit of developing strategic partnerships to drive a circular economy project (Veleva & Bodkin, 2018, de Jesus et al., 2021). As industries are encouraged to operate more sustainably, circular economy could contribute to this agenda in businesses as it is seen as an economic system that can contribute to a paradigm shift in how businesses operate (Lopes & Farinha, 2019).

The purpose of the research aimed to understand how a strategic partnership between a mining company and a mining supplier can be secured to establish a successful circular economy program. It investigated how such circular economy strategic partnership could serve as a resource that can be seen as a competitive advantage for both companies through perceived value creation. Furthermore, the research garnered insights into the possibility that the perceived value derived from a circular economy strategic partnership can positively contribute to a company's reputation and shareholder sentiment, supporting literature (Choi & Il Park, 2014; Mbanga, Darrat, & Park, 2018) that shareholder sentiment, whether positive or negative, influences a company's value.

From the insights gained in this research, a conceptual framework was developed for use by commercial professionals to identify key elements that should be included in a circular economy strategic partnership to ensure a competitive advantage for the participating companies.

1.6. The research contribution

This research contributes to the extant literature on motivations for environmental alliances and collaborations to enhance circular economy. The focus is on circular economy strategic partnerships between two multinationals operating in the mining industry and proposes the inclusion into the literature of the multinational-multinational collaboration to advance value perceptions through circular economy strategic partnerships. It elaborates on how circular economy strategic partnership principles adopted in mining companies and their tyre suppliers can become a driving force that

may create increased value perceptions among these role players that will boost companies' competitive advantage in international business.

Furthermore, the research explored the understanding of, and applicability of circular economy principles in the mining industry, to promote sustainability with a focus on environmental aspects such as waste and carbon reduction, and the social and economic aspects, through job creation and the betterment of the communities in the areas where mines operate. It adds to the literature on societal understanding of circular economy in the mining context, an area that is lacking (Kinnunen & Kaksonen, 2019)

1.7. The business contribution

Sustainability problems in the mining industry are complex problems as they are difficult to define, numerous solutions exist, but none are obvious, time remains open-ended, yet time is of the essence, all the sites have unique problems and multiple players are competing for resources (Basu, Misra & Puppala, 2014). Mining companies and their suppliers at large need to get involved and contribute consciously to the sustainability drive. Addressing sustainability issues and implementing sustainable practices can contribute to an organisation's overall success (Chladek, 2019). The transition to a more sustainable economy will lead to more opportunities for vulnerable people, including workers, small businesses, and communities (Patel, 2021). Business needs to be challenged to have a genuine drive towards sustainable practices or be exposed to only have apathy coated in rhetoric.

Circular economy has gained prominence among stakeholders in business, with value beyond traditional terms being recorded by companies that have embraced the concept (Laclau, 2019). Embracing circular economy concepts, moving away from a 'make, use waste' linear model, to a regenerative, circular model, will redefine value with a focus on the environment and societies (Material Economics, 2019).

A strategic partnership that incorporates a circular economy can impact the entire business, specifically in terms of the supply chain, sustainability, strategy policy, and corporate affairs, with a specific focus on their environmental, social, and governance requirements. Developing circular economy strategies to manage OTR waste tyres that presently pose a business and environmental risk, can make a worthy contribution towards corporate, social, and environmental responsibility, thus sustaining competitive advantage (Lal Yadav, et al., 2017).

There is a need to create a business norm where an ecosystem is created which promotes collaborative partnership approaches to address the sustainability requirements of the future. The outcome of the research proposed a framework for the development of a circular economy strategic partnership. The framework may benefit commercial professionals on both the mining company and the supplier to develop more collaborative, sustainable, and environmentally focused commercial strategies.

1.8. Roadmap of the research report

This research report comprises of seven chapters.

Chapter 1 introduces the reader to the wicked problem that is climate change, the mining sector's contribution to it, and the mitigating factors aimed at addressing it. Addressing carbon emissions in mining will require a cross-sector collaboration between multinational companies. The purpose of the research is described, incorporating the contribution it seeks to make to the existing literature and business on the topics addressed. The context of the research is elaborated on and referenced to academic literature.

Chapter 2 presents a review of the extant literature for the key topics or themes as identified in Chapter 1, with the focus on five themes. It starts with sustainability, its importance, and its role in mining. Circular economy is introduced and how it can contribute to sustainability, whilst describing opportunities for the mining industry to enable their sustainability initiatives through circular economy. Strategic partnerships are reviewed as an enabler of circular economy programs. This is followed by an investigation into the value perception of strategic partnerships in the mining sector, and how value is defined. The themes are concluded with an analysis of the competitive advantage that value perceptions may create. Lastly, it expands on how the resource-based view theory, associated with value perceptions, can contribute to a competitive advantage.

Chapter 3 presents the research question and the supporting questions that were structured to support the primary research question.

Chapter 4 presents a detailed account of the research methodology followed, expanding on the rationale for decisions made, the ethical considerations, and any limitations to the research methodology used.

Chapter 5 sets out a detailed overview of the analysis of the data, the finding, and conclusions, logically arranged to complement the themes identified in Chapter 2.

Chapter 6 discusses the findings in the context of the literature presented in Chapter 2, concerning the research questions presented in Chapter 3.

Chapter 7 concludes the research discussed in Chapter 6 and highlights the limitations of the research, recommending future areas of study. It reviews and revises the theoretical and business problem and describes the significance of the research.

Figure 2 presents a visual representation of the chapter layouts.

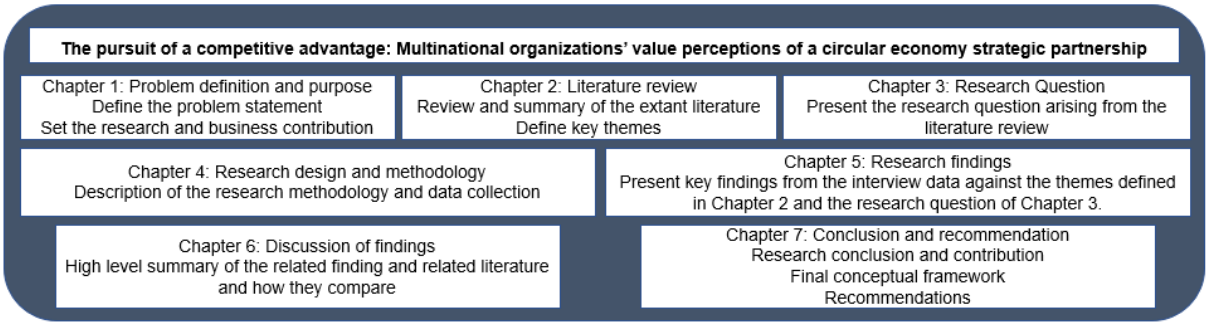


Figure 2: Research report content layout
Source: Developed by the author

CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

This chapter introduces the existent literature relevant to the research. A literature review was conducted to review sustainability, circular economy, strategic partnerships, and the value perception of strategic partnerships. Furthermore, in trying to understand the competitive advantage of strategic partnerships, a literature review of resource-based theory and its application to circular economy strategic partnerships are presented.

Each section will present recent literature related to a particular concept, supported by a theoretical analysis of the literature. Conclusions are presented in Section 2.7, synthesizing the literature review. A conceptual framework for a circular economy strategic partnership is presented. The literature review departs from including only peer-reviewed articles to include published views of shareholders, industry-related discussions, and further literature relevant to the context of the research.

Figure 3 provides an overview of the approach to the literature review, defining the constructs that were explored.

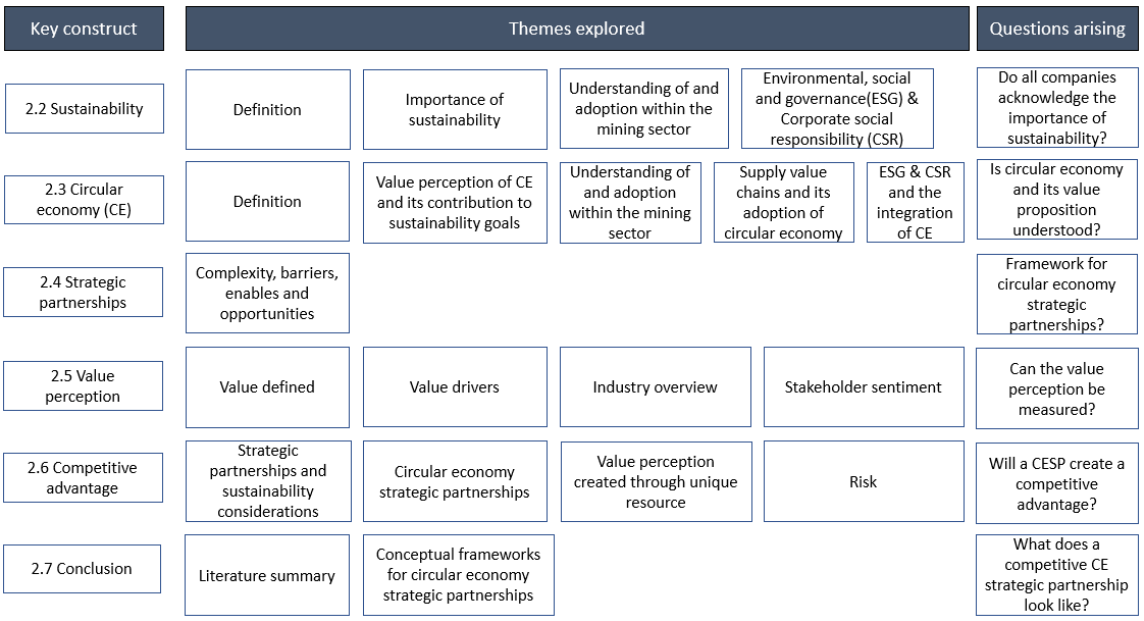


Figure 3: Research constructs
Source: Developed by the author

The focus of the research was on the mining sector. The literature review considered generic topics of sustainability, circular economy, and strategic partnerships that hold relevance to the research question. A deeper dive into these topics within a mining context is also presented.

Sustainability and sustainable development are defined relative to the research. A broad overview of the importance of sustainability is presented, with a narrower view on the understanding of and adoption within the mining sector.

Circular economy is introduced with a focus on its applicability to sustainability. The concept of circular economy within mining was explored, where mining companies were represented as consumers of products and not the producer of the raw materials, typically associated with circular models. As such, the literature review on circularity did not expand on mined products and materials and the role of mining companies in this process. The importance of value chains of products was explored from a practical point of view, and how value chains can contribute to circular economy sustainability solutions, by decoupling growth from a linear economy, based on resource extraction and the degradation of the environment (Scheel, Aguiñaga & Bello, 2020). The literature review excluded the exploration of the development of circular economy business models and the potential benefits these may have. The focus was on the potential value perception creation of an already successfully implemented partnership that incorporates and promotes circular economy programs. Circular economy programs are complex and span across multiple networks within an organization (Aminoff & Kettunen, 2016), and this program framework development is excluded from this research.

The literature review explored the complexity, barriers, enablers, and opportunities for a strategic partnership contextualized for multinational mining companies and the global OEMs that supply to these mining companies. The value perception of strategic partnerships was investigated, with a focus on the definition of value, the value drivers, and the perception of the industry and various stakeholders.

The literature review explored insights into the potential competitive advantage that circular economy strategic partnerships can create, investigating the dynamics of the resource-based theory and the positive (or negative) value perception of circular economy strategic partnerships on stakeholders, that may contribute to the competitive advantage of multinational companies.

The literature review concluded with an exploration of the resource-based view of a strategic partnership and the potential for sustained competitive advantage due to the perceived value perception of incorporating a circular economy program into the strategic partnership. The resource-based view challenged if this circular economy strategic partnership is a valuable, rare, inimitable, and non-replaceable capability (Kraaijenbrink, Spender & Groen, 2010).

Based on the literature review, a draft framework for circular economy strategic partnerships was presented. The framework may be used as a tool for commercial teams to incorporate sustainability and circular economy themes into their category or commercial strategies. Creating an awareness of the potential benefit and the requirement to focus on sustainability, whilst incorporating circular economy, will enhance any commercial strategy and act as an enabler to develop a competitive advantage (Aminoff & Kettunen, 2016).

The linkages spanning the themes in the literature review are depicted in Figure 4 below. These linkages cause overlaps in areas of the review, but overlaps will be highlighted accordingly.

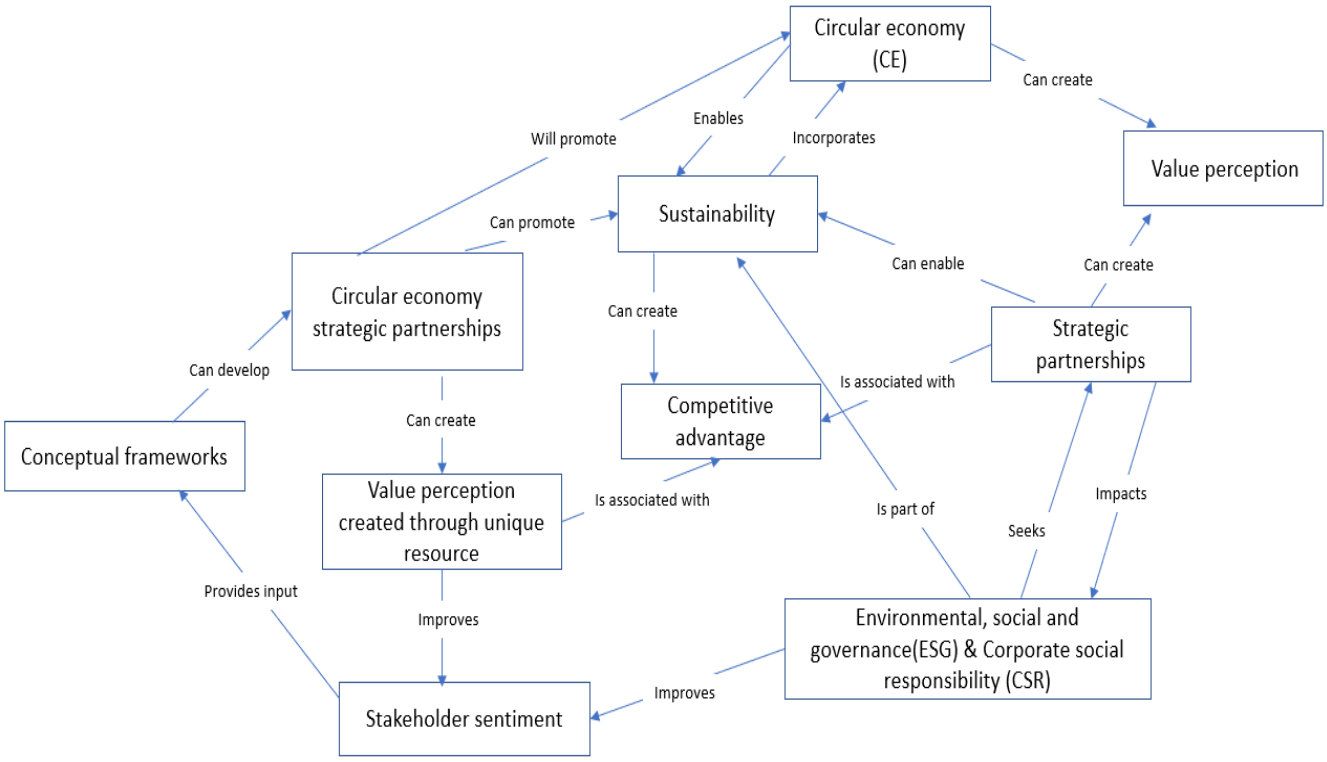


Figure 4: Research constructs and relevant linkages
Source: Developed by the author

2.2. Sustainability

2.2.1. Definition

Sustainability is a contested concept and is defined and measured in various ways (Giddings, Howood & O'Brien, 2002, Shi et al., 2019). Specific organizations, agencies, or enterprises will influence the definition based on their interpretations and requirements (Shi et al., 2019). In 1987, the World Commission on Environment and Development (WCED) drafted a report on human development, "Our Common Future" in which it

defined sustainable development, noting “Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs. The concept of sustainable development does imply limits…” (Brundtland, 1987, p. 16, para 5). This definition will be accepted as common for both sustainability and sustainable development, and no discrimination was made between these concepts.

Sustainability includes three dimensions: economy, environment, and social (Zorpas, 2014). These dimensions form part of the definition for sustainability, as adopted by the United Nations in its Agenda for Development. "Development is a multidimensional undertaking to achieve a higher quality of life for all people. Economic development, social development, and environmental protection are interdependent and mutually reinforcing components of sustainable development” (Kuhlman & Farrington, 2010, p. 3438, para 6).

The need for development, societal growth, and the responsibility to protect the environment led to a consistent conflict of interest between the economy, society, and the environment over numerous years (Kaptein & Wempe, 2001; Basu et al., 2014). To plan for and enable the common goal for a sustainable future for all, the Sustainable Development Goals (SDGs) were adopted by the United Nations in 2015, defining 17 goals that aim to intentionally address new ways for development.

2.2.2. Importance of sustainability

Although sustainable development has been at the forefront for most societies, with a strive to ensure wellbeing, a concrete transition into sustainability is yet to deliver real, scalable results (Helne & Hirvilammi, 2015). Yet, companies can no longer afford not to incorporate sustainability into their business plans, which looks at the effect it has on societies and the environment.

Mankind is faced with an unprecedented survival dilemma, fuelled by increasing populations and escalating anthropogenic activities (Arora, 2018). If nothing is done, the threat that will define the twenty-first century will be climate change. There will be an increase in climate refugees due to extreme weather changes in countries of origin, the arctic will melt, causing the oceans to rise, levels of environmental degradation, and diversity disappearance at levels not seen to mankind. Further, from an economic point of view, there will be an economic meltdown larger than the great depression (Sunter, 2021).

2.2.3. Sustainability in the mining sector

Mining can actively contribute to the SDG goals through initiatives aligned to reducing their impact on the environment, the betterment of the communities in the areas where they operate, and actively seeking economic opportunities to invest in. Mining, per se, cannot achieve this in isolation and will need to collaborate with various stakeholders with pressure on all sectors to incorporate sustainability into their operations (Sonesson, Davidson & Sachs, 2016). To ensure progress, generate capital, and advance economies, natural resources are currently extracted and depleted at the expense of future societies (Kuhlman & Farrington, 2010).

A summary is presented in Figure 5 below on how mining can contribute to achieving the 17 SDGs.

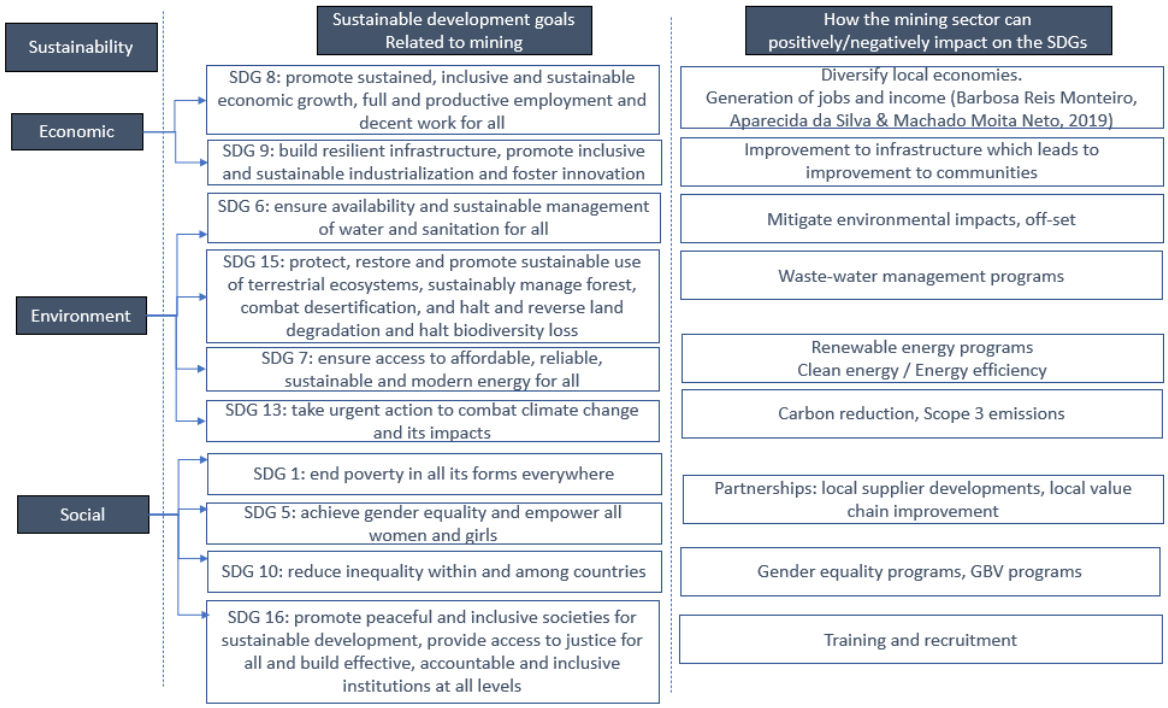


Figure 5: Sustainable development goals linked to mining
Source: Developed by the author

Increased pressure to achieve optimal land use, beneficiation of communities, legislation, and environmental lobbyist, has urged mining companies to demonstrate their responsiveness to these pressures (Kemp & Owen, 2020).

Environmental, social, and governance (ESG) should be key to any mining company's strategy development for future growth, as this contributes to gaining a competitive advantage in the industry, have the potential to improve costs, and positions a company as responsible with a legitimised reputation (Mitchell & Ramey, 2011). ESG is integral to sustainable development and a high-level introduction will be presented in Section 2.2.4.

Corporate social responsibility (CSR), another is a key factor for mining companies in their approach to their sustainability, plays a key role in attracting individual investors, with a focus on socially responsible investing (Demetriades & Auret, 2014). Section 2.2.5. will provide a high-level overview of the key concepts relevant to the research.

2.2.4. Environmental, social, and governance (ESG)

Mining companies cannot deny the importance of environmental, social, and governance requirements that they are expected to abide by. They are being held accountable by various stakeholders, including governments, communities, and activists (Kemp & Owen, 2020).

These requirements are categorized by the factors listed in Table 1 below.

Table 1: ESG factors

Environmental	Changes in climatic conditions, the impact of pollution, waste, greenhouse gases, depletion of natural resources, green spaces, drinking water supplies, energy efficiency, renewable energy sources, climate adaptation, environmental protection
Social	Regional development, working conditions, gender composition of workers, labor protection, social guarantees, affordable housing, construction of social, educational, medical institutions, production safety, public organizations.
Governing / Corporate management	The strategy of the companies, the goals of the company, agency relations, the interest of the parties, the level of competence, anti-corruption.

Adapted from Current parameters of investments in the mining industry, Table 1, p. 1 (Frolova, Samakhvalova & Novikova, 2021)

Failing to consider ESG factors can negatively impact a companies' public perception, which directly relates to its competitive advantage (Mitchell & Ramey, 2011). ESG not only impacts a company's public perception but also impacts financial sustainability. Where investors focus on socially responsible investing, mining companies with a good performance record in ESG areas will be included in investment portfolios (Demetriades & Auret, 2014). This sentiment was shared by Mark Mobius, a veteran emerging markets investor, during a Nedgroup Investments Responsible Investment summit, hosted in January 2021. He noted that companies who adhere to ESG standards and make it part of their corporate culture, perform better than those who do not (Roberts, 2021).

The higher ESG rating and subsequent performance metrics include an increase in revenues, business opportunities, and improved market sentiments (Chladek, 2019). Natasha Viljoen, CEO of Anglo American Platinum affirmed the statement during an interview (Kotze, Unger & Viljoen, 2021) when she noted “we are now seeing significant interest in ESG (environmental, social, and governance) matters from investors, but I

think that’s fairly recent. Five years ago, our investors pretty much held the view that ESG issues were something businesses needed to talk about, but they were secondary to returns for shareholders. That is changing very quickly. You can see the pressure from investors on any energy call, for instance”.

ESG issues are a topical discussion, addressing the need to move to a carbon-neutral industry and rethink socio-economic development (Slater, 2021). However, ESG ratings alone cannot be used to determine a company's response to the challenges of sustainability (Bester & Groenewald, 2021). If a company does not act on its targets and merely report on current performance, ESG reporting is lacking as it reports on negative breaches, rather than proactive initiatives.

Eventually, ESG ratings are merely a snapshot of a company's response to the requirements of responsible mining and do not provide an indicator of issues that may arise, a company's accomplishments, or lack of action in these areas (Bester & Groenewald, 2021). ESG financing could provide confidence in the commitment of companies to their targets, and not merely be reporting on non-concurrences (Frolova et al., 2021).

2.2.5. Corporate social responsibility

Corporate social responsibility (CSR) is "the voluntary actions undertaken by mining companies to reduce the negative effects of mining initiatives and to improve the lives of locals, the local economy, and the environment" (MiningAfrica, n.d.). CSR is generally linked with creating shared value (CSV) but is often criticized for greenwashing as it seldom designs solutions that remain sustainable once an organization leaves an area, and the solutions are never disruptive (de los Reyes & Scholz, 2019).

Greenwashing is a general term for when companies misrepresent their efforts and deliverables on becoming environmentally responsible, intending to be perceived by the public as being responsible (Mitchell & Ramey, 2011).

The mining industry contributes to the global economy, and its activities impact social structures surrounding the mine sites, as well as the environment, negatively impacting biodiversity, air and water quality, and water (Pons et al., 2021). However, a mining company can demonstrate corporate social responsibility when it can balance social, economic, and environmental requirements and tensions (Daddi et al., 2018). When a company fully embraces its CSR responsibilities, accepting its responsibility to act on the impacts of its activities, CSR can become a driving force towards sustainability goals (Pons et al., 2021). Through proper engagement, corporate socially responsible

programs can further contribute to the longevity of mines within specific communities, as through its processes, it can act as a risk mitigation and security enabler, maximize development in communities and maximize company benefits (Bester & Groenewald, 2021).

Mining companies need to continuously investigate and adopt strategies that will enable them to address the sustainability challenge, maintain their license to mine which is directly linked to the value perception of stakeholders (Pons et al., 2021). Whilst theses for implementing CSR continuously evolve, circular economy has recently been identified as a model that can put into practice the core principles of sustainable corporate social responsibility programs (Del Baldo & Anghela, 2020).

2.2.6. Comparative analysis on the literature

The concept of sustainability, how it is defined, and its importance were introduced. Mining has a role to play in acting as responsible corporate citizens, whilst further being positioned as an enabler for sustainability solutions. ESG and CSR were two of the models introduced, used in mining to investigate sustainable solutions, concluding that circular economy may play a role.

Table 2 summarises the key constructs that were attended to in literature.

Table 2: Key sustainability concepts

Sustainability		
Author	Key construct	Relevance
Giddings, Howood & O'Brien, 2002	What is Sustainability	There are various definitions for sustainability, which makes it difficult to define solutions to address the urgent need to ensure the well-being of people and the planet
Shi et al., 2019	Sustainability definition	The sustainability concept is adapted to suit the requirement of companies and will be defined to meet their needs.
Kuhlman & Farrington, 2010	Sustainability definition	Argues that including economic, social, and the environment into the sustainability definition, diminishes the importance of future wellbeing, by focusing on the gratification of immediate needs. Argues that the current definition should be wellbeing, and the future should be sustainable.
Demetriades & Auret, 2014	ESG and CSR as competitive advantages	Short-term investments in ESG responsible companies performed relative to their counterparts. Longer-term investments showed a significantly superior result.
Bester & Groenewald, 2021	ESG shortcomings	ESG reporting only provides a view of a company's performance for a moment in time and is unreliable to demonstrate the real performance of a company on these fronts
Frolova, Samakhvalova & Novikova, 2021	Financing ESG	There are various methods to finance ESG initiatives, and the financial commitment demonstrates a company's real commitment to environmental protection, ensuring social guarantees, and ensuring transparency in its activities.

Source: Developed by the author

2.3. Circular Economy

2.3.1. Definition

With the increasing demand for natural resources, the concept of circular economy has been investigated and discussed by numerous organizations and has become a highly relevant topic (Lahti, Wincent & Parida, 2018). The core principles emerged in the early 1960s, but recent enthusiasm seemed to be fueled by its contribution to sustainable development (Kirchherr et al., 2018). Circular economy can contribute to job creation, the preservation of natural resources, and increased gains in productivity, addressing some of the social, economic, and environmental aspects of sustainability (Scheel et al., 2020).

The EMF (2021, para.6) states that a circular economy is based on the principles of "designing out waste and pollution, keeping products and materials in use, and regenerating natural systems". Kircherr, Reike, and Hekkert (2017, p224 - 225) define a circular economy as "an economic system that is based on business models which replace the 'end-of-life' concept with reducing, alternatively reusing, recycling and

recovering materials in production/distribution and consumption processes, thus operating at the micro-level (products, companies, consumers), meso-level (eco-industrial parks) and macro-level (city, region, nation and beyond) to accomplish sustainable development, which implies creating environmental quality, economic prosperity and social equity, to the benefit of current and future generations".

The goals of sustainability include finding a balance between economic, social, and environmental needs. Circular economy follows some concepts of sustainability; being global, both calling to action authorities and the public, both acknowledging that economic progress should integrate environmental and social aspects (Lathi et al., 2018). Circular economy is further positioned that resource consumption can be decoupled from GDP and that this will not impact continued economic growth (Velenturf & Purnell, 2021).

The ideal is that companies (and individuals) should rethink the make-use-dispose consumption models, and transition to a circular approach, re-use, re-cycle and repurpose. The essence of a circular economy is a closed-loop system, where the need for virgin material is reduced due to the circular nature of its use. This reduces the creation of waste, as products are re-used, recycled, repurposed.

This consideration is, however, not practical to mining, where the core business is the extraction of finite minerals, but mining can re-evaluate its waste footprint. By evaluating the definition of circular economy "… the value of products and materials is maintained, waste is avoided, and resources are kept within the economy when a product has reached the end of its life" (Geisendorf & Pietrulla, 2018, p. 88), waste generated on mine sites has the potential to be re-appropriated and used for something else. Sufficient practical guidance is available to support companies to transition to a sustainable organization, but there is limited literature available to incorporate circularity into the business model and very few companies have embraced any form of circularity (Lathi et al., 2018).

2.3.2. Perception of circular economy and its sustainability contribution

To date, progress has been slow in achieving the SDGs; lack of funding is cited as one of the major inhibitors to achieving targets (Shi et al., 2019). However, circular economy could reduce CO_2 emissions in the European Union by 48% and create more than two million jobs by 2030 (EMF, 2021). It can act as a tool to help address and alleviate sustainability pressures (Bocken et al., 2016). A 2015 study found that circular economy could unlock $4.5 trillion in economic growth in North America alone (Accenture, 2015).

Figure 6 highlights SDGs where circular economy can have a direct impact on the mining sector. The different sectors are color coded.

Figure 6: CE considerations on the Global Sustainability Goals
Source: Adopted from WEForum, Retrieved from https://www.weforum.org/agenda/2015/09/how-achievable-are-the-sustainable-development-goals/

Although a circular economy has the potential to disrupt the linear make, use, dispose of model, the value of circular economy in the sustainability context remains a subject of contention, as social, economic, and environmental performance is not guaranteed by circularity (Meidl, 2021). The notion that sustainability is integrated with the implementation of circular economy is challenged, as there is insufficient practical evidence indicating circular economy contributes to the whole sustainability system, including social, environmental, economic, and technology (Velenturf & Purnell, 2021). Research further indicates that companies have not defined circular economy practices, with the focus remaining on the reduction of waste or usage of renewable energy (Del Baldo & Anghela, 2020).

Circular economy has many definitions (Geisendorf & Pietrulla) and the contradicting statements on the value and integration of circular economy into sustainability indicated the requirement for more research in this area (Del Baldo & Anghela, 2020). For this research, the opportunity that a circular economy incorporation into the mining industry can create (Kinnunen & Kaksonen, 2019), will be accepted, and further explored.

2.3.3. Adoption of a circular economy within the mining sector

Circular economy will play a prominent role in the future (Aminoff & Kettunen, 2016). However, recycling and adopting a circular economy alone, will not serve the needs of a growing global population, and mining will continue to play a role in servicing the needs of a growing urban middle-class population (Nurmi, 2017).

The concept of circular economy has gained significant traction in the last decade, with mining industry leaders focused on mitigating their waste footprint considering the

environmental and social impacts (World Economic Forum, 2015). Through the International Council on Mining and Metals, a conglomerate of various mining companies, and methods are explored on how to reduce waste and the ICMM creates a platform to share best practices. The mining industry is hence attempting to shift to a new paradigm focused on these restorative and regenerative business practices (Mishra, 2019). However, incorporating circular economy solutions to manage OTR waste tyres, its concomitant social and environmental impacts require action and not mere commitments and platforms for best practice.

Established circular economy programs in the mining industry are not common yet, and the mining sector will need to embrace this challenge to reduce the extraction of or use of natural resources in the future (Petronijević, et al., 2020; L´ebre, Corder & Golev, 2017). Incorporating circular economy into the linear consumption model of mining could result in innovative solutions for waste streams, including mining OTR waste tyres.

Figure 7 represents a typical linear economy, overlay with circular models incorporated into mining concepts. The focus of the model is on parts and components, but a similar model could be designed for waste tyres, slurry, etc.

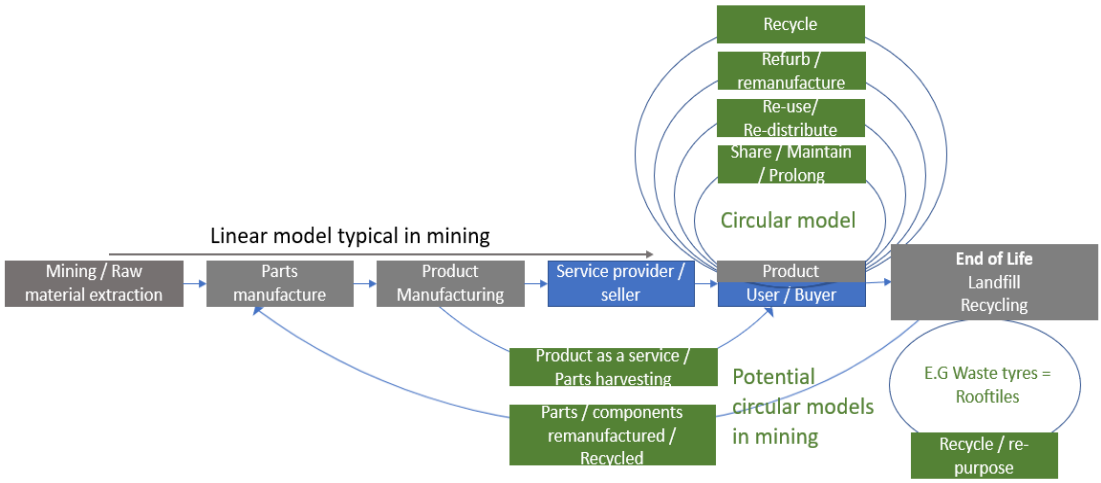


Figure 7: Circular economy potential within mining
Source: Developed by the researcher using elements of Circular economy systems diagram (EMF, 2019)

By challenging the linear model, mining companies can develop and include circular economy concepts into their sustainability concepts, to create innovative opportunities for economic material recovery, waste management, and energy usage (Kinnunen & Kaksonen, 2019).

2.3.4. Value Chains within a partnership

Circular economy views the value chain of supply as a closed-loop where a product is re-used creating a restorative system (Aminoff, Valkokari & Kettunen, 2016). The full range of a value chain explores the cradle-to-grave concept of a product, including "design, production, marketing, distribution, and support to the final consumer, and can be contained within a single firm or divided among different firms" (Cattaneo et al., 2013, para 2, p. 2).

Circular economy incorporates value chains, as this provides a baseline of the raw materials required for a product, and the potential substitutes that can be used. As Porter (1985) noted, value chains enable the analysis of trade.

In understanding the value chain, waste management can be designed into the product design phase. Companies hence need to re-evaluate their response to waste management. Also, OEMs need to rethink business models focused on profit and production, to models where all raw materials, including waste, are maintained within the product's life cycle and the start-to-end state of the product (Maitre-Ekern, 2021).

2.3.5. Supply value chains and integration of circular economy

A common practice in the mining industry with large manufacturers of the mining mobile fleet includes offering supporting services during the life-cycle of the products. Suppliers provide an improved customer experience by offering additional services that enhance the product experience throughout the life cycle of the product (Vendrell-Herrero et al, 2018). This service is limited though, to the working life of the products, with little to no involvement of the suppliers at the end of product life, such as when tyres are replaced.

Sustainable supply chain management incorporates the value chains of the products. There is however a need for manufacturers to be incentivized or encouraged to recover their products at the end of their life cycle. The transition from a linear to a circular economy is negatively impacted by the lack of partnerships between businesses, communities, and institutions. (Lopes & Farinha, 2019).

Ideally, tyre manufacturers' role should change from supplier to service provider with circular economy becoming a driving force to restructure these incentive activities (Geisendorf & Pietrulla, 2018).

2.3.6. Comparative analysis on the literature

Although circular economy is not a new concept, it is an unknown concept in most industries, with limited research, and a few practical examples (Kirchherr et al., 2018).

The mining industry is crucial in the development of circular economy yet has been largely ignored due to its perceived linear economy (Kinnunen & Kaksonen, 2019).

By incorporating circular economy as part of its CSR initiatives, mining can play a transformational role in establishing circular economy to improve local economies, the environment, and the societies where mines operate (Del Baldo & Anghela, 2020).

Table 3 summarizes some of the key constructs of the literature review.

Table 3: Key circular economy concepts

Circular economy (CE)		
Author	Key construct	Relevance
Kinnunen & Kaksonen, 2019	Potential for CE in mining	Recognize that CE is not incorporated into mining, that there is limited research but that there is a significant potential to change mining waste through circular economy principles
Kirchherr et al., 2018	Concept of CE	Circular economy is not a new concept but has not gained any prominence until recently when its impact on the delivery of the SDGs was noted
Petronijević, et al., 2020	CE in mining	CE in mining is not a well-established concept. Mining is an extractive industry, and CE requires the reuse and repurpose of resources.
Velenturf & Purnell, 2021	CE solution	Challenges the notion that sustainability is automatically integrated into circular economy and is interlinked.

Source: Developed by the author

2.4. Strategic partnerships

The research focused on and will be limited to the partnerships between mining companies and their tyre suppliers. Mining companies that partner with suppliers, other than strategic-supply partners, and leverage the skills of these suppliers to deliver value is an emerging theme in mining (Ferguson & Swart, 2020). Partnerships that investigate mergers and acquisitions, joint ventures between mining companies and the various stakeholders impacted by mining will be excluded from the literature review. Trade unions, communities, and NGOs typically identified as partners or interested and affected peoples will not be included as part of the investigation into circular economy strategic partnerships, although the importance of these parties is not discounted.

A strategic partnership, or alliance, can be described as "cooperative arrangements between two or more firms, who share reciprocal inputs to realize improved competitive performance by sharing resources while maintaining their own corporate identities" (O'Dwyer & Gilmore, 2018, p1, para 1). The parties remain independent, share the risks and benefits, as well as make important decisions together. Strategic partnerships are characterized by continuous improvement, mutual planning, and problem-solving where

high levels of trust, commitment, and cooperation exists among partners (Henderson, Dhanaraj & Avagyan, 2014). These relationships are not stagnant and continue to evolve, as the parties influence each other in complex ways (Gelderman, Semeijn, & Verhappen, 2019).

Multinational enterprises' inter-organizational relationships can shape boundaries and determine new opportunities for both companies (Nachum, 2010). Market competitiveness and company performance are further determined by collaborative relationships with strategic partners, which are often leveraged to gain a competitive advantage (Gelderman, et al., 2019). These strategic partnerships furthermore allow for access to complementary resources, a primary reason for alliances to form, and the continued development of these resources will maximize returns (O'Dwyer & Gilmore, 2018).

2.4.1. The complexity associated with strategic partnerships

Various factors can impact the complexity of structuring a strategic partnership. The cultural differences between companies may impact the formal instrument required. Certain cultures may require negotiating formal terms and conditions for a partnership. However, a McKinsey study (Chao, Rinaudo & Uhlaner, 2014) found that developing a contract takes 50 percent of the time, and only delivers ten percent of the value.

Both parties must acknowledge the importance of the partnership. It is required that the governance structure and the operating model be clearly defined and that the strategic intent is articulated, and they agree on the vision. Responsibilities need to be delegated to ensure that senior managers are accountable, but not responsible for the delivery of outcomes of activities related to the strategic partnership. Vigilance on delivery is critical (Chao et al., 2014).

Building trust requires finesse that does not come naturally to multinational organizations. One strategy could be to buy trust, where it is perceived as being weak. The associated risk is that these relationships will become transactional, and not strategic. High levels of trust cultivate strategic partnerships, that incorporate personal relationships, focus on common goals, and respect for cultural differences. It further creates a sense of solidarity between the parties (Henderson et al., 2014)

2.4.2. Barriers associated with strategic partnerships

Partnering with a third party for reasons including meeting CSR standards, innovation, environmental improvements can result in positive (or negative) results (Pons et al., 2021). Where a third-party partner fails to act ethically or environmentally responsibly, a

company will be associated with such failure (Refinitiv, 2021). Companies, therefore, need to choose their respective strategic partners in such a manner that values align, there is a common goal and there will be benefits to both parties.

Barriers that impacted successful strategic partnerships include, but are not limited to, underinvestment of one or both partners, over-appropriation, and misalignment (Henderson et al., 2014). Underinvestment typically occurs when there was no consensus on any costing models, limited governance or leadership sponsorship, and a lack in sharing of resources. Over-appropriation involves competing parties collaborating to such an extent, that customer relations, intellectual property, and other firm-specific attributes are at risk of exposure.

For strategic partnerships to succeed, goals have to be aligned, all roles and accountabilities defined, and cross-collaboration encouraged to limit the risk of misalignment. Another concern in securing strategic partnerships is defining what the business case or value proposition will be for the partnership, as sustainability benefits cannot always be measured in monetary values (MacDonald et al., 2019).

2.4.3. Enablers associated with strategic partnerships

There are various benefits of entering into a strategic partnership and some of the enablers of such a partnership include the definition of a common goal or objective, the development of revised aligned perspectives, and supplementing each other's capabilities (Gibbons, 2019). A contract does not necessarily enable a strategic relationship, but there is a requirement for a memorandum of understanding, as this will define what the partnership is about, and aims to achieve and sets the clear rules of the game in terms of who needs to deliver what (Burns, 2019).

There should be a win-win solution (and taking it further, where it is not just the companies, but incorporating stakeholders as well). The exchange of value is critical, and both companies need to bring value to the relationship to make it a truly strategic partnership, that is sustainable. Companies should evaluate the whole ecosystem of the relationship when looking for a strategic partner and success depends on (Henderson et al., 2014).

Figure 8 highlights considerations for strategic partnerships, including the dimensions of strategic alliances, what the key factors entail, a high level overview of what the key roles are of a strategic partnership and the governance factors that should be included (Genç, Alayğlu & Öykü Íyigün, 2012).

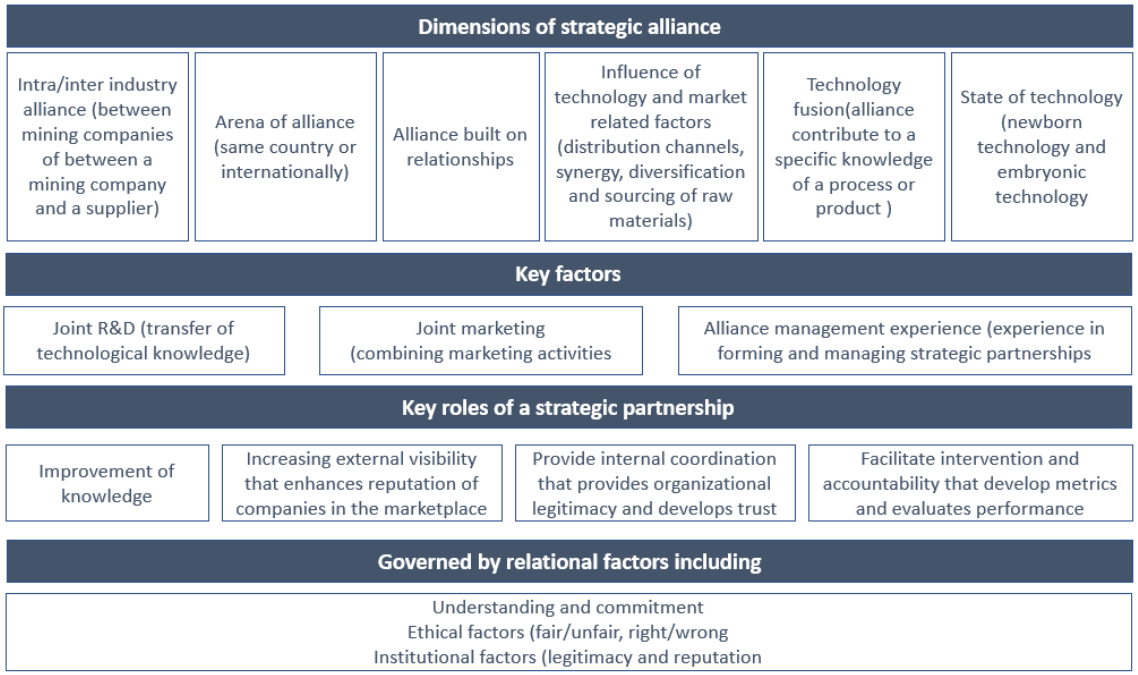


Figure 8: Evaluating strategic partnerships
Source: Developed by the researcher quoting literature from Genç et al.2012

2.4.4. Opportunities related to strategic partnerships

Sustainability presents a complex global challenge, and there is a need for a coordinated approach between multiple stakeholders to address this challenge (Clarke & MacDonald, 2016). Partnerships that focus on sustainability can generate external value, reduce the risk associated with sustainability and reduce cost (Niesten & Jolink, 2020). Strategic alliances can therefore ensure a competitive advantage for mining companies and their suppliers who are competing against their peers in a global field (Genç et al., 2012).

Cross-sector collaboration, or partnerships, can become a key driving force in the battle against climate change and drive a sustainability agenda. Global partnerships can become a catalyst for change, causing ripples of change across multiple industries. With responsible leaders, the change can only be positive for the environment and humanity as a whole (WeForum, 2015).

2.4.5. Comparative analysis on the literature

The literature on strategic partnership and its contribution to competitive advantage is abundant and unchallenged. The current global sustainability issues plaguing mankind cannot be resolved in isolation. Strategic partnerships between multinational companies can become an enabler to define, develop and implement solutions.

The mining industry can be a significant contributor to finding solutions, with an extensive partner network into which it can tap. Creating partnerships could address issues and identify opportunities, whilst delivering value for both parties.

Some strategic partnership concepts are presented in Table 4.

Table 4: Key strategic partnership concepts

Strategic partnerships		
Author	Key construct	Relevance
Clarke & MacDonald, 2016	Partnerships can address issues	The wicked problem that is sustainability cannot be solved on its own and partnerships are required that can focus on working towards solutions incorporating various stakeholders
Genç et al., 2012	Benefits of a strategic partnership	Truly strategic partnerships can create a competitive advantage for both companies that partake in the partnership
Henderson et al., 2014	What makes a strategic partnership	To be successful, there needs to be a strategy, alignment and the companies need to be able to integrate, focusing on the shared commitment and what resources can be leveraged to identify and deliver value
O'Dwyer & Gilmore, 2018	Definition of partnerships	Work together for a common goal but don't lose your individuality

Source: Developed by the author

2.5. Value

2.5.1. Introduction

The Davos Manifesto 2020 states that a company's purpose in the Fourth Industrial Revolution is to "engage all its stakeholders in shared and sustained value creation" (World Economic Forum, 2019). The definition of shared value creation is not a new concept to mining, who through its creating shared value (CSV) initiatives, tried to redress the impact of mining in the communities where it operates (de los Reyes & Scholz, 2019). Mark Cutifani, CEO of Anglo American were quoted saying "The company's purpose of re-imagining mining to improve people's lives is guided the company's delivery of sustainable value to its shareholders, employees, and broader business and societal stakeholders…. Improving people's lives is what we believe sustainable businesses must deliver – both through the direct value we create in terms of employment and economic and social contribution, but also to the world at large through the metals and minerals we provide, many of which are fundamental to decarbonization and meeting global consumer demand for every day through to specialty and luxury products". Cutifani continued: "Just as financial performance presents an opportunity for differentiation, we see sustainability no differently – it is integral to how

we all work and plan and is central to our overall business performance..” (Creamer, 2021, para. 7, 11.)

2.5.2. Value defined

For mining companies and their suppliers to attract investment through shareholding, they need to demonstrate that they can deliver value. Value is defined in the dictionary as "The regard that something is held to deserve; the importance, worth, or usefulness of something. The material or monetary worth of something" (Oxford Dictionary, 2021). Traditionally, companies' value was determined by their financial performance and the value that they can deliver, through the return of shareholders' investment.

The economist, Armen Alchian, a widely cited American economist (The Library of Economics and Liberty, n.d.), and co-author of *University Economics*, once articulated that the criterion for the survival of business firms is profit maximization (Thurow, n.d.). Business has however changed, responding to stakeholders, including shareholders' needs (Lorne & Dilling, 2012), and therefore, the definition of value in a business context has changed. Mining companies adapted and responded to this change in value definition, with many including carbon neutrality as part of their value proposition for future investors, with investors responding favorably to those that made their commitment public (Hume, 2021).

Shareholders focus on value delivery, a competitive advantage which includes security (the company either disrupts its market or is guarded against disruption), financial strength (high possibility for return on investments, large margins, and low leverage), and risk management focused on environmental, social, or governance and accounting risks (Heugh & Fox, 2017). These factors contribute to the perceived quality of the company compared to others.

Further investor activity growth can be attributed to the following factors: positive discounted free cash flow, optimized efficiencies of a company's fixed assets, aggressive marketing strategies, adaptable pricing structures, managed supply chains, quality and control systems, implementation of environmentally friendly technologies, requisite skills and agile productive employees and leadership focused on continuous improvement (Frolova et al., 2021). Investors are further getting involved to put pressure on mining companies to ensure they deliver on sustainability targets, and where these targets are not in place, such as scope 3 commitments, to work towards finding solutions (Hume, 2021).

The risk in presenting premature initiatives can be reputations, and the mining industry needs to guard against window dressing sustainability issues to be perceived as a "green company", as the consequence of the issues will highlight the inaccuracies reported (Bester & Groenewald, 2021). Value is not only defined in monetary forms, but also in managing reputational risk and the mining industry as a whole is prone to damaging perceptions due to its environmental footprint and social impacts (Innis & Kunz, 2020). However, setting targets and delivering on those targets contributes to the value identified by shareholders (Hume, 2021)

2.5.3. Value drivers

Although value is relative, shareholders value companies that can sweat their assets, grow revenue, and maintain a healthy margin (Lukac & Frazier, 2012). Each of these elements can be manipulated by levers as indicated in Figure 9, where for example, revenue growth is impacted by volume and price.

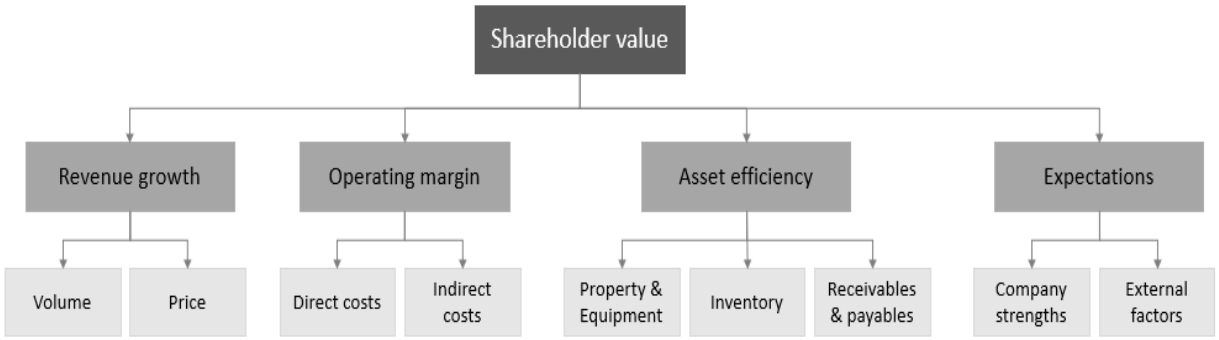


Figure 9: High-level shareholder value map
Source: Deloitte methods. Adapted from "Linking strategy to value," by Lukac, & Frazier, 2012

By creating value, a company will be able to maintain its competitive advantage. When a company can create more value for a client than what it costs to deliver on that value, a firm's competitive advantage will grow. Value is what the client is willing to pay, and superior value can be created by offering additional value add, or unique offering aligned to needs that justifies a higher price and offsets it (Porter, 1985).

A shift in economic jargon indicates that the modern economy aims to increase competitiveness and achieve sustainability goals while taking into consideration and leveraging off the fourth industrial revolution (Pinchuk, Tkalenko & Marhasova, 2019), allowing for production efficiencies and incorporating the "3R principle", reduce, reuse and recycle. This aligns with the value drive towards circular economy strategies as organisations are increasingly challenged to incorporate sustainability and waste reduction into their strategic intent (MacDonald et al., 2019) circling back to the perception of value creation.

Sustainability incorporates the historic, familiar concepts of betterment for the future by preservation, where circular economy challenges how humans efficiently use resources now to sustain the future (Pinchuk et al., 2019). Traditional value drivers are shifting to incorporate the modern world economy, and although the uptake of circular economy is not widely recognised, it has gained traction to replace the take-make-dispose model with a more circular model (Veleva & Bodkin, 2018). Making the transition to circular economy is complex, and where companies can achieve this, they can create a competitive advantage and develop sustained success where they can leverage these value creation opportunities and capture capabilities to achieve outcomes (O'Dwyer & Gilmore, 2018).

Circular economy value creation cannot be considered in isolation, and circular economy must be viewed as a system that incorporates the environment, societies, and the economy (De Baldo & Anghela, 2020). Responsible ESG participation by companies provides confidence that these companies can sustain a competitive advantage over the long term, and as such, influence investment decisions (Heugh & Fox, 2017). Market performance analysis indicated that companies that complied with ESG standards, outperformed companies that didn't (Roberts, 2021). Interestingly, this is in direct contradiction with Bester and Groenewald (2021) who argued that asset managers were motivated by financial performance rather than ethical progress, further arguing that positive cash flows allowed companies to report on a positive ESG rating, rather than the other way around, meaning that a positive ESG rating is not necessarily the reason for a positive cash flow, the main value driver for investors. For this research, it will be accepted that a company that scored high in ESG ratings outperforms its peers that do not. The evidence was provided by PWC during an annual review of the top 40 mining companies (Africa Mining IQ, 2021) which indicated that ESG is a must.

2.5.4. Value perception of circular economy

Circular economy has gained prominence in recent years, and it is contextualized as a way of extending resources, through recycling and industrial symbiosis, which is typically defined as industries that work in isolation but create competitive advantages when they collaborate (Lopes & Farinha, 2019). By incorporating circular economy into business models, a circular business model can be created, which contributes to a sustainable value proposition that can improve a company's sustainability performance. However, the market perception of companies that adopt circular economy into their business models is not clear (van Keulen & Kircherr, 2021).

The drivers that are pushing companies to shift to circular economy solution, contributing to the value perception includes differentiation, a reduction in cost, improved profitability, and importantly, brand protection (Vesela & Bodkin, 2018). These drivers align with the requirements from shareholders who are looking towards less risky investments (Frolova et al., 2021) and better returns on investments.

Circular economy can significantly contribute to sustainability; however, it can also be detrimental to sustainability as it has a strong economic connection (Velenturf & Purnell, 2021). Care should be taken on how the circular project is positioned, to ensure it will deliver external as well as internal value. Compliance with ESG, which can be enabled by circular economy, clear communication, and risk mitigation can contribute to companies' attractiveness, to both investors and other stakeholders (Frolova et al., 2021).

2.5.5. Industry overview

A survey conducted in eleven countries with 6000 participants, found that 83% of respondents wanted to buy products that can be reused or recycled, from suppliers who are embracing a circular economy (Accenture, 2019). Deloitte interviewed 1168 CFOs on their companies' commitment to climate change and found that respondents faced increased pressure to act on climate issues. The survey further revealed that energy, utilities, and mining faced the largest extent of pressure (54%) from investors and shareholders to have transformational plans that address climate issues (Coppola, Krick & Blohmke, 2019).

In 2019, 181 chief executive officers who formed part of the Business RoundTable, America's most influential group of corporate leaders, signed an agreement to support a new Statement on the Purpose of a Corporation, committing to lead their companies in a manner that will benefit all stakeholders. Business RoundTable (2019) reported that the President of the Ford Foundation commented that the change in mindset is tremendous news. He explained that, in the 21st century, it is critical that businesses focus on generating long-term value for all stakeholders, and that they address prevailing challenges that will result in prosperity and sustainability for both business and society. This is a radical mindset change from late economist Milton Friedman, who argued in favour of chasing profits for shareholders in 1970, indicating that it is the only way for a company to prosper, keep people employed and fuel the economy (MacLellan, 2019).

In 2015, Adidas partnered with Parley the Oceans for a pilot program to manufacture shoes, made entirely from plastic recovered in the ocean. This pilot transformed Adidas's

entire business model due to its popularity, with Adidas announcing that by 2024, every shoe will be manufactured from ocean plastic (Holm, n.d.). This is an example of how early adopters of circular economy business models have captured a market of conscious consumers, gaining a competitive advantage over its competitors.

Creating a circular economy strategic partnership that creates a perceived value may depend on what each company can contribute to the circular economy program. Strategic partnerships lead to a competitive advantage, although the advantage stems from how firms apply their strengths to the relationship (Fernandes, et al., 2017). The value perception will be motivated by the contribution the circular relationship makes to the stakeholders impacted by the relationship. However, circular economy concepts have been challenged to exclude sustainable development, having a limited understanding of how it can contribute to sustainable development and certain circular economy projects that have negatively impacted sustainability (Velenturf & Purnell, 2021). Limited information is available on successfully implemented green projects, their financing, and the results achieved from these projects (Frolova et al., 2021).

2.5.6. Stakeholder sentiment

The mining industry is positioned for generational change, meaning that the fleet and technologies have reached, and are reaching the end of life in the next five years (Researcher experience). Capturing a future investor market will be easier if the new technologies support decarbonization, green economies, and the stakeholders impacted by the mines (De Baldo & Anghela, 2020). However, there need to be tangible results and not just commitments. The change in the mindset of mining companies needs to be responsible and should not be a façade to impress shareholders. As Hendrik du Toit, CEO of Ninety-One, the former Investec asset management business, notes "what we are saying is that if Anglo spins off its coal, it's not cleaning the world; it's cleaning Anglo's annual report" (Buthelezi, 2021, para 11).

Gaining shareholder confidence will require a rethink of business as usual and circular economy solutions can provide the answers, however, this includes impacting the value chains both up and downstream from its businesses by redesigning product life cycles (De Baldo & Anghela, 2020).

Companies face the risk of shareholder pushback should they not be aligned to global expectations. CGI Glass Lewis, an influential proxy advisor to shareholders, recently challenged a global miner on the scientific approach of its carbon reduction plans and criticized the company for not doing enough (Toscano, 2021). Companies that do not

transition to a greener footprint, face the risk of losing their investment platforms. There is an urgency required to transition to a greener economy to safeguard humanity's future, and responsible investors will start putting pressure on companies to transition. Investors will force the industry to change, as were seen when Norway's US$1 trillion sovereign wealth fund, informed the markets that it was selling some of its shares in oil and gas companies, reverberating its sentiment on the need for change (UN, 2019).

COVID-19 has dwarfed environmental, social, and governance factors for many companies that had to deal with health, supply chain, and safety issues. However, with the return to "business as usual", investors are likely to actively focus on and invest in, companies that proved resilient during this time, with strong ESG performance, which also effectively communicated their sustainability strategies and the impact of these strategies (Millet, 2020). Mining companies now and in the future cannot afford to ignore the pressures to transform to sustainable practices, as investors, societies, and governments will not tolerate unsustainable practices (Nurmi, 2017). It is envisaged that asset managers will be signing a pledge to commit to investing in companies that will become carbon neutral by 2050 (Buthelezi, 2021).

Evidence suggests that it is critical to share strategic partnership news, as this can positively impact the companies' partnership. When NVidia and Volvo announced their partnership to create self-driving trucks, the markets responded favorably, and their share price reflected the approvals (Gibbons, 2019).

2.5.7. Comparative analysis on the literature

There is a differential shift in shareholders' view of what constitutes responsible investing, with public forums advertising the pressure being put on the mining industry to transform. The literature provides opposing views in acknowledging the value ESG and associated programs can bring to a company but highlights those returns remain a major motivator for investors. The value perception of circular economy is not well understood, with opposing views on its contribution to sustainability.

Table 5 presents a summary of the key literature concepts on the value perception of circular economy strategic partnerships.

Table 5: Key value perception concepts

Value perception		
Author	Key construct	Relevance
Porter, 1985	Differentiation	A company can differentiate itself in its industry by providing a unique product or solution that is valued by shareholders and stakeholders. By being unique, the company will be able to charge a premium price.
Porter, 1990	Acts of innovation	Innovation is key for companies to gain a competitive advantage, however, if companies become lax and stop innovating, competitors will eventually overtake them. Remaining competitive requires continuous innovation.
Velenturf & Purnell, 2021	CE is a risk to sustainable development	Circular economy has a weak link to sustainable development and where projects were implemented, evidence suggests that it countered the sustainability goals.

Source: Developed by the author

2.6. Competitive advantage

One of the fundamentals of competitive advantage is a companies' ability to derive value for stakeholders. The way a company responds to competition, through innovation, culture changes, and effectiveness, can improve (or destroy) its value proposition (Porter, 1985). A differentiator for companies includes valuable and rare resources that are difficult to imitate. These resources need to continue to adapt to remain a competitive advantage (Kamukama, et al. 2017). Mining companies are dependent, amongst others, on the price of commodities which directly impact their share price (Antono, Jaharadak, & Khatibi, 2019). As such, mining companies are very dependent on differentiators that will attract investors to them, rather than their peers.

Mining and the suppliers that supply mining companies will need to differentiate themselves in a highly regulated and competitive market to create a competitive advantage, as the core business of most mining companies is material extraction. When an organization outperforms its competitors due to a set of attributes it has developed that is unique to that organization, those attributes can be seen as contributing to the organization's competitive advantage or that competitive advantage has been obtained (Wang, 2014).

The core business and the capabilities of a company can translate into a competitive advantage, with intangible, rather than tangible resources expanding this advantage. It is further noted that companies that can attain a competitive advance will outperform those companies that cannot (Kamukama et al. 2017). These intangible resources expand into the sustainability real in the mining industry, incorporating ESG and the risks associated with CSR.

2.6.1. Sustainability considerations and strategic partnerships

Mining companies that focus on their sustainability strategies, and communicate them effectively, can create a competitive advantage from these initiatives. The organisational narrative, its values, beliefs, and behavioural norms that shape its sustainability agenda are measured by its sustainability orientation. Organisation performance, including financial, operational, and environmental performance has been linked to sustainability orientation, and the awareness of sustainability is a unique resource that further affects performance (Hussain & Malik, 2020). Companies in the mining industry that do not have a culture focused on sustainability, will not be able to demonstrate a sustainable orientation.

Mining companies and suppliers linked to the mining industry are very interdependent with various types of contracts regulating those relationships (Researcher experience). The relationship development between suppliers and customers is dependent on the market. Where a market is competitive, relationships are traditionally transactional, and where customers seek customised solutions, these relationships tend to become collaborative (Lacoste & Johnsen, 2015). The mining industry has a very robust supplier base and competitive tenders are encouraged to ensure the best solutions are provided to the mining houses at the best price. These tenders do not always promote partnerships with suppliers. Where a supplier partners with a mining company, these partnerships are normally well advertised (Petit, 2021; Mining Technology, 2021). Relationship management is key to strategic marketing (Stone & Mason, 1997). Collaborating with suppliers in a strategic manner, where both companies work towards a specific goal, encourages the development of innovative solutions, which strengthens both companies' competitive advantage (Lacoste & Johnsen, 2015).

2.6.2. Circular economy strategic partnership

In certain sectors, circular economy strategic partnerships are not a new concept. The Government of the Netherlands has circulated a National Agreement on circular economy, developing transition agendas with strategic partners to help facilitate the government’s program to transition the Netherlands to circular by 2050 (Government of the Netherlands, n.d.).

The mining sector cannot delay embracing circular economy ecosystems, as this will drive future growth and competitive advantage (Mishra, 2019). The mining industry is relatively stable, bar the fluctuation in commodity prices. The recent push for carbon neutrality may evolve the industry. Two examples of creating structural changes in the industry, are, as an example, Fortescue Metals Group that committed an initial $83million

to the construction of the world's largest hydrogen electrolyser plant in Australia, intending to lead the industry in the fight against global warming (Burton, 2021). Also, Anglo American is planning on disrupting the conventional mining truck sector with a prototype hydrogen fuel cell truck, eliminating the need for diesel-powered engines (Moore, 2021). These changes can impact the competitive forces, and either positively or negatively impact profitability.

Mining companies can enhance their position to transition their business models by partnering with suppliers to develop circular operations and engage with users to innovate circular products and services and ensure the product value chains focus on a circular economy approach by establishing cross-industry partnerships (Mishra, 2019). These transitions will require a significant mindset change for the industry as a whole, supported by innovation and potential funding requirements, none of which can accurately be anticipated (Veleva & Bodkin, 2018) as practical examples in the industry is limited. The three core principles that have been identified for effective circular partnerships include the active engagement of corporate partners to drive the circular interventions; clear roles, responsibilities, and accountabilities allocated; and the active engagement in these partnerships (Holm, n.d.).

2.6.3. Resource-based view

The resource-based view "aspires to explain the internal sources of a firm's sustained competitive advantage" (Kraaijenbrink et al., 2010, pp 350), acknowledging that there is a potential to gain a resource through "network structures, and firm-to-firm alliances" (Clarke & MacDonald, 2016, pp 303), and arguing that a competitive company has a unique set of resources and capabilities (Sanders & Wong, 2021). A company remains competitive, effective, and efficiently provided its specific resource as defined by the resource-based definition upholds: "resources that create sustained competitive advantage should fulfill the following feature: value, rareness, imperfect imitability and substitutability" (Hamdoun, 2020, p. 453).

The literature review and research on resource-based theory focus on the additional resources that a strategic partnership can contribute to the companies that partake in such partnership. One of the main motivations for partnerships is access to specific resources (Sanders & Wong, 2021). Strategic partnerships can be seen as multi-stakeholder partnerships, as various parties can be impacted by the partnership. This study would include the mining companies, the suppliers, their distributors, the potential mines, and surrounding communities.

Clarke and MacDonald (2016) describe the resources gained by the parties that partake in strategic partnerships, indicating that a coordinated approach by multiple industry players is required to address the sustainable development challenges. These partner outcomes are elaborated on in Table 6 below.

Table 6: Partner outcomes from resource-based view partnership literature

Resource	Partnership outcomes	RBV on partnership literature	Circular economy incorporation
Physical capital	Cost savings and improved efficiency	Lavie, 2006	Sharing of resources reduces consumption
Organizational capital	Innovation	Lavie, 2006	Innovative solutions for the industry
	Progress on goals		Align sustainable development goals
	Build trust, reputation, and legitimacy	Arya & Lin, 2007 Lavie, 2006 Lin & Darnall, 2014	CE projects incorporate the communities and environmental aspect and require trust
Human capital	Gained knowledge and training	Arya & Lin, 2007	Expand the impact of CE

Source: Adapted from Clarke & MacDonald (2016) Table 1

2.6.4. Comparative analysis on the literature

For companies to operate in a robust market and maintain their competitive advantage, they require a valuable, rare and hard to imitate resource unique to that company (Porter, 1985). It is further acknowledged that companies that can maintain their competitive advantage over longer periods of time, results in better performance and higher returns on investment (Kamukama et al., 2017).

Key competitive advantage concepts are highlighted in Table 7.

Table 7: Key competitive advantage concepts

Competitive advantage		
Author	Key construct	Relevance
Porter, 1985	Differentiation	A company can differentiate itself in its industry by providing a unique product or solution that is valued by shareholders and stakeholders. By being unique, the company will be able to charge a premium price.
Porter, 1990	Acts of innovation	Innovation is key for companies to gain a competitive advantage, however, if companies become lax and stop innovating, competitors will eventually overtake them. Remaining competitive requires continuous innovation.
Kamukama, et al., 2017	Intangible resources	Intangible resources such as internal resources, capabilities, and skills provide a stronger competitive advantage

Source: Developed by the author

2.7. Conclusion and summary

Although the definition of circular economy is varied and one of the only common denominators being that resources need to be better used, the fact remains that at current consumption, humans are depleting our natural resources and there are significant waste stockpiles globally (Velenturf & Purnell, 2021). Resolving this waste solution cannot be done in isolation, and mines are ideally positioned to start with recovering their mined product or managing their waste responsibly.

Circular economy, or a variant thereof, can offer such a solution, and partnering with a key supplier can enable broader reach and impact. The Ellen MacArthur Foundation. (n.d.). notes that circular economy demands a systemic change.

The need for a full-scale transformation of industries will require a collaborative approach between numerous institutions, industries, and the communities in which these industries operate. The literature on framework considerations for a circular economy strategic partnership in mining is limited, and this research aims to develop a conceptual framework for mining industry commercial leaders, using tyre waste management as a case study for developing such a framework.

2.7.1. Key concepts for a framework

The development of a conceptual framework to consider how multinational mining companies and their supplier counterparts can initiate circular economy strategic partnerships incorporated the following principles/ guidelines:

i. An aligned sustainability vision between the mining company and the supplier
ii. A definition for circular economy and how it will be applied or interpreted as part of a partnership.
iii. Sustainability and circular economy: Are there a correlation, a need, and a retorting capability in either party?
iv. Mining and circular economy: How is it defined, what needs to be achieved?
v. Value chains: Understanding the value chain and how it can be incorporated into the circular economy, aligned to both parties needs and strengths.
vi. Strategic partnership selection is "win-win" for the mining company and supplier, and "win-win-win" for the mining company, supplier, and stakeholders.
vii. Identification of the factors that will contribute to the strategic partnership.
viii. Governance structures are required to enable the partnership and ensure its longevity.
ix. Communication between parties and marketing to a broader forum.
x. Continuous improvement and evolving to challenge the industry.

2.7.2. Framework considerations

The draft framework developed incorporates a process flow depicting high level how a circular economy strategic partnership should be selected and implemented. Partners need to be identified that shares the same values as the mining company. Strategic partnership goals need to be defined and there is a requirement to ensure these are aligned.

A strategic partnership can be formalized and implemented. Once the partnership is implemented, the parties should agree on a circular economy opportunity that can be investigated. As the companies are multinationals, a country should be selected where the circular economy strategic partnership program and partnership can be piloted.

A circular economy project is initiated which forms the foundation of the partnership. This program should be managed to ensure the deliverables of the partnership is met.

Figure 10 depicts the draft framework considerations.

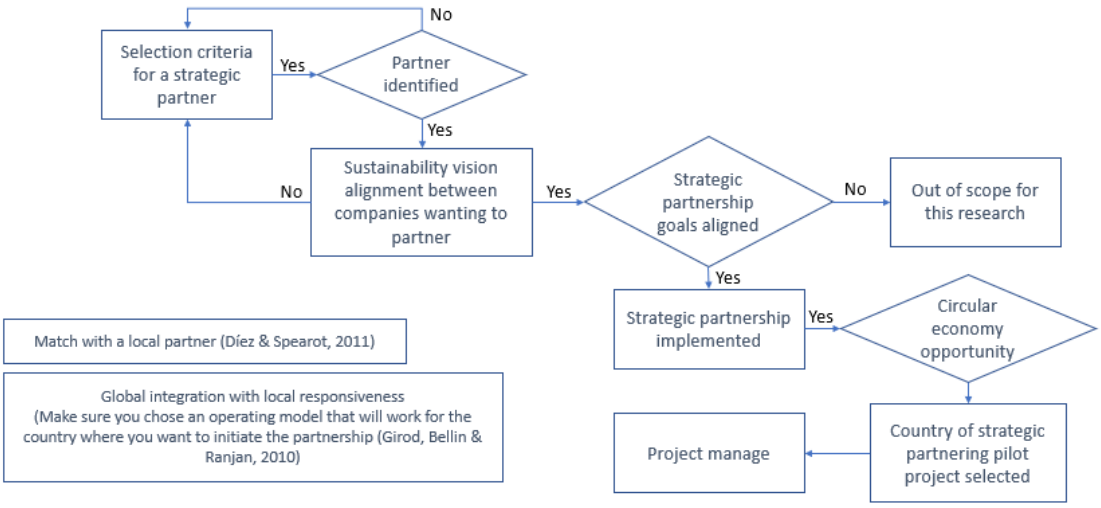


Figure 10: Draft framework consideration for CE strategic partnerships
Source: Developed by the author

The following chapter introduces the research questions that directed the investigation.

CHAPTER 3: RESEARCH QUESTIONS

Due to the restructuring of economic driving forces, multinational organizations are put under pressure to re-evaluate their global value chains and to re-consider strategic alliances or partnerships (Petricevic & Teece, 2019). Circular economy, a conversation where mining companies should play a crucial role (Kinnunen & Kaksonen, 2019), can become a significant driving force in changing the value chains of the mining companies and their suppliers. Multinational organizations should leverage their networks, identify strategic partners, and create circular economies. Certain corporate social performance measures, of which circular economy is a key driver, have the potential to deliver increased financial gains in a competitive industry (Endo, 2019).

The resource-based theory suggests that increasing and enhancing a company's resource portfolio, can create a competitive advantage, that could be sustainable over a long period (Lathi et al., 2018). As such, strategic partnerships between multinational mining companies and their international suppliers can potentially create a competitive advantage, and a unique circular economy strategic partnership can become a resource to be leveraged, that may be non-substitutable. Multinational mining companies are under continued pressure to reduce their carbon footprint, and these partnerships could significantly contribute to address this issue.

The research questions were formulated based on the research problem, which inspired the literature review that is articulated in Chapter 2. The main question was defined and refined in terms of five sub-questions to further explore the elements of the research problem.

The main research question: How can a circular economy strategic partnership among multinational organizations within the mining sector create value perceptions that will create a competitive advantage for all role players?

The main research question explores the value perception of strategic partnerships that actively collaborate to drive circular economy programs. Circular economy programs within mining is not well established and as such, could be a valuable resource that contribute to a company's competitive advantage.

The five sub-questions explore the principles of circular economy, relationship management, and value identification that can translate to a resource-based competitive advantage.

Sub-Question 1: How well are the principles of circular economy established in the mining sector?

This question aims to gain an understanding of the mining sector's awareness of sustainability and circular economy and the relationship between these two concepts.

Sub-Question 2: Within the principles of a circular economy, how established is the strategy to embed circular economy as part of business as usual within the mining industry?

This question aims to explore the importance of circular economy within multinational organizations.

Sub-Question 3: How can a strategic transactional relationship between two selected multinational companies transform into a circular economy strategic partnership withing the mining industry?

Sub-question 3 aims to understand if there is a view of transitioning from a take and pay relationship, to a long-term, circular partnership. It further explores how such a transition can occur

Sub-Question 4: How can a circular economy strategic partnership enhance role players' value perceptions?

Sub-Question 4 expanded on the preceding exploration, to gain insight into potential enablers that could shift the sector's sustainability paradigm and enhance activity in the industry

Sub-Question 5: How can partnering companies' circular economy strategic partnership value perceptions act as a competitive advantage?

This question sought to explore the opportunities that a stronger position on sustainability and action could offer the sector.

The research questions directed the research design and methodology that are presented in Chapter 4. Due to the nature of the research problem, the research adopted a qualitative approach.

CHAPTER 4: RESEARCH DESIGN AND METHODOLOGY

4.1. Introduction

This chapter presents the research methodology for the study that aimed to investigate mining companies' and their suppliers' understanding of the relevance of circular economy in terms of more sustainable practices and its adoption in the mining industry. The research questions aimed to determine how strategic partnerships can be leveraged to create a circular economy program, if circular economy strategic partnerships are perceived to enhance their value perceptions, and if the value perception could be translated to a competitive advantage for all the role players.

This study followed a qualitative approach to gain the perspective of influential, knowledgeable employees who are involved in relationship management in the mining industry, concerning their perceptions of circular economy strategic partnerships, and the role these partnerships could play as a specific resource to their respective companies. The sample of participants for qualitative research is limited to participants that have experience in and knowledge of the field of research (Vishnevsky & Beanlands, 2004). Setting clear objectives of what the research entailed, prevented the researcher from wasting time and effort on data collection that does not contribute to the research (Cypress, 2018).

Due to the nature of qualitative research where the approach to data collection involved conversations with a purpose (Bauman et al., 2011) and the analysis were numerous, qualitative research provided flexibility in exploring relationships and value perceptions through open-ended questions and a conversational research method that not only provided responses, but also insights into given circumstances (Guest, MacQueen, & Namey, 2014). Qualitative research further allowed for a deeper exploration of themes related to sustainability (Crane, Henriques, & Husted, 2018) and as such, allowed the incorporation of circular economy. The research was exploratory in nature.

4.2. Research paradigm

4.2.1. Ontology

In this study, ontological assumptions entailed an understanding of value perceptions associated with circular economy strategic partnerships in mining. Value perceptions tied within the constructivist school of thought that states "knowledge of the world is not a simple reflection of what there is, but a set of social artefacts, a reflection of what we make of what is there" (Nunes & McPherson, 2003, p2). It explored the nature of the

partnerships that exist between the multinational companies, from the mining companies, as well as the suppliers' point of view. The qualitative research approach and data collection methods collaborated with the constructivist view as the researcher entered the world view and perceptions of the interviewees, where data collection occurred by interview (Cypress, 2018).

4.2.2. Epistemological position

The literature review in Chapter 2 introduced a framework for circular economy strategic partnerships. Strategic alliance literature cites that trust is critical in partnerships (Gelderman, et al., 2019). Reinforced by the constructivist thoughts that knowledge is not singular but made up of various reflections between parties (Nunes & McPherson, 2003), the research approach reviewed the motivation and candor of trust, the perceptions of strategic partnerships, and value creation. The interpretivist epistemological position explored the understanding of the relationships and perceptions based on the interpretations of the research participants of what a relationship should entail and what is perceived as a value in business (Bell, Bryman & Harley, 2019). As such, it explored the value perception of circular economy programs implemented between two multinationals as partners, and if these circular economy strategic partnerships created a unique resource that could be perceived as a competitive advantage.

4.3. Research Design

The main research question sought to understand how a circular economy strategic partnership among multinational organizations within the mining sector can create value perceptions that will create a competitive advantage for all role players. The research intended to develop a conceptual framework that may support mining professionals in the identification of key elements that should be considered when developing a circular economy strategic partnership, to position the partnership as a valuable resource that can be perceived as a competitive advantage for all role players. The intention was congruent with the resource-based theory which seeks to explain a firm's internal source of sustained competitive advantage (Kraaijenbrink et al., 2010).

A qualitative research study design approach was followed, as the researcher intended to determine how participants experienced and interpreted their social worlds (Merriam & Tisdell, 2016). The approach to the research was holistic, not aiming to make group comparisons, but to understand the themes as a whole, by gathering subjective data

from the participants, that includes their respective views and experience (Vishnevsky & Beanlands, 2004; Merriam &Tisdell, 2016).

The principles for undertaking a basic qualitative investigation were provided by Merriam and Tisdell (2016), which offered a logical approach to the research.

- Participants are carefully selected.
- Data collection occurs through interviews, observations, and document analysis
- The questions asked in the interview depend on the theoretical framework.
- The analysis of the data includes identifying themes across the various data sets.
- Findings are associated with these themes and is supported by the data from how they were collected.
- Interpretation of the data is based on the researcher's understanding of the participants' response to the questions.

The principle of basic qualitative research was to understand how participants interpreted the research constructs, what meaning they assigned to it based on their experience and knowledge, and to unpack the meaning as interpretive as possible (Merriam & Tisdell, 2016). The aim is to create a rich description of the research topic, that could contribute to the theory and create contribute to the development of formal frameworks (Vishnevsky & Beanlands, 2004).

4.4. Research methodology

The qualitative research investigation was conducted through semi-structured virtual interviews with various participants, as semi-structured interviews allowed participants to convey their lived experience, retrospective and in real-time (Gioia, Corley & Hamilton, 2012). These interviews were conducted virtually by the principal researcher, due to the COVID-19 pandemic limitations placed on participants, that complicated the possibility to meet participants in person in South Africa. However, these virtual interviews eased the complexity of interviewing participants based in Australia, France, Kenya, London, Mali, the United States of America, and Zambia.

4.5. Sampling approach

4.5.1. Population

The population of the study focused on a group of people within the mining sector who has specific skills (Banerjee & Chaudhury, 2010). This population, or unit from which the participant sample was selected (Bell et al., 2019), worked for multinational and regional

mining companies with operations in South Africa, Australia, Mali, and Zambia and multinational suppliers affiliated with these mining companies, headquartered in Japan, France, and the USA, with dealerships in South Africa.

The sample for this research was defined as managerial professionals representing mining companies and OEMs (suppliers) who specialize in OTR tyres and mining equipment, as defined in Section 4.5.3.

The scope of the research was limited to the perceptions of the employees of mining industry companies that could form part of strategic partnerships and does not take the investor community or broader stakeholder communities into consideration.

4.5.2. Unit of analysis

The unit of analysis comprised multinational mining companies, mining operations (mine sites) in Mali, South Africa, and Zambia, and the multinational suppliers that provide services and products to these companies and operations. The mining companies included a multinational mining company based in South Africa, headquartered in London, a mine in the Northern Cape, a mine in Zambia, and one in Mali. The suppliers identified and employees interviewed, included multinational tyre OEMs, a global tyre services provider, and a multinational heavy mobile equipment manufacturer, which were included to broaden the OEM data gathering set.

The unit of observation was supply chain professionals focused on supporting the mining sector, global category managers managing supplier partnerships, senior managers, and experts in the fields of sustainability and circular economy, product developers for the suppliers, and senior account managers for both the mining companies and the suppliers. It is assumed that the professionals will be knowledgeable agents (Gioia et al., 2012) in their profession who can articulate their thoughts and actions and explain their intentions.

4.5.3. Sample

The research participants were professionals and managers who were based at the respective corporate offices, as well as operational personnel based at the mine sites. Managerial professionals included employees working in sustainable development, supply chain, responsible sourcing, technical, communications, key account or category managers, and the counterparts in the supplier organizations.

A purposeful selection of participants and subsequent data collection has the potential to contribute to the theory (Bell et al., 2019). The participants were therefore required to

be engaged in the topics surrounding the research and to share their experiences and perceptions in conversations that led to data generation (Bauman et al., 2011). The participants were all knowledgeable people in their respective fields and had some exposure to or knowledge of the themes identified for this research (Gioia et al., 2012).

The research participants were selected based on their roles in their respective organizations, being individuals who could influence decisions within their organisations on relationship management, sustainability practices, and internal communications. A further consideration to define the population was the requirement that the research participants had to have knowledge or experience in the following areas:

- sustainability with the focus on circular economy and the importance of circular economy in the mining industry,
- mining supply chains and product value chains and how it relates to circular economy,
- strategic partnerships and what such partnership would entail,
- factors that will contribute to the success of a strategic partnership,
- the value perception of a circular economy strategic partnership, and
- market insights on stakeholder and shareholders' needs.

4.5.4. Sampling technique and criteria

The mining sector and the supplier base supporting mining are extensive. The sample of selected interviewees focused on three mining companies and their subsidiaries. Two of the three mining companies are under the top 15 biggest mining companies (5th and 13th respectively) in the world, by market capitalization (Mining.com, 2021) and the tyre OEMs are the two largest suppliers of OTR tyres (Tyre Deets, 2020).

Participants were purposefully selected to ensure that data would be relevant to the research topic (Maxwell, 2003), as knowledgeable agents in the relevant areas (Cypress, 2018) of sustainability, supplier partnerships, and value identification and creation.

Three mining companies were identified, and purposefully selected representatives participated in the interviews. The suppliers were represented by two tyre OEMs and a global tyre service provider. Five mining equipment OEMs that utilize tyres were identified to participate, but the researcher focused the research on the relationship between tyre suppliers and mining companies. As such, none of the equipment OEMs who is a major user of the large OTR tyres, were included.

The research companies were selected based on the following criteria:

i. Multinational mining companies who had partnerships with suppliers, either through strategic engagements or through global supply framework agreements.
ii. Global suppliers who actively engaged with mining companies through strategic supply agreements.
iii. The suppliers were limited to tyre suppliers, mining equipment suppliers, and tyre service providers.
iv. No limitation was placed on companies where a partnership was based on a transactional agreement.

The research participants were selected based on the following criteria

i. Researcher's ability to engage with professionals in these companies due to past shared working experiences.
ii. Participants had to be knowledgeable in the fields of sustainability, partnerships, or value identification.
iii. Participants had to be in senior positions (or equivalent experience) within their respective companies, to contribute to the conversation of strategic partnering.
iv. Interviews were scheduled between September and October 2020 and participants had to be available and willing to be interviewed.

Where the researcher was unclear of whom the best participant within a supplier company would be, these participants were recommended by the supplier companies, based on the requirements mentioned in section 4.5.1.

4.5.5. Sample size

The literature differs on the sample size required with qualitative research, but Merriam and Tisdell (2016) suggest “If the purpose is to maximize information, the sampling is terminated when no new information is forthcoming” (p.101). The interview protocol identified 25 participants who met the criteria as set out in Section 4.5.4.

An additional 27 participants were identified, which could, should there be time, or data saturation has not been achieved, be considered to be interviewed. These additional 27 participants were from other mining and supplier companies. As such, a total of 52 participants were identified who could potentially partake in the interviews to create a diverse and rich data set (Gioia et al., 2012; Bell et al., 2019). However, from a timing and data saturation perspective, not all of them were invited.

Table 8 represents the original identified sample of participants, as presented in the interview protocol.

Table 8: Original participant sample size

Population	*Number of companies*	Identified participants	*Number of companies*	Additional participants
Mining: Corporate	*1*	10		
Mining: Site-based	*1*	3		
Mining: Alt mining houses			*2*	12
Suppliers: Tyre OEMs	*2*	11		
Suppliers: Service provider	*1*	1		
Suppliers: Equipment OEMs			*5*	15
Total	*5*	25	*7*	27

Source: Developed by the author

In qualitative research, the criteria for defining data saturation are not articulated, which complicates the decision of how many people should be invited from the onset to be interviewed (Merriam & Tisdell, 2016). A total of 32 individuals were sent a request to be interviewed, and eventually, a total of 25 participants were interviewed.

Two individuals did not respond and were subsequently eliminated (mining company site-based employees). Two individuals accepted the request for an interview and the invite to the interview but failed to dial into the call (alternative mining site-based and supplier corporate). A request to schedule a follow up interview were left unanswered.

Two participants' data were not included in the data analysis due to poor connectivity and bad quality interviews. The first included a supplier corporate participant whose first language was not English and there was a risk in the correct interpretation of the recording and the electronic transcription which failed to correctly capture what was said. The second was a mining company corporate-based participant who had connectivity issues resulting in a bad quality recording. The electronic transcription failed to capture what was said due to the poor connectivity. In both instances the data accuracy could not be guaranteed and subsequently where excluded. These participants were informed of the circumstances and that their data would not be processed.

The three OEM mining equipment suppliers accepted the interviews but were subsequently advised that due to a timing constraint and the fact that data saturation was obtained, their interviews would be cancelled. They were thanked for their willingness to participate in this process. None of these would-be participants were inconvenienced with these cancellations.

A total of 25 participants were interviewed to ensure that the sample size is not too small. From a timing perspective, there was a risk that deep case-orientated analysis could not be done with a larger sample size (Bell et al., 2019).

Table 9: Final participant sample size

Population	*Number of companies approached*	*Identified participants*	*Invited participants*	*Number of interviews concluded*	*Number of interviews realised*
Mining: Corporate	1	10	10	**10**	**9**
Mining: Site-based	1	3	3	**1**	**1**
Mining: Alt mining houses (Site based)	2	3	3	**2**	**2**
Suppliers: Tyre OEMs	2	11	11	**10**	**9**
Suppliers: Tyre OEMs (Site based)			1	**1**	**1**
Suppliers: Service provider	1	1	1	**1**	**1**
Suppliers: Equipment OEMs	1	4	3	**0**	**0**
Total	8	32	32	**25**	**23**

Source: Developed by the author

4.6. Measurement instrument

A semi-structured interview protocol was used as the measurement instrument. Semi-structured interviews allowed for the development of questions structured around the identified themes of the research question (Qu & Dumay, 2011). Semi-structured interviews were held with both the supplier and mining company participants to obtain a balanced view from different role players, anticipating the views were assumed to be meaningful and made explicitly (Cypress, 2018). The semi-structured interview contained both open and closed questions with pre-planned questions set to ensure consistency for all participants (Bell et al., 2019).

The questions in the interview protocol, provided in Appendix A, were aligned with the main research question and sub-questions. Probing questions, kept to a minimum, were only asked where a participant's answer was not clear.

4.7. Data collection procedure

COVID-19 has placed constraints on the researcher to conduct in-person interviews. As such, semi-structured interviews were conducted online, in real-time by the researcher, via Microsoft Teams video conference platform as per appointment. The interviews were recorded with the Microsoft Teams recording functionality and with the prior permission of each participant. The participants were informed that all recordings will be kept and stored anonymously to retain confidentiality (Morse, 2015). All participants consented that interviews may be recorded. Before asking the participants any questions, each

participant was offered the opportunity to stop the interview at any stage and verbal confirmation was obtained that they were comfortable to continue with the interview.

During the recording, Microsoft Teams transcribed the interviews. Where a transcription was ambiguous, Windows Speech Recognition was used (one interview required this intervention). All interviews were documented in Microsoft Word format. The researcher reviewed all documented transcriptions against the recordings to ensure the content is consistent and transcribed correctly following the guidelines of Bell et al. (2019), noting that nuances in an interview should be captured, and to ensure that the transcriptions remained elegant and accurate (McLellan, MacQueen & Neidig, 2003).

Each interview was scheduled for 60 minutes. The formal part of the interview took approximately 45 minutes for most participants. The interviews were conducted over one month and where possible, the researcher endeavored to transcribe the interview on the same day.

As per the written consent form (Appendix D), all interviewees were reminded that they were afforded anonymity and that their responses would be kept confidential as part of ethical conduct (McLellan et al., 2003). Where verbatim quotes were used in the report, the anonymous coded description allocated to each participant was used. Only the researcher and the supervisor knew who the participants were. All identifiers, for both the participants and any company named, were removed by the researcher during the review and quality check process of the transcribed interviews.

Microsoft Teams served as the interview platform with cameras on unless requested by the participants to switch the cameras off. All interviews were recorded, transcribed, and checked for correctness by the principal researcher. The recorded interviews were converted into audio files, to guarantee the anonymity of the participants.

Semi-structured interviews implied a more conversational style of data gathering, where the topics discussed were prompted by semi-structured open-ended questions (Bauman et al., 2011). Specific, open-ended questions, where participants could provide their views and discuss their experience, assisted in limiting the inclusion of the interviewer’s point of view and associated biases (McLellan et al., 2003). The specific questions allowed the researcher a limited number of clarifying questions, which resulted in all interviewees being asked the same questions throughout the interview process. Affording participants open discussions allowed for a rich set of varying data that focused on the participants' understanding of circular economy, its value, and how it is applied in the business where the participants are employed. Additional themes that were explored,

were the participants' perceptions of strategic partnerships, value perceptions, and their views on competitive advantage.

4.8. Data saturation

A total of 23 interviews were conducted to ensure sufficient data collection (Bell et al., 2019). The participants were invited once approval was obtained from their respective companies. The interviews were conducted over a month, according to the availability of the participants. Due to the delay in obtaining approval from the supplier corporate companies, the majority of the interviews that were conducted in the first half of the month, were with participants associated with the mining companies. Although sampling is recommended until a point of saturation is reached (Merriam & Tisdell, 2016), sampling continued beyond data saturation, to ensure that all perspectives were covered, taking into consideration sufficient views of the knowledgeable agents from the suppliers (Gioia et al., 2012) and ensuring that an adequate representation of supplier views are captured, although this would be dependent on the data obtained (Merriam & Tisdell, 2016).

Figure 11 indicates the unique new codes obtained from each participant, as well as the codes generated per participant. The interviews concluded when no new codes were generated, thus achieving redundancy (Merriam & Tisdell, 2016) and the researcher observed equal representation by both the mining and supplier participants to ensure the sample was equally sufficiently represented (Banerjee & Chaudhury, 2010).

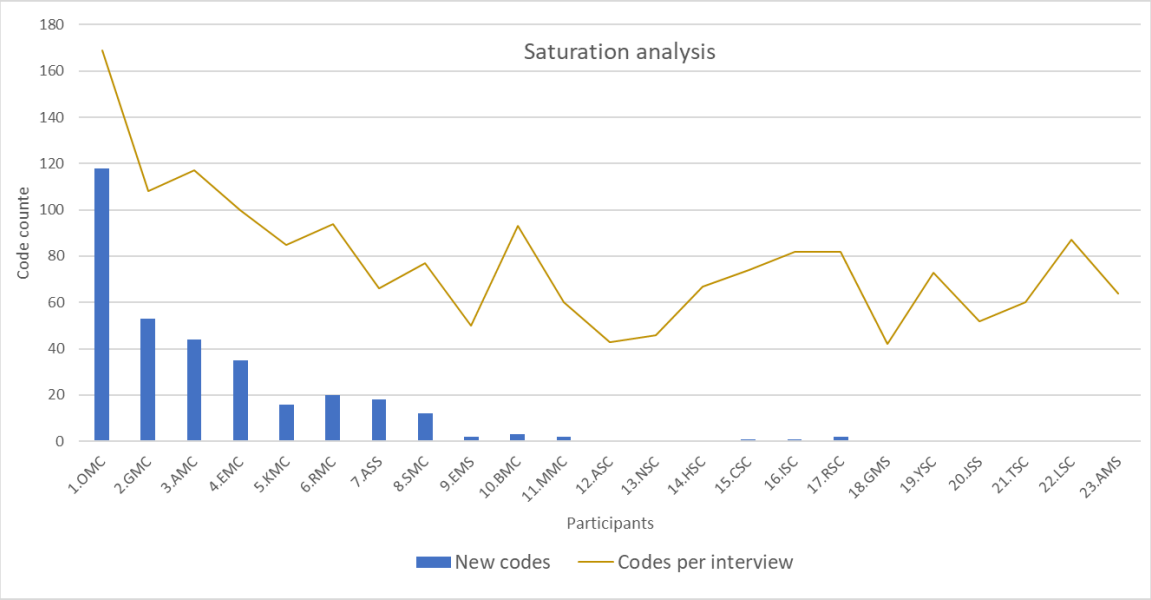


Figure 11: Unique codes developed for each participant
Source: Developed by the author

4.9. Data analysis

Analysis of the interview data was an iterative process, which commenced when half of the interviews were conducted. Bell et al., (2019) advise that, due to the volume of information gathered through the interview process, the analysis should not be left until all interviews are completed. Each transcription was scrutinised to confirm that all identifiers were removed, and to afford the researcher a broad overview of the data. Once the researcher was satisfied with the consistency of the content, a thematic content analysis commenced, where the overarching impression of the interviews and the data were established. The thematic analysis allowed for the identification, analysis, and reporting of similar themes or patterns within a body of data (Scharp & Sanders, 2019).

A two-stage approach was followed, where firstly, the interviews were inductively coded, and secondly, themes were identified deductively. Care was taken to not only look at codes that repeat to identify a theme but that the codes were related to the research question, to construct a relevant theme (Bell et al., 2019)

ATLAS.ti Cloud was used as the qualitative data analysis software. The software was used to facilitate the analysis of the non-numerical data, which allowed for the identification of themes (ATLAS.ti, 2019). The transcribed interviews were uploaded for analysis, it was coded, and relevant themes were generated. These themes were reviewed by the researcher, and concepts related to the research questions were identified, summarised, defined, and interpreted. The analysis required more interpretation from the researcher, as there is a clear divide between the analysis of themes and that of just words. The implicit and explicit meanings within the data are explored (Guest et al., 2014).

This approach was supported by a thematic analysis, which explored themes within the data and required involvement and interpretation from the researcher (Guest, et al., 2014). Thematic analysis was used for the data analysis, hence identifying, and reporting patterns or themes in the data (Braun & Clarke, 2006). This form of research was congruent with the research goal that sought to ask questions about sustainability concepts, partnerships, and perceptions. A thematic analysis was ideally suited exploring these variables because it is flexible in analyzing qualitative data (Bell, et al., 2019) and as the research focused on perceptions and relationships, thematic analysis provided a complete interpretation of data, that was rich and comprehensive, yet complex (Braun & Clarke, 2006).

4.10. Quality controls

Thematic analysis allows for a “rigorous, yet inductive, set of procedures designed to identify and examine themes from textual data in a way that is transparent and credible” (Guest et al., 2014, p14. para. 4). However, there is a concern with reliability when it comes to thematic analysis as more interpretation is required to define the data (Guest, et al., 2014). Although trustworthiness has been punted as a leading indicator for quality control in research, it is not enough and limits the test of rigor if it does not overlay reliability, validity, and generalizability (Morse, 2015). By researching ethically, it may contribute to ensuring validity and reliability of data (Merriam & Tisdell, 2016). Validity and reliability parallel with qualitative metrics of credibility and dependability (Bell et al., 2019).

Trustworthiness and authenticity are two criteria proposed for assessing a qualitative research outcome (Bell et al., 2019). Trustworthiness consists of credibility, transferability, dependability, and confirmability (Morse, 2015. & Bell et al., 2019). Credibility investigates how believable the finding is, or how the findings match reality (Bell et al., 2019; Merriam & Tisdell, 2016). The sample of participants included key personnel from the participating companies that were experts in their respective fields and influential in the company. As such, participants presented rich data based on real-time information, as experienced currently in the industry. Participants' knowledge and experience contribute to the credibility of the data.

Participants were purposely selected based on their current role within their respective organisations to ensure data collection is rich and varied (Terreblanche & Durrheim, 1999). The qualification and experience of each of the participants contribute to the claim that they are knowledgeable contributors and are appropriately selected to be interviewed. The number of participants and the specific participants were selected to ensure a broad range of expertise are accounted for in the interview, allowing for rich data (Gioia et al., 2012) and building on credibility where the data reached saturation. Table 10 highlights the qualifications of the participants, indicating knowledgeable agents and adding weight to the credibility of the data collected.

Table 10: Participants' (Ppt) qualifications and experience

Ppt	Qualification
OMC	Undergraduate in industrial engineering, postgraduate in operations management, and a Master of Science
GMC	Commercial background and over 20 years in current role
AMC	Undergrad degree in law (human rights), MBA (sustainable supply chains) Ph.D. (inclusive supply chains and value)
EMC	BSC in electrical engineering, some postgrads, and some business courses as well
KMC	BCom business management and other tertiary programs, including studies at GIBS Business School, South Africa, and IEC, the Business School, Barcelona, Spain
RMC	First-class honours in engineering and signed with a background in geology, black belt, and green belt in Six Sigma.
ASS	BCom accounts degree, been working in the industry since 1986
SMC	BSC, Chemical engineering, MSC Industrial engineering, project management professional certification. Currently studying towards masters in sustainability leadership
EMS	Mining Engineer
BMC	Ph.D. in metallurgy and material science
MMC	Mechanical engineer, also have two trades: federal machinist, and automotive mechanic
ASC	Multiple business courses at Wits Business school. Currently studying Global executive program through GIBS
NSC	Certificate in business management. 19 years' experience in the industry
HSC	Bachelor of Commerce
CSC	Various business courses and over 17 years' experience in the industry
ISC	Journalism, various courses in project management and stakeholder engagement
RSC	MBA in international business and 29 years' experience in the industry
GMS	National Diploma in Electrical Engineering, MBA from Stellenbosch University
YSC	Executive strategic projects and sustainability initiatives lead
JSS	The transport industry, but with experience in sustainable mobility
TSC	Business knowledge, Industry knowledge, and over 30 years of industry knowledge
LSC	Undergrad in Business and MBA with a focus on marketing.
AMS	Bachelor of Engineering Mechanical, master's in maintenance management and reliability ad studying an MBA executive

Source: Developed by the author

Transferability investigates if the findings can be applied in different contexts (Bell et al., 2019). The nature of the research allowed for the extraction of transferable concepts from the data set, and due to the relatively large sample size in the context of a qualitative investigation, the constructs could be generalised (Gioia et al., 2012). The concepts would be similar for other industries investigating circular economy programs and the partnerships associated with them.

If the findings can be applied at different times, then the data is dependable (Bell et al., 2019). Dependability or reliability can be demonstrated with the thematic analysis which followed a structured method to code the data (Morse, 2015). Short statements were

used to capture the key points in the semi-structured interviews, the order of the questions never changed and the same coding criteria was used for app participants (Morse, 2015).

A pilot interview was held before ethical clearance submission, to ensure the questions were clear and easy to understand. The recommended changes were incorporated into the interview protocol for the final ethical application. The pilot interviewee requested the inclusion of a definition for circular economy. The justification for providing additional clarity was that the inclusion of circular economy principles into business is slow (Soh & Wong, 2021), and non-sustainability professionals may misinterpret circular economy as a waste management program (Maitre-Ekern, 2021). The pilot interview was not used as part of the data collection process, and the pilot interviewee was not invited for further interviews. No significant changes were made to the interview protocol post ethical clearance approval. The same interview protocol was used for all participants.

Confirmability evaluates if the researcher remained unbiased in the data collection (Merriam & Tisdell, 2016). This relates to the way the questions were structured, how the nuances were captured when the interviews were transcribed, and the coding of the interviews. Care had to be taken by the researcher to ensure a neutral stance was maintained throughout (Morse, 2015). As the researcher is the primary instrument to gather data, care was taken to limit the shortcomings and biases that could impact the research (Merriam & Tisdell, 2016). Care was taken to limit researcher bias when constructing the questions (Morse, 2015). This was achieved through a thorough literature review which ensured the applicable constructs were aptly covered in the questionnaire (Gioia et al., 2012).

The questions were further designed to be open-ended, which allowed the participant the opportunity to answer per their lived experience, and not be guided by the researcher. Care was taken to not have preconceived notions of what the answers will be as well as not value-laden the answers (Morse, 2015). While ensuring that the intent of the data was captured, the researcher was cognisant to ensure the validity of the answers by observing and capturing the data as it was presented, and not interpreted (Bell, et al, 2019). The researcher aimed to remain neutral throughout the interview and not provide any ques, as this may alienate the interviewees (Cypres, 2018) unless clarifying questions were asked by the participants, as were the case in some instances. Where biases existed, the researcher tried to identify them and remain conscious of them, to limit the influence on how data was collected (Merriam & Tisdell, 2016).

The researcher introduced the participants to the research topic, explaining the context of the study and allowed them to ask questions beforehand. Their anonymity was confirmed, and any concerns were addressed before the interview started. This contributed to a level of trust and comfort between the researcher and the participant (Bell et al., 2019). The time booked with the participants was longer than the required time to complete the interview. This allowed for a pro-longed engagement where the participants wanted to elaborate on their points. These thick descriptions contributed to the reliability of the content, together with the sample of interviews (Morse, 2015). The interviewees were allocated sufficient time to frame their answers, with only one interviewee running out of time. A follow-up interview was scheduled to conclude the interview, upon the interviewee's request.

4.11. Ethics considerations

Before engaging with any of the participants, ethical clearance was obtained from the University's Ethics committee. The research methodology and interview protocol required ethical clearance (see Appendix F) and thus limited the flexibility of the qualitative research paper, resulting in a lesser ability to respond to changing conditions of the research (Merriam & Tisdell, 2016). To mitigate the risk of requiring to change the interview and impact the ethical approval, a pilot interview was conducted, as described in Section 4.9. The ethical clearance process entailed the completion of an ethical clearance application, which was approved by the researcher's supervisor, and submitted to be approved by the ethics committee. The application details the research proposal and the interview protocol. Ethical clearance requested how the research data gathering would be conducted, that the actions of the researcher would be ethical and respectful towards all participants, that no bribes would be offered to participate, and that the confidentiality of all parties would be honoured. It stated that no interview would commence without the proper authorisations and consent letters signed, also providing clarity concerning the storage of data. The ethical clearance approval letter, obtained from the Gordon Institute of Business Science, University of Pretoria, is presented in Appendix F.

A letter of approval to engage with employees from the multinational companies was obtained before scheduling appointments with the identified employees. The request letter is provided in Appendix C. Before commencing data collection, all approval and consent letters were obtained from the companies and the participants and stored anonymously. Once all approvals were obtained, interviews were scheduled. The participants' time was respected, and interviews were kept to the allocated scheduled

time. Where an interview ran over time, both parties agreed to reschedule and conclude the interview at another time of the participant's convenience. All interviews were concluded within the scheduled 45 minutes, apart from one. The participant recommended a follow-up discussion that concluded the interview questions.

No interviewee was compensated for their participation in the research. No interviewee was forced to continue with an interview once it started and he/she was not comfortable continuing. All interviews were concluded.

The interview questions were not prejudiced towards any employee partaking in the interviews and would neither benefit nor be detrimental to an organisation. All participants remained anonymous and were distinguished through distinct codes. However, actual roles were described within their area of expertise, unless otherwise agreed during the interview.

As per Section 4.4, all video recordings were converted to audio recordings, and the audio recording files were stored anonymously. Under no circumstances will it be possible to connect the companies with the participants and their contributions, to retain anonymity and protect the rights of participants (Cypress, 2018).

The file where the recordings were stored, was password protected and only the researcher holds the knowledge of the password. The collected research data was stored on a private computer for the recommended retention period. No printed copies, other than the research report, of the interview transcripts, was made.

All data about the research question, excluding the interview data, were sourced from appropriate websites available in the public domain, with proper referencing attributed to any data used or interpreted. All academic literature was sourced from academic databases and journals, which were legally accessed and where data were incorporated into the research paper, all were accurately referenced.

4.12. Limitation of the research design and methods

The researcher is a novice which may have impacted the quality and efficacy of the interview, research methods used, and the data collection. The researcher is not skilled in doing interviews. The lack of interviewing skills and the structure of the questions may have impacted the quality of the answers received. An example of this was the question surrounding sustainability and the ambiguity that sustainability vs sustainable development caused. The researcher opted not to probe participants with leading

questions or impose frameworks (Qu & Dumay, 2011), to ensure that all interviewees were treated equally unless the participant did not answer a question meaningfully.

Although all participants were knowledgeable in their respective fields, the accent of certain foreign participants complicated the data collection process as neither the transcription technology, not the interviewer could understand what was said. This limitation did not impact the research due to the sample size being sufficient and data saturation being obtained.

Crane and co-authors (2017) warn against qualitative research that does not consider the context-dependent nature of the research studies. To guard against this, the interview questions were designed to be explicit, which allowed the interviewees to share their experiences and perceptions, with clear themes to be discussed and elaborated on.

A practical limitation was the knowledge and exposure of the interviewees to circular economy. Although sustainability is well understood and incorporated as a core element in companies' business strategies (Chladek, 2019), circular economy has only started gaining traction in 2015 (SAIIA, 2020). Based on the author's experience, there are limited circular economy strategic partnerships in mining, and therefore participants may not have been highly experienced with the phenomenon.

Historically, mining companies and suppliers worked on a transactional basis. This is due to the governance structures within both organizations (Researcher insights). The corporate office cultures are vastly different, the OEMs are based in France, the US, and Japan, and the mining companies in South Africa and the United Kingdom. This cultural difference and historic relationships may have impacted the ability of the interviewees to share their opinion freely, although they were encouraged, and anonymity guaranteed.

The research sample was limited to a select population of mining companies and specific suppliers and did not consider the broader industry. Due to the specific nature of the suppliers, it may impact the ability to generalize the findings to the broader supplier base of mining companies.

Shareholder sentiment and the correlation to company value were not investigated.

These limitations do not impact the potential usefulness of the research and the outcomes of a generic framework that conceptualizes how strategic partnerships could be developed to include a circular economy approach.

CHAPTER 5: RESEARCH FINDINGS

5.1. Introduction

This chapter presents the outcome of the data collected during the interview process as part of the research undertaken, as set out in Chapter 4. The findings will be presented by the theoretical categories as laid out in Chapter 2, mapped against the research question defined in Chapter 3. A visual representation on how the data was analysed are presented in Figure 12.

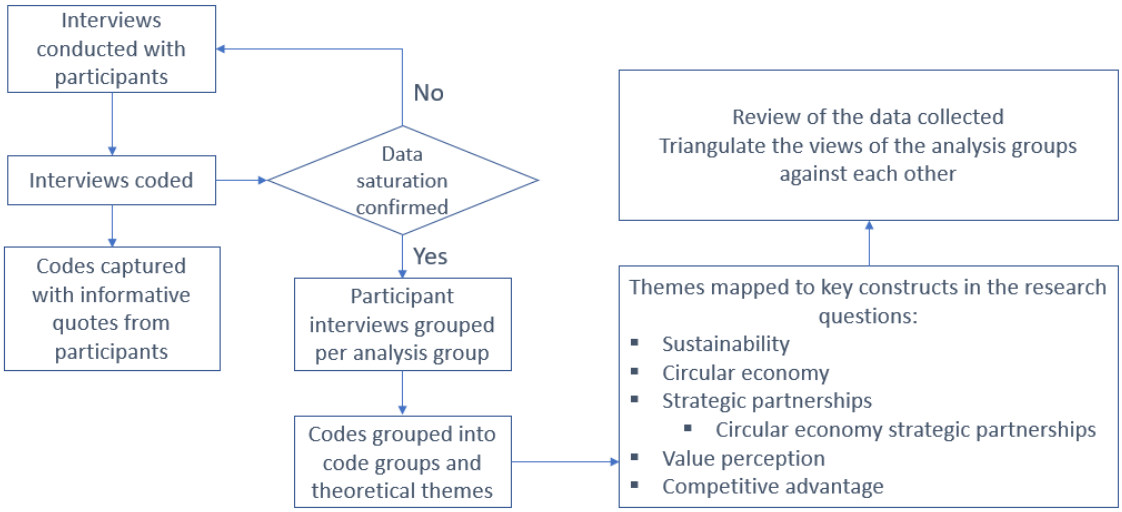


Figure 12: Unique codes developed for each participant
Source: Developed by the author

The section presents an introduction to the research participants with subsequent sections expanding on the research data.

5.2. Interview participants

A total of 23 interview were conducted. The participants represented two primary categories namely mining companies based in Australia, Mali, South Africa, the United Kingdom (UK) and Zambia, and tyre OEMs based in France, Kenya, and the USA. The participants were grouped into four categories, or analysis groups, as per Table 11.

Table 11: Analysis groups and identifier reference

Identifier	Analysis group
MC	Mining companies: Corporate office representation
MS	Mining companies: Site based
SC	Suppliers: Corporate office representation
SS	Suppliers: Site based

Source: Developed by the author

Research participants were grouped into the analysis groups based on their positions within their respective companies. Table 12 represents the participants' analysis group, their identifier, and their role description, or modified role description adjusted during their interview as per their request.

Table 12: Participants' description and role in the organization

Participant identifier	Role in the organisation
Mining Companies: Corporate office representation	
OMC	Category specialist in the global category management team
GMC	Global supply manager for mining equipment within supply chain
AMC	Principle for sustainable and responsible supply chain
EMC	Independent service provider managing transformational supply chain
KMC	Head of supply for technical and sustainability
RMC	Global performance improvement manager in group supply chain
SMC	Sustainability manager looking after responsible mining certifications
BMC	Global Lead at the group level related to circular economy and material stewardship
MMC	Global lead for mobile equipment working for the asset, strategy, and reliability team
Mining Companies: Site based / On a mine site representation	
EMS	General manager for Mining Company C in Mali for Corporate office C, a UK based mining company
GMS	Senior category specialist looking after HME, fuel and explosives based at South African mine A, part of a multinational mining company with head office in the UK
AMS	Manager for planning, engineering, reliability, and projects based at mine B in Zambia, part of a multinational mining group with its head office in Canada
Tyre OEM Supplier: Corporate office representation	
ASC	Commercial director for Tyre OEM B, South Africa
NSC	Business segment manager for OTR with Tyre OEM B, South Africa
HSC	Global account manager within Tyre OEM A's mining organization
CSC	Sales operations manager for commercial, responsible for OTR, Agri tyres and truck and bus tyres
ISC	Recycling manager for Tyre OEM A
RSC	Dual role: Global recycling manager & Global marketing and sales engagement manager
YSC	BCom in accounting and management accounting and Chartered management accountant
TSC	Market intelligence and customer insight manager in the global mining business
LSC	Customer experience manager/ communications director and also responsible for worldwide business line of planet or sustainability.
Tyre OEM Supplier: Site based / On a mine site representation	
ASS	Country manager and Director for Africa representing various mines for Tyre services provider A
JSS	Sustainable development manager based on a mine in Kenya for Supplier A

Source: Developed by the author

For the remainder of Chapter 5, participants will be referenced through their respective participant identifiers as indicated in Table 12. These identifiers act as descriptors when analysing the data, without compromising the identity of the participants.

Both mining companies and suppliers are well represented, with equal numbers representing their respective data sets. creating a balanced view from both companies. The participants were all professionals within their respective companies. Both the mining and supplier corporate office participants' responses represented holistic and strategic views, evident of their exposure to the relationships within and between companies and aligned to the communicated visions of their respective companies. The mining site-based participants were more pragmatic in their answers, typically focused on their respective sites, narrowing their focus, and limiting their response to the activities and knowledge of a specific site, and not necessarily the broader company. The supplier site-based responses aligned with their corporate counterparts, with similar themes emerging in their respective interviews. There was less alignment between the mining company corporate personnel and the mining company site-based personnel. Figure 13 depicts the code distribution, normalised for all participants.

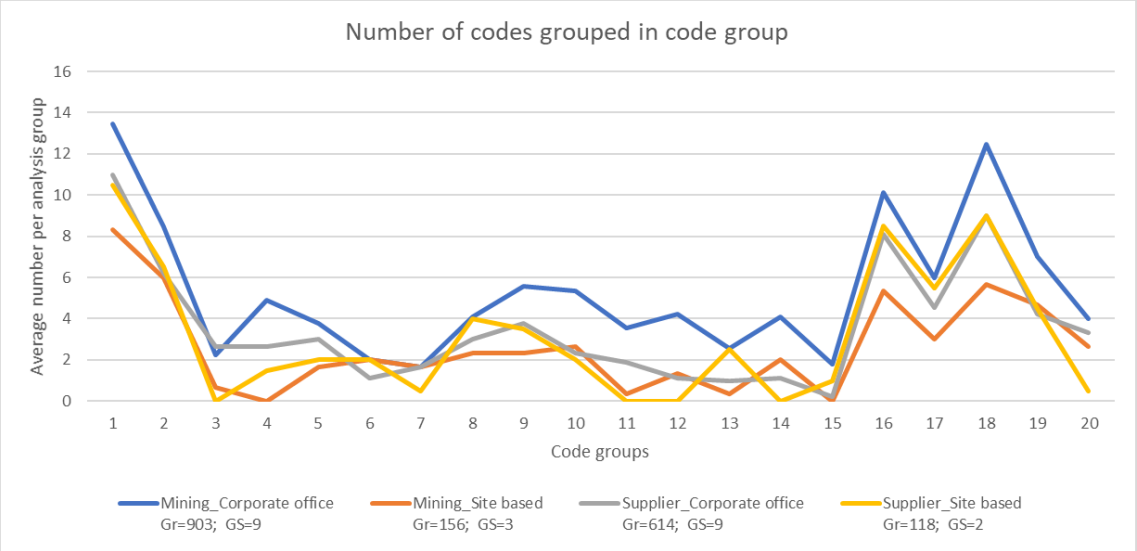


Figure 13: Codes grouped in code groups per analysis group
Source: Developed by the author

The code groups, as seen above, will be elaborated on in Chapter 5.3 below.

5.3. Analysis of the interview data

A total of 327 first level codes were identified from the 23 interview transcripts analysed. A review of the codes resulted in some codes merging, reducing the number of codes to 229 unique codes. These codes were further analysed through an inductive process,

and grouped into 20 second level code groups, based on their meaning and intent during the interviews. Similar code groups that could be linked to the theoretical themes were identified, and new themes emerged from the interview analysis. The theoretical themes identified in Chapter 2 include sustainability, circular economy, strategic partnerships, value perception and competitive advantage.

Figure 14 depict these theoretical themes linked to the research question, connected to the second level code groups. The additional themes that emersed during the interviews are captured and shaded light blue.

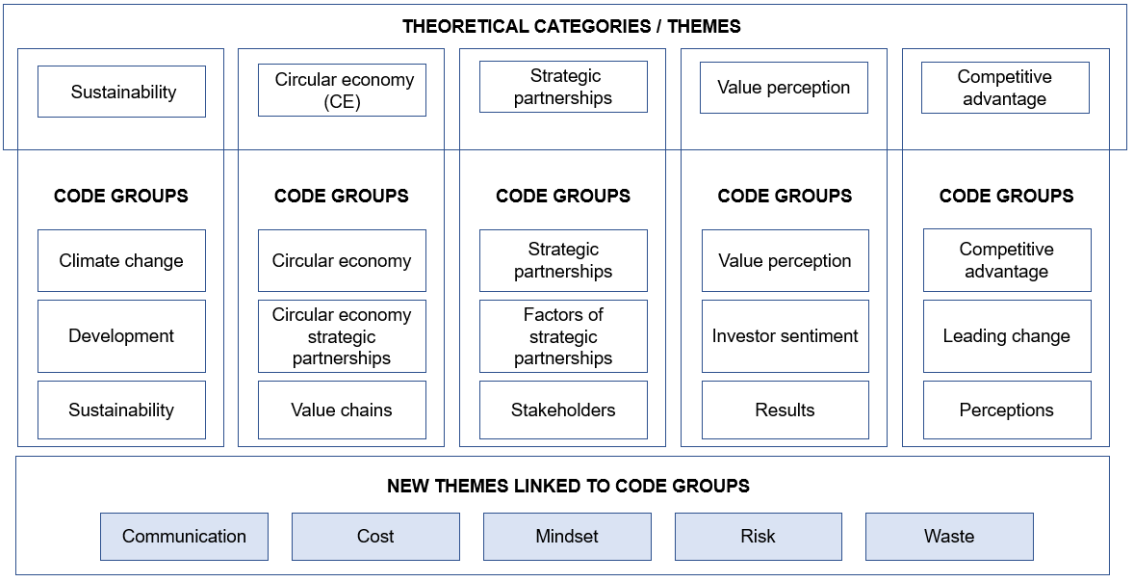


Figure 14: Theoretical categories, code groups and new themes
Source: Developed by the author

Two lenses were used when reviewing the data. The first was to segment the data per the constructs identified in the main research question and supporting questions. These main constructs will depict the themes against which the data were analysed. This approach allows for a logical order to build on the data sets; setting the context of sustainability within mining, how and if circular economy is integrated, the value of strategic partnerships, and if circular economy strategic partnerships can create a value perception, concluding on the perceived competitiveness of these partnerships.

The second lens segmented the data in accordance with the analysis groups. This allowed for the triangulation of the parties' views with a clear distinction between mining companies corporate office employees, their site-based personnel, the supplier corporate office employees and their site-based personnel.

Each section started with a detailed schematic of the main theoretical theme and code groups associated with the theme. The codes supporting each code group are

schematically represented. Key responses from the data analysis are presented, triangulating the mining companies, both corporate and onsite personnel, with the suppliers corporate and onsite personnel. The views are supported by quotes from the respective participants. Each section progressed iteratively, until all themes were reviewed and addressed accordingly. Key concepts identified in the additional themes are included to either support or disqualify theoretical themes identified in Chapter 4. Each section ends with a short conclusion and key points summarised. This layout is repeated for all themes.

Figure 15 illustrates a simplistic representation of the data presentation in Section 5.4, repeated for all themes.

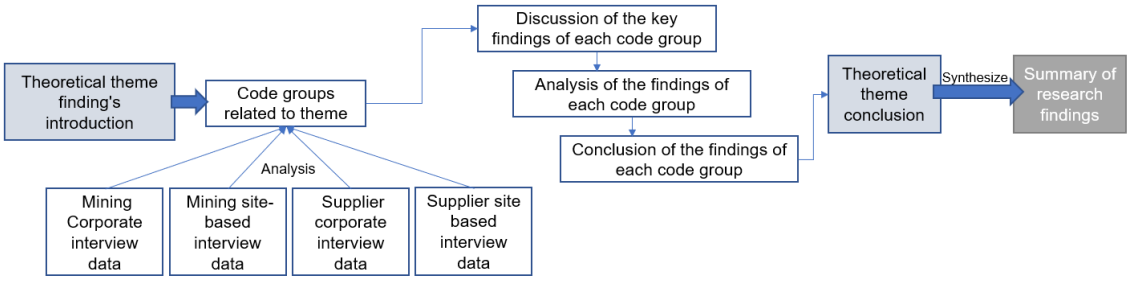


Figure 15: Data presentation
Source: Developed by the author

Each theoretical theme is introduced, and the code groups associated with the theme are described. A short discussion, analysis and conclusion summarize the data collected during the interviews for each code group. Each section will conclude with the highlights identified during the findings analysis. Chapter 5 concludes with a summary of the research findings.

5.4. Research findings

The analysis of the data shaped the insights to answer the overarching research question which aimed to determine how a circular economy strategic partnership among multinational organisations can developed a value perception that will create a competitive advantage for all role players. Through a process of deductive analysis on the participants understanding of the importance of sustainability and circular economy, the perceptions and requirements of strategic partnerships, and the competitiveness of a circular economy strategic partnership, an understanding of the stakeholder value perceptions within the mining sector were obtained.

5.4.1. Theoretical theme findings - Sustainability

Due to the nature of the research topic including circular economy, the data collection included a section on sustainability and its relevance to circular economy. Although sustainability is a widely acknowledged concept, there was a need to determine if participants had a clear understanding of what was meant with the concept. The analysis of the data identified three code groups in the research data linked to the theoretical theme sustainability. These code groups were sustainability, its definition and importance, climate change linked to carbon footprints of businesses and the urgency required to address it, and development, highlighting the continued importance of mining to improve people's lives. Sustainability set the context for the role of mining in sustainability, how it responds to environmental, social and governance issues and is communications on corporate social responsibility.

Figure 16 illustrates the main theoretical theme, its associated code groups and codes linked to each code group.

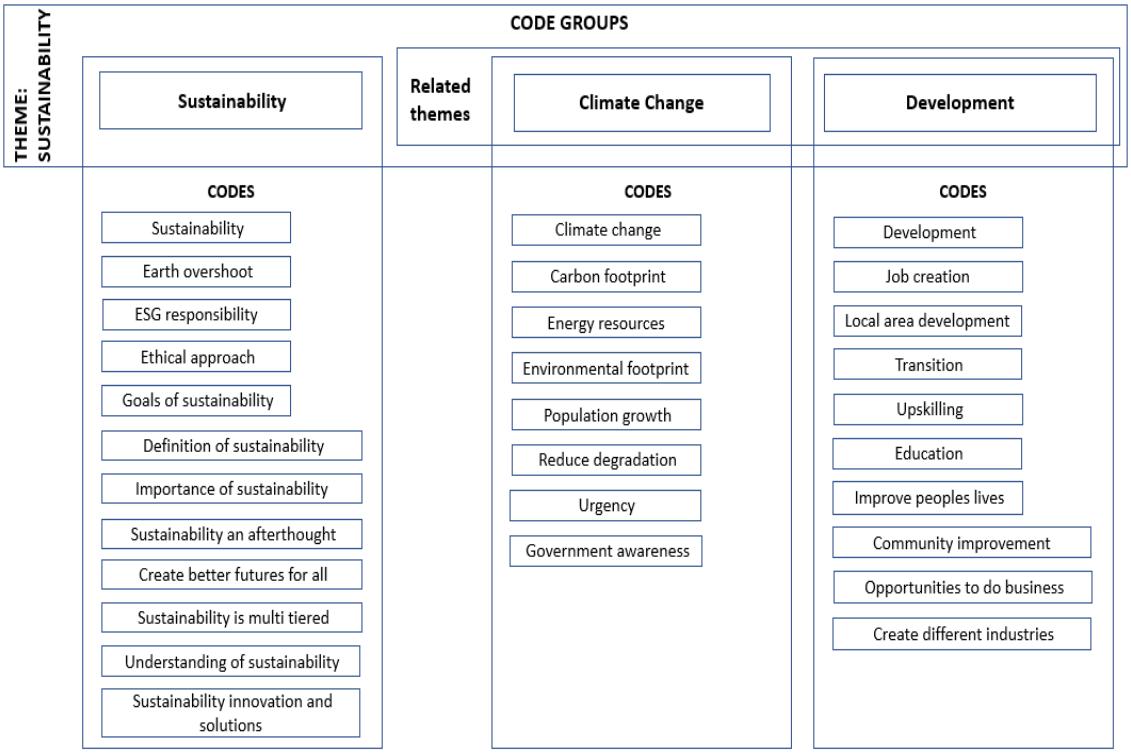


Figure 16: Sustainability codes grouped in code groups
Source: Developed by the author

5.4.1.1. Discussion of the key findings – Sustainability

Sustainability is a broad topic, understood by most of the participants, with varying definitions offered, also incorporating broader definitions than those limited to mining. As LSC, a supplier corporate employee explained,

"Like, the concepts and constructs will vary a little bit depending on the group who's talking. For example, Ella MacArthur has a certain way of talking about it. There's an organization in the United States called Greenbiz and they talk about it in a very specific way. We have the cop 26 coming up, and they refer to it…" LSC

AMC, a mining corporate employee captured the ambiguity of sustainability and the simplicity of its definition well:

"You know, sustainability is one of those things that everybody gets, but it's actually very hard to articulate, so I've got a very simple definition. It's being able to do things which position us for a more prosperous future or create a future which enables better livelihoods" AMC

The importance and impact that sustainability can have in the mining industry was not lost on the participants, with both mining and supplier personnel acknowledging the impact it had in the areas where mining operates.

"Business should be coming into an area not just to make money, but to also improve people's lives in terms of stakeholders and also the people that we interactive with" OMC

"It's something that that needs to continue in future … It's either projects, products or systems, any sort of items you can look at that really is going to make a difference in future for the next generation. Let's call it, that to utilize something today that's going to make a difference and leave the world and the community in a better place. Now and for futures to come" HSC

"It's not a soft, a PR exercise if done properly, because it's fundamental to your business being able to operate" AMC

Although some participants noted that sustainability may not always be on the forefront of mining companies' strategic planning when it comes to their category management (supply chain) planning.

"Sustainability, being sort of an afterthought" OMC

A more practical approach to sustainability was observed from the mining company site-based personnel, focussing on problems, and how sustainability may solve these problems.

"A good example is probably tyres where you manufacture a tyre from certain products, you use a tyre and then you dispose of that tyre. And the disposal creates a new economy

where you can dissolve a tyre and make use of the products that you can get out of the tyre again when it's done utilized. So, then those products you again use for other industries or create new products that you can sell again from that product" GMS

"In more recent times there's more and more engagement with local communities. How we support the local communities, so it's that once the mine has closed, there's still a sustainable colony. And the environment, the actual environment is still or not like it was when the mine first started, but it's inhibitable and it's not actually a legacy to the local community" AMS

Surprisingly, evidence shows that not all participants were that familiar with sustainability as a theme, and linked it to financial reward, citing the economic benefits that can be achieved with sustainability. All mining site-based participants applied a very practical definition to sustainability, linking it with the importance to reduce wastage and the impact mining has on communities.

"…sustainability, obviously. It's so much cheaper version for economical purposes. It is environmentally friendly and it's like I said, it's economical sustainability" EMS

Sustainability is important because if we don't do that, we will not have any space left for old tires and old products that we need to clean up so it's not sustainable and the world will become a mess, if we don't reuse and reutilize products sustainably GMS

If I look at mining in the decades and literally, we just dug up dirt, put on a stockpile. And we didn't really consider the impact it might have on the local community or even employees themselves. But as time has gone by, there's more and more awareness of what mining companies are doing" AMS

In contrast, a supplier site-based participant, JSS, gave a clear definition of what he believes sustainability is, not linking it to the practicalities of his day-to-day job.

"I believe sustainability is uh really important because um it means meeting our own needs without uh compromising uhm the future of future generations' own needs"

Some of the participants emphasized the need that sustainability needs to be a personal charge as well, and not only a focus for the industries in which they work.

"You want to leave the world a better place for children, you know? I don't want my children around all those chemicals or eating all these foods with chemicals in it even though you know generally everything that's processed these days contains chemicals, but from a global perspective it's about, and it's a little bit ***Company A's*** *vision to leave the world a*

better place, it has to make sure that its sustainable for everybody moving forward and that you're not putting any country or person at risk by wasting stuff, using chemicals that you know will potentially be damaging many years to come" MMC

Sustainability has gained significant prominence in the mining industry, although this has not always been the case. To reduce the perception of risk, the industry had to change.

"*[It was the] late 90s when the mining industry was at a good all-time low, really with regards to investor risk. And that was where the real conversation around sustainability started with the mining industry was when ABN Amro (Dutch bank headquartered in Amsterdam) and others not wanting to invest in it anymore because they felt it was too high risk, and an ICMM (International Council on Mining and Metals) was formed at that time to bring the industry together." BMC*

"Almost every company that you look at today, they would have some kind of… On their CSR page would have some words around sustainability and how they're working towards it, but it's actually seeing changes actually seeing the results" OMC

Mining of resources will continue due to the continued need of materials for survival. The mining industry and its suppliers recognise the need to be responsible in their approach to the extraction of natural resources. A level of ownership and creativity is required. The true benefits of acting responsibly should also be recognised and communicated. And this requires a well-defined approach.

"Stewardship is a very important part of all that, and I, I emphasize that word for a very important reason. Personal view, resources are intended to be used. You know the resources that exist in the Earth are not, they're not there just to be looked at. They're there to serve human needs so stewardship is not about non consuming it… But about consuming it as respectfully and efficiently as possible to still meet the needs and to maximize its long-term life". TSC

"I think there's ways to look creatively at that whole process and think about how does that create livelihood? How does that support a community? And how does that continue to give the message back to the local inhabitants and stakeholders that we do care. You know we, we do want to make this a better planet and we do want to create sustainable solutions" LSC

5.4.1.2. Analysis – Sustainability

Sustainability is a very broad definition and an explanation of what it means will depend on the audience you ask. The term is generally accepted and endorsed by all participants

and the importance was well embedded. Some of the mining corporate office participants were well versed in sustainability and its importance, the same focus on sustainability is not consistent with the mining site-based participants. The site participants focused on the practical application of sustainability, which, although it aligned with the intent of sustainability, it did not talk to the propagated messages of the corporate offices. In contrast, the supplier site-based personnel spoke the “same language” as their corporate counterparts.

Mining will remain a critical contributor to the future generations and participants emphasised the importance of being responsible stewards of the resources which they control. Sustainability is critical to ensure mining can continue, as the communities, environment and legislative requirements are all linked to a successful sustainability program embedded at the mines.

5.4.1.3. Conclusion – Sustainability

The focus of sustainability varied considerably between the mining corporate participants, and site-based participants. Although both definitions were acceptable, it highlights that the focus for both are different. Mining corporate participants focus on the long term, nice to have strategies, where site-based participants are challenged with the day to day operations, community, and environmental pressures. This mis-alignment could lead to corporate initiatives not being implemented due to the lack of urgency compared to the site focus areas.

Supplier participants’ definition concurred with each other and with the mining corporate participants’ definition. Although, some supplier participants were less versed in what sustainability is but could elaborate on the topic once they were guided.

5.4.1.4. Discussion of the key findings – Climate change

The results of climate change are evident, and societies can see and feel the impact. A major contributor to climate change is carbon and the mining industry are under enormous pressure to reduce its carbon footprint. Participants highlighted the need for their industries to become more aware of the requirements and alternative options to address climate change. This need was not only articulated from an industry perspective, but some participants highlighted that there is a need for change in personal lives as well. Participants further noted the urgency with which the change need to happen and that companies need to take an interest in where they buy their products and to whom they sell their products and how responsive their clients are to the global challenge.

"Society is demanding it [becoming carbon neutral]. Demanding in that space and for us, I mean our strategy is all about yes, shareholder return. But then also how do we position ourselves with broader society and it's more becoming more and more complex. But society have woken up and society is demanding from large organizations, not just in mining but more broadly, to be a responsible citizen and we're a mining company, we make huge holes in the Earth…" KMC

"…or any one of us that you know, especially, maybe as we're getting older, you know I think we realized that the value of a climate of the world as we know it, and you know, it's becoming more relevant for us to be sustainable for the future that we leave behind for other people. You know for our children" ASC

"There's a much bigger picture, so we're starting to get a lot more pressure on things like scope 3 carbon emissions, so that will be the use of our products, but also all of that carbon. It's admitted in the production of the things we're buying, so there's an upstream component to it, so now you're starting to think, OK, actually, what does that company that we're buying our tires like Supplier A, and like Supplier B, whoever we we're buying our tires from. What do they do? What are they here emissions?" BMC

Both mining and supplier participants acknowledged that circular economy could potentially play a role in the mining industry's drive towards a more sustainable future.

"Circular economy looking at opportunities to reduce our carbon footprint" GMC

"I think circularity can definitely contribute to sustainability goals. I think if you, you know, articulated goals, so one of the things that we're seeing, and I'm sure you're seeing as well, is that a lot of companies articulating 2030 ambitions to you know, reduce their CO2 emissions maybe by 20% or 30%, and then to be carbon neutral by 2050. I think that in order to get to those very ambitious goals. So, it's great to say you're going to do it, but you know the how that you do it is by using a construct like circular economy, and I think that if you look at each component of these circularity of the economy and you try to look at ways that you can reduce, reuse, recycle and renew that those are the only ways that are going to help you" LSC

Mining and supplier participants recommended innovative solutions to address climate change and the reduction of carbon in the atmosphere. These solutions were not ground-breaking but incorporated practical application of ideas that can make an impact now. A supplier corporate participant urged companies to investigate efficient use of products and drive innovation to reduce waste and improve costs:

"This is actually where the biggest impact on the environment is for tyres, is when they use it, the tyres. So, either you incorporate new innovation, new ways of thinking in a sustainable manner, either by reducing rolling resistance, motion resistance. Therefore, leading to something like reducing CO_2 emissions. Burning less fuel. It leads to the circular economy. If you as a user of that tyres are not utilizing more fuel, therefore you have to have some sort of saving on your bottom line. By not burning enough fuel burning less CO_2 so you contributing towards the environment. We all contributing in a way of giving you the best technology in the world and it's a full circle in terms of savings" HSC

Time is of the urgency, and some of the participants highlighted this concern.

"But yeah, that's a great point that you make about the speed of change, right? What needs to happen and what is happening? It's a question and you know that if there is a gap here that we also can miss out on this on this ship, right, that we need to ride to make this happen because our time is up" RSC

"People are talking about climate change and they're talking about greenhouse gas emissions. Really, really, is this something we need to be cognizant of and worried about now" LSC

5.4.1.5. Analysis – Climate change

Analysis of the data compiled across the various analysis groups indicate a high awareness of climate change and the need to reduce the industries' carbon footprint. Both the mining and supplier participants emphasized the role mining can play to significantly reduce the global carbon footprint and recommended that mining take an active role to encourage its suppliers to contribute to the cause. All parties acknowledged that circular economy could play a significant role to contribute to the plight in reducing the industry's carbon footprint.

Mining corporate participants identified a need to start holding both suppliers and clients accountable for their contribution to the industry's carbon footprint. This is partially motivated by the Scope 3 emissions accord, which is placing more pressure on companies to understand what their clients are doing.

Mining site-based participants were aware of carbon reduction, but as their focus were on production, they could not articulate specific programs that focus on carbon reduction. There is a slight misalignment between mining corporate and site participants, as the corporate office is driving initiatives to reduce CO_2 emissions, which was seen as a cost reduction exercise by the mine personnel. Although, they do recognise the shift in focus, as mentioned by AMS:

“But it's a bit like a I suppose 20 odd years ago, maybe even longer. The use of solar power was not considered. Something that you can do. It was pretty like a waste of money. A consideration for energy efficiency and general wasn't really considered. So nowadays people are looking at greenhouse gas. They're looking at emissions in a different light”.

The supplier corporate participants highlighted that they cannot achieve carbon neutrality without their clients. Although a considerable amount of R&D goes into their products, they are dependent on having responsible clients to assist in reducing their scope 3 emissions. As LSC noted:

“I don't think we can achieve what we need to achieve in terms of carbon neutrality and where we're headed with circular economy by acting as individual people or individual companies” AMS

5.4.1.6. Conclusion – Climate change

Review of the interview data highlighted the urgency to act identified by most participants in the analysis groups. All participants acknowledge climate change and the industry’s direct contribution to carbon in the atmosphere. The views of the participants are supported by what is currently happening in the industry, with various of the major mining houses publicly announcing decarbonisation programs.

Climate change was a discussion to which most participants responded with a personal plight as well. They recognised the need to change and support their companies who are actively trying to make a difference.

Participants agreed that circular economy could be a game changer in the drive towards a greener future, supporting activities aligned to address the environment, but also the social and economic requirements.

5.4.1.7. Discussion of the key findings – Development

Sustainability with a view on the future is core to development. Mining is integral to development, and this was recognised by the participants from both analysis groups.

> *“The fact that the world needs these minerals and that we need to find the best ways to extract them and provide them to the companies that need them so that the people that consume them have what they need to live their daily lives” LSC*

Some participants were less enthusiastic about the way minerals are extracted, citing JSS who noted companies focus on profits, disregarding their impacts. His views were supported by both supplier and mining corporate participants.

> *"As we have all known that for the past 20 years ago or 10 years ago, the majority of companies have just been focusing on making profit, yeah, without uhm minding about the activities, what what's the impact of their activities on the planet yeah" JSS*

> *"I think mining is a very destructive industry where when I say destructive, I mean on the environment itself. I mean it's the nature of mining. We digging great big holes into the earth right" CSC*

> *"I see the mining industry, yeah, rightly so, being challenged by communities and other stakeholders to do more. To put money back to, you know, to develop. And partly, it's I think it's a recognition by people on a basic level that these companies come in and they take the mineral resource with not really having paid for it" EMC*

A shifting perception with the focus on sustainability are opening new areas for development with integrating sustainability programs. Waste management programs, incorporating the broader communities and developing value streams from waste is one such a tool. As AMC highlights:

> *"…community engagement because you have such an opportunity around repositioning your waste and the opportunity that waste creates for downstream value. That's not realized at the moment. So, I think if we were to do something simple like advertising, then again this is just a thought, advertising 10 key things that we have as waste at our sites in local community newspapers and setting up a very simple incubation hub where people can refine their ideas. We will likely get hundreds of thousands of ideas" AMC*

The global shift in focus is further contributing to the change in mindset surrounding sustainable development. The renewed focus on climate change opens opportunities for new markets to be established. An example given by a mining corporate participant demonstrates the success of electric vehicles.

> *"You know ten years ago, if you had [brought] a product onto the market. There was potential it would fail because you know climate change wasn't a big thing. There wasn't being movement that there is now in relation to sustainability and as a result introducing electric car, which was extremely expensive would have just fallen over. Now in today, people are more educated on this topic and that strategic advantage that's generated, you*

know it's welcomed. Whereas previously it might have been rejected and put companies at risk and putting a lot of research and development into solutions" MMC

Developing new industries from waste, as mentioned by AMC, were further supported by a participant from the supplier corporate offices, referring to the opportunity with waste OTR tyres:

"In the old days, it's general that tires would just be dumped in some manholes. Yeah, and be basically, completely in put in a grave, if you want to put it that way. But in in future this can be returned and can assist in some sort of asset management where you can turn waste into a resource where you can contribute to different parts of the economy. Either selling off the steel, selling off the rubber chips, selling off, it in powders or a powder sort of form, putting it into paint… Numerous different aspects where you can put it back into the economy contributing to firstly, the communities around you" HSC

Changing to more sustainable practices will contribute to the development of local communities and the enhancement of the environment.

"It's also you able to create new entrepreneurs as well and skilled people with new skills because it's something that if it doesn't exist as yet, you need to teach people new skills of either recycling tires or making products from recycled tires, and that's a new skill that they have that they can use and help themselves better themselves going forward" ISC

"That creates new opportunities and that make sure that the communities and areas where they operate is sustainably, support sustainably" GMS

"Obviously it gives opportunity for people to generate additional economic gain so that same resource has benefited multiple people in terms of economic returning, we all need economic returns to sustain our quality of life." TSC

"…mining smarter with what we have and thereby putting back in the environment of using less or polluting the environment less" GMC

5.4.1.8. Analysis – Development

The analysis of the data indicated that there was consensus on the need to for mining to continue, but that there was opposing views on the successful implementation of responsible mining programs. Some of the mining corporate participants were critical of mining in that the value extracted were far greater than the value returned to the communities during mining, and the environment one a mine is depleted. This view was echoed by a supplier site-based participant who indicated that mining only focuses on making a profit.

These sentiments were contradicted by mining corporate participants who indicated that there were numerous programs initiated that develops communities, provides education, and supports sustainable living in the areas where mines operate.

Supplier corporate personnel explicitly focused on the economic gain that development could bring, as TSC stated:

"Obviously it gives opportunity for people to generate additional economic gain so that same resource has benefited multiple people in terms of economic return, we all need economic returns to sustain our quality of life."

Other participants highlighted the opportunities but did not volunteer information on actual successfully implemented development programs.

All participants acknowledged and supported the notion that circular economy can create new value streams that could lead to development of communities, using the waste generated by mines.

5.4.1.9. Conclusion – Development

Due to the nature of mining, it typically occurs in underdeveloped areas. The analysis of the data revealed that all participants expect mines to ensure that there are opportunities created for the communities where the mines are based, and that these communities should be better off than what they were prior to the mines starting up.

This view build on the notion that circular economy projects could enhance the lives of communities if these projects are sustainably implemented.

There were some polarising views on the real value that mining does add, with opposing parties focusing on the destruction of both the environment and communities, against the opportunities and initiatives that can lead to growth and economic independence that could be achieved in the mining areas.

Not all mining corporate participants were as supportive of these initiatives, as they believe more could be done. Site based mining participants highlighted the ease with which programs could be put in place, if there were less corporate bureaucracy. Supplier corporate personnel focused on the financial gain that can be achieved through development with supplier site-based personnel believing mines do too little to enhance the communities and the environment.

5.4.2. Theoretical theme conclusion – Sustainability

Sustainability set the context for the interviews, and it was important to gain an appreciation of the participants' understanding of the concept. It was further important to determine if the participants deemed sustainability critical to gain an understanding of their sense of urgency when it comes to finding solutions to address sustainability. There was a need to determine if there was alignment between the analysis groups when it came to sustainability.

The understanding of participants, and their alignment between analysis groups are presented with Harvey balls in Figure 17.

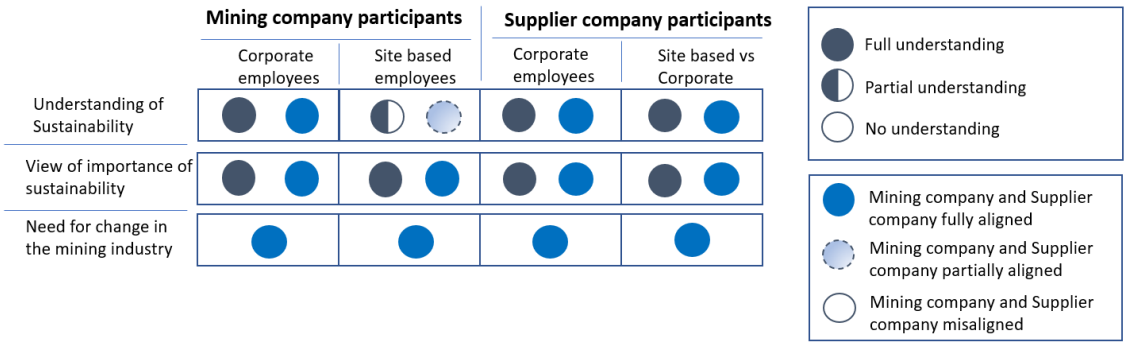


Figure 17: Sustainability theme conclusion summary
Source: Developed by the author

Although there were differing views, the participants had consensus on the need to address climate change, sustainability and there is an urgency associated with it.

5.4.3. Theoretical theme findings – Circular economy

Three code groups were identified related to the theoretical theme, circular economy. This first code group consists of circular economy, its definition, the benefits and critically, the fact that this is a newly introduced concept in industries. The second, critical to the research question is circular economy strategic partnerships, which focused on the benefits and constraints of these types of partnerships. And lastly, the value chain, which relates to the enabling factor of understanding and positioning circular economy strategic partnerships. Each of the code group data sets will be analysed and discussed below.

Figure 18 illustrates the main theoretical theme, its associated code groups and codes linked to each code group.

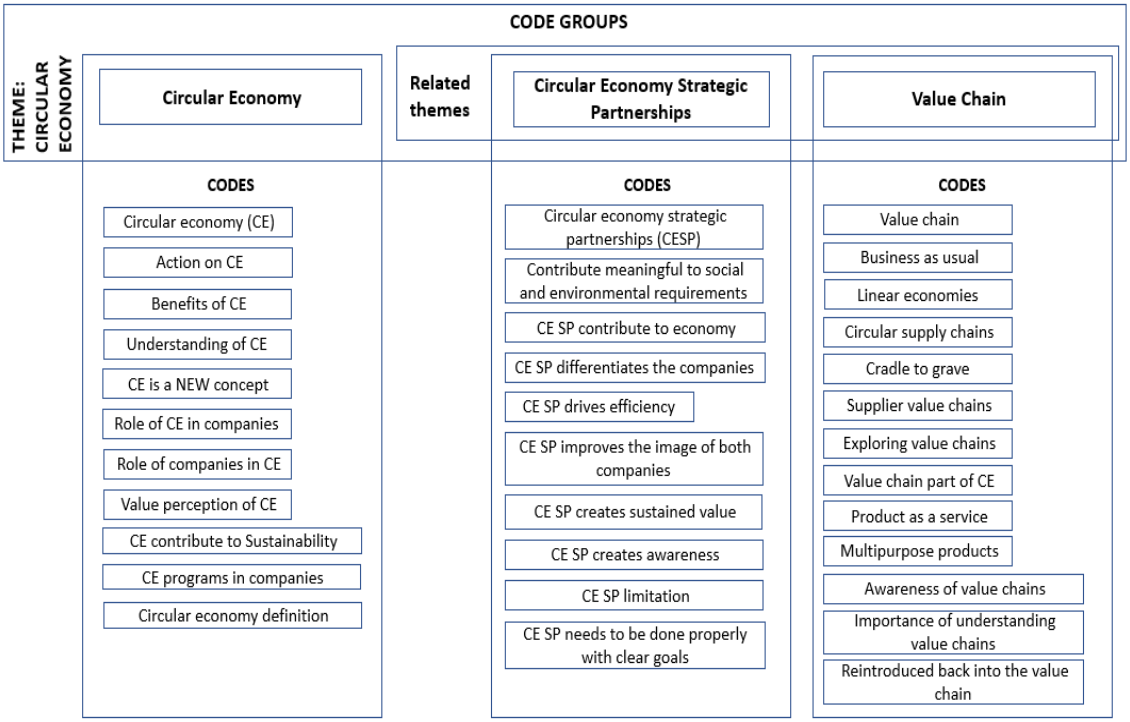


Figure 18: Circular economy codes grouped in code groups
Source: Developed by the author

5.4.3.1. Discussion of the key findings – Circular economy

Although a few of the participants could articulate the intent behind circular economy, invariably the majority had a very broad understanding of the topic with the majority noting its newness. Circular economy is an emerging topic within the mining industry, with both the mining and supplier participants noting that they are not clear on how to define it. Some comments on the definition and understanding of circular economy are highlighted below.

> *"It's obviously a new topic for us around the whole circular economy discussion ... way that we frankly have not done before. Because ultimately circular economy wasn't one of the areas that you know when you're putting a strategy or a contract in place is something that we necessarily focused on" GMC*

> *"So, I think quite often the concept is, people think of recycling and just that end of life of products and materials, whereas actually the circular economy, in the circular economy, recycling is almost like the last resort. It's actually like design out that waste in the 1st place is what you should be doing so, and that's really what we've been trying to take a look at it. So quite often mining companies think it doesn't really apply to them. It's all about downstream and the materials and recycling, but the reality is, there's a lot of relevance for in the circular economy" BMC*

"I view circular economy like we then aim to create greater value in all areas at all stages. In this, I mean, the design stage, the manufacture stage, the multiple uses stage, which benefits people as possible, but also by minimizing the use of materials thereby, just like how it is circular. Yeah. Great value in all areas, at all stages in whatever. Even if it is a product lifecycle, even if it is a service lifecycle, but increasing value at each stage while preserving the natural resources that are needed to put forward whatever is needed" JSS

"...so, it's ensuring that and once again, when mining finishes that the net impact on the economy and the net impact on the environment and the air is reduced. So, it's true that companies are not just extracting wealth through mineral extraction without realising what impact they do it and looking at it" AMS

The participants who were unfamiliar were introduced to the concept of circular economy, as defined by the Ellen McArthur Foundation, as captured in the Interview Protocol presented in Appendix A. The participants interpreted their understanding and could relate circular economy back to sustainability. All participants acknowledged that circular economy could contribute to sustainability in one form or another.

"I think what's really nice or what's interesting about it, it makes us responsible for our actions, right? It puts responsibility on all the players of the economy, not just to benefit in isolation or for selfish motives, but to make sure that there is this benefit to not just the economy, but the environment in which we operate as well" YSC

"I don't think it actually should be thought of as separately, because I would for me circular economy is a lever towards sustainability and you've got mechanisms within circular economy that supports the sustainability agenda" AMC

"You know it talks directly to sustainability because you are not going to deplete Mother Earth. You're gonna have a cleaner, greener future with circular economy. You know your waste streams, you basically going to deal with your waste streams and that's going to directly impact sustainability" KMC

"Circular economy can contribute to sustainability goals because it can become a mindset, a way of thinking in how we approach things" SMC

Although sustainability is well established in the mining sector and in the OEM realm, it does not seem to be the case with circular economy. Some of the participants' admitted that their organisations had formal circular economy programs in place, however, they were not that familiar with the content of these programs. Some of the participants linked their sustainability programs back to circular economy. MMC noted that circular economy was not yet embedded in the mining industry, as noted below:

"*The circular economy is just a bit of a pipe dream at the moment. I don't know of too many industries that have actually successfully implemented, but it's gonna take integration between both parties to actually get that to work. But it should be a global thing. You know it should be something that, it should be in networks where you know we produced 15 waste products, 12 which we use and we eliminate that waste from the process, but the other 3 we give to somebody else who can process it and then vice versa. Data is saying and it's gonna take a while for that network to generate. But you could see it happening. Slowly but surely" MMC*

The data presented some examples of how participants viewed circular economy, with BMC, a leader in circular economy principles, expecting it to become business as usual, supplier corporate participants linking it to their sustainability strategies and mining site-based personnel relating it to practical examples, although also aligned to sustainability.

"[we] engage as broadly as we can on the principles and get circular economy imbedded as a as a kind of way of doing business. So, I think what we'd love to see in the long run is that we don't have actually have circular economy programs, but we have the principles embedding it in into how we design work, how we plan things so that we don't need to have a separate work stream on circular economy" BMC

"A topic that is very high on our agenda. So, for instance, in our manufacturing facility, you know we constantly looking at the material that we use in manufacture of tyre and how we can use more natural products. So natural rubber instead of any synthetic or like crude oil material. And then you know just as far as, like the water that we use and the natural resources on how we can recycle them so that, we definitely look at" ASC

"we've got a number of community projects and you know, we talk about empowering the local communities for growing crops like bananas and so one. And a lot of that is with the local ladies and it's giving them skills and crops or cash that maybe they wouldn't have had previously" AMS

5.4.3.2. Analysis – Circular economy

From the analysis of the data, it was clear that not all participants understood what circular economy was. Although circular economy does have a broad definition, the concept was confused with sustainability, community involvement, recycling, and waste management. The analysis indicate that circular economy is a newly introduced concept within the mining industry, with both mining company and supplier company participants requesting explanations of what it is. In both organisations, the professionals who work with circular economy on a day-to-day basis had knowledge of the topic and the potential it has to contribute within the mining industry.

After an explanation were provided, based on the Ellen McArthur definition, most participants could articulate the need and value for circular economy, and how it could contribute positively to the sustainability visions of their respective companies.

There was a general consensus that circular economy could contribute to carbon reduction, the betterment of the environment and the communities surrounding the mines. Supplier participants noted that circular economy could be used in their manufacturing facilities, with the focus on using renewable products, materials, and energy.

The site-based personnel, both from a mining and supplier point of view, cited practical examples implemented under the guise of sustainability programs, that they interpreted as circular economy programs (renewable energy, use of waste water).

5.4.3.3. Conclusion – Circular economy

Analysis of the interview data revealed that circular economy can contribute to sustainability goals, improving the environment and the societies where mines operate. Both mining corporate participants and supplier corporate participants encouraged the implementation of circular economy projects and believed that it could contribute to the success of their companies.

Although there were formal programs for circular economy identified, these programs were not embedded in the companies or in the industry.

Noteworthy, is that some of the participants were of the opinion that circular economy should not be an independent program that needs to be managed in the organisations, but that it should form part of the way business is done, be integrated, and not be called out specifically. Circular economy programs may not differentiate a company, unless it is the only one that has implemented it, which defeats the global objective of collaboration to reduce the carbon emissions in the atmosphere.

5.4.3.4. Discussion of the key findings – Circular economy strategic partnerships

Data indicated that all the participants believed circular economy strategic partnerships could contribute to meaningful change and benefit the environment

Participants noted that there could be limitations to circular economy strategic partnerships. OMC noted the limitations historic product purchases placed on mining companies, where mining equipment in itself limits the circular discussions with partners.

"We're only gonna be able to do as much as we're able to in terms of how we've equipped ourselves with products" OMC

AMC discussed the life cycle design of circular economy, that it is time bound and once it becomes part of business, the very nature of circular economy is to design out waste, which limits the longevity of potential circular economy strategic partnerships.

"Over time… It depends on the horizon need looking at because I'd imagine over time you what you're gonna see in circular economy is the quantum of opportunity is going to get smaller and smaller purely because of the nature of it. …Are there ways we could incrementally extends the life of the products that you not creating waste? Because if you're successful in doing that, then circular economy stops even being in consideration or thing to drive or to catalyse any impact" AMC

"You've got to be careful about not eroding future value, by… and be careful with your investments, but also. The flip side is as you, you exhaust the easier, easier methods of disposal, you will reach a point where you will out design the liability that you have, and that's really where I think the heart of circular economy is" AMC

Participants indicted that circular economy strategic partnerships can have several benefits, one of which is the improvement of the image of both parties that forms part of this partnership. It can demonstrate a shift in thinking and both companies approach their business by incorporating greened ideas into their strategies.

"I think being innovative and working with suppliers would probably mean that once again we can be more efficient with this sort of new ways of working and I think technology in terms of what we can really adopt" OMC

"Absolutely it does [improve their image], because it shows that you're a good corporate citizen, but you're doing the right thing. It's not about just about business results, it's how you achieve those results. And it's about a cleaner, greener, you know, more sustainable future and that's what society wants. Society demands it." KMC

Some of the participants highlighted the need to communicate the intent of the circular economy strategic partnerships to ensure that the correct message is delivered to all stakeholders. A reputational risk is associated when the wrong message is perceived in the market. These partnerships can be used as an advertisement for the companies, but emphasis were on delivering the correct message that will resonate with communities, stakeholders and shareholders.

"Yes, it does, uhm but they need to probably have quite a comprehensive com and change sort of program to make people aware of it." RMC

"If you have two very dominant companies coming together, as much as they may have great reputations independently, but if they seem to be a monopoly, I think even these kind of initiatives can tarnish their reputation, right? Because it might be seen in the wrong view, but I think if it was, it it… You know it's like these kind of things, it's not something in isolation. Something that will impact your reputation. It depends on where you're coming from and where you're going to" YSC

"Now, even if you look on some of the advertisements on TV in that it's not all just about, you know the product itself, it's about you know it was sourced sustainably, it was, and those are sort of the keywords that are starting to be used in advertisements and stuff like that now. Uh, because that's what the younger generational or worried about. I mean, global warming. It's a very real thing if you look at it, and I think they more attuned to it, then what we were" CSC

The data indicated that participants were of the strong opinion that circular economy strategic partnerships can create value for all stakeholders. However, participants qualified that the partnerships needed to deliver on their commitments, and that the commitments needed to be relevant to the needs of the stakeholders.

"… but once again you know there will be… There will be circular economy initiatives and there will be circular economy initiatives. But as a whole, I definitely think there that the answer to that question is yes" GMC

"So, as you're describing job creation, we have seen opportunities where in bringing in circular economy principles, in looking at things that would have disposed it, created opportunities for others downstream. We've also seen how just looking for circular, whether it's renewable energy, energy, that you can reuse. You are also already benefiting the environment and ultimately to link to things like positive influence in health and wellbeing of communities, livelihoods" SMC

"Yeah. And I think that uhm the whole aspect of the Community impact is really key. And I think more and more companies are, uhm you know, realizing that and some have realized it a long time back because. uhm Again, I don't want to be this is not about a political statement" RSC

"I think the short answer is yes. I think it could definitely on the environment side. When you say job creation it might be secondary job creation in terms of you know supporting

industries for their initiatives that they want to drive and I think that positioning those kind of secondary support industries that create the job that creates new jobs." YSC

The mining site-based participants translated the partnerships to practical application in the mining communities, reflecting on the value add that these structured partnerships that focus on circular economy, can deliver. The limitation with this view is the focus on waste management as circular economy is broader than that.

"Most certainly, if you just take the scrap example or scrap steel. We can keep it on site. Put in the landfill. But what does it do? It doesn't help the environment, and it certainly doesn't help local community, and so if we sell or donate, people can then reuse those products." AMC

"Yes, definitely, because you create new uhm entities, you uhm utilize the available resources or re utilize the resources so you are environmentally friendly. You don't create a lot of waste for the environment, and you support job creation." GMS

Some of the participants noted the competitive edge that a circular economy strategic partnership could bring to the companies that partake in the partnerships, highlighting the new concepts that could come from this partnership.

"Absolutely. And partly that you know. And because this is new, right? So, this requires thinking out the box and creating new models, new business models, new work that didn't exist before, so yeah, absolutely" EMC

"Yes, without any doubt because you know that will bring a competitive edge to those role players because the relationship and the partnership will be of long-term notion and not short term and any shareholder today globally is looking at those long-term sustainable partnerships that create value, create, focus and that result in sustainability" AMC

For the partnerships to be successful, participants highlighted the need for the parties to work together to deliver value for both and the stakeholders that are impacted by the partnerships.

"…look at productivity or whether it's to look at sustainability, whether it's to look at circular economy initiatives because the OEMs are understanding that they are looking to us and we are looking to them to do the right thing for the, for the for the economies that ultimately we operate in" GMC

"Depending upon the players and you know the level of involvement. For example, if one player is more engaged and does more than the other, that could create a a potential strife or difficult position" LSC

Although some of the participants highlighted that there is a time factors associated with circular economy strategic partnerships, most of the participants agreed that these partnerships can and will differentiate the parties that form these partnerships. The change in the nature of the relationship, where two companies engage for the greater good even if it is not core to their business but contributes to the success of their business, were highlighted as a key differentiator. Participants emphasized the need to do it properly, in order for the partnership to have the desired impact and for it to succeed.

"Well, I think it definitely strengthens the relationship you know, so you know if, and again, if we had to use our example, if we were in in a relationship where we constantly looking at improving the value chain and sort of adding value back into each of our businesses, it's almost like investing in each other. And it definitely secures the relationship, gives it longevity and I think in most of these, in my experience, you know when companies are willing to work together and explore opportunities beyond just the core business, then it creates immense value from a relationship point of view, from a longevity point of view, you know you sort of get away from just a product or a service at a price. But rather around, you know what sort of value add and benefit you adding back into the business" ASC

"It will be a differentiator, but only if you do it properly. And. Because it's the right thing to you, to do again" EMC

"Anytime you do something that adds strategic value and especially when you create value with a partner who is your customer. Then that obviously gives you strength and differentiation in the market. Now everybody understands that and so everybody in pretty much every market today is trying to convince the world that they're doing this really well and that they were mastering this. So, the proofs in the pudding" LSC

"I think absolutely it will differentiate the partnership. I think it will provide a platform for communications and storytelling that is unlike any other, and I think the first ones to do it will be able to leverage that platform. And in addition to that, and arguably more importantly than that, they'll be able to more quickly achieve the ambitions they've said in terms of reaching true circularity and getting to the ambitions of you know, net carbon zero" LSC

"It does because it just leverages... It shows that you ahead of the pack in terms of your thinking and practically where you are the business again in terms of maturity and implementations" KMC

"…catches attention and it definitely differentiates you from the pack. You know, the broader you know peers in the industry or whatever the case might be" KMC

Due to the newness of circular economy in the mining industry, some of the participants highlighted that there is a level of risk in developing these partnerships. But the reward will be that the companies are differentiated from their peers.

"Yeah, if you're willing to take a risk. And look at how being different, being a differentiator with other players in the market, it actually allows you to probably deliver more value and also to be at the forefront of delivering on your sustainability objectives and also the greater sustainability targets that have been set with more at the international level too" RMC

Some of the participants highlighted that these partnerships indicated a longer-term relationship, which contradicted the risk others highlighted in the temporary nature due to the nature of circular economy, as discussed earlier.

"The way that policy, and regulations are moving and raising the big issues here. Circular economy is definitely more prominent. It's much more prominent in business strategies of leading companies, so I think that anybody who's looking at circular economy as part of the business strategy, I think is you know will be viewed favourably because I think it does imply a longer term, you know risk and value focus and I think again I think that the relationship side of things is vital" BMC

The data analysis indicated that participants believed that these partnerships could influence the perception of stakeholders and contribute to the image of these companies. As BMC noted:

"You can change the perception of investors. You look at mining as being, you know perhaps a high-risk activity, which is when you look at it on the ground. And you know, in absolute terms and high impact, fairly high risk. Producing materials that flow into this horribly cyclical market. If you can actually take a step back and look at it in more of the big picture, which is what you're beginning to do through circular economy and look at a mining company, actually as a strategic provider of materials that are needed to solve this huge global imperative around carbon for example and decarbonization. Then I think it

becomes a very different way of looking at it so you know, I think that's the reason you know one of the big reasons for doing it" BMC

Some of the participants highlighted the need to communicate the partnerships to influence shareholders, noting that partnering but not communicating the partnership, will not contribute to a positive image and shareholders will be unaware of the value proposition. The analysis of the data indicated that participants believed these partnerships will increase the companies' share price.

"Yes, but I think they need to be able to publicize that sort of a relationship" RMC

"Absolutely, I mean. The very first opportunity that companies get these days to advertise the fact that they have something that is benefiting the environment or they have removed waste from a particular program, from a particular process, increased their share price" BMC

"Without any doubt, because that will become the benchmark in the industry or specific industry, and you know that will be seen on any kind of in the shareholding. It will be seen in the dividends it will be seen in the profit and bottom line because those partnerships you know will can only deliver value and value goes straight down to the bottom line" ASS

Some participants believe that circular economy strategic partnerships can create a competitive advantage, however the parties need to deliver on their commitments, or the confidence in those companies will be eroded and with it, their competitive advantage.

"And if you're using circular economy as one of your levers to move to a more sustainable state with your suppliers as you're demonstrating, I think you would then be able to get that competitive advantage" SMC

"People need to walk the talk and you know just saying all the right things and putting something in that has the facade of circularity doesn't steal confidence. Actually, suggest a little bit of disingenuousness but if it's done right, if it's done in a way that actually uses a different method to get equal or better results, and then of course, that instils confidence" TSC

The data analysis indicated that the participants were of the opinion that circular economy partnerships will contribute to sustainability as a whole.

"We think of circular economy in sort of three buckets, if you like. The one is around how we can operate more efficiently? So, do you put a real sort of business improvement side of circular economy so can we reduce the impact of materials that we use or energy that

we use etc can it be changed to renewables? Can we use more bio based materials? Can we actually use them more efficiently, use less of them? Can we maximize the utility of the equipment the fleet so we have all of those things? So, I think there's a real angle when we start to look at that system, circular economy sustainability" BMC

Yet, for all the positive sentiments displayed by the participants, some of them were of the opinion that the industry is not mature to set up circular economy strategic partnerships.

"But I think we're not good at setting up strategic partnerships. That's the first thing and the second thing is that I suppose we really need to have a bit of a road map as to how we're gonna get there, and this is where we struggle so that strategic partnership" BMC

"You know, we we've come a long way, but you know, I would say I don't exactly know what the figures are, but I would say 25% of the population is aware of, you know sustainability and you know you know roundabout way, circular economy. Those strategic partnerships aren't at a point where you say they really exist. At this point, I think there's companies out there that are trying to lead the way to create those partnerships, but they're few and far between and until those strategic partnerships become more popular and the true competitive advantage is understood, then the progress is going to be slow" MMC

5.4.3.1. Analysis – Circular economy strategic partnerships

Analysis of the circular economy strategic partnership data across all participants highlighted that they shared the perspective that circular economy strategic partnerships could add value to the companies that partook in these partnerships. However, there were some qualifications made. There is a need that the parties clearly articulate the intent of the partnership to ensure the correct message were shared with the broader stakeholder groups and thus not alienate them. A clear message should also be sent to the market to ensure that the value proposition is clearly defined to potential shareholders. These partnerships were further encouraged as it could contribute to the environment and communities in the areas where the mines operate.

The reality persisted that although participants agreed in the value add, they acknowledged that these partnerships are non-existent in the industry or in an infancy stage. There was agreement that industry players were not geared to set up these partnerships or were in a position to accurately articulate the value benefit. The entire value chain of mining suppliers and the mining industry is geared towards a linear economy, and participants agreed that this will further hamper the creation of these

partnerships. Yet, most participants acknowledged that these limitations are a perfect setting for creating a competitive advantage, as participants in successful circular economy strategic partnerships will benefit first and have a competitive advantage over companies and industries that don't embrace these types of partnerships. A key driver for circular economy strategic partnerships is a successful delivery of any initiative that these partnerships identify, as this will contribute to a positive image and enhance shareholder perceptions.

5.4.3.2. Conclusion – Circular economy strategic partnerships

Circular economy strategic partnerships can add value to the participants of these partnerships. The intent of the partnership must be well articulated. The perception that circular economy is not an established concept in the mining industry may hamper the successful implementation of circular economy strategic partnerships. There are limited frameworks guiding the structure and implementation of these partnerships.

Both the mining companies' and supplier participants agreed that the industry should include circular economy strategic partnerships to address the requirements to become more sustainable with regards to Scope 3 emissions and carbon reduction, as this will differentiate them with their peers and contribute to their competitive advantage.

5.4.3.1. Discussion of the key findings – Value chain

A product value chain and understanding the value chain could significantly contribute to the strategy on how to shift the production and consumption from a linear model to a circular model. Not all participants had a clear understanding of what product value chains were. Once a high level overview of the intended definition of the value chain for the purpose of this research were given, participants could articulate their understanding of product value chains well. Participants could correlate the product value chain to circular economy with most participants providing examples of understanding the value chain and how it relates to circular economy.

> *"I think that's what the circular economy discussions is bringing to the table now so it's almost like a cradle to grave. You buying it, you using it and you disposing it or are you disposing, the goods in a way that ultimately puts it back into the economy" GMC*

> *"Value chains in my mind is essentially everything that contributes to the development of the product, whether it's the sourcing of the raw materials, whether it's the facilities along that actually produce it, whether it's the technology that goes into that, which results in that final product that we effectively as a consumer or customer would purchase. …So I think maybe the principle is unpacking the life cycles and actually defining value streams*

for life cycles down the line is something which I think will actually catalyze a lot of the work in circular economy" AMC

Participants challenged their industries to the become more efficient in using their products, impacting the value chain by extending the life of products, with GMC wondering:

"One benefit that I'm still trying to at least get over my mind is maybe around the other example that we used earlier around the tyres to say, we buying a tyre. Is there something that we can do to make the tyre last longer, i.e. Is there an opportunity or do we understand why do we potentially damage our tyres and let's say if we then identify it's because of the driving behaviors of our haul truck operators is there is something we can do to assist them with their behavior" GMC

The participants had conflicting views on if key personnel within their organizations understood product value chains with some participants believing that the value chains are well understood, and others countered that key personnel should know the value chain, but don't. Supplier participants had a very good view of their product value chains, linking it to their productivity. Mining participants had varied views, with most claiming that the people who should know, doesn't and don't understand the value chains.

"Some people do, and some people don't. I think mature companies today really understand the full breadth of their, the implications of what they do and how they do it and how it translates to value for society and economic value for society and proper stewardship of resources" TSC

"I think that they do. I think it becomes quite a critical part of the operating function of the business, and I think the other thing that you have to bear in mind is that in most companies that's where that's where most of your costs sit. So, the product value chain gets a lot of attention" YSC

"I think they probably understand the value chain at a higher level in regard to the product. So, if you use the tyre example, they understand how that tyre makes us money and they understand how much that tyre costs us, so they you know. The difference is the profit we make as a result of you using that tyre. But what I don't think they understand is the... Although there's multiple products that make up that tyre, we don't fully understand which aspects of that product aren't as efficient as they possibly could be" MMC

"Not as well as they could do, I would say. I think it was, we probably made quite a lot of progress in that in recent years. But possibly, I think there's probably still work to do." BMC

All participants were of the opinion that it is important to understand the value chains and that the value chains related to circular economy opportunities. The supplier corporate participants were well versed in the benefits of understanding their product value chains.

"I think yes, because if you truly want to reduce, reuse, renew, and recycle. You need to be mindful of what is happening in each piece of the value chain, because I don't think that you could do any one of those things without a knowledge of the entire chain" LSC

"They do in that the path between raw material and end use could have lots of loops in it, you know, and so that that changes the demand stream that changes the methodology in which the material makes its way down so, so I definitely think that that understanding the whole value chain will identify where circularity opportunities exist. And if you use circularity appropriately, you can probably extend the life of that value chain" TSC

"Companies want to understand the value chain because it has a direct cost impact. So, there's opportunities to streamline and make products more cost effective. It improves our profitability" YSC

The real costs of not understanding and optimizing value chains were explored with AMS when he noted:

"Most people only think of tyres as a consumable item. And they look at the costs and then say OK, a Supplier A tyre is gonna cost you X number of dollars. I don't worry about the actual impact it has of actually making the tyre, or what environmental impacts it has, its causing by the manufacturer that, what impact it might have on their work environment habits because it's gonna be made, sorry, sourced from a supplier many many miles away from the end user. So, we don't consider that we don't even put a value on what impact that might have. … And then likewise, when we finished with the tyre, it is putting it on the waste dump, occasionally landfill. But we don't often put a price on it. You know there is a closure, mine closure date that we have. Does it take into consideration all the scrap we might have? It terms of tyres it may or may not, but generally, we don't consider the value that we've actually destroyed" AMS

5.4.3.2. Analysis – Value chain

Most of the participants had a clear understanding of what a product value chain entailed and could articulate the importance of value chains. They recognized that understanding value chains could reduce cost, limit the supply chain risk profile, and create areas of opportunity for improvement. Participants could like the importance of understanding a value chain to circular economy, noting that understanding the product streams, waste can be designed out.

The participants had conflicting opinions on whether their industries and key role players in their industry understood the value chains, with some challenging their supply chains focus, which is predominantly on cost, and others stating that there is just a general lack of understanding. Other participants were of the opinion that the value chains are well understood, and that this was due to the maturity of the industry. Supplier participants were more versed in their understanding of the value chains.

An observation was made that not understanding the value chains, both from a supplier and mining perspective could become costly once the mines need to close. Opportunities could be missed to address waste prior to closure, which will increase your mine closure costs.

5.4.3.3. Conclusion – Value chain

Value chains were not a key contributor to the research paper, but the data analysis highlighted the need from participants that their industries need to make a concerted effort to understand the upstream and downstream value chains. Through this understanding, opportunities for circular economy can be identified, which can contribute to the implementation of circular economy projects.

There was limited alignment between the participants on if their industries understood the value chains, but all participants agreed that there is a need to and that the importance of understanding it could be linked to monetary value, risk reduction and efficiency optimization.

5.4.4. Theoretical theme conclusions – Circular economy

Circular economy is a new concept in the mining industry and not all participants were familiar with the term. Industry experts could articulate the definition and expand on some of the benefits, where novices developed a general understanding once the definition were read to them. Circular economy is a key theme in the research question. Circular economy strategic partnerships are partnerships that will focus on implementing circular economy initiatives.

Participants agreed that these partnerships could contribute positively to the environment and the societies where the mines operate. These partnerships further have the potential to differentiate the companies that partake in these partnerships from their peers.

An enablers of these partnerships is the understanding of the value chains of the products being used in an industry, to identify areas of opportunity for circularity implementation, and then developing a strategic partnership to roll out such opportunity.

Circular economy strategic partnerships are non-existent in mining industry, and participants indicated that limited frameworks are in place that demonstrate successful strategic partnership implementation. However, this limited resource could contribute to the competitiveness of such a partnership.

The understanding of participants, and their alignment between analysis groups are presented with Harvey balls in Figure 19.

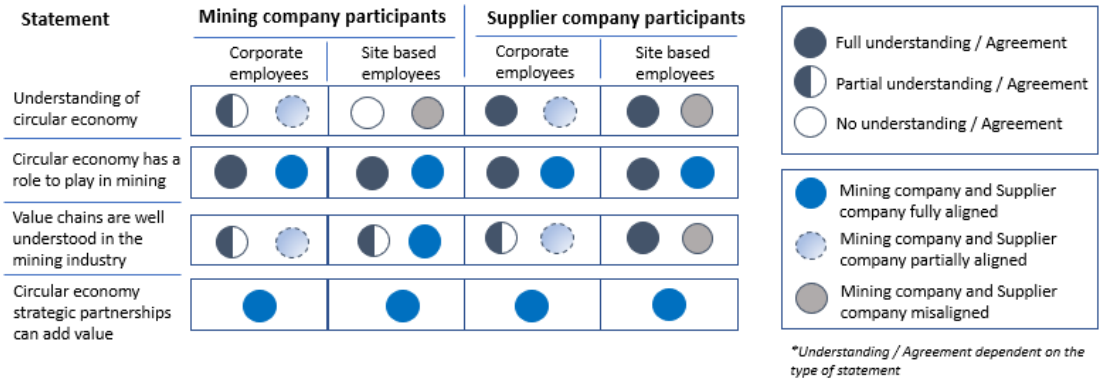


Figure 19: Circular economy participant understanding
Source: Developed by the author

5.4.5. Theoretical theme findings - Strategic partnerships

Strategic partnerships are a key driver in change and formed a core part of the data collection. Three code groups were identified when grouping the codes for strategic partnerships. These include strategic partnerships, focusing on the definition, benefits, complexity, barriers, enablers, and the opportunities that exist in these partnerships.

The factors of strategic partnerships focused on the core elements of a strategic partnership and stakeholders, which provided a high-level overview of who could be impacted by these partnerships, as well as the impact stakeholders have on partnerships.

Figure 20 illustrates the main theoretical theme, its associated code groups and codes linked to each code group.

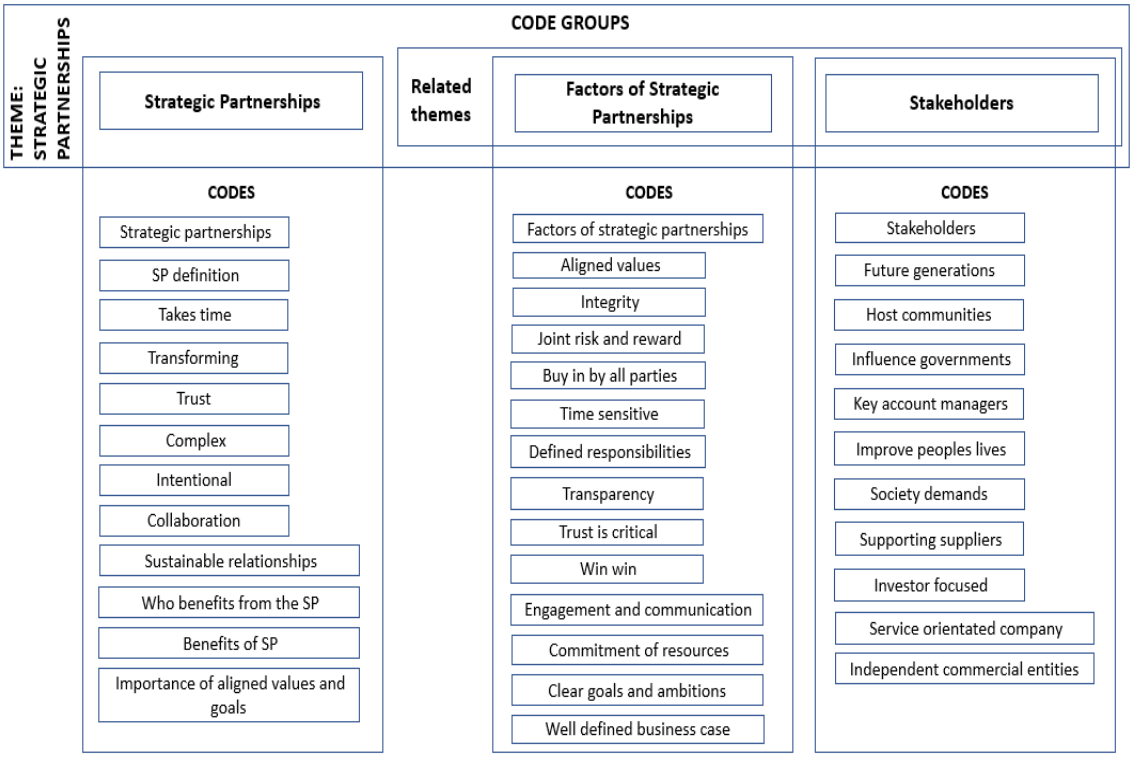


Figure 20: Strategic partnership codes grouped in code groups
Source: Developed by the author

5.4.5.1. Discussion of the key findings – Strategic partnerships

The analysis of the data revealed a sense of ambiguity amongst the participants when it came to strategic partnerships. All parties agreed that a partnerships need to be a win-win solution for both parties, but some respondents indicated that although this was communicated to suppliers, it was not always the case. Some of the participants, such as GMC, noted that the nature of mining forces strategic partnerships, as mining companies would partner with specific suppliers to supply equipment which would result in a long-term relationship – mining equipment lasts in excess of 20 years.

> *"…what a strategic partnership would then be, is we already engaging by default because we are utilizing a lot of their equipment. We are using in a lot of instances their people their labor, you know, and we have got certain MARC [maintenance and repair contracts] agreements in place and we are also continuously buying parts from the OEM's, manufacturers" GMC*

The majority of the participants identified strategic partnerships as relationships where there is a common goal and it's a win-win for both parties, and where there is significant impact and success is dependent on each other.

> *"it's a win-win collaboration between yourself and your supplier. And I think we need to be quite careful about it not being a dependency on the supplier, but, basically, defining areas*

of collaboration or initiatives one could work on together which creates value in both ends" AMC

"Define it as a partnership where you're looking at, you know, something bigger than just your immediate, your own companies' immediate goals. So, looking for areas of mutual interest in that sort of bigger strategic space" BMC

"I would say a strategic partnership to me is one where the organizations, 'cause partnership may be with two or more organizations, realize that they sort of have an interdependency. OK, that doesn't mean that you know, you have to work with this organization, but you realize that their success depends on your success. Right, or, they have a contribution to your success and if you are aligned from a strategic level or you can say, maybe a corporate direction or even you know, how you do business, that by aligning with that organization, you mutually would benefit. OK, whether it's one, two, or three organizations that are in partnership, you know uhm with each other that that there is benefit" RSC

The analysis further highlighted that there is a level of complexity involved with strategic partnerships. Strategic partnerships' monetary value is difficult to quantify, and as EMC notes, at the end of the day value is a key driving force to do what needs to be done. The interviews further highlighted the difficulty in measuring the success of a partnership. A further complexity identified during the analysis is the perception of these types of relationships. Often, it is viewed as an opportunity for companies to optimize processes, but in return, reduce labour. As such, these partnerships are not always viewed optimistically.

"I think, what is the challenge, that especially now that we're going to find this, you know you always will be challenged, particularly as a supply chain professional, so where's the commercial value" EMC

"so, partnerships have to have to win on both parties, but often when people talk partnership. It's only in their sense and so there is a there is a difference of opinion of what a partnership actually means. How do you measure it? And then, how do you make sure it's actually sustainable" AMS

Communicating the intent of a partnership is really key to ensure the perception doesn't cause harm to the companies entering into the partnership.

"Supporting industries for their initiatives that they want to drive, and I think that positioning those kind of secondary support industries that create the job, that creates new jobs.

Because of these partnerships, sometimes people miss the correlation, right? And what they see is too big companies coming together, partnering together and then the people will lose jobs. But I think the ripple effect of the job creation is beyond the actual companies individually" TSS

The participants raised some concerns on the barriers to engage in strategic partnerships. Corporate mining participants highlighted the need to have a common goal and ensuring that there is investment available for these initiatives. There is limited to no risk appetite in mining houses, which makes innovative strategic partnerships difficult. First mover risks are real, and participants noted that this hampers progress with partnerships.

"The biggest challenge though, to us reaching that, is to actually be able to bed down and articulate ideas that work. One of the big issues we face, and I've had several discussions with many of OEMs and our partner mining houses as well is that, while we all agree on the principles of what we need to get done, there's often a lack of confidence about moving ahead with certain things because there's ultimately going to be investment required to test technologies, or even to prove pilots, and it often becomes a case of do I as a Supplier invest in that, or do I as a Mining house invest in that and you can never… There's never been, I think consensus in terms of where that goes, so both parties are often not willing to take risk when it comes to these, because some of these things may not go anywhere or and as often the case where there's a first mover, people are skeptical around things that are different to a traditional method of doing work and managing that change" AMC

Mining site-based participants pointed out the volatility of mining, and this places a risk in building trust with suppliers to really develop strategic partnerships.

"No, so it's just saying for this period of time, while I want you. But I'm also willing to get rid of you if you mockup and I'll go to someone else. That's not really a partnership" AMS

Varying requirements further impact on the successful rollout of partnerships. Participants from both the mining companies and supplier companies highlighted the strains that can arise when companies have different deliverables and values.

"The true sense of the partnership means that we actually collectively work together. And that's often difficult because you've got your own KPIs. You've got your own metrics. You've got your own boss to appease if you like, so u can become very difficult" AMS

"Pull a supplier in the direction that doesn't really align, because then you know they would only be in it for I don't know, the business, which is not what you really want, you want

them to also have a value investment stake in this like they also have something invested in this chart there trying to make it work broader than Company A. You know broader than your actual company, so for them there has to be a reason why they're doing it that goes over and beyond just service in your company"

Uncertainty was also identified as a major contributor to strategic partnerships failing or not being developed in the first place.

"And that uncertainty if I can just say it like the South African environment, right? I think especially like in the mining industry and especially after we've just been through Covid and that everyone is a little bit weary to get into like any long term strategic partnerships, right?" ISC

The analysis of the interview data revealed common themes identified by the participants that could act as enables for a strategic partnership. These include getting alignment on a strategic goal or identified need. Ensuring that the partnership will lead to a win-win relationship for both parties. The partners should be of equal stature, depending on the needs to be fulfilled. Having alignment on values, setting a plan, and delivering on the plan. Communicating successes is critical, as highlighted by some of the participants, as a message well delivered can contribute to success. Longevity is a major enabler of strategic partnership. Key points were highlighted by various participants below:

"First it starts with some objectives, alignment on strategic objectives" KMC

"Two strong brand names and where the two can actually, you know, fulfilled each need by providing a footprint and good value in brands, and eventually it's a 1 + 1 you know gives you three, three or four" ASS

"Strategic partners is obviously a win-win relationship. It's a same goal, same values, same mission" EMS

"Bad news makes it to the front of the paper faster than good news, so I think it can. You just have to be intentional in getting the stories told so that others can learn from you, but also so that you can get the credit for the proactive approach" SMC

"Strategic partnership is one where there is benefit from the partnership to be able to realize a strategy, so your long term thinking or your plan if you like for the long term. So, I think strategic partnerships is all about being set up to be able to realize benefit for the long term" SMC

"And I think that partnerships that are true, partnerships or ones where we are all working together for a common good and a common end, and that sustainability as an ambition you know related to planet is one where we can partner together to, you know to improve the world for the future and for others that come after us. So, I think if you share that kind of perspective and ambition it's got to be mutually beneficial to both, because honestly again, going back to the definition, if it's not, it's probably questionable whether it's truly a strategic partnership or not" LSC

The interview analysis highlighted some key opportunities that could be unlocked with strategic partnerships. Some of the participants highlighted the fact that sustainability ambitions cannot be achieved in isolation and partnering could enhance these programs. Strategic partnerships may enable delivery of results faster.

"The one reality that we need to accept is that if we've got certain ambitions that we want to achieve, you know, and one of them being around the whole circular economy opportunities, benefits. We won't be able to achieve it by ourselves" GMC

"On a deeper level, I think all the stakeholders, the investor community, because the results that you're going to jointly achieve out of that strategic partnership, is going to propel the business results" KMC

5.4.5.1. Analysis – Strategic partnerships

Analysis of the data across the analysis groups revealed common themes on the view that strategic partnerships should be a win-win relationship between the parties, that there should be a driving force on why the partnership is created and that once the partnership is created, that there needs to be a common goal.

Analysis of the mining site-based participants revealed that these participants challenged the success of partnerships, stating that mining companies generally only view a partnership strategic when it suites them, but will just as easily disregard the partnership. Some of the mining corporate participants echoed this sentiment.

There were also dividing views from the participants on who benefits from a strategic partnership, with mining corporate, site-based and suppliers noting that all parties in the partnership, should get some form of benefit, but most of the times the mining company will get the greater benefit.

Concerns raised were the need to align on expectations and deliverables, and the ensure that key performance areas are defined and with equal importance on these from both parties. Participants from all the analysis groups raised the point that time is of the

essence, and that strategic partnerships should be a long term focus, and not a short term sprint. It is critical that these partnerships be positioned to have longevity.

5.4.5.2. Conclusion – Strategic partnerships

Analysis of the interview data highlighted the important role strategic partnerships could play to deliver on long term initiatives, that would be difficult to deliver on should a party attempt it alone. Creating a strategic partnership, with the focus on delivering sustainability solutions, is imperative as participants identified that the magnitude of the problem related to sustainability, requires partnerships to resolve it.

Strategic partnerships must be a win-win partnership for all stakeholders involved. However, some participants highlighted that this is not always the case when it comes to mining companies.

Ensuring aligned goals and visions among all the parties is a critical element of strategic partnerships, to ensure all parties are aware of the expectations and deliverables under this strategic partnership.

5.4.5.3. Discussion of the key findings – Factors of strategic partnerships

The analysis of the interview data focus on what participants thought what the key factors of a strategic partnership would be. These factors will contribute to the success of a strategic partnership. Various factors were identified by the participants. These are described below.

“Need to have real buy in from all levels”, “having a solid business case, plan of action would lead to real buy in that that that should be achieved from senior levels in both companies” OMC

“Openness is a critical one because you need to have trust in the partner that you're working with” AMC

“I think do you need to have transparency. We need to have a shared vision or goal” EMC

“They obviously have to be mutual, for mutual gain, the objectives, the values. So, make sure I don't mix those two, the objectives and the values of the two companies have got to [be] aligned” TSC

“Trust, I mean it's really what it comes down to and I think you know as we speaking of corporations, you know we don't have to be afraid to say that the word benefit, right? Whether it's financial, whether it's a savings or whatever it is, it's a matter of you know” RSC

"We can't have one party taking all the risk and one party taking all the benefits, so it has to be a collaborative relationship where everyone has to take risk" RMC

"…predefine the responsibilities of all the role players to achieve that common goal, very important that those responsibilities are predefined and then measured on frequent basis. To ensure that the progress are made. To achieve that common objective." ASS

"I think each party needs to be clear on. What are they trying to get out from it? So, what does value look like for them", "they also needs to be shared interests. And the best way I know to describe a shared interest is when you are seeing your success is also my success. So, we are a win on your side will also be a win for me. So, we all want to win as a result" SMC

"So, sort of understanding why you've got that relationship in the 1st place, and you know. And I think that that relies on kind of honesty and openness" BMC

"So, you gotta come up with an agreement. If you're like you got to have a vision. But It's also important that, throughout the organization, each of the levels actually agree with that as well. Actually worked. You know rather just. Yeah, someone signed up top, but then we fight down here at the bottom" AMS

The site-based participants focused the discussion on the stakeholders that will be impacted and the factors that needed to be considered:

"I also believe in consultation from those that are going to be affected or implemented, impacted like consultation because there is this belief whereby let me put across, let's say, an organization, there is the top boss, the managers, then the normal workers, then the extreme workers who don't have any qualification" JSS

5.4.5.4. Analysis – Factors of strategic partnerships

Interviews indicated that all participants acknowledged the importance of trust. Some mentioned that the trust needs to expand into the delivery of commitments, that the parties need to trust each other so that when commitments are made, that there will be delivery on these commitments.

Participants raised the importance of a common goal, with some specifically also calling out the difference between a common goal and aligned values. It was important that companies that create these partnerships share similar values.

It became clear that the value definition for both participants in the partnership does not necessarily have to be the same, but it was critical that the value be defined for both parties and communicated.

A supplier site-based participant included the stakeholders that could potentially be impacted by the relationship.

5.4.5.5. Conclusion – Factors of strategic partnerships

The analysis of the interview data presented the factors that participants believed were critical to ensure a successful, sustainable, and long term strategic partnership. All of the participants highlighted the importance of trust and a common goal and shared vision.

There is a need that both parties are fully aligned on the intent of the partnership and that the values of both companies aligned. Participants identified that partnerships need to be mutually beneficial but also benefit a greater good. The value to be derived needed to be defined for both parties in the partnership. Table 13 summarizes the factors identified by the participants that may contribute to a successful strategic partnership.

Table 13: Factors of a strategic partnerships

Factors of strategic partnerships	
Buy in from all levels	The strategic partnership is discussed and agreed through all levels, from he sites of implementation through to the senior executives
Defined business case	A business case is defined between the parties (circular economy strategic initiative)
Value definition	What does value look like for each party
Shared in interest	Value can differ but there is a need for a common end state / deliverable on the business case
Responsibilities	Clear responsibilities need to be allocated to each party and their representatives
Accountabilities	Each party needs to know and accept what they are accountable for
Measures	Measures need to be put in place to ensure that the success of the relationship can be communicated, that the business case were achieved
Trust	Due to the nature of the relationship, and it being between multinationals, trust will be critical
Mutual risk and reward	Both parties need to take equal responsibility on the required deliverables
Openness	Sharing of information will be essential, and clear communication and openness, linked to trust, will be required
Transparency	The parties need to be able to communicate shortcomings, risk, value streams and any concerns
Honesty	Parties need to be realistic and honest in terms of the resources that they can contribute to the partnership
Objective	Clear differentiation between the business case of the partnership and the objective that the partnership want to achieve
Values	There needs to be shared values between the parties, as misalignment will cause friction later on
Form of agreement	The partnership should be formalised in some form or another
Win-win-win	All parties, including stakeholders need to win in this strategic partnership. There is no value if its just the mining companies that benefit
Communication	Clear communication and consultation with stakeholders, investors, between parties and the market (advertising)

Source: Developed by the author

5.4.5.6. Discussion of the key findings – Stakeholders

Participants identified numerous stakeholders that could impact either positively or negatively on operations, directly influencing the viability of partnerships. Stakeholders are further critical in designing what potential partnerships could look like. As one mining corporate office participant noted" … [need to] work with stakeholders to actually share what that [future partnerships] look like" OMC. Participants were further pointing out that stakeholders are changing and demanding more from business.

> *"Society [is] becoming more and more demanding and sophisticated. It talks right into where Society wants to go cleaner, greener safer, don't kill people, don't harm the planet. You know, it benefit everybody in society, economically, financially, it's right up there with where society is today so that it just so aligned." KMC*

Stakeholder management is critical to ensure the sustainability of the mining industry. GMD, a mining corporate representative highlighted that there is a need for strategic partnership managers, and these individuals are key stakeholders managing the strategic intent of the partnerships.

> *"So, if we can think of any of our big agreements that we have in place, all these OEM's have got their specific individual [key account manager] that looks after the Company account so you can see from a customer perspective, they see us as important from a supplier perspective, we see them as important" GMC*

Some of the participants pointed out companies need to start leveraging stakeholders to create value for all parties and potentially influence other stakeholder for the better. This section does not include investor views as part of the stakeholder community, as this is covered under Section 5.4.7.7 Investor sentiment.

> *"Potentially we could involve our host communities. And within that, to re-purpose the rubber into something potentially that we haven't thought off. Because I don't think we've tapped into that intellectual capital, that enthusiasm that come from people. So, I do think a community partnership is a huge piece to actually help drive that well" AMC*

> *"Working with the communities, our work perhaps can also influence governments because of how we are running our operations in the countries where our mines are" SMC*

> *"Not just the local communities, but big corporate companies outside looking in for investors as well are going to put this as a key instrument for investors investing in companies in future" HSC*

5.4.5.7. Analysis – Stakeholders

The focus of the research was not on stakeholders, but participants recognized their importance and included governments, communities, and the broader society into their feedback. Both mining participants and supplier participants mentioned the potential value add that stakeholders can bring to a partnership. Some of the participants highlighted that stakeholders place demands on the mining industry, not just for societies, but for the environment as well. The mining company participants were more aware of the need to manage all stakeholders, where the supplier participants focused on the mining companies, their clients, as the key stakeholder to them.

5.4.5.8. Conclusion – Stakeholders

Although stakeholders were not explicitly mentioned in the research question, their importance in contributing to the future view of companies were highlighted, and therefore their inclusion into broader relationship discussions are required. Companies entering into a strategic partnership should clearly communicate with all stakeholders to ensure there is alignment in the needs of all parties.

5.4.6. Theoretical theme conclusion – Strategic partnerships

The mining industry lends itself to natural partnerships due to the long term commitments companies make when they procure mining equipment. Participants acknowledged that there is a need to re-evaluate how strategic partnerships are set up in the beginning of the partnership, to focus more on sustainability and the joint contribution the companies can make. These mining industry partnerships are complex, and the participants had varying views on the equal benefit achieved when entering into these partnerships. All participants agreed that strategic partnerships should result in a win-win outcome for all.

The understanding of participants, and the alignment among different analysis groups are presented with Harvey balls in Figure 21.

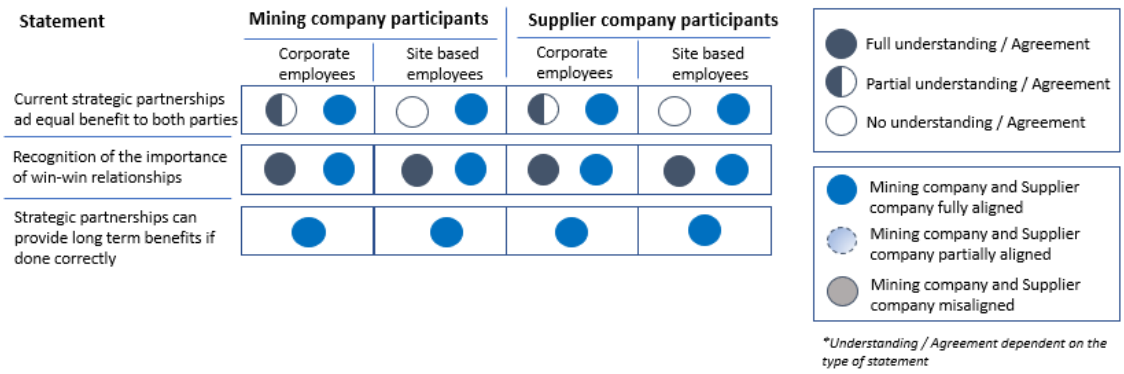


Figure 21: Strategic partnership participant understanding
Source: Developed by the author

A strategic partnership should not limit the approach to the complex problem that is the transition to a circular economy. The partnership should authentically engage and design solutions beyond reduce/reuse/recycle and drive a true green, sustainable economy that delivers return on investment for both partners. When designing the partnership, the broader stakeholder groups need to be taken into consideration.

5.4.7. Theoretical theme findings - Value perception

The analysis of the data correlated with three main code groups; value perception and the description of what value is, investor sentiment which explored the externalities of value perception and what investors want, and lastly, the importance of results. As a supplier corporate office participant noted:

"*…I think that if you have a strong business case and a business model around it [strategic partnership], giving confidence, usually you have to do it through proven results. If you're able to prove results or pre-empt results it helps your business case. But I think just conceptually talking about it, it might be hard for people to see the benefit, because you might require, and this is always when you're doing something differently or different, doing something new, it might require investment, and whenever people want to make investments, they need to know there's going to be a return" YCS*

Figure 22 illustrates the code groups and the accompanying codes linked to value perception.

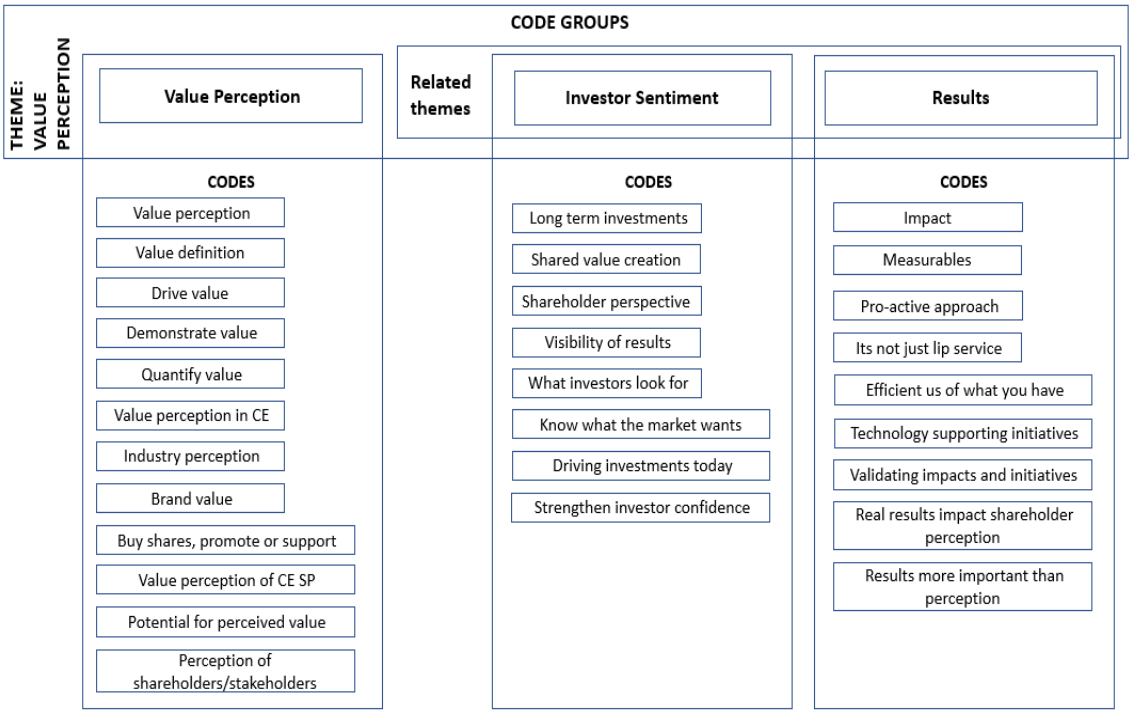


Figure 22: Value perception codes grouped in code groups
Source: Developed by the author

The value perception of circular economy strategic partnerships was explored. Most participants across the analysis groups acknowledged that there could be a positive perception linked to these partnerships. However, value definition, marketing, initiative type linked to the circular economy, real impact and delivery of results hampered the conviction of participants that these partnerships could be a game changer for the companies that partake in these partnerships.

5.4.7.1. Discussion of the key findings – Value perception

Several participants struggled with the concept of value and how it should be defined. As GMC noted, "*Is there a way that we can reflect value in a way that ultimately, historically, we've been reporting value? Which is predominantly more around a dollar type of value. I don't know*". The research analysis revealed that participants had varying views on the value perception of circular economy strategic partnerships. Certain participants linked it to the broader value delivery that mines should focus on and believes it will contribute to that, as EMC explained:

> *"It makes us in the mining industry think about for what value are we creating beyond just, you know? I'm taking this thing, crushing it and sending it on a ship to somebody else to transform in. What value are we adding?" EMC*

Other participants recognised the value perception of circular economy strategic partnerships as long as there were tangible results and these results were communicated to the broader society.

> *"I think the potential is very high. I think perceived value can be significantly boosted if a company not only talks about where it's headed as it relates to achieving a circular economy but takes demonstrative and decisive actions to articulate its ambitions. But also, it's pragmatic activities. To get to where it needs to go" LSC*

> *"There's these members of society out there that don't work in a mining company, but they are, you know they are looking for these things and the more that it's made visible and spoken about and even internally within the organization, the more the perceived value because that's what people want" KMC*

The data analysis indicated that participants were aware of the sentiments of broader society, acknowledging that there is a real drive to become conscious about sustainability and the activities companies put in place to support their drive towards more sustainable practices.

"I think that people are a lot more mindful of it these days. And you know, the further we go into the future, with all the media coverage on, you know, climate change and sustainability, and circular economy. And it will latch on, but I think the key to it is getting these companies who provide a specific product, like for example the OEMs and like for example, in a car manufacturing. Those guys have to latch onto this stuff" MMC

This was contrasted with the view that certain participants had that sustainability is seen internally as a soft topic, although it had significant opportunity to drive profits. Participants agreed that sustainability could contribute to the bottom line.

"When people speak about things sustainability related. They often seen as softer things that are not critical to business, and I think it's hugely important that we understand sustainability things are actually things that drive a lot more savings if that's a prerogative" EMC

"I think it's more sustainable. I think it's more profitable in the long run. Uh, I think if you don't go in that direction, it's more fly by night, and I think it's not a wise investment, like it's a fly by night operation because I mean I, I don't see a company not focused on war on waste as being self-sustainable" EMS

Participants recognised that companies who drive sustainability initiatives were viewed on favourably by investors, increasing their value perception.

"Looking for people that are using those opportunities and the beauty of being part of an ESG movement, is there are people who are already differentiating companies by those who are ESG leaders. So, if you think about future access to funding or easier access to funding in the future, that is the way to go. So, I would definitely do that and I think as the sustainability drive gets more embedded and as people start thinking more and more about it, the companies that are lagging behind are going to probably be impacted in a negative way" SMC

The analysis of the interview data highlighted that supplier participants recognised the value perception of a successfully implemented circular economy strategic partnerships for their greater business, where they can differentiate themselves with their clients through these relationships and become imbedded in the client organisation.

"I think it becomes an open opportunity and in the success story. And you know those companies that do have their strategic partnerships and alliances you know and had a taste for it. Of course, they will. You know copy and paste that to their other customers and introduce that same kind of relationships and objectives" ASS

"If you are promoting yourself, people are like Oh no, no, no. But if you get promotion from other people that are saying, that are putting value behind what you are doing, that's more of a confidence boost and the reason for more people to want to come on board as well to say that's where we should be because they've seen the value" ISC

The value perception for some participants were in the collaborative approach to reach a common goal that is for the greater good. This is created and supported by continuous dialogue. As a supplier corporate participant noted:

"And how do we collectively make it a more sustainable journey, so that it's more friendly to the planet? I think that the worst thing we could do is sit in individual silos and say we're going to work on this, and we think it's going to be great at Michelin, and you know our customers going to work on that, and they're going to think it's great. I think the more that we can create a dialogue about where we're headed and how we can get there together, the more effective a partnership can be, and the more time it can save us too in the end, because we won't waste time looking at the things that won't work or that are not. Useful to you" LSC

The data analysis indicated that some of the participants linked a strong brand name to already created value. This will further contribute to the perceived value that can be created.

"The higher the brand value of a company, you know, the more that that [circular economy strategic partnerships]] drives more investment, the more shareholders are going to be happier because it, you know, the share price or his or her share price will go up" EMC

5.4.7.2. Analysis – Value perception

The data analysis across the analysis groups indicated that there was a high level of inconsistency on how value was interpreted. Mining corporate participants highlighted that traditionally, value was determined in dollar terms, and questioned how intangible programs, like a circular economy strategic partnership could be seen as valuable. However, other participants linked the partnership to the benefit it could create for the societies and the environment and linking value to that.

A key observation was the need for tangible results. Most of the participants highlighted that the value perception is substantiated by real result from programs as a result of these circular economy strategic partnerships. These results were observed by societies and investors. Participants agreed that these partnerships could further contribute to the bottom line, as it promoted sustainability.

Analysis of the interview data indicated that sustainable practices are viewed on favorable by investors, and partnerships that promote sustainability will carry a substantial value perception. This was again qualified by the need for demonstrated results. As such, communication of the circular economy strategic partnerships remains critical, as this contributes to the value creation of these partnerships.

5.4.7.3. Conclusion – Value perception

From the interview analysis most participants agreed that a circular economy strategic partnership will contribute to a value perception. There were questions raised on how value could be defined, as traditionally in the mining industry it is measured in dollar terms. Participants linked the value to the benefit such a partnership could create for the communities and the environment where mines operate.

Participants highlighted that companies that promote sustainability are perceived as valuable contributors. A key driver of the value perception is how the circular economy strategic partnerships are communicated. The brand value linked to the companies will further contribute to the value perception.

5.4.7.4. Discussion of the key findings – Investor sentiment

Analysis of the research data indicated that some of the key topics participants identified as the requirements from investors included longevity, return on investments, results, and security. As OMC indicated:

> *"That's what you're looking for, is longevity" "tangible results that investors look for. You know it's something that they can actually measure. So, I think absolutely it has to be based on results" OMC*

From a personal point of view, there were varying opinions if participants would invest in companies that initiated circular economy strategic partnerships. Some of the participants highlighted that their investment strategy would focus purely on return on their investment, discarding how that ROI is achieved:

> *"So ultimately when you investing your own hard-earned money, investing in a company that you feel is gonna give you that, that growth that you need to realize your return on your investment. Whether that's in mining, whether that's in finance, in whatever industry" GMC*

> *"If you've got company A that returning 10% and Company B is returning 5. Who do you invest in, so it takes a leap of faith to go to a company at the moment, that may not be generating returns, but may have greater potential" AMS*

“So, if you're not very effective and you're not taken good care of the economic needs but you're doing all the right green things that to me that doesn't necessarily make a compelling. So, answer so it's a part of the part of the consideration I would use, but it wasn't. It wouldn't be the sole consideration” TSC

While others based their decision on the perceptions of companies that presented themselves as responsible companies.

“So, for me, it's knowing that this company has, as the world that we live in, has a major consideration for the way that it does business and the decisions, the strategic decisions it makes” EMC

“I do start, am starting to look more of that whole ESG requirement and looking at what, if companies are delivering on those sort of commitments and are providing that sort of value add. I would invest over another, let's say supplier or mining house in the same industry” “really only really want to invest in companies that do have that ESG focus. More so these days” RMC

“Share prices could benefit from doing that, but again, if and only if it actually shows sustainable ability to return the value to the investor. So so, to the financial value. So, the economic value that that is always at the core of an investor's choices, if if they're being smart about it. I mean, there's some people that do things on principle to make a point, but they don't. That's not that's not sustainable either” TSC

The analysis of the interview data indicated that participants believed that it would be the younger generation and investor base that would potentially drive the change.

“That's why people, especially particularly young investors, are putting their money in these companies. And there's funds that look at these things for, are they alright, there are ratings agencies because they they. They see that these companies, if they're doing all these right things, they will be around in thirty 40 50 years and therefore that attract capital” EMC

Ultimately, all participants agreed that shareholder confidence can be boosted when the companies demonstrate results. From the data analysis, results were such a prominent theme that a separate code group were created and will be discussed in Section 5.4.7.7.

“…leads out to tangible results, tangible projects, and deliverables, I mean it’s there, it’s out there You know, for society to touch and feel and it absolutely will impact you know both” KMC

Analysis of the interview data revealed that the participants noted a shift in what institutional investors require from companies in whom they would be willing to invest. They are more responsive to companies that act sustainably responsible and are demanding more.

> *"Shareholders, especially institutional investors, are asking a lot more in terms of sustainable performance and responsible performance or businesses" AMC*

> *"ESG shareholders now are wanting more out of companies that they invest in" RMC*

> *"Looking for people that are using those opportunities. And the beauty of being part of an ESG movement is there are people who are already differentiating companies by those who are ESG leaders" SMC*

> *"Awareness of what the actual impact mining had and so you know more recent times, the community has become more empowered in terms of mining and what it does. And also investors so, investors are now forcing companies if they want to get investment, to actually go and invest in certain technologies and that reduces the impact to the environment in total and becoming a much better society" AMC*

> *"I think there's enormous potential to elevate shareholder conference. [] Excuse me. I think if you look at things like black circles and what they said, for example as it relates to the fact that they really want to invest in companies, for example that are exiting coal, they want to invest in companies that have, you know, articulated ambitions regarding circularity and being carbon neutral. They want to avoid and in fact have gone so far as to to blacklist some companies that have, you know, not. Articulated a carbon neutral ambition or circularity ambition" LSC*

Some of the participants indicated the importance to not lose sight of what the market wants as this could lead to value erosion, as RSC noted through an example:

> *"…you know, because. I'll use this, may not be a direct example, but I think about, you know, I don't know if you pay attention to the Fortune 500 companies and many studies that come out that show that if you look decade by decade how they have changed right? Which means that the companies that are successful today may not necessarily be successful tomorrow. OK, they're not in the top 500 and so the question is why? Right? Well, many of what reasons that have been said is because they have lost touch with what the market has needed. …Which means that the companies that are successful today may not necessarily be successful tomorrow. OK, they're not in the top. You know, 500 and so the question is why? Right? Well, many of what reasons that have been said is because they have lost touch with what the market has needed. OK, so if you imagine the*

whole nature of sustainability and circular economy, if that is clearly the direction that we, I say we as our global world, right, want to go, the companies that choose to do so use that as a basis I would think should be the ones that if they do everything else correctly, will be at the forefront of where the world needs to go and where the market needs to go because they're going to be a lot closer together they will communicate about what's important to them, and by having partnerships" RSC

The interview analysis reflected on the perceptions of investments and highlighted that security of an investment is critical. Participants indicated that where a share may look profitable, it needs to be secure in order to attract long term investments.

"Shareholders also. While they look at an investment decision, they also need to look at the safety of the investment, and if there's a high likelihood that, that advocacy groups will protests around the quality of what they're doing that my dissuade them from walking away from the hugely profitable share" AMC

Analysis of the interview data suggests that participants believed shareholder and investor trust are cultivated by deliverables and clear communication. The investors need to be taken on a journey in the circular economy strategic partnership development. Trust will be enhanced if the partnership then delivers on what it committed and the communication is shared broadly.

"It's what shareholders talk about. It's what's in the public domain. The investor community. That's what they, what they see. That's what they comment on. So, if you do again, if you do well in this space and you really impacting you, and you make, you know tangible results and it's and it's high up strategically for the business. Then it builds their trust and confidence" KMC

"You've got to be really clear about what you're doing. I think you've got to articulate that along the way to all of the stakeholders, and then I think you've got to say this is what we want to do. And this is how we're going to measure it. And then we have to come back at the end and say, you know, this is what we did and this is how we want to measure it" LSC

Participants indicated that apart from results, there is a requirement that companies demonstrate consistent performance in delivering results. The analysis of the interview indicated that investors would lose trust if performance were inconsistent. As TSC noted:

"Investors want reliability and results that they can count on consistently…. if you've demonstrated excellence in forming partnerships that further the work in a very meaningful

way, and it looks like you can continue to do it, it's not a one time. Let me know, like, say, even a broken clock strike twice a day. Right, so if you're able to do it consistently then then it's exactly what investor wants" TSC

Interviews indicated that investors will also not only look at the sustainability performance of a company. And when evaluating circular economy programs or partnerships, that all needs to be equal for the partnership to be a differentiator. As YSC noted, circular economy on its own is not enough to encourage investment into the respective companies.

"In isolation is not what you would look at, right? You would look at it in context of the actual business performance, their reputation and all the other qualitative measures and financial measures that you would normally look at. If all things were equal, and then you had one company doing this and the other one not, then that might give it a bit of a leverage but I think that it's not something you'd look at in isolation." YSC

5.4.7.5. Analysis – Investor sentiment

Analysis of the research data indicated that both the mining and supplier participants were of the opinion that investors responded positively to demonstrated results. Circular economy strategic partnerships could be viewed positively, but the intent needs to be communicated, with clear deliverables in place and the outcomes should be results driven.

Participants were also of the opinion that circular economy strategic partnerships viewed in isolation will not be a determining factor to enhance investor confident. There is still a requirement for value to be delivered in the form of ROI.

The participants shared differing views of their own confidence in investing in companies that partnered to develop circular economy programs, with some claiming that they will invest in companies that offers the best return, irrespective of their circular economy status, and others wanting to create portfolios that reflected companies that were perceived to be responsible.

Return on investment remains a major focus for most participants on their views of creating investor confidence, but there were differing views on their perceptions of what they think investors would focus on. Some claim that investors would rather invest in companies that are perceived to be doing the right thing by transitioning to more circular models, with the expectation that on the long run their investment would be more secure to deliver returns. Other participants made the point that ROI remained critical, whether

the company does the right thing by transitioning to circular economy or not. They did not disqualify that the companies need to act responsibly but took that as a given in today's market environment.

The mix in responses were observed from both the supplier and mining company representatives, with the older participants (50+) being more focused on the ROI and the younger (below 50) claiming to focus on the company's approach to sustainability change.

The analysis did indicate that participants believed companies should continue to adapt to what the market wants if it wants to remain relevant and attract investment. This held true for both younger and older participants.

5.4.7.6. Conclusion – Investor sentiment

Analysis of the interview data indicates that investor sentiment is varied but there is a strong preference for companies that can demonstrate they are responsible corporate citizens with a focus on sustainability issues. Circular economy strategic partnerships could be an enabler for sustainability in companies and could therefore be perceived as an enhancer of investor sentiment.

Based on the data review, a partnership without consistent results will be detrimental to the perceptions the market holds of such partnerships. There is further a requirement that these partnerships be communicated to the markets with clear deliverable and continued updates on progress.

5.4.7.7. Discussion of the key findings – Results

Analysis of the interview data highlighted that participants pointed out the importance of delivering results when establishing strategic partnerships. Results contribute to stakeholder confidence, which may impact on the success of an organisation. Results related to the successful implementation of ESG programs and CSR initiatives provided an additional sense of company responsibility, showing that the companies care. Some of the mining company corporate participants explained:

> *"It's not just lip service. And then you know the market sees these things and you will attract more investment and therefore your share price will go up so. Coming, yeah, it's all connected in in my view" EMC*

> *"Strategic partnership for me is all about impact. It's all about impact if you, whatever you do as a business" KMC*

The results need to be linked to measurables which is not easily defined, and where two independent companies collaborate, these measurables, or KPIs, may not always be aligned and create issues, as noted by one of the supplier corporate personnel.

"…and measure it, but it needs to be measurable in some sort of shape or form, which can be very difficult" RMC

This view was supported by supplier site-based participant emphasizing the importance of partners each being aware of what their responsibilities and deliverables are.

"…understand their responsibilities and we continuously measure, you know, the progress and the outcomes, you know it will be quite, I will be extremely excited to get shares in that business because we know that the end result will bring value to all partners" ASS

The data analysis indicated that there was a need to position business differently which will impact on the results. Participants highlighted that we cannot continue as is, due to the continued pressures from markets and industries. The change also relates to how products are designed and used.

"And what we're seeing happening around the world, that we really do need to change the way that we're doing things particularly in business. And the way you know, come back to circle economy, the way that we use products and materials and doing everything we do with one eye on the impact. As well as the benefit of it, which I think we haven't done with them over the years since the industrial revolution" BMC

The interview data analysis revealed that collaboration between industries can scale the impact any one company can achieve. This view was shared by both mining and supplier personnel. The analysis groups recognised that a collaborative approach was required to work towards sustainability solutions. The mining companies and suppliers need to collaborate to investigate how to leverage their resources to do things differently.

"Why not join and make a bigger impact as a collaborative effort where you can have a multiple multi-international Company joined forces and have it even bigger impact" HSC

"I don't think anyone can sit in their corner in their world in there like individual little offices and say, OK, I'm going to work on circular economy and I'm going to achieve everything that needs to be done. And I'm going to do it all by myself. I think the name of the game is partnership and determining where we have mutual ambitions and how we can create programs to achieve them together" LSC

"But I think relationships in along the value chain on either side, you know we talk a little bit more, probably about the downstream ones and linking up with our customers and getting our materials into it uses, but I think, I think equally doing that with suppliers and beginning to, you know, understand the impact of products and what are the alternatives, and what are the ways that we could collaborate to do things differently" BMC

Analysis of the interview data revealed the participants perception was that a key contributor to shareholder confidence is that they want results. The concept of a unique circular economy partnership alone will not be sufficient conviction to enhance confidence. As one of the supplier corporate participants indicated:

"I think when it comes to shareholders' confidence it comes back to results. …And I think just positioning a partnership that's gonna drive initiatives that's gonna support a circular economy. MMM, yeah, I'm not entirely convinced that that will be the confidence that your shareholders would be looking for unless it has to do, unless they see the benefit of it delivering results right…" YSC

The data analysis revealed that participants were all aligned on the view of the importance of execution, delivered results on identified projects and the value that these projects could deliver. The importance of ROI was not lost on them, with some of the participants still mentioning that this remains the primary motivator for investors.

"It could it be a value enhancer on all meanings of the word value, but the share price and all that really depends greatly on how well you execute it and how much you return. Because I mean, if somebody is making an investment, they're going to pay for their retirement. Ultimately, they care most about the fact that there's enough money they can retire on when they get there" TSC

"Whether you know Company A is doing the right thing and you know your return on investment is half of a company that's potentially not. I think it will be difficult for anybody to put their hand through the heart to say, well, I'm honestly still invest in Company A because they're doing everything that should be done as opposed to this company" GMC

A supplier corporate participant echoed the requirement for a return on investment, especially where new concept project, like circular economy, are being introduced. A strong business case will be required to motivate the financial commitment. Companies will require funding for these new initiatives but will need to demonstrate results once the funding is obtained.

“I think that if you have a strong business case and a business model around it, giving confidence, usually you have to do through proven results. If you're able to prove results or pre-empt results it helps your business case. But I think just conceptually talking about it. It might be hard for people to see the benefit because you might require, and this is always when you're doing something differently or different, doing something new, it might require investment right, and whenever people want to make investments, they need to know there's going to be a return. And unless you can come in some way or another prove that there could be some sort of level of guaranteed or proven returns, building that confidence can be a bit difficult, but it's not to say that people only make decisions on a financial basis because, you know if we had to talk from a government point of view, maybe their initiatives supported by government subsidies is what could drive and deliver the results that you would be looking for. Because having that support will give companies kind of financial incentives as well. So, I think it's all about the positioning” YSC

5.4.7.8. Analysis – Results

Analysis of the interview data revealed that participants from all the analysis groups made comments about delivering results in order to enhance investor confidence. Participants were also of the opinion that a circular economy strategic partnership alone will not create confidence, as this is a new concept and there are limited proven examples that will create a sense of comfort with investors. Delivering results ties in closely with ESG and CSR commitments, which will enhance stakeholder and community perceptions. This results in companies being perceived as responsible corporate citizens which further enhances investor confidence.

Businesses need to reimagine how they want to position them for the future, as doing business as usual will not contribute to the sustainable future envisioned for all. The market expectations continue to evolve, and companies who ignore this will be left behind and become redundant.

5.4.7.9. Conclusion – Results

Participants identified results as a key motivator for investors. The implementation of a circular economy strategic partnership alone will not inspire confidence with investors, as this is a new concept and there are limited success stories in the market.

There was a split between participants on if investors will favor companies who partner to form circular economy strategic partnerships but with an initial lower ROI above companies who has a good ROI, with the latter consensus reached with older participants, irrespective of the company they work for.

5.4.8. Theoretical theme conclusion – Value perception

The interview data analysis highlighted the inconsistency with which the term value is understood. Participants mentioned value in dollar terms, a traditional method of value identification and measurement in supply chain in the mining industry. Some participants mentioned that value could be defined as the contribution that a company makes to a greater cause. Participants further highlighted investors may have different value perspectives. However, a key driver for investor value perception would be return on investments.

Participants identified a circular economy strategic partnership that is results and outcome driven may enhance the company's value perception with stakeholders and investors alike. The data analysis indicated that it is critical that these partnerships and the intent of what the partnerships aim to achieve be clearly communicated. Participants indicated the strong link between ESG, CSR and circular economy projects could contribute to the value perception of companies that include circular economy strategic partnerships into their profile.

The understanding of participants and their alignment between analysis groups are presented with Harvey balls in Figure 23.

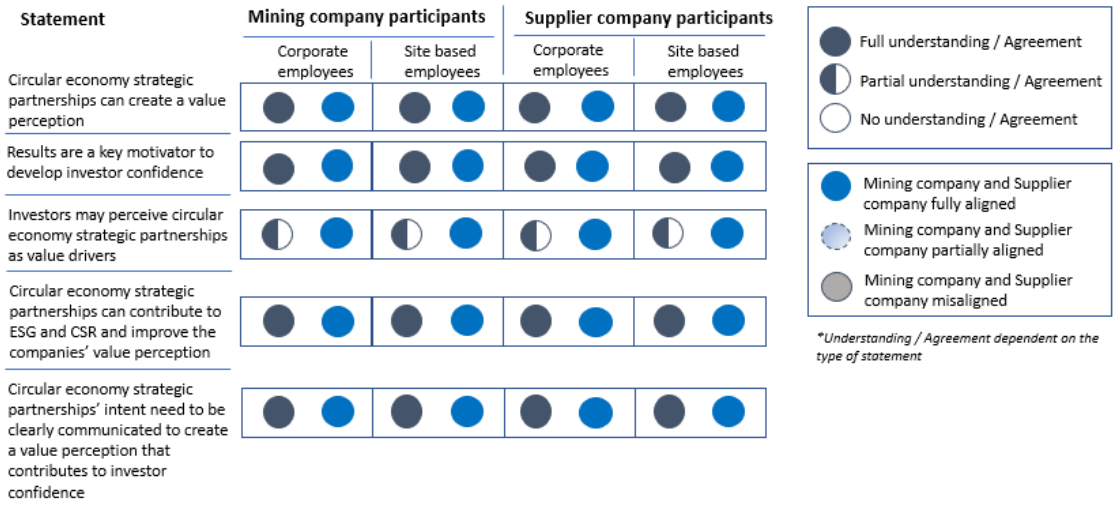


Figure 23: Value perception participant understanding
Source: Developed by the author

5.4.9. Theoretical category - Competitive advantage

The analysis on competitive advantage focused on three code groups that presented data on the differentiators that could develop a competitive advantage. These code groups focused on exploring the elements that will contribute to competitiveness,

captured under competitive advantage, which focused on differentiators, being commercially valuable and the advantage a value perception can present. It explored the importance of being leaders in the market and directing the transformation of the industry, as opposed to merely partaking and being a follower that needs to adapt to the change. It investigated the perception of various stakeholders of mining and supplier companies and how these perceptions impact competitiveness.

Themes that were explored include image, perceptions of shareholders, how longevity impact perception and the importance of ensuring that a companies' employees are aligned to its vision for the future.

The data analysis focused on the broad interpretation of competitive advantage where a defined circular economy strategic partnership is implemented.

Figure 24 depicts the code groups and their respective codes, illustrating the core topics that emerged during the interview analysis.

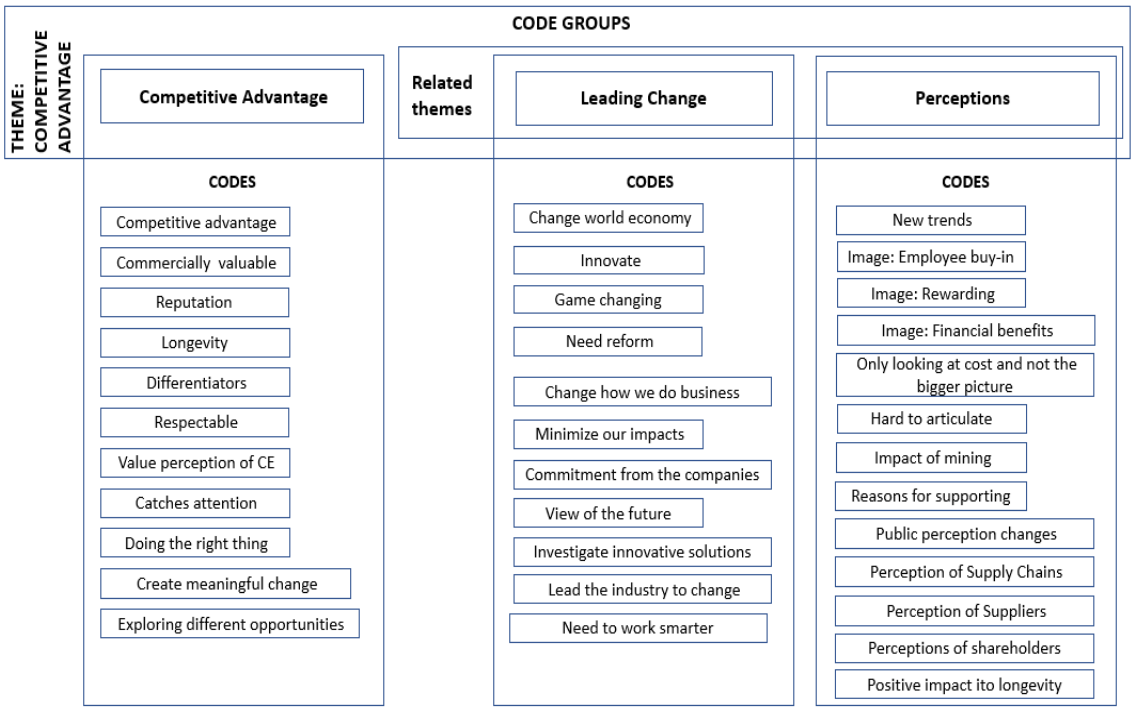


Figure 24: Competitive advantage codes grouped in code groups
Source: Developed by the author

5.4.9.1. Discussion of the key findings – Competitive advantage

Analysis of the interview data presented varied opinions on the views of competitive advantage. Participants from both the mining companies and the supplier companies

observed that circular economy strategic partnerships can contribute to competitiveness, while providing benefit to each other.

> "*If you demonstrate excellence in serving needs and in supporting your partner, and your partner succeeds and both of you are doing good things for the world at large, then it has to add an edge" RSC*

> *"And if you're using circular economy as one of your levers to move to a more sustainable state with your suppliers as you're demonstrating, I think you would then be able to get that competitive advantage" SMC*

However, to remain competitive, the partnership must remain unique.

> *"So, to have a competitive advantage, you need to have a niche. You have got to have a niche that you can demonstrate that no one else can copy. So that's where your strategic advantage is. So, you've got to work out what is your expertise that you can deliver that no one else can copy otherwise there's no longer a strategic advantage" AMC*

> *"If you don't have other companies also embarking on a strategic partnership journey, so I think it's all relative. If you are following a pack then you're part of the pack. If you're leading the pack, then you are differentiated and you're seen as somebody doing something that's different, right? So, I think it all comes back to what's happening around you. If you are doing something that's completely different by putting a strategic partnership in place and people see a benefit that's beyond an organization, but that could have a ripple effect on the rest of the population for sure it would be a differentiator"*

A recognition on the competitive advantage of circular economy strategic partnerships is that there is a need for global industries to transform which it cannot do in isolation. As such, these partnerships may become an enabler to transform the industries, and in the process become a norm for transformation. Some participants challenged the view of competitiveness created by a circular economy strategic partnership, arguing that these partnerships should rather become business as usual. A supplier employee based on site articulated the view of most of the supplier participants that they would want to replicate any partnering success with other clients.

> *"I think it becomes an open opportunity in the success story. And those companies that do have their strategic partnerships and alliances had a taste for it. Of course, they will copy and paste that to their other customers and introduce that same kind of relationships and objectives, and by doing so the business will just grow and your competitive edge in the market will just grow and strengthen and therefore the barriers to entry, to enter that*

high kind of marketing, will become very difficult for competitors to enter into … because of the nature of the relationship and the value that it creates" ASS

Participants identified that a key enabler of a competitive advantage in circular economy strategic partnerships is communicating these partnerships. The risk in communicating the benefits is advertising the way to achieve them, which results in diminishing the uniqueness of the partnership. The risk can be mitigated if the partners create a continuous loop of improvement through this competitive process between peers.

"So, it's about getting the communication out there, showing the people what you're doing. And again, having that communication go out gets people thinking about how they can potentially one up Supplier B and do it better. And then somebody is potentially going to, and then gets us thinking again. How do we up them and do it better? It's all about the competition at the end of the day as well, in my mind" CSC

"…explained the why behind it so that it's very clear to people, to investors or to stakeholders or audiences why you're doing what you're doing, I think that that is even more attractive. But it's all got to be done under the guise of avoiding the notion of greenwashing, you know. So, making sure that what's being done is being done for the right reason with the right ambition and with authenticity and the best possible intentions" LSC

"Because you know you don't want to reveal too much of what you're doing necessarily, but I would say that if one customer, let's just say, a mining organization is doing one thing and they're successful. And another one is not. I think it will become apparent, perhaps what are they doing right? And hopefully the company that is going to be the more successful should be the one that has adapted to the new world order. And I would say, sustainability or circular economy, I would myself call that the new world order of how we need to govern ourselves and how we need to conduct ourselves and how we need to do business. And if a company is not playing by those rules, or playing in that field, I almost say that they were going to be left behind and in certain ways, they're not going to reap the benefits" RSC

Participants pointed out that the circular economy strategic partnerships may not immediately result in a competitive advantage, due to the requirement to demonstrate value and the need for education surrounding the topic. The current relationships need to change in order to promote circular economy strategic partnerships.

"From a competitive advantage point of view, these kinds of initiatives are not necessarily directly correlated to financial results in the short term, [right]. So, in the longer term, yes,

you think that you will deliver results because you're going to deliver results in a different way. But in terms of a competitive advantage, I think you need a lot of education and time with the greater population to understand why we're doing something and the benefits of it. Before you… it starts to be seen as a competitive advantage" YSC

"Changing that basic relationship is a, it's just a no brainer. And I think we'll, you know, I think we're at still probably quite an early stage in it, but I think that as regulatory pressure increases, and as you know, the impact of climate change and other things become more apparent, then I think these relationships will just become, you know, much more necessary and much more normal" BMC

There was an element of financial competitiveness linked to circular economy strategic partnerships, where some of the participants identified the cost benefit of partnering and how this could potentially create a competitive advantage. Longevity of the relationships are also critical to drive competitiveness.

"To be honest its [circular economy strategic partnerships] probably actually going to be cheaper in the long run, in terms of how it operates. So, you know the mine will be actually operating much cheaper against the base rate of what it operates at against the moment, so it wins and so the suppliers that it works with as well wins, as they will be seeing that as the standard for delivering sustainable solutions" AMS

"It's really important that we do things that will have longevity and be able to grow into the future and be stronger than it is today" YSC

5.4.9.2. Analysis – Competitive advantage

The participants agreed in principle that a circular economy strategic partnership could lead to a competitive advantage. There were concerns raised on the uniqueness of such a partnership, as the drive towards a more sustainable world requires a collaborative approach between stakeholders. If partnerships will be created, this will become a norm and will dilute the competitive advantage.

Early adopters of circular economy strategic partnerships may have a head start on the rest of their peers, and these circular economy strategic partnerships can contribute to other initiatives that enables a competitive advantage.

Supplier companies were more convinced on the longer-term benefit of these partnerships with mining companies than the other way around. Supplier participants noted that a successful partnership can be replicated with another mining company, enhancing their footprint within the industry, and establishing them as a partner of choice.

Mining company participants admitted that there could potentially be a cost benefit in incorporating these circular economy partnerships into their business frameworks, which may indirectly lead to a competitive advantage.

Analysis of the interview data identified the value in circular economy strategic partnerships, as it focuses on longevity and doing the right thing. Participants were adamant on the requirement for longevity, as indicated by OMC, "*longevity and you know, I think that's the key to any business"*

5.4.9.3. Conclusion – Competitive advantage

Analysis of the interview data highlighted the mixed views of participants on the competitive advantage that a circular economy strategic partnership could create. Participants acknowledged that there could be a short-term benefit for early adopters, but as circular economy becomes more mainstream, it will not be seen as a unique resource. Participants highlighted that this could be mitigated if there is a continuous improvement cycle between the parties. Site based participants were of the opinion that strategic partnerships will create a competitive advantage.

Supplier participants highlighted that such strategic partnership would position them favourably in the market, and as such better their competitiveness.

Whether such partnership will act as a differentiator to establish a competitive advantage were questioned by both the mining company participants and the supplier participants, however the value of such partnership was recognised by all parties. Competitive advantage can be achieved, the question remains for how long.

5.4.9.4. Discussion of the key findings – Leading change

A common theme that emerged throughout the interviews were the requirement for change. Mining companies are large contributors to waste and finding solutions to address these waste problems sustainably can have significant benefits to all parties involved. There is further a need to rethink how mining companies develop their future partnerships. Not changing can potentially have dire impacts on the industry, as mining corporate participants noted:

> "…*the way the world economy and ultimately the way the mining industry is going. Unless we find a sustainable solution, I don't think the mining industry will be sustainable for many years or for future generations." GMC*

"It's a fascinating topic and I think that if we don't reform the sort of relationships we have with suppliers and customers to an extent that it's even, and to say exactly the same thing to our marketing. Then I think you know it can really hamper some of our goals in sustainability, circular economy, whatever it is" BMC

Suppliers acknowledge their role and responsibility in driving the change as well.

"Supplier A being the leaders in tyre manufacturing research and development technologies and innovation, by setting the example, maybe more people would follow, more companies would follow. And that's a responsibility every big and leading company should have the burden to bare" HSC

Participants believed that mining companies had a responsibility to lead the drive towards waste reduction in their organisations. There exists an opportunity to drive the change and influence the broader industry as well. Mining focus on sustainability activities but one of the mining corporate participants questioned if there was an opportunity to drive and influence the customers of mining products to change as well.

"[need to play a] leading role in this space because we consume enough to be able to really set the tone you know for, let me say, excellence in this space." OMC

"But I think also going out and influencing more those downstream of us [mining company]. So, you know today we talk about pressure coming from customers for sustainably produced materials and we're seeing that from the big automotive producers asking us questions: You know, what's the carbon footprint of our products? Do we have human rights policies in place? And are we doing blah blah blah? Well, I'd like to see us asking them like what they've got in place?" BMC

Supplier participants further amplified the importance of mining companies driving change, as discussed by a supplier corporate participant:

"The whole communication and peer pressure… and maybe pressure may not always be the best terminology. It's like it may not be politically correct, but the point is, if you are working with someone and they set the benchmark and you see that what they're doing, the direction that they're going, is the right one. It most likely will influence you too investigate and maybe consider doing the same. OK, that's kind of my point when I said peer pressure, it doesn't have to be in a negative way, but I do think that more and more companies are acknowledging that they have a role to play" RSC

Participants identified that leaders in change will have a competitive advantage over those that merely follow the trends. However, there is a need to continue to innovate what you do to remain competitive.

> *"Our way of doing business could start to impact them which changes the vehicle industry because they're now learning from us, how we engage with our communities. Looking at shared value creation, will circular economy opportunities can also start to impact how we work with communities that influences other industries" SMC*

> *"You need to continue innovating on how you do things and what you do. You know, to keep ahead and maintain that competitive advantage. Otherwise, people, I mean people catch up. That's how the global markets work, right? You, you don't have their competitive advantage forever. You need to make the best of it while you can" CSC*

Some of the participants noted the conflict in having created a unique partnership to drive a circular economy program and needing to replicate the success for the betterment of the world. As such, leading the change could diminish the competitive advantage that a company created, as it will no longer be unique. As a supplier corporate office employee commented:

> *"Let's take mining company X in a strategic relationship with company Y, also a big company. And if we can demonstrate success… That same strategic supplier who's also helping company Y, another mining company can be able to take those benefits, those learnings from us and it starts to drive an industry movement. So, I think that potential is high [for perceived value] because it can start with these people and if it's benefiting you, why wouldn't someone else also want to get that benefit? So, I think in that way it can create a very high potential that has the magnitude to transform an industry." ISC*

5.4.9.5. Analysis – Leading change

Various participants acknowledged the requirement that their industries needed to change and actively engage in other industries to drive this change. This requirement s need for change were motivated by the need to better the environment, focus on sustainability and better the areas were mining companies operate. The suppliers shared the view that their industry need to change to support mining companies in their efforts to improve.

Important on the theme of change, is noting that if the industry change as a whole, focusing on circular economy partnerships may no longer be a differentiator for the companies that partake in these partnerships, as it will become a norm.

5.4.9.6. Conclusion – Leading change

Mining companies are bearing the brunt of being in the limelight of sustainability, which is not always the case with its suppliers or customers. Mining companies are uniquely placed to drive change both upstream, influencing their suppliers, and downstream, influencing their customers, to shift their focus to become more sustainable. Being leaders of change can create a competitive advantage for the companies that partner to drive the change. However, doing the right thing will become a norm, and where suppliers have implemented successful partnerships to incorporate sustainability and circular economy, they will most likely replicate the success of this partnership, strengthening their own competitiveness, whilst enhancing the peer mining company's industry and investor perceptions.

5.4.9.7. Discussion of the key findings – Perceptions

Both mining participants and supplier participants focused on the importance of perceptions when it came to competitive advantage. There was significant focus on the investor perceptions from the corporate participants, and the site-based participants focused on the community aspects.

> *"It's just very important to work together, I think to get to where we need to go, but I think if you show that sort of collaborative fashion, the investors will be very positive and I think you'll have a much better review than if you were, say, to sit within your world and say I don't agree that there's anything going on with climate change, I don't think we need to, you know, be worried about a circular economy, and I'm just going to do things the way I've done it. I think that taking that kind of a stance would have a very, create a very negative Impact as it relates to investor relations" LSC*

> *"So yes, absolutely, that's what the investor community is looking for. Its shareholder return, and all the financial metrics. But now it's this metric and it's what catches their attention and attracts the investment. Because again, it comes back to that's what society now demands" KMC*

Whilst investigating the perceptions of circular economy, a recurring theme that emerged was the value in waste.

> *"And what blew my mind there was how a lot of what we would chuck away as waste, where even the poorest of people in our country would not even touch, was seen as high value commodities in places like that [Madagascar]" AMC*

"So, what's, you know, waste to one is gold to the other. So, I think, yeah, there's definitely benefit in seeing the value in what the next person can gain out of it [waste] and giving them the opportunity to do something with that" EMS

Participants acknowledged the ever-changing perception in industry and there is a need to shift the perceptions of the mining industry with regards to its stakeholders and how mining is perceived. There are global changing stakeholder landscapes that need to be taken into consideration and whose perceptions are important.

"…can shift the perception [in mining] where you know, one of the key things that runs through circular economy is this move to think much more about the services that are being provided, and I think that's where it gives mining a real opportunity in that service that we provide is not digging holes in the ground or exploiting a mineral resource, but it's actually providing the materials that are absolutely necessary for a decarbonized economy" BMC

"The way that you guys write and talk about it also is fascinating and you know, we find ourselves oftentimes having a lot of conversations about, oh, you're working in mining and mining is bad for the environment. That's the perception, right? And we have to take that head on and we have to talk about what we're doing as it relates to finding solutions that are better for the environment there, like the notion of circularity" LSC

"Let's be honest, as times shift, as times move, your new customers and the people that are your potential investors, they're needs or what they care about is different from your old investors. So, as we've progressed in time, we care about different things and your new investors, that's what they will care about. It's been proven in research as well that the current generations, what they value the most is, you know, how are you taking care of the [environment]. How sustainable are you? You know, how are you taking care of the environment? Do you care about the environment? Do you care about the impact that you make?" ISC

One of the corporate supplier participants shifted the view from the customer, investor and communities, to employees, emphasising the importance that companies aligned with the needs of employees to not alienate the future labour market, talking to the need to adapt to your shareholders requirements as well.

"The job market today, you could see it's even more challenging, or trying, to get people that we want and need to work for organizations. So, you know, being able to, I think, part of it is, first, not just speaking the words, but actually doing the act, right? So as companies, I think we have to literally live what we're saying. But assuming that we're

doing that, I think then it's a matter of making sure that not only our stockholders are happy with it, but our employees are happy" RSC

The importance of education, and the risk of uninformed societies, were highlighted by a supplier corporate participant, reflecting on the need to properly communicate intentions of partnerships to ensure that the wrong perceptions are not created by uninformed masses.

"So, I'd say that if people are educated and they understand the reason why there's a benefit of moving to a circular economy and there are strategic partnerships in place to drive this, I think that it will be beneficial. But if people view it, or view the strategic partnership, and it depends on how it's positioned, right? But if they view it as "ah no, here's another two companies getting together to make more money off us and to actually, you know, squeeze the consumer more, I don't know if you'll get the benefits" YSC

5.4.9.8. Analysis – Perceptions

Analysis of the interview data revealed that participants from both analysis groups believed perceptions of the companies are an important indicator for competitive advantage. The corporate office participants were aware of the perceptions of investors, while site based personnel focused on the local communities in the areas where the mines operated. Some of the supplier corporate participants highlighted the importance of employee perceptions, as this aids in creating satisfying employment resulting in consistency within the companies.

The perception that circular economy strategic partnerships could contribute to the longevity of a company is a key factor for consideration when evaluating a company's competitive advantage. Longevity was further highlighted as key element investors look for to boost their confidence.

The analysis further highlighted the need to for companies to change their views on waste, and that the perceptions should shift from disposal, to repurpose and creating opportunities for the communities. Mining participants were very adamant on this need for change.

5.4.9.9. Conclusion – Perceptions

Analysis of the data highlighted that a circular economy strategic partnership could be perceived as contributing to a companies' competitive advantage. The perception of a partnership incorporating circular economy principles linked to ESG and CRS responsibility. Creating a credible perception, is critical for creating investor confidence.

5.4.10. Theoretical theme conclusion – Competitive advantage

Analysis of the data highlighted participants from both the mining companies and supplier agreed that circular economy strategic partnerships could contribute to a competitive advantage. There is a risk that the competitive advantage cannot be maintained as a circular economy strategic partnership is not likely to remain unique to the companies that partake in the partnership.

The drive towards sustainability and finding solutions that can be implemented to encourage that drive, may result in circular economies becoming part of business as usual. Participants further stated that the magnitude of the problem to find sustainability solutions require all stakeholders to work together, thus encouraging more partnerships that can shift from linear to circular economies.

Participants highlighted that circular economy strategic partnerships will take to be perceived as a valuable resource, as evidence of its successful implementation will be required. However, implementing circular economy may reduce a company's cost, which can contribute to its competitiveness.

Supplier partners were more convinced about the potential for circular economy strategic partnerships positioning them as an integral partner to a mining company, thus enhancing their footprint in the industry. Participants highlighted successful partnerships will position them for more success with other companies where these partnerships could be replicated.

The understanding of participants and their alignment between analysis groups are presented with Harvey balls in Figure 25.

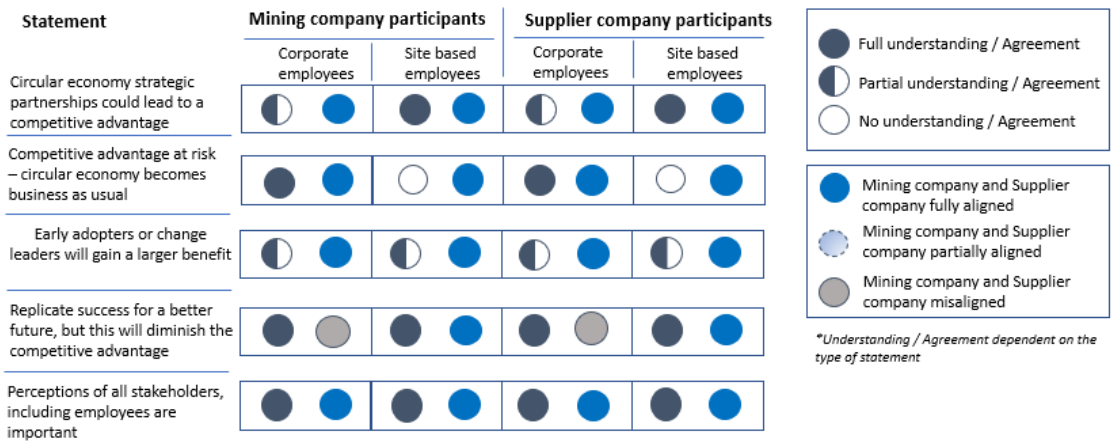


Figure 25: Competitive advantage participant understanding
Source: Developed by the author

The mining industry is well positioned to drive the change towards a more circular economy and early adopters may reap more benefits than companies that wait. However, as participants highlighted, there is a financial risk associated with these partnerships as there will be a cost, with no guarantee on the return of the investment. Companies should cultivate a responsible image as perceptions is a critical enabler to ensure competitive advantage.

5.4.11. Supplementary themes contributing to the richness of the data

Although the interview questions were open ended, with a focus on circular economy strategic partnerships, certain themes kept emerging which supplemented the theoretical themes. These themes emerged in the codes from the interviews and were grouped into five code groups. Cost, a major focus for both mining companies and suppliers, were brought up during topical discussions of sustainability, circular economy, partnering and competitive advantage. The criticality of communication and marketing were emphasized by various participants, both from a positive and detrimental perspective. Circular economy and the partnerships that could enable them required a mindset shift within industries, but also in personal lives. The risk of inactiveness in our approach to sustainability, the efforts it takes to partner, and the frustrations associated with the various role players were flagged as risks and reasons for failed partnerships. Waste, an indirect opposite of sustainability was described in many forms.

Figure 26 illustrates these additional themes, or code groups, and the associated codes derived from the interviews.

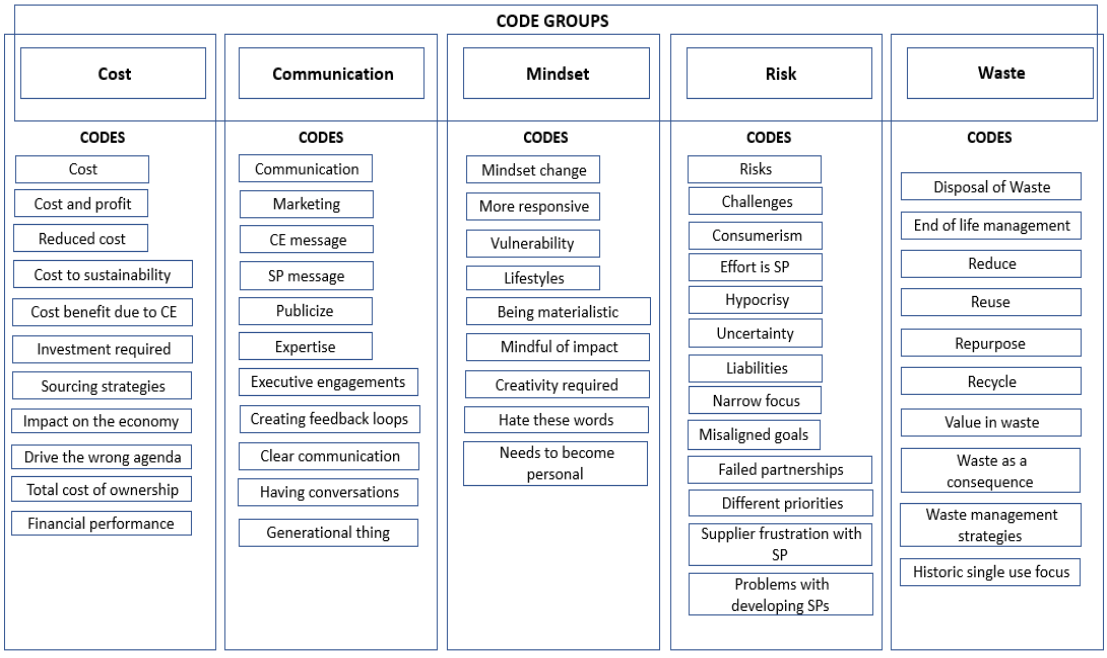


Figure 26: Supplementary codes grouped in code groups
Source: Developed by the author

5.4.11.1. Discussion of the key findings - Cost

Although the code group references cost, this financial aspect was approached holistically incorporating cost to companies, cost benefits and charges that results in losses to name a few. Some of the participants claimed that sustainability, and incorporating circular economy into your business plans, can result in reduced costs. Using a practical example, a mining corporate office participant noted:

> "…*reduces your future costs, because if we could then give the tyre back to our tyre OEM and say, "well here is a used tyre, when it came in it weighed 4 tons, now it weighs 2 tons because we've used the tread, we've ultimately achieved its life. Can you take the carbon black back out? Can you melt the rubber down and re-utilize it? Can you repurpose this steel and potentially that could offset the future price that we paying?" GMC*

Participants highlighted that companies don't always take to total cost of ownership into perspective when negotiating procurement contracts, with reference to sustainability. Participants highlighted that incorporating sustainability is not for free and the return on investment is not always obvious but could be in the long run.

> *"We don't think about it so much in terms of the total cost of ownership. Yeah, I'm sure that we don't do enough of that. Those sort of things. So, like I think there's, I think there's huge value in us being more active in that thinking about, you know, impacts along the whole life cycle and product" BMC*

> *"Really speaking of the sustainability message, so they were all saying the right things. However, do they really have the right policies and processes in place? Because you have to imagine. There is actually a cost. I'm not sure you may ask me this question later, but there is actually a cost to sustainability" RSC*

> *"You could look at it from one perspective, which is if we don't do this right, the cost will be so much higher than what we need to spend today. But if we spend it today, we're going to reach the point where the benefits begin to come back" RSC*

A few supplier corporate participants focused on cost of doing business, noting that relationships do carry a cost and that doing the right thing also comes at a cost. It is important for the parties to realise this and address the issue up-front, prior to the establishment of a partnership, to prevent uncomfortable interactions in the future.

> *"They each need to understand there's going to be a cost involved, you know, and if it's part of your culture and it's something you realize is important, then you know you have*

to be willing to spend, you know, to achieve that and then of course you know for it to work, you need to make sure that you can achieve that from either side" RSC

"All things being equal, if you have one company embarking on the strategic partnership with a mindset of driving a circular economy and you have others that are not, there will be a price difference in terms of the end product, right? Or the end service? Because one is more expensive than the other, right? And I think that's where unless people start to see value in doing the right thing right versus being constrained by their purse strings, it's going to be really difficult" YSC

5.4.11.2. Discussion of the key findings - Communication

Most of the participants placed a strong emphasis on communication and the need to articulate the intent of the partnership with each other and broader stakeholders. Whilst developing commercial relationships, GMC noted the importance of having structured conversations indicating:

"… [there are] very regular interfaces that we have with the suppliers and I think that's helping us because those partnerships will govern the way the success of what we're trying to do in whatever area it is" GMC

The importance of changing the conversations were highlighted by ACM, when he mentioned the importance of how conversations and what is the ask:

"I think there's an element of listening, which often I don't think we do enough off because I think so... So given, I'll use mining equipment as a example, we could approach this in one of two ways. We could tell them we've been buying this piece of kit, so keep on giving us this piece of kid. We could also say to them, look, we've been buying this piece of kit tell us how do we slightly improve this piece of kit? Or we could tell them and this is a third scenario we tell them, what do you think the future of mining looks like and what can you provide to us that it enables us to get there. Which puts a supplier, it gives like confidence in their own research to propose things that their customers may not have even considered. And I do think it's about the change that comes with that and rely on the expertise of people that know what they're doing." ACM

When partnering, KMC could not emphasise the importance of communicating the success stories enough.

"But it's all about the comms around, that it's how you communicate, how you, how you… Talk about it. How you share stories. How you make it more visible" KMC

Communication was also recognised as the tool that would create the differentiator for the mining companies and the suppliers they chose to partner with. Clear communication sets the intent of a partnership and creates alignment. It sets the expectation with shareholders and ensures that there is action on commitments made. It could also contribute to an improvement on reputations.

"…can clearly articulate what these you know, this partnership will do in relation to the sustainability circular economy a piece. I think it will be a different differentiator between other mining houses or even suppliers in that industry. I think it's something that, it's really being called for by a lot of shareholders these days, and they want to invest in companies that are really focused on delivering" RMC

"And being very open about that. So, I think that can be very good for reputation and you know, I just think like if you look at, you know our industry well we beginning to see it happen, aren't we? So, you know there was an announcement a few months ago about. I think it's BHP supplying nickel to Tesla for battery so Tesla is suddenly sourcing directly from miners" BMC

Some of the participants noted the importance of not creating false expectations when communicating partnerships or sustainability strategies, warning against greenwashing. This is critical to ensure parties maintain their credibility. Participants from both the mining corporate offices and supplier corporate offices claimed that the message being communicated by companies, contribute to the attractiveness of a company, and influence their market value and perception with shareholders.

"Companies are now claiming that they've got a solution, but they really don't have anything that's you know gonna be in place until say 2030, but they're already claiming in 2021 that they're going down that path because it does have an effect on who buys shares, and it does have an effect on how the company is seen from a global perspective" MMC

"But also, it goes back to the marketing strategy of both companies, because if they can use that well, if they can leverage that and put it out that, hey, guys, see what we are doing, we are trying to promote this circular economy and these are the benefits for you and us as opposed to other companies who advertise differently" JSS

"I don't know if you'll get the benefits, so I think what I'm getting to is the positioning of these kind of strategic partnerships. It has to be relative to where these companies are coming from. I think the objectives around these strategic partnerships, if they are not

clear and the economy at large cannot see that there's a benefit beyond these companies, or these two partners coming together. I think it can be a challenge" YSC

"…greenwashing, right? We don't want to say. OK, this is, you know where we're gonna go and we're just going to do it, but we're not going to tell you how. Or are we gonna say you know, make up a carbon calculator without … Or carbon offset calculator without a tremendous amount of research and development, working with our designers and engineers in their manufacturing facilities and in research and development. So, we're I think we're very careful that before we say or do anything that we want to be really sure about it and that we want to be able to speak to the to the how, but we tend to be maybe a little bit too conservative" LSC

Some of the participants noted the reservedness of the industry to communicate on success and feel that there is a need for the mining industry to change its approach, to market itself better and communicate the good work that is being done.

"We tend to be very. I would say introspective and humble and we don't talk a lot about the good things that we're doing. We don't. We just we tend to be very guarded with regards to that communication, and I'd say that probably it's even more so from a sustainability and planet standpoint because. You know there's this whole world of people talking about this subject now, and a lot of people talking about their ambitions and where they're going to get to. And you know, 2030 or 2050. But the truth of the matter is, a lot of people are setting ambitions, but they haven't said how they're going to be able to accomplish them" LSC

5.4.11.3. Discussion of the key findings - Mindset

Most of the participants mentioned the needs for a mindset shift in the industry. There is a need to become mindful of how the industry approached its relationships, its stakeholders, and the market. Some of the mining corporate participants believes that sustainability and how the industry delivers its sustainability message, can be a strong contributor to changing the global mindset of mining.

"Sustainability really talks to, really being able to just be mindful of what you're doing and how we can impact people's lives both indirectly and directly so you know it" OMC

There is also a need for sustainability to become personal. EMC, a mining corporate participant echoed the sentiments of other participants which looked at sustainability in his personal life. There is an industry shift to demand a more responsible approach to how mines are extracting resources and what their suppliers do to support them.

But our thinking is transformed from a linear process into one with multiple feedback loops, not just the recycling. There's other things as well… ultimately, we want to move away from this old way of doing business where it's just consuming, you step on the small guy and you just you don't care about communities you… It's just about the rich getting richer and who cares about the poor or and it, and I include the environment in that conversation as well" EMC

"Society have woken up and society is demanding from large organizations, not just in mining but you know more broadly, to be a responsible citizen" KMC

"Mindful that you know of the social requirements as well that you know we gotta look at the greater good. We can't just do one thing for one portion of the population" RMC

"So currently we are all wired to stick with the dispose model, so that model is very familiar to all of us and the impacts thereof. But the way I see circular economy, if we can start to infiltrate everyone thinking so that they are tuned into how do I re purpose? How do I reuse? How do I reduce even from the source? So, I see it more than being just an intervention or a department, but I see it being a way of thinking and the lifestyle that if it spread out across the whole world every individual starts to really consider, do I need to purchase the car or why do I buy my spaghetti in this format. Why don't I just take a container to the shop and refill my spaghetti?" SMC

Two supplier corporate office employees were of the opinion that it will be the younger generation employees that will really drive the change in sustainability and in how relationships are managed.

"It's really the new generation that's going to push big international companies to think, in my perspective, I think a little bit more broader. Big international companies are pretty much fixed in the ways they thinking and how they've been working. But I think the new generation is going to be, have to be the ones that's gonna have to broaden this way of partnership with companies" HSC

"Just put a spotlight on it and make sure that people are thinking about these things. But I think us globally as a new world generation. And also I think more with the younger generation. Those discussions are happening in those things are coming to light and I think people are thinking about those kind of things more and more and more" CSM

Changing mindsets can contribute to changing organisations and countries. But it does not happen overnight, and because of the perceived expenses associated with a sustainable approach, it will not be easy. As YSC noted:

"That's an evolution, right? You need people from, it's a mindset evolution. Because you, you're going to influence a behaviour and you know, I think if we look at South Africa specifically, people have constraints, right? Financial constraints that's evident every day and most of the time they're making a purchase decision based on price, right? Not even quality, sometimes it's just what you can afford" YSC

The analysis of the data indicated that although participants believed it would be difficult, it did not change their perceptions that there was a need to shift organisations approach to business.

"Changing how we do business and our approach to how we do business. I think the only way that we can be successful with the aggressive objectives that have been articulated, you know, so many people are saying or so many companies are saying we want to be carbon neutral by 2050, the only way we can get there is by changing the way we do things within our own internal organizations and really learning from others and partnering with others and making actions happen with others that go well beyond our normal business" LMC

5.4.11.4. Discussion of the key findings - Risk

Various factors were identified as a risk when trying to establish strategic partnerships between mining companies and the tyre OEMs. This section explores the perception suppliers have of mining companies, the industry risk of greenwashing, and uncertainty that exists within the global markets. Mining site participants indicated the operational pressures to perform and how this impacts on supplier relationships. AMC noted the variability in mining companies' commitment, to promote partnerships when it suites them, but to dissolve them when it doesn't. This places a significant risk on the supplier. As was mentioned:

"No, so it's just saying for this period of time, while I want you. But I'm also willing to get rid of you if you if you mock up and I'll go to someone else. That's not really a partnerships" AMC

This was supported by a mining corporate participant who noted that the nature of mining companies and their approach to suppliers creates distrust with suppliers.

"We really don't go to the OEM and say, WOW, he fitted that component that you sent us the other day on time and it worked perfectly. We never do that so. Uh, you know. Generally, there's this element of distrust" MMC

Companies articulating aggressive sustainability target, reducing their carbon footprint, and contributing to societies and the economy, face a risk of greenwashing if there are no clear strategies in place to deliver on these targets. As mentioned by LSC:

"The worry thing or the worrisome thing is, you know you could be perceived as greenwashing. If you're making things up. If you're, you know, just you know, stating ambitions but you don't have a plan in place to accomplish the ambitions. And I think the more things you can do outside of your own realm, which is hard because everybody's got so much work to do and you've got a very demanding jobs daily. But if the more we can get outside of that grind and to look at others and how they're doing things, I think there's an even greater potential for value" LSC

A huge contributor to the breakdown of partnerships is uncertainty as it diminishing the possibility of guaranteed longevity in the partnership, which is required when circular economy projects need to be established.

"And that uncertainty if I can just say it like the South African environment, right? I think especially like in the mining industry and especially after we've just been through Covid and that everyone is a little bit weary to get into like any long-term strategic partnerships, right" CSC.

5.4.11.5. Discussion of the key findings - Waste

As highlighted in section 5.4.9.4, the conversation surrounding circular economy cannot exclude waste and the management thereof. Participants highlighted the significant opportunity in waste, if it is viewed as a resource instead of a disposable item. The opportunity exists for both the betterment of the environment and the communities where mines operate.

"But aside from that we don't often embed the full value to these, so as an example, if we were to break down the tyre into the useful components that go into it, you'll find steel. You'll find virgin rubber. You'll find a bunch of chemicals that could be extracted and used for other purposes. And, even if that purpose could be something simple like just de-beading and selling that scrap metal off that creates a livelihood opportunity for somebody in that value chain and it reduces that environmental liability" AMC

"What I mean just looking at the at the stock pile, or the waste dump next to the mine now, and I mean it's uneconomical for us to mine it. But there's people up there with metal detectors and I mean scratching the last piece of gold out of there, which they can do because they're doing selective mining. So, what's, you know, waste to one is gold to the other" EMS

"That you know it may not contribute directly to sustainability of mining, but what it will do is produce less waste, you know, and you know the mining industry, because it's always traditionally made so much money has an extreme amount of waste that we don't do anything with and have no intention of doing anything with. And whereas we could, you know, be be utilizing that waste now not only to create jobs for people, but also to ensure that you know those waste products aren't going into the environment. Uhm from a sustainability perspective. I think you know there's huge opportunities in mining" MMC

Some of the supplier participants were challenging the current status quo in their industry, acknowledging the need to address the waste tyres generated by mining in the industry.

"How do we make sure our products impact positively on the in the environment, right? Once you've then used them, we say, "We don't want you to take them into a landfill, and there's nothing done with them. How do we get them back into a system where they can be recycled and renewed to come back and feed into your process? Whether as a different product or back into the tyre manufacturing process again, where you then come back and procure the same tyres that would consist of what you've already used that before, and that's what we need to start looking at" ISC

Other supplier participants articulated the supply and waste problem, affirming that suppliers do not get involved in how mining companies manage their waste.

"We sell tyres to our consumers, but we don't once they're done using them, we're not responsible for how they, or what they actually do with those tires. YSC

5.4.11.6. Analysis – Supplementary themes

The analysis of the interview data indicated that participants from all four analysis groups acknowledged that costs should not be excluded when investigating circular economy strategic partnerships. All parties involved in these partnerships need to be prepared to allocate funding to any circular economy program being developed. Further, the cost of waste was not always taken into consideration, as well as the opportunity costs. Participants felt that mining should re-evaluate its perception of waste and how it could contribute to a better future for the communities where mines operate.

Participants from both the mining company and the supplier acknowledged that the mining industry has historically not been good at advertising the good work that the industry does. Partnerships are not always advertised and this could be an opportunity lost to strengthen investor confidence. Supplier corporate participants were adamant that

the intent of a strategic partnership should be communicated to remove any uncertainty or concerns, as well as promote the successes and opportunity for change.

Participants guarded against greenwashing when communicating these partnerships. The analysis of the data revealed that participant from all the analysis groups were of the opinion that an industry mindset shift relating to sustainability and the approach to circular economy need to occur. Supplier corporate personnel highlighted that it will be the younger generations that drive this change.

Mining site-based participants highlighted the operational risk that may impact on the trust supplier will cultivate with mining companies. There is a need for consistency when setting up a strategic partnership, and mining companies need to guard against gaining benefit from the partnership when it suites them, but discarding the partnership when it doesn't. Supplier participants noted that uncertainty is a major contributor to the breakdown of trust and the failure of potential strategic partnerships.

The data analysis indicated that although communication is critical, companies need to guard against greenwashing, where companies over promise, but under deliver. The interview analysis revealed that supplier participants were challenging their industry to take more accountability for the waste being generated by their clients.

5.4.11.7. Conclusion – Supplementary themes

Participants highlighted that the cost commitment need to be well defined and that the parties need to agree to the financial layout of any partnerships prior to entering such partnership.

Communication is a critical element to promote the competitive advantage that can be created by a circular economy strategic partnerships. Analysis of the data revealed that participants from both the mining and supplier companies recommended that communication programs be put in place to actively promote circular economy strategic partnerships and the benefits it could deliver.

Participants warned against greenwashing, noting that the communication shared should be backed up with clear plans and deliverables.

Participants recommended a mindset shift in the industry on its approach to circular economy. Supplier participants particularly pointed out the need for their industry to become more actively involved in what their clients do with waste OTR tyres.

Participants warned against the pitfalls of developing a strategic partnership highlighted uncertainty and unfairness as two contributors that diminish trust from suppliers.

All participants acknowledged that their respective companies need to reposition how they see and manage waste, as it could become a resource that could contribute to new revenue streams.

The understanding of participants and their alignment between analysis groups of the key points from the additional themes are presented with Harvey balls in Figure 27.

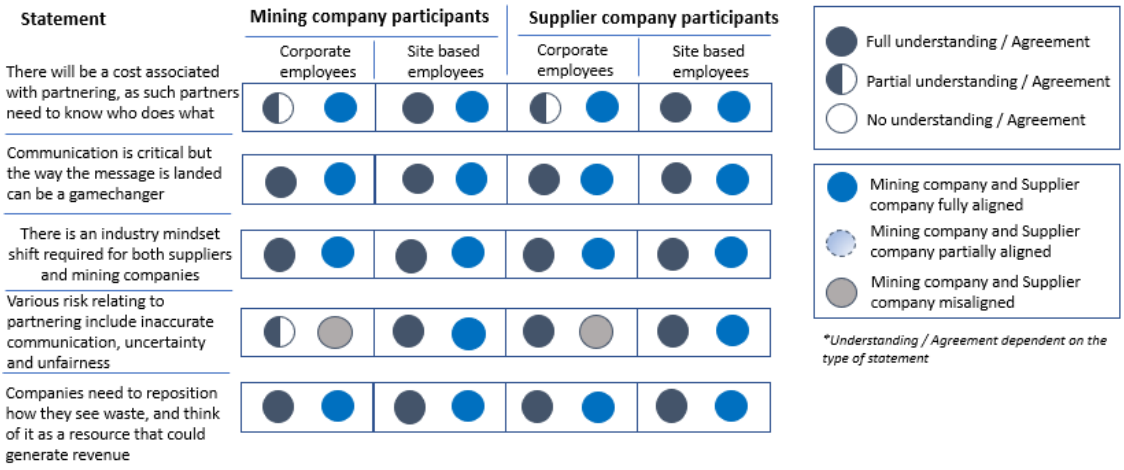


Figure 27: Supplementary themes participant understanding
Source: Developed by the author

5.5. Summary of research findings

Chapter 5 documents the research findings based on the analysis of the interviews held. The findings were summarised, substantiated with quotes and reviewed for each participant and analysis group, which consisted of the corporate mining participants, the site-based mining participants, the corporate supplier participants and site-based supplier participants.

A comparative analysis was conducted between the mining corporate participants and the supplier corporate participants, and the mining site-based participants against the supplier site-based personnel. The corporate participants were triangulated against the site-based participants for observation on the alignment between corporate and site-based participants. 23 data sets were reviewed, analysed and findings presented against the theoretical themes.

The five main theoretical themes as identified in Chapter 2 were identified in the data set from the code groups, developed from the codes. A further five supplementary themes

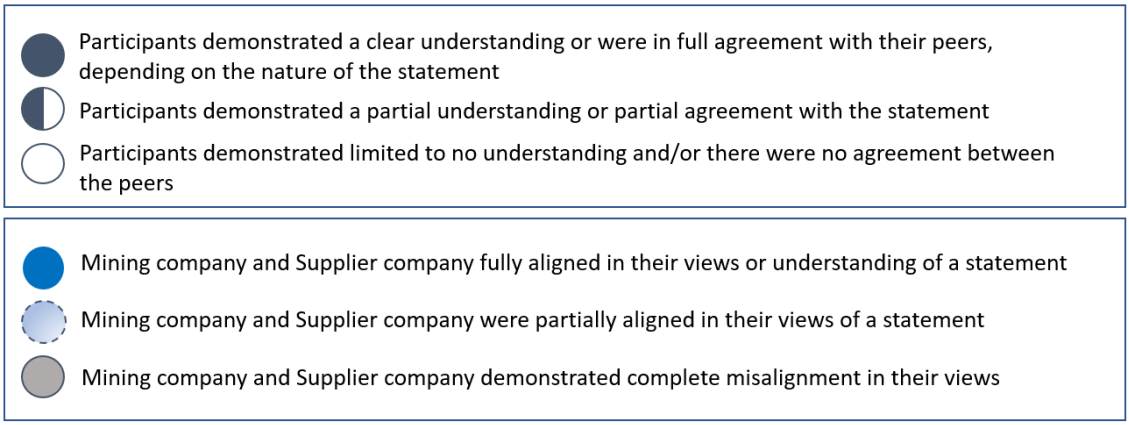
were identified, supporting the main themes. Each main themes had three code groups linked to it, which supported the data analysis process. These code groups were defined trough deductive analysis of the various codes.

An explanation of the Harvey balls used in the analysis of the research findings are presented in Table 14. Two sets of balls were used to triangulate industry peers.

The first set represented by dark blue, half dark and half white, and white balls. These balls presented the comparison between peers. For example, the understanding of sustainability as described by mining corporate participants compared to their mining corporate participant peers under the mining table. And visa versa for the suppliers.

The second set of balls, represented by light blue colours, presented the alignment between the mining company participants and the supplier participants. Depending on the statement, the balls should be interpreted as “understanding of” or “agreement to”.

Table 14: Summary of the findings of the key theoretical themes



Source: Developed by the author

A summary of the findings of the understanding of participants as analysed in Chapter 5 are presented in Table 15 with the supplementary themes’ summary being presented in Table 16.

These findings and its relation to the to the research question will be discussed in Chapter 6.

Table 15: Summary of the findings of the key theoretical themes

Theme	Statement / key finding	Mining				Supplier			
		Corp		Site		Corp		Site	
Sustainability	Understanding of Sustainability	●	●	◐	○	●	●	●	●
	View of importance of sustainability	●	●	●	●	●	●	●	●
	Need for change in the mining industry	●	●	●	●	●	●	●	●
Circular economy	Understanding of circular economy	◐	○	○	○	●	○	●	○
	Circular economy has a role to play in mining	●	●	●	●	●	●	●	●
	Value chains are well understood in the mining industry	◐	○	◐	●	◐	○	●	○
	Circular economy strategic partnerships can add value	●	●	●	●	●	●	●	●
Strategic partnership	Current strategic partnerships ad equal benefit to both parties	◐	●	○	●	◐	●	○	●
	Recognition of the importance of win-win relationships	●	●	●	●	●	●	●	●
	Strategic partnerships can provide long term benefits if done correctly	●	●	●	●	●	●	●	●
Value perception	Circular economy strategic partnerships can create a value perception	●	●	●	●	●	●	●	●
	Results are a key motivator to develop investor confidence	●	●	●	●	●	●	●	●
	Investors may perceive circular economy strategic partnerships as value drivers	◐	●	◐	●	◐	●	◐	●
	Circular economy strategic partnerships can contribute to ESG and CSR and improve the companies' value perception	●	●	●	●	●	●	●	●
	Circular economy strategic partnerships' intent need to be clearly communicated to create a value perception that contributes to investor confidence	●	●	●	●	●	●	●	●
Competitive advantage	Circular economy strategic partnerships could lead to a competitive advantage	◐	●	●	●	◐	●	●	●
	Competitive advantage at risk – circular economy becomes business as usual	●	●	○	●	●	●	○	●
	Early adopters or change leaders will gain a larger benefit	◐	●	◐	●	◐	●	◐	●
	Replicate success for a better future, but this will diminish the competitive advantage	●	○	●	●	●	○	●	●
	Perceptions of all stakeholders, including employees are important	●	●	●	●	●	●	●	●

Table 16: Summary of the findings of the supplementary themes identified

Theme	Statement / key finding	Mining				Supplier			
		Corp		Site		Corp		Site	
Supplementary themes	There will be a cost associated with partnering, as such partners need to know who does what	◐	●	●	●	◐	●	●	●
	Communication is critical but the way the message is landed can be a gamechanger	●	●	●	●	●	●	●	●
	There is an industry mindset shift required for both suppliers and mining companies	●	●	●	●	●	●	●	●
	Various risk relating to partnering include inaccurate communication, uncertainty and unfairness	◐	○	●	●	●	○	●	●
	Companies need to reposition how they see waste, and think of it as a resource that could generate revenue	●	●	●	●	●	●	●	●

Source: Tables 15 and 16 were developed by the author

CHAPTER 6: DISCUSSION OF FINDINGS

6.1. Introduction

Chapter 6 discusses the research findings presented in Chapter 5, with a focus on the theoretical themes and key findings as highlighted through the data analysis, summarised in Table 14, and supplemented by the additional themes identified during the review of the interview data, as shown in Table 15. These key findings will be discussed in terms of the literature review presented in Chapter 2 to indicate new insights and possible differences. Conclusions will be drawn and presented for each theoretical theme. This process aims to assist in answering the main research question: How can a circular economy strategic partnership among multinational organizations create value perceptions that will create a competitive advantage for all role players? The findings of the research contribute to understanding the views of the analysis groups on circular economy, its value add, and the potential of circular economy strategic partnerships to become a valuable resource that can act as a competitive advantage on the mining industry.

Figure 28 is a representation of the layout of Chapter 6. Each section will introduce the summary of the research findings as presented in Chapter 5, excluding any reference to the literature. This will be followed by an overview of the findings, comparing it with the extant literature and concluding the section with a conclusion based on the evidence presented. Where required, the literature will be updated or extended in Chapter 2.

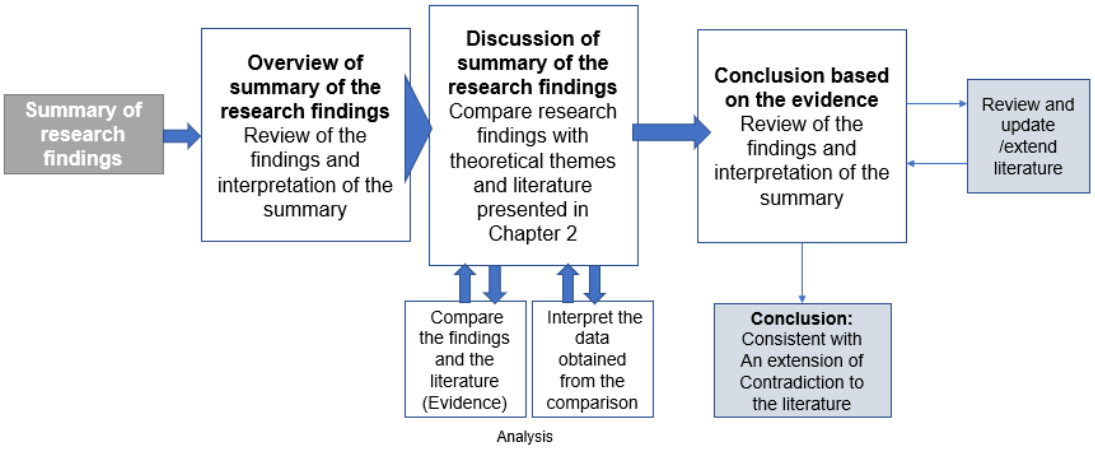


Figure 28: Layout of Chapter 6
Source: Developed by the author

6.2. Discussion of the results for sustainability

Table 17 presents a high-level summary of the research findings for the theoretical theme sustainability. It incorporated the major code groups that were identified during the analysis of the interview data and reflects the key statements that constitute the outcome of the data analysis. The discussion on the key findings will be compared to the extant literature to determine if it is consistent with, an extension of or a contradiction to the literature.

Table 17: Summary of the research findings on sustainability

Theme	Statement/key finding	Mining		Supplier	
		Corp	Site	Corp	Site
Sustainability	Understanding of Sustainability	● ●	◐ ○	● ●	● ●
	View of importance of sustainability	● ●	● ●	● ●	● ●
	Need for change in the mining industry	● ●	● ●	● ●	● ●

Source: Developed by the author

6.2.1. Overview of the findings for the theme sustainability

The majority of the participants had a clear understanding of what sustainability is, with the supplier corporate and site personnel having full alignment even though being from different companies. The mining site personnel had different views of what sustainability is, relating it to ESG and CSR initiatives. The views were also different from the supplier site-based personnel, who cited the Brundtland definition. Whilst discussing the relevance of circular economy, the practice was placed on par with sustainability, and the two themes were often intertwined and understood as the same concept.

All the participants agreed that sustainability is important, irrespective of whether the participants were based at the corporate office or on-site. The motivations for the participants' reasoning on why sustainability is important ranged between varying extremes, from basic human survival, sustainable work futures, ensuring the societies and environments where mines operate can flourish, and self-interests, where many noted the importance of leaving a living planet for their children.

Both the mining participants, based at corporate and at the mine sites, and the supplier participants highlighted the need for change in the mining industry. Business cannot continue as per usual and mining houses and their suppliers need to re-evaluate how they want to engage in resource extraction and the mining industry as a whole. Circular economy was identified as a potential lever that could be leveraged to improve sustainability in mining, but participants acknowledged that this could not be achieved in isolation and a cross-organisational attempt is needed.

6.2.1.1. Discussion of the understanding of sustainability

Sustainability evolves around using current resources responsibly to enable a prosperous future for generations to come, taking into consideration the finite nature of natural resources (Kuhlman & Farrington, 2010). Participants could articulate what sustainability is and that mining played an integral role in resource extraction required for current sustainable human activities, and as such, mining should play an active role to support sustainability. This is aligned to the literature that highlights the opportunities of the mining industry to contribute to the Sustainability Development Goals through active engagement in defining solutions (Sonesson et al., 2016).

The mining industry plays an integral role in the global economy, providing the raw material for most of the industries that support human progress, but it also impacts economies, environments, societies, and social fibres (Pons et al., 2021). The research findings aligned with the literature indicating the importance of the mining industry being aware of its ESG and CSR impacts and providing it with the required airtime to enable companies to achieve their commitments (Kemp & Owen, 2020), with particular emphasis on the mining site-based participants on this topic.

Site-based personnel seemed to share the same scepticism as Kemp and Owen (2020) on how authentic CSR matters are incorporated into the business and the supplier partnerships that are built to enable these programs.

6.2.1.2. Discussion of the view of the importance of sustainability

Supporting human life has become increasingly challenging due to the continuation of human-caused changes in ecosystems and the destruction of natural systems (Shi et al., 2019). Further evidence suggests that the scale of the degradation and the support required to reverse the damage is greater than some scientists can articulate, highlighting the lack of awareness and the required actions to start addressing the issues (Bradshaw et al., 2021). This aligns with the views of the participants, noting that they are concerned for their children's futures.

The magnitude of the sustainability issues was not negated by participants and they were aware of the need to address the sustainability concerns and that time is of the essence. Therefore, the research findings aligned with the extant literature on the importance of sustainability, and participants in the mining industry are aware.

6.2.1.3. Discussion of the need for change in the mining industry

At current consumption rates, non-renewable natural resources will become depleted through continued extraction, however, technology innovations may provide solutions in

the future where these resources do not become exhausted but become substituted by renewable man-made products (Kuhlman & Farrington, 2010). Changing from natural resources to man-made resources, or replacing current resources is far in the future, and mining will continue to contribute to economies in modern society (Sonesson et al., 2016).

Mining focuses on linear model economy thinking and there is a need to shift the industry to think differently by identifying new value chains, improving technologies, and decreasing waste (Kinnunen & Kaksonen, 2019). The research findings indicated that participants believed that there is a need for change in the mining industry, which is further supported by the extant literature of Kinnunen and Kaksonen (2019). Therefore, the literature is aligned with the research findings on the need for change in the mining industry.

6.2.2. Conclusions of the theme sustainability

The extant literature and the research findings correlate with minor observations presented. Sustainability was identified as an important but complex theme in the mining industry. The industry is challenged to change its approach to addressing sustainability issues, incorporating all elements of sustainability, including the environment, economy, and social aspects. This finding was corresponding with the literature.

Participants acknowledged that a collaborative approach, including cross-sector partnerships are required, which further aligns with the extant literature which states that the complex problems caused by sustainability will require a collaborative approach spanning across industries (Sonesson et al., 2016).

An observation was the difference in interpretation of what sustainability is between the mining corporate participants and the mining site-based participants. Although both definitions aligned with the literature as discussed, participants from the same population group had varying views with site-based participants leaning strongly towards ESG and CSR. This is also supported by the literature that emphasises the importance of mining companies to demonstrate their responsibility towards the social aspects in the areas where they operate, with a clear focus on compliance and improvement of livelihoods (Bester & Groenewald, 2021).

6.3. Discussion of the results for circular economy

Table 18 presents a high-level summary of the research findings for the theoretical theme circular economy. It incorporated the major code groups that were identified during the

analysis of the interview data and reflects the key statements that constitute the outcome of the data analysis. The discussion on the key findings will be compared to the extant literature to determine if it is consistent with, an extension of or a contradiction to the literature.

Table 18: Summary of the research findings on circular economy

Theme	Statement/key finding	Mining				Supplier			
		Corp		Site		Corp		Site	
Circular economy	Understanding of circular economy								
	Circular economy has a role to play in mining								
	Value chains are well understood in the mining industry								
	Circular economy strategic partnerships can add value								

Source: Developed by the author

6.3.1. Overview of the findings for the theme circular economy

The response of the participants on their understanding of circular economy was varied, with the majority of the mining company corporate participants having different views but aligned to the broad definition of waste reduction. Mining site-based participants' views of circular economy were rooted in ESG, and the participants had limited in-depth knowledge on what circular economy is. The supplier corporate-based participants, as well as the site-based participants, were well versed on circular economy and there was general alignment between their views.

The views of mining corporate and supplier corporate were similar, and the mining participants were well versed in circular economy. There was, however, a complete misalignment between the mining site-based participants and the supplier site-based participants.

Where participants were not sure of what circular economy is, they were provided the Ellen McArthur definition, a widely recognised and accepted definition, although just as widely challenged. All the participants agreed that circular economy has a role to play in mining taking into consideration the definition.

The product value chains were not well understood by the participants, with only the supplier site-based participants all being aligned on what a product value chain entails. All participants recognised the importance of understanding the value chain and how it relates to developing circular economy strategic partnerships.

Participants recognised the value that circular economy strategic partnerships, underpinned by projects guided by product value chains, can play in the mining industry.

6.3.1.1. Discussion of the understanding of circular economy

Although it is widely recognised that circular economy aims to transition usage models from a manufacture, use, and throwaway liner model to a manufacture, use, repurpose, recycle circular model, there are numerous concepts defining circular economy (Salvador et al., 2021). These schools of thought include Laws of Ecology, Regenerative Design, Industrial Ecology, and Performance Economy (Salvador et al., 2021). A more recent and widely advertised definition is presented by the Ellen McArthur Foundation (Ellen MacArthur Foundation, 2021). It is therefore not surprising that participants had varying views on what circular economy is and how it could be applied in mining. The research findings aligned with the extant literature with observations from participants quoting literature and presenting practical applications of what could constitute a circular economy. Kinnunen and Kaksonen (2019) note that the mining industry is aware of circular economy although it is not yet integrated, which collaborates with some of the research findings where participants acknowledged the concept.

The research findings indicate that not all participants were equally aware of what circular economy is and some participants noted their definition and understanding as recycling, waste management, and renewable energy sources. Kazancoglu et al. (2020) cautioned that circular economy should not merely be viewed as a waste management program but should incorporate the holistic view of what sustainability entails, not limiting the view to the environment and economy, but incorporating the social aspects as well. This was corroborated by participants from both the supplier and mining company corporate offices stressing the importance of a holistic circular economy approach.

6.3.1.2. Discussions of circular economy having a role to play in mining

An unintended outcome of progress has been a linear economy that consumes Earth's capacity, at times beyond its regeneration capability (Bradshaw et al., 2021). Extraction of resources has tripled in forty years, increasing from 22 billion to 70 billion tonnes from 2070 to 2010 (van Meeteren, 2021).

Mining has traditionally not been included in the circular economy discussions, due to the linear approach of the industry and the view that mining is the first step in the resource extraction model (L´ebre et al., 2017). This was supported by the research finding, highlighting the limited number of linear economy programs implemented by the mining industry. Participants from the mining corporate offices mentioned the limited programs offered to implement circular economy, and where these programs are implemented, the success rate was negligible.

Potential areas to enhance literature relate to:

- The inclusion of potential areas for circular economy project development that does not only focus on waste management in mining
- The investigation of successful circular economy program implementation on mines and the inclusion of a framework that guides operators to implement these programs
- The understanding of circular economy models in the resource extraction process, for mining companies to become involved in the entire value stream of the mined ore

Circular economy has become a very relevant topic for discussion (Lathi et al., 2018) and mining companies, therefore, need to guard against incorporating circular economy just for the sake of being circular (van Meeteren, 2021). The research findings support the literature with participants highlighting that circular economy projects must deliver results and value for the various stakeholders impacted by the mines. To identify and manage these projects, the mining industry needs to harness the correct skills. This was supported by the literature, where mining companies need to develop adequate skills and capabilities to implement circular economy (Khan, Daddi & Iraldo, 2019)

When considering sustainability, three aspects need to be taken into consideration, social, economic, and the environment (Giddings et al.,2002). Circular economy traditionally focuses on the economy and the environment, disregarding the social element (van Meeteren, 2021). Social consideration is a key element in improving mining sustainability, as it reduces the mines' risk profile where it comes to communities and disruptions (Bester & Groenewald, 2021). It is therefore critical that when circular economy solutions, partnerships, or initiatives be considered in mining, that all the sustainability elements be taken into consideration. The research findings resulted in similar comments from the participants, where site-based participants highlighted the importance of social engagement with the communities where the mines operate and that programs be put in place to support these communities.

6.3.1.3. Discussion of the understanding of value chains in mining

Industry practitioners that will be developing circular economy strategic partnerships will need to have a clear understanding of value chains to be able to identify a project that could be linked to circular economy. Yet, applying circular economy to the value chain, without incorporating a holistic sustainability view, will not ensure a truly sustainable business model (van Meeteren, 2021). A well-thought-through value chain becomes a

closed loop, and the product or its waste can be reused (Aminoff et al., 2016) improving the environment. The research findings highlighted the importance that value chains should be well understood, as the understanding will enable the identification of opportunities that could be incorporated into a circular supply system.

The research findings were aligned to the general body of knowledge of understanding value chains. An observation that could be of value to the business managers is the area of understanding value chains. Participants in the mining company analysis group highlighted the gap in understanding value chains. The opportunity lost by not understanding the value chain include:

- risk management, supply chains may be exposed but a lack of understanding will limit the ability to do a risk assessment
- cost increase, pricing models are dependent on what the supplier says as the value chain is not well understood and as such, neither is the cost drivers
- cost containment, suppliers can optimise production costs if the value chains are understood and areas of improvement can be introduced
- circular economy initiatives, a lack of understanding of the product value chains will limit the ability of waste identification and as such, waste management will follow a traditional route and no innovation in waste management can occur.

Keyword searches on mining product value chains reveal limited information on the opportunities identified and implemented using mining value streams to identify circular economy projects. Yet, the research data indicated that this is a key area where circular economy could play a significant role.

6.3.1.4. Discussion on circular economy partnerships adding value

Where a company incorporates circular economy, it demonstrates profit both economically and socially, whilst contributing to environmental improvement and de-risking its business (van Meeteren, 2021). Stakeholders are further putting pressure on mining companies and their suppliers to deliver on financial returns, whilst also improving the environment and the societies where these mines operate (Daddi et al., 2018). Viewing circular economy as a lever to promote sustainability and acknowledging that partnerships are required to address sustainability (Sonesson et al., 2016), these circular economy partnerships can add value to the companies that form these partnerships.

The extant literature and research findings are similar, with participants highlighting the potential value that could be created by circular economy strategic partnerships. Comparing the findings with the literature, a key construct highlighted in the research

findings was that the partnership alone will not deliver the value but that the results coming out of the partnership will create the step change required to create value.

6.3.2. Conclusions of the theme circular economy

The research findings revealed that the adoption of circular economy in mining is limited, and the concept of circular economy is not well established. This aligned with the literature which highlighted the various definition and applications for circular economy. The research findings highlighted that the definitions for circular economy created a space and unintended risk that circular economy can become a singular topic, focused on waste management, recycling, or re-purposing. Yet, the research data and literature is aligned in that the focus of circular economy should incorporate all the elements of sustainability.

The literature cautioned that circular economy programs which focus on the environment and the economy alone will not contribute to sustainability and companies need to guard against this. Companies should further guard against implementing circular economy for the sake of circular economy, which the research data corroborated.

Circular economy programs can add value as indicated by the research data and existing literature. It should not be done in isolation and participants highlighted that circular economy programs should become part of business as usual. Potential enhancement of the literature may include

- Extending the literature to reflect the potential of circular economy becoming part of a business where the business model is focused on a linear model
- What the framework should look like that will be a driving force for including circular economies into businesses that traditionally were not geared towards circular models.

6.4. Discussion of the results for strategic partnerships

Table 19 presents a high-level summary of the research findings for the theoretical theme circular economy. It incorporated the major code groups that were identified during the analysis of the interview data and reflects the key statements that constitute the outcome of the data analysis.

The discussion on the key findings will be compared to the extant literature to determine if it is consistent with, an extension of or a contradiction to the literature.

Table 19: Summary of the research findings on strategic partnerships

Theme	Statement/key finding	Mining				Supplier			
		Corp		Site		Corp		Site	
Strategic partnership	Current strategic partnerships ad equal benefit to both parties	◐	●	○	●	◐	●	○	●
	Recognition of the importance of win-win relationships	●	●	●	●	●	●	●	●
	Strategic partnerships can provide long term benefits if done correctly	●	●	●	●	●	●	●	●

Source: Developed by the author

6.4.1. Overview of the findings for the theme strategic partnerships

Participants expressed different views on how strategic partnerships are interpreted in business. Although all participants agreed that strategic partnerships should result in equal benefit to both parties and that the relationship should lead to a win-win scenario, some of the participants in both the mining corporate and supplier corporate office held the view that suppliers do not always experience partnerships as a win for them. Site-based participants from both the mining companies and the supplier concluded that the mines will always push to gain the benefit, with little to no consideration for the suppliers. However, the importance of both parties gaining a benefit was emphasized by all participants, else it negates the partnership and becomes a transactional relationship.

All participants agreed that strategic partnerships can provide long-term benefits to both parties if the partnerships are done correctly. These benefits include competitive advantage and financial gain.

6.4.1.1. Discussion of the view of equal benefits to both parties

Large multinational partnerships are problem-focused and not necessarily set up to provide equal benefit to the partner organisations or meet their respective goals (MacDonald et al., 2019). It is therefore critical that the parties formalise their partnership through some form of a formal agreement, however complex partnership structures can take up valuable time to negotiate the form of partnership instead of working on the potential value add that a partnership can contribute to delivering on goals (Chao et al., 2014). Strategic partnerships should be set up to ensure all parties achieve equal benefit or at least achieve the goals set out in the partnership (Cowan, Paswan & van Steenberg, 2015).

These paradoxical literature findings correlate with the research findings where participants were of the view that partnerships should offer equal benefit to both parties, but that this was not always the practical case. Some participants agreed that strategic partnerships will be a win-win for both parties, others argued that the mines will push for

a greater benefit. A strategic partnership aims to create a competitive advantage, improve its stakeholder value, and share resources to improve its efficiency for both parties (Cowan et al., 2015). The research findings supported the literature in the contrast of win-win solutions in partnerships, as well as the challenge that due to power plays, there will always be a party that gains more from the relationship (Cowan et al., 2015).

Partnerships that are designed to address the sustainability concerns through focused programs where progress can be measured, will contribute to value creation for both partners in the form of risk reduction and cost improvements (Niesten & Jolink, 2020). This aligns with the research findings where participants noted that companies who are perceived as responsible in the sustainability area, and who can manage their costs, will be seen as more valuable companies. This will result in a competitive advantage.

6.4.1.2. Discussion on the importance of a win-win relationship

A strategic partnership may consist of a focal company and an alliance partner, with the assumption that the resources of the alliance partner will have an impact on the competitive advantage of the focal company and both companies gaining a benefit from the partnership (Lavie, 2006). This was evident in the research findings with supplier participants adding value and weight to their partnerships with key customers, and mining participants acknowledging the importance of key suppliers, but not from a competitive advantage point of view.

Various factors were identified that will contribute to the success of a strategic partnership, with aligned values and an identified goal, trust, and the focus on a win-win-win partnership identified as essential by the participants. The extant literature supported the outcomes of the research findings, with Henderson et al. (2014) expanding on the needs for companies to integrate into the relationship, with both companies having alignment and sharing of resources.

6.4.1.3. Discussion if strategic partnerships can provide long term benefits

Cross-sector partnerships between multinational companies can contribute to solutions to solve the complex issues that sustainability bring, which cannot be resolved by individual companies (van Hille et al., 2020). Strategic partnerships that focus on circular economy could contribute to resilient supply chains, access to value chains, the creation of socially responsible companies, and financial gains (Veleva & Bodkin, 2018).

The research analysis aligned with the literature but included a time element that should be taken into consideration when setting up these partnerships. A conclusion from the

research findings is that these strategic partnerships contribute to long-term benefits for the companies, but that these partnerships will become a norm and therefore no longer a competitive advantage.

An area that may extend the literature is the investigation of time factors on strategic partnership and how it impacts the competitive advantage.

6.4.2. Conclusions of the theme strategic partnerships

The research findings identified that strategic partnerships between mining companies and their key suppliers can create a benefit for both parties by providing access to resources unique to each company. An increase in competitive advantage was more likely for the supplier partners who can leverage the learning and gains from the partnership with other mining companies. A strategic partnership with a mining company will further create barriers of entry for competing suppliers, as the supplier chosen as a strategic partner will become a supplier of choice for the mining company.

The following areas were common themes identified in the research findings and the literature which constitutes key factors for developing strategic partnerships.

- Partners should be selected based on the value proposition or business case that will contribute to a win-win scenario for both
- The partnership should take a holistic approach to circular economy, incorporating all the elements of sustainability
- A clear goal should be identified and agreed upon by both parties
- Internal stakeholders are as important and clear communication presented to all parties involved or impacted
- The partnership should be formalized, but care taken to not waste time to define the relationship and lose momentum for implementation
- Measures are critical and partners should be held accountable for those measures
- Partnerships should be communicated, and the intent of the partnership sensitized with all stakeholders
- There should be defined roles and responsibilities for all parties involved in the relationship

The parties should trust each other. Trust can be built through consistent delivery, dedication, and mutual respect, and interaction of the participants in the partnership. This is enabled by both parties contributing their resources and getting something in return for the contribution (Stengel, 2020).

6.5. Discussion of the results for value perception

Table 20 presents a high-level summary of the research findings for the theoretical theme circular economy. It incorporated the major code groups that were identified during the analysis of the interview data and reflects the key statements that constitute the outcome of the data analysis. The discussion on the key findings will be compared to the extant literature to determine if it is consistent with, an extension of, or a contradiction to the literature.

Table 20: Summary of the research findings on value perception

Theme	Statement/key finding	Mining				Supplier			
		Corp		Site		Corp		Site	
Value perception	Circular economy strategic partnerships can create a value perception	●	●	●	●	●	●	●	●
	Results are a key motivator to develop investor confidence	●	●	●	●	●	●	●	●
	Investors may perceive circular economy strategic partnerships as value drivers	◐	●	◐	●	◐	●	◐	●
	Circular economy strategic partnerships can contribute to ESG and CSR and improve the companies' value perception	●	●	●	●	●	●	●	●
	Circular economy strategic partnerships' intent need to be clearly communicated to create a value perception that contributes to investor confidence	●	●	●	●	●	●	●	●

Source: Developed by the author

6.5.1. Overview of the findings for the theme value perception

The research findings identified the potential of circular economy and its contribution to sustainability, the value of strategic partnerships, and the potential of a circular economy strategic partnership. Through inference, participants acknowledged due to the value contribution of circular economy, that partnerships that leverage circular economy programs can create a value perception for all stakeholders and potentially create investor confidence.

However, a strategic partnership leveraging circular economy elements alone will not promote investor confidence. Participants all agreed that delivering results was a key motivator to develop investor confidence and it is critical for circular economy partnerships to demonstrate the success of the circular program outcomes that are supported by these partnerships.

Participants were not convinced that circular economy strategic partnerships will be perceived as value drivers, as the longevity and with it, the uniqueness of the partnerships was questioned. This was based on the perception that circular economy should become a business norm and not a differentiator.

All participants believed that circular economy strategic partnerships could contribute to ESG and CSR which may influence a company's value perception. A key factor was that these partnerships needed to demonstrate an improvement to the ESG and CSR of the companies, for the value perception to improve.

The research data indicated that investors needed to be convinced of the intent of the circular economy partnerships and the message require alignment with market sentiment to impact the views of the investors positively. Great care should be taken to not be perceived as greenwashing the sustainability strategy of the company.

6.5.1.1. Discussion on the creation of a value perception

Companies need to be organised to identify and capture value through putting practices in place that leverage the companies' resources (MacDonald et al., 2019). Creating strategic partnerships could be cited as such a practice and companies are recognising the value of incorporating circular economy into their businesses (Veleva & Bodkin, 2018). Companies that publicly advertise their strategies and intent to address sustainability issues saw a positive sentiment from investors, creating a value perception through their commitments (Hume, 2021).

The research findings suggest that circular economy strategic partnerships can create a value perception. However, given the relatively new concept of circular economy in the mining industry, the research indicated that partnerships incorporating circular economy alone will not contribute to a value perception. There is a clear requirement for plans, deliverables, measures, and performance reporting. This is supplementing the literature that noted investor sentiments improving when companies communicated their sustainability agendas (Hume, 2021). The research findings ask for results.

Based on the discussion of the research findings and the literature, for a value perception to be created, the existing literature on value perceptions of partnerships in mining may be extended to include:

- The communication strategies on how circular economy strategic partnerships will be positioned and communicated within a company to internal stakeholders
- How the circular economy program, supported by a strategic partnership will be communicated to external stakeholders
- What the metrics are that should be measured to ensure the circular economy strategic partnership delivers on the value expectation from investors
- What the core message should be external stakeholders that will contribute to the value perception

6.5.1.2. Discussion on results is a key motivator

Investors will decide on where and how to invest their money based on their risk appetite, having a focus on fast and short-term return on investments or a more moderate longer-term view (Frolova et al., 2021). The extant literature focused on the programs and technologies that will be implemented that will support the drive towards sustainability (De Baldo & Anghela, 2020), but there is limited focus on the views of investors on initiative results. There is a clear indication of the investor pressures placed on companies to have clear sustainability, EST and CSR plans in place, and the impact that failures of these plans have on shareholders (Coppola et al., 2019), but circular economy is a new concept being introduced to the mining industry (Kirchherr et al., 2018), and limited research are available on the impact, tangible results or the lack thereof from circular economy plans may have on investor confidence.

The research highlighted delivering results as a strong motivator for investor confidence where circular economy strategic partnerships are involved. Multiple participants enforced their views that the partnership alone will not enhance a favourable view but delivering results in a partnership will benefit both parties in the partnership. The research findings indicated a potential gap in the literature and it may be extended by:

- Extending the literature to include evidence of the positive (or neutral) perspective delivering results creates with investors
- Exploring if investors require tangible outcomes or mere commitments on circular economy strategic projects to improve investor confidence

Clear performance measures will be required to ensure the initiative delivers on what it set out to deliver. This aligns with the extant literature highlighting the need to measure successful circular implementation. Clear metrics are required to ensure that the “what” of circularity is clear as well as the “how” can be assessed for a level of successful circular implementation (van Meeteren, 2021).

6.5.1.3. Discussion on the investor’s perceptions

Companies adopting sustainability strategies and business practices are viewed more favorably by consumers, communities, and investors, as these are companies they perceive as trustworthy (Trivedi, Trivedi & Goswami, 2018). Investors have also shown significant interest in mining companies' transparency when it comes to reporting on their environmental, social, and governance performance as these elements contribute to risk, and managing it well, bodes well for investors (Innis & Kunz, 2020). Companies that embrace sustainability and in return reduce their risk profile, are viewed positively by

investors (Frolova et al., 2021). However, the market perception is not clear on circular economy initiatives being incorporated into companies' business models (van Keulen & Kircherr, 2021) and circular economy is not well established in the mining industry.

The research findings confirmed the literature, as participants were unsure of the views of the market on circular economy strategic partnerships. Although participants believed that due to the nature of circular economy, contributing to sustainability, it may be perceived as a positive, the notion of timing was a conclusive factor that inhibited participants to agree that it will positively influence investors. The research findings indicated that circular economy strategic partnerships should become a business norm, and therefore in the future, it may not be a differentiator that will attract potential investors.

The research alluded to the newness of circular economy in the mining industry, and that partnerships that incorporate circular economy will first need to demonstrate value before it will be perceived as valuable. This is in contradiction with the extant literature which highlights that companies with demonstrated success in partnering, will result in positive and higher than normal stock market gains when new partnerships are announced, therefore creating a link to value creation and partnership creation (O'Dwyer & Gilmore, 2018).

6.5.1.4. Discussion on CE partnerships contribution to ESG and CSR

The literature on circular economy business integration is still in its infancy stage but structuring a circular economy strategic partnership around sustainability, may contribute to ESG and CSR and improve a company's value perception (Rattalino, 2017). A clear value definition will be required on how circular economy will contribute to the environmental, economic, and social aspects to ensure companies are perceived as responsible. The definition of circular economy on many occasions hampers this definition (Geisendorf & Pietrulla, 2018). The struggle to identify the value proposition for partnerships can hamper the formation and continuation of a strategic partnership (MacDonald et al., 2019) and it is therefore critical that companies align on their goals and views when defining the partnerships.

The research findings suggested that successfully implemented circular economy strategic partnerships will contribute to competitive advantage if there are tangible results that can demonstrate the success. There is a limited similarity between the literature and the findings, with the research indicating a strong preference for circular economy

partnerships to further enable ESG, as the perception is there that ESG will drive investor confidence which will drive competitive advantage.

A research gap would be addressed by determining the value proposition of incorporating circular economy into ESG and CSR strategies.

6.5.1.5. Discussion on the communication of the partnership intent

Companies need to guard against greenwashing as this will erode investor confidence (Mitchell & Ramey, 2011) when communicating the intent of the circular economy strategic partnerships. The research data indicated that there is a need to communicate strategic partnerships that focus on circular economy implementation, but that the message of what the deliverable of the partnership will be, needs to be well articulated with clear and measurable performance indicators. This aligns with the literature that communication is key, but care should be taken about how a message is delivered. Companies need to guard against circular-washing, where companies advertise themselves to be contributors to circular economy, but they are not (van Meeteren, 2021).

6.5.2. Conclusions of the theme value perception

The ability to create value and develop capabilities that can capture this value enables a company's competitive advantage and ensures a sustainable future (O'Dwyer & Gilmore, 2018). The findings from the research highlighted that a value perception can be created with a circular economy strategic partnership as such a partnership may contribute to ESG and CSR business strategies. A strong correlation between the sustainability element and circular economy is the main motivator for the research findings value perception. There is not sufficient similarity between the extant literature and the research findings, on the value perception, as the linkages in the literature between ESG and CSR and circular economy is not well defined.

A theme that was not explicitly explored in the literature review but emerged in the research findings is the delivery of results. The research findings suggest that circular economy strategic partnerships will not create a value perception on their own, but the results that these partnerships deliver may be a contributing factor to a positive value perception, increasing investor confidence.

The draft framework as presented in Chapter 2 will be extended to include performance and success measures of the strategic partnership. Clear metrics will be included that need to be identified that can measure what success looks like. An adjustment to the

draft framework will be made to incorporate clear metrics to measure performance and communicate the success (or failure) of a strategic partnership.

The literature can be extended to investigate the true value of tangible results in circular economy strategic partnerships and how these results impact value perception.

6.6. Discussion of the results for competitive advantage

Table 21 presents a high-level summary of the research findings for the theoretical theme circular economy. It incorporated the major code groups that were identified during the analysis of the interview data and reflects the key statements that constitute the outcome of the data analysis. The discussion on the key findings will be compared to the extant literature to determine if it is consistent with, an extension of or a contradiction to the literature.

Table 21: Summary of the research findings on competitive advantage

Theme	Statement/key finding	Mining				Supplier			
		Corp		Site		Corp		Site	
Competitive advantage	Circular economy strategic partnerships could lead to a competitive advantage	◐	●	●	●	◐	●	●	●
	Competitive advantage at risk – circular economy becomes business as usual	●	●	○	●	●	●	○	●
	Early adopters or change leaders will gain a larger benefit	◐	●	◐	●	◐	●	◐	●
	Replicate success for a better future, but this will diminish the competitive advantage	●	◍	●	●	●	◍	●	●
	Perceptions of all stakeholders, including employees are important	●	●	●	●	●	●	●	●

Source: Developed by the author

6.6.1. Overview of the findings for the theme competitive advantage

Participants from both the mining companies and suppliers based on the mine sites thought that circular economy strategic partnerships had the potential to create a competitive advantage for the companies that form the partnership, but that the time element was a concern. Participants from the corporate offices thought that as a first mover to introduce circular economy strategic partnerships, there may be some potential benefit, but the uniqueness of the partnership will vary and in time will no longer exist. As such, these partnerships will become business as usual. Supplier site-based participants thought that the supplier will gain a competitive advantage, as these partnerships are bound to create a long-term agreement between the supplier and mining company, therefore creating a market entry barrier for its competitors.

The participants had varying opinions on the benefit of being an early adopter, with mining and supplier corporate participants agreeing that there could be a benefit but that it is not sustained and site-based participants agreeing on the potential for benefit, but that the supplier will gain the most from such a market foothold. Participants based at the corporate offices acknowledged that sustainability cannot be done in isolation

6.6.1.1. Discussion on if circular economy strategic partnerships could lead to a competitive advantage

Sustainability is a complex problem that requires a collaborative approach to resolve as the capacity and knowledge are dispersed between multiple stakeholders (MacDonald et al., 2019). Incorporating circular economy into companies 'sustainability agenda (Salvador et al., 2021), circular economy could be a lever with which companies, through a collaborative approach, can address the sustainability problem (Sánchez-Ortiz et al., 2020). Focusing on the sustainability benefit a circular economy strategic partnership may bring (Kirchherr et al., 2018), these partnerships have the potential to create a competitive advantage for the companies that partake in these partnerships.

The literature review highlighted that circular economy initiatives provide implicit competitive advantages but that there is no conclusive evidence of companies formally integrating circular economy into their business, and that circular economy models are visions rather than strategies (Del Baldo & Anghela, 2020). The research analysis agrees with the literature, with participants being uncertain as to the practical implementation of circular economy programs that will successfully enable companies' sustainability agendas. Therefore, the competitiveness of the partnerships is questioned. Although, they supported the concept, or vision as per the literature, and reverted again to the need for delivery of results.

Where partnerships are aligned and the partners understand their companies' reasons and the goals for entering into a strategic partnership and develop capabilities to meet the goals, the partnership-level resources could be turned into a competitive advantage (MacDonald et al., 2019). The research findings indicated that competitive advantage will be obtained by at least the supplier partner, as they will become a partner of choice to the mining company, creating barriers of entry for other suppliers.

Potential gaps highlighted in the literature relates to

- Opportunities of circular economy integration into the mining industry
- Successful implementation of circular economy programs in the mining industry
- If circular economy strategic partnerships contributed to a competitive advantage where these partnerships were implemented

6.6.1.2. Discussion on circular economy becoming business as usual

Companies have a competitive advantage when they have a valuable or unique resource that delivers to stakeholders what they may want or need (Porter, 1985). The research findings indicated that circular economy partnerships may become business as usual, as the intent of companies is to become responsible and be perceived as reducing their carbon footprint. The findings highlighted that circular economy could contribute to these ambitions and will therefore not be a differentiator for companies.

Competitive advantage could also be viewed as the resources of a company that could hardly be copied, it could be sustainable in the future, it leads to better business practices and it positions a company above its peers (Kamukama et al., 2016). Incorporating circular economy strategic partnerships into a multinational business and replicating these partnerships across the global operations, may add to the competitive advantage of the companies due to the perceived global impact of doing better business.

The research findings suggested that this may not be enough as all companies will transition to doing the right thing, especially if they want to attract investors and satisfy current shareholders.

6.6.1.3. Discussion on early adopters or change leaders

Mining companies entering into circular economy strategic partnerships can obtain a first-mover competitive advantage due to the perception being created that these companies are better off than their peers in the industry (Suarez & Lanzolla, 2005). The research indicated that companies who implement circular economy strategic partnerships will be perceived as more responsible, carry less risk due to ESG issues, and will improve their image, thus being better off than mining companies that don't embrace these partnerships.

The research established that early adopters would define and implement the standards and set the circular trend, which reduces the pressure to follow suit. This more or less aligns with the literature that states first movers have an advantage due to the asymmetry

in the market which allows the mining company and its partners to have a head start over its peers (Frynas, Mellahi & Pigman 2006).

Developing and implementing a circular economy strategic partnership before any of the other mining companies and their suppliers may create an advantage for both companies, who can develop their respective resources whilst investigating what would work for each party, and what would be a good definition for a successful circular economy strategic partnership, before being pressured into the trend.

6.6.1.4. Discussion on the replication of success for a better future

The research suggests that circular economy should become more mainstream in the mining industry to enable a transition to a more sustainable future. This aligns with the extant literature that circular economy is an enabler of sustainability if it applies and incorporates all aspects of sustainability (Pons et al., 2021). Strategic partnerships that incorporate circular economy principles, should therefore become a business priority. However, a competitive advantage is a unique resource (Sanders & Wong, 2021), and should circular economy strategic partnerships become business as usual, it will diminish the competitive advantage of the strategic partnership.

6.6.1.5. Discussion on the perceptions of all stakeholders

The implementation of CSR initiatives can assist companies to gain a competitive advantage, with employees responding positively to the companies who act responsibly (Rodrigo, Aqueveque & Duran, 2018). The research suggested that mining companies and their suppliers that actively contribute to the communities where these mines operate will be perceived as good corporate citizens. This will result in fewer disruptions to the mines, more support from the local governments in the countries where the mines operate, and an improved reputation. The research alluded that these elements would contribute to positive shareholder sentiment. The research findings and literature agree that companies who practice CSR well will derive value (Lorne & Dilling, 2012).

The research indicated that a value perception based on the positive sentiments of sustainability alone will not contribute to a competitive advantage for companies. There is still a need to deliver value in terms of a return on investment. The findings align with the literature which states that companies cannot rely solely on environmental and societal values but need to deliver sound business cases to attract positive stakeholder sentiments (Kahupi et al., 2020).

6.6.2. Conclusions of the theme competitive advantage

The research findings indicated that circular economy strategic partnerships could lead to a sustainable focus and initiative implementation, and resulting from the value perception of sustainability, create a competitive advantage. This aligns with the literature that focuses on the competitive advantage sustainability can bring to companies.

However, the research findings cautioned that these partnerships alone will not create a competitive advantage. A further risk identified is the uniqueness of these circular economy strategic partnerships. Due to the global drive on carbon reduction and the identification of circular economy as a tool to contribute to the reduction of carbon, these partnerships will most likely become business as usual. Where these partnerships focused on circular economy programs are implemented successfully, it may reduce the companies' costs and liabilities, improving investor sentiment and increasing competitive advantage.

6.7. Discussion of the results for the supplementary themes

Table 22 presents a high-level summary of the research findings related to the supplementary themes. It incorporated the major code groups that were identified during the analysis of the interview data and reflects the key statements that constitute the outcome of the data analysis.

Table 22: Summary of the research findings on supplementary themes

Theme	Statement/key finding	Mining				Supplier			
		Corp		Site		Corp		Site	
Supplementary themes	There will be a cost associated with partnering, as such partners need to know who does what	◐	●	●	●	◐	●	●	●
	Communication is critical but the way the message is landed can be a gamechanger	●	●	●	●	●	●	●	●
	There is an industry mindset shift required for both suppliers and mining companies	●	●	●	●	●	●	●	●
	Various risk relating to partnering include inaccurate communication, uncertainty and unfairness	◐	○	●	●	●	○	●	●
	Companies need to reposition how they see waste, and think of it as a resource that could generate revenue	●	●	●	●	●	●	●	●

Source: Developed by the author

The mining and supplier corporate participants focused on the cost implication of a strategic partnership, that there will be commitments and both parties need to acknowledge their role and the committed resources required in the partnership. The

research analysis indicated the requirement that all parties commit their resources, and that clarity is required on what resources each company will contribute. This aligns with the literature on the requirement that companies need to commit their specific resources to contribute to an alliance's success (O'Dwyer & Gilmore, 2018).

All the participants highlighted the requirement and need for clear communication surrounding any circular economy strategic partnership. Sustainability is mainstream with significant and increased global visibility (Helne & Hirvilammi, 2015). Mining companies need to act transparently and keep their stakeholders engaged, by communicating a clear vision, purpose, and plan that can build trust with its stakeholders, including communities, investors, and its employees (Trivedi et al., 2018).

Advertising the partnership was as important as how the partnership was positioned to the market, as the wrong perception due to either miss-communication

The research found that mining companies and their suppliers acknowledge the requirement to relook at their waste and to transition the industry from a historic linear model to a circular model. The focus remained on the products used by the mines and not the minerals mined, but there is resultant waste material from the extraction process. The research indicated that there is a need that the entire value chain of mining to be investigated to identify and implement circular economy opportunities, that can repurpose the waste for economic gains. This aligns with the literature that highlights some of the opportunities in mining that includes reusing and recycling of the waste streams, to redesigning and rethinking mining as a whole (Tayebi-Khorami et al., 2019).

6.8. Conclusion of the research findings

Mining companies and their suppliers face increased pressure to deliver on carbon reduction and to contribute to the Sustainable Development Goals. Circular economy can contribute to achieving sustainability if all the aspects of sustainability are considered, including the environment, social elements, and the economy. Circular economy needs to be linked to the company's sustainability strategy and this needs to be communicated internally to all employees, aligning it to the company values and goals. Circular economy opportunities should be encouraged formally within the industry.

A circular economy strategic partnership with a credible and reputable strategic partner has the potential to enhance these companies' competitive advantage in the mining industry. Such partnerships need to take ESG and CSR into consideration. Once a

partnership is established, the intent of the partnership needs to be clearly articulated and communicated to all identified stakeholder groups.

The partners need to identify the business case or value proposition for both. The value proposition needs to align and if there is alignment, the parties need to define the circular economy project, incorporating all stakeholders. Key resources from each company need to be identified and leveraged that will enable the partnership. The partnership needs to be formalized with clear deliverables that will incorporate a circular economy project with a holistic approach, ie taking into consideration environmental aspects in the area where the project will be developed, societal improvement and inclusion, and economic development.

Metrics need to be established that will indicate the success of the partnership and the outcomes must be communicated as demonstrating results is critical.

Table 23 provides a summary of the research findings and literature comparison as discussed in this Chapter 6. The similarities and differences will be highlighted. Where there was a gap, and potential extensions to the literature were highlighted, these will be summarized in Chapter 7.

Table 23: Summary of comparison of the findings

Key construct	Key findings		Outcomes
Sustainability	Sustainability is important and integral to the mining industry	Observation: mining companies need to coordinate their sustainability message with its mine sites	Literature and findings similar / aligned
Circular economy (CE)	Circular economy is not yet well understood or established in the mining industry	There is a significant value case to be developed for circular economy in the mining industry	Gap in the literature identified // Literature and findings similar / aligned
Strategic partnerships	Strategic partnerships can add to participant's competitive advantage		Gap in the literature identified // Literature and findings similar / aligned
Value perception	Partnerships does not add inherent value contradicts with the literature that it does	Findings suggest circular economy contributes to ESG which will improve the value perception contradicts with literature which suggests circular economy does not yet incorporate ESG requirements. No correlation on value perceptions	Gap in the literature identified // Limited similarity
Competitive advantage	Circular economy strategic partnerships can create a potential competitive advantage but there are qualifiers		Literature and findings similar / aligned

Source: Developed by the author

6.9. Revised conceptual framework

The draft framework, as presented in Figure 10, Chapter 2, was revised incorporating the research findings discussed in Chapter 6 and subsequent outcomes from the discussion of the data analysis captured in Chapter 5. The framework was modified to expand on the considerations for the development of a circular economy strategic partnership. A description of the inclusions will be elaborated on in Chapter 7.

Consideration was given to the circular economy metrics presented by van Meeteren (2021) to ensure the circular economy strategic partnership takes a holistic approach to sustainability and doesn't only focus on the historically obvious elements, economy, and the environment.

The modified framework is presented in Figure 29.

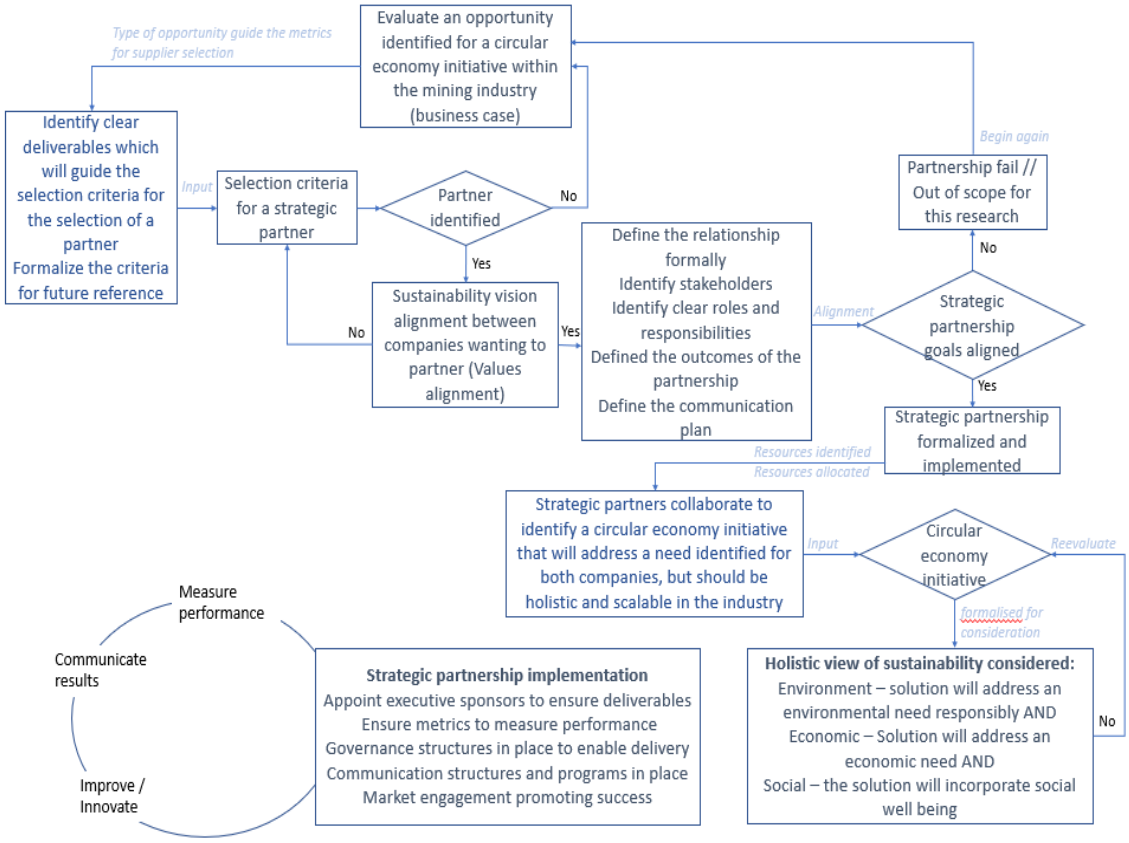


Figure 29: Revised framework consideration for CE strategic partnerships
Source: Developed by the author

CHAPTER 7: CONCLUSION AND RECOMMENDATIONS

7.1. Introduction

The global focus on sustainability and the call for action can no longer be ignored. The mining industry has to some extent embraced the challenge with public commitments from multiple multinational majors to address their carbon footprint. (Reuters, 2021). This will be achieved through partnerships with large OEMs to develop business breakthrough initiatives that will change the way mining operates. Yet, these commitments are long-term and far into the future, which do not address the immediate need for a call to act now.

By introducing strategic partnerships that focus on smaller, impactful projects that can enhance the environment, improve the communities where mines operate, and address economic needs, parties can start contributing to the fight against climate change today. Circular economy, a model recognised as having the ability to contribute to sustainability, can be an enabler to both mining companies and their suppliers to identify areas where they can collaborate to drive a sustainability initiative (Sonesson et al., 2016), with real impact and results in the areas where mines operate.

One such area is OTR waste tyre management. A circular economy approach to reduce the waste tyres stored in mining areas, reuse these tyres, or repurpose them, have the potential to create jobs, improve the environment and enhance the economy in these areas. Waste tyres have been a legacy issue since mining started with limited solutions implemented to date. Only as recent as 2020, technology improvements have allowed for mining tyre pyrolysis (Scott, 2020), but the quality and sustainability of these solutions have not been tested, with limited scope for community inclusion and job creation due to the nature of the technology.

Unfortunately, circular economy, as a phenomenon, is not well understood in the mining industry, which may create some reluctance with mining professionals, as failure may tarnish their reputation, impacting investor confidence. Little work has been done to identify the requirements for circular economy implementation within the mining industry, with the majority of the work devoted to waste management through recycling. Yet, circular economy entails the optimisation of resources that concurs with the principles of the resource advantage theory (Sanders & Wong, 2021) and offers solutions that encompass all the elements of sustainability if a collaborative approach is followed (Clarke & MacDonald, 2016). Through its implementation, a successful circular economy

initiative has the potential to reduce costs, limit ESG risk and enhance communities where the initiative is implemented. These results can lead to a value perception that may improve investor sentiment and therefore create a competitive advantage for the companies that are involved in the partnership.

The literature indicated that there is a decisive need for companies to partner globally to address the issue that is sustainability for the survival of humankind (Sonesson et al., 2016). Further, circular economy, an area where the mining industry is not yet active but can play a significant role (Kinnunen & Kaksonen, 2019), can become a lever that companies can use to reduce their carbon footprint and directly, positively enhance sustainability.

This research aimed to answer the question: How can a circular economy strategic partnership among multinational organizations create value perceptions that will create a competitive advantage for all role players? The key constructs identified for this research, include sustainability, circular economy, strategic partnership, value perception, and competitive advantage. These constructs were expanded on as part of the literature review in Chapter 2 to develop a conceptual framework for consideration when developing a circular economy strategic partnership for the mining industry that intends to positively enhance value perceptions among all role players.

The theoretical constructs and conceptual framework guided the research questions and subsequent interviews. Chapter 5 presented the discussion on the research findings, expanding on the theoretical constructs by introducing themes of communication, and the importance of delivering favourable results. The findings were compared to the existing literature presented in Chapter 2, and similarities and variances were highlighted.

The findings indicate that the concept of circular economy is still unknown in the mining industry, and little confidence surrounds the value proposition. However, it is acknowledged that it presents a significant opportunity to contribute to sustainability, which will impact positively on investor and stakeholder sentiment, optimising resources, which would then create a competitive advantage. The creation of circular economy strategic partnerships was encouraged for both the potential, as well as the understanding that it is the right thing to do and implies a shift that is to the benefit of the industry as a whole.

7.2. Principle theoretical conclusions: Response to the research questions

This section will integrate the literature review from Chapter 2, the research findings as summarised in Chapter 5, as well as the discussion of the findings from Chapter 6 to address the main research question. The theoretical constructs are incorporated into the sub-questions, which to answer the main research question.

7.2.1. Conclusions on sub-research question 1

Sub-Question 1 investigated how well the principles of circular economy are established in the mining sector, to understand if the mining industry is aware of the urgency with which the complex issues of sustainability should be addressed and if circular economy could be a lever.

The research concluded that the mining sector from both suppliers' and mining companies' points of view, including the mining operations, were acutely aware of sustainability and the importance of sustainability. Sustainability concepts are well understood and embedded in the mining sector, with a strong focus on carbon reduction, communities, the economy, and the environment.

Circular economy principles are however not well understood, nor established in the mining sector. Although there are efforts through formal and informal programs to unlock creative ideas, circular economy is not an established practice or culture within the industry. Efforts driving circularity included renewable energy programs and waste management programs. The research findings and literature concurred.

7.2.2. Conclusions on sub-research question 2

Sub-Question 2 expanded on sub-question 1 to explore if there were established strategies within the respective industries to embed circular economy as part of business as usual. The question aimed to determine if circular economy is viewed as important in multinational organizations and has created noteworthy change in how the businesses approached their value chains.

The research concluded that circular economy was an emerging theme and some of the companies and suppliers have formalized programs intending to identify circular economy opportunities. The majority of these opportunities however linked back to waste management or alternative energy sources, which falls short of the sustainability requirement that requires these programs to include solutions for the environment, societies (social), and the economy (financial). The aims of the programs were not well

articulated or understood within the organizations, apart from recognizing its importance to contribute to sustainability.

The importance of understanding value chains and their relation to circular economy was highlighted in the research, recognizing that understanding value chains will identify inefficiencies and opportunities for improvement. It could further assist in improving cost profiles and reducing risks. The development of circular economy programs will be enhanced by a clear understanding of the value chain of the problem that is being targeted, that inevitably entails attention to resource optimisation, asserting the companies' efficiency and effectiveness (Hamdoun, 2020). The research highlighted those key personnel in the mining companies who do not necessarily understand the value chain and will therefore contribute limited insights.

7.2.3. Conclusions on sub-research question 3

Sub-Question 3 aimed to investigate the dynamics between multinational companies and their suppliers, to determine how these relationships can transition from a transactional relationship to a collaborative strategic partnership where resources are optimised to the advantage of all, including the environment and sustainability concerns. It expanded the partnership to include a circular economy view, transitioning from a take and pay relationship, to a long-term, circular partnership.

The research concluded that although there are complexities involved, and various factors that can contribute to the successful transition from a transactional relationship to a strategic partnership, it is possible to achieve. Additionally, circular economy strategic partnerships were viewed as a positive step in the right direction and encouraged, although it was not a familiar topic. Clarke and MacDonald (2016) highlighted that companies that partner gain partner resources as individual organizations as a consequence of partaking in the partnership. They further found that partnerships create an increased impact on community sustainability, which also supports the notion that circular economy should focus on the social aspect of sustainability. Forming partnerships allows the companies to leverage of each other's resources, knowledge and skills (Sanders & Wong, 2020) which can assist to expand the impact the companies can have on sustainability.

The findings suggested key factors for consideration when partnering with a company that operates in the mining industry, from either the mining company or the supplier company's perspective:

- There needs to be a value proposition for both parties and it should be to the advantage of all within the partnership
- The partnership should approach sustainability holistically.
- The parties should have similar values and share a common goal of incorporating circular economy.
- Identify all stakeholders and develop clear and continuous communication plans to prevent confusion and uncertainties.
- The circular economy strategic partnership should include a formal agreement to ensure transparency.
- Delivery is critical, and measures should be in place to ensure that delivery can be mapped to achieve the desired outcomes and results.
- Marketing is critical and the correct message should be conveyed.
- Roles and responsibilities should be clearly understood.

7.2.4. Conclusions on sub-research question 4

Sub-Question 4 explored how circular economy strategic partnerships can enhance the various role players' value perceptions. The relevant stakeholders were identified as potential investors, shareholders, and the local communities that are impacted by the mining operations. In-depth stakeholder analyses were not conducted and the views of communities were limited to extant literature on environmental and social governance, and corporate social responsibility, aiming to gain insight into potential enablers that could shift the sector's sustainability paradigm and enhance circular economy activity in the mining industry.

The findings indicate that by inference, a circular economy strategic partnership is to the benefit of the parties who shape the specific partnership's value perception. Circular economy is perceived as a lever that can contribute to more sustainable mining practices, and by partnering, companies will be able to leverage each other's resources to tap into the potential of circular economy and gain superior knowledge of its implementation through a partnership. This concurs with the basic principles of resource advantage theory, in that resources are identified and optimised to the benefit of all and that the whole in a partnership is better than the individual parts (Clarke & MacDonald, 2016).

A circular economy strategic partnership can hence enhance the value perception if the circular economy initiative identified for implementation through the partnership, addressing environmental, social, and economic factors.

Social inclusion is critical, as this ties in with CSR, which, if it is done correctly, will reduce the risk profile of the relevant companies, enhance the communities where the mines operate, and improve stakeholder relations. These are all key elements potential investors generally look for. It further aligns with the market trends, which shift investor sentiments to be more positive towards companies that are actively pursuing carbon reduction and social inclusion, sharing the value of mining with host communities, and acting responsibly towards economies.

7.2.5. Conclusions on sub-research question 5

Sub-Question 5 aimed to understand how circular economy strategic partnership value perceptions act as a competitive advantage for the companies that form the partnership. This question sought to explore the competitive advantage opportunities that a circular economy strategic partnership, and the value perception attached to it, could offer the players in the partnership.

The research concluded that mining companies and suppliers that enter these partnerships early on, may have some competitive advantage as it will be perceived that these companies are proactively addressing sustainability issues. A key deliverable of these partnerships will be to demonstrate results to all stakeholders, as circular economy is a relatively new concept in mining. These partnerships will lead to a reduction of a company's risk profile, managing its waste footprint, thus reducing its legal liabilities.

In the case of the tyre OEMs, it could protect the brand reputation as the tyre waste, which has the company logos on the tyres, will be disposed of responsibly. Supplier companies will gain a particular competitive advantage in positioning themselves as a partner of choice to the mining companies, thus creating barriers of entry for their competitors.

A detraction from the value perception contribution to competitive advantage, was that circular economy strategic partnerships will most likely become business as usual in the future. The need to form alliances to address sustainability is such that companies will need to collaborate to ensure a successful implementation of initiatives that can make a difference.

7.2.6. Conclusions on the main research question

This section reflects on the conclusions of the sub-questions that addressed the main research question, which explored how a circular economy strategic partnership among

multinational organizations can create value perceptions that will create a competitive advantage for all role players.

The research concluded that circular economy strategic partnerships are not yet a common occurrence in the mining industry and that circular economy is a relatively new concept. The value perception of circular economy strategic partnerships will be the demonstration of successful application of solutions that address environmental concerns, societal needs, and economic development. This can be achieved through a structured collaborative approach between multinational companies, operating in the mining industry, leveraging off each other's resources. The strategic partnership will contribute to a competitive advantage for the companies that form this partnership if it demonstrates tangible results, and if the partnership remains a unique resource between the two companies. The partnership should focus on delivering value to all stakeholders and create a win-win outcome for the parties.

7.2.7. Conclusion and final conceptual framework

Circular economy strategic partnerships can shift how mining companies engage their suppliers to deliver products and services. There is a need to transition from a transactional relationship to a strategic partnership to address sustainability issues. This can be done by carefully selecting partnerships that will be able to leverage resources to drive a broader sustainability agenda, whilst delivering on the various scopes of supply and/or services. Both mining companies and suppliers need to identify partnerships that align with each other's values and commitment to deliver on defined sustainability goals.

The companies need to develop the skills to structure these partnerships, as these strategic partnerships could become a valuable resource to the companies. From a resource-based view, multinational mining companies that partner with a strategic supplier, such as a tyre OEM, can create a value perception through this partnerships that can become a competitive advantage (Clarke & MacDonald, 2016). The companies should leverage each other’s resources (Sanders & Wong, 2021) as proposed in resource advantage theory (Hamdoun, 2020). The mining company can leverage off the tyre OEMs’ specific technological know-how in manufacturing these tyres, to seek re-purposing solutions, whilst the OEMs can leverage off the mining company’s global footprint, gaining access to new markets through becoming this partner of choice. In so doing, both companies gain through the partnership as it will be addressing environmental concerns due to the removal of waste tyres from mining operations, and if the true circular economy model, incorporating all the elements of sustainability is applied, CSR concerns will also be addressed. This will contribute to a reputation boost

within the communities where the mines operate. All the while, these strategic partnerships should remain agile, and continue to adapt to enhance the value offering to the stakeholders, and to ensure that the alliance remains unique in its solution offering (Hamdoun, 2020)

Figure 30 illustrates the revised conceptual framework based on the outcomes of the study for consideration when developing a strategy for a circular economy strategic partnership selection, to deliver value that may contribute to the participants' competitive advantage.

The conceptual framework departs from the draft theoretical conceptual framework presented in Chapter 2. The framework starts with a company identifying the need to incorporate circular economy into its business model. The framework was expanded to include the concepts of partner selection, results measurement, and delivery and that the circular economy partnership should incorporate sustainability holistically, and not only focus on the environment, which was historically the case.

The framework highlights the need for continuous monitoring and measurement, marketing, and continuous improvement. These were not constructs investigated in-depth in the research but emerged as important during the analysis of the research data.

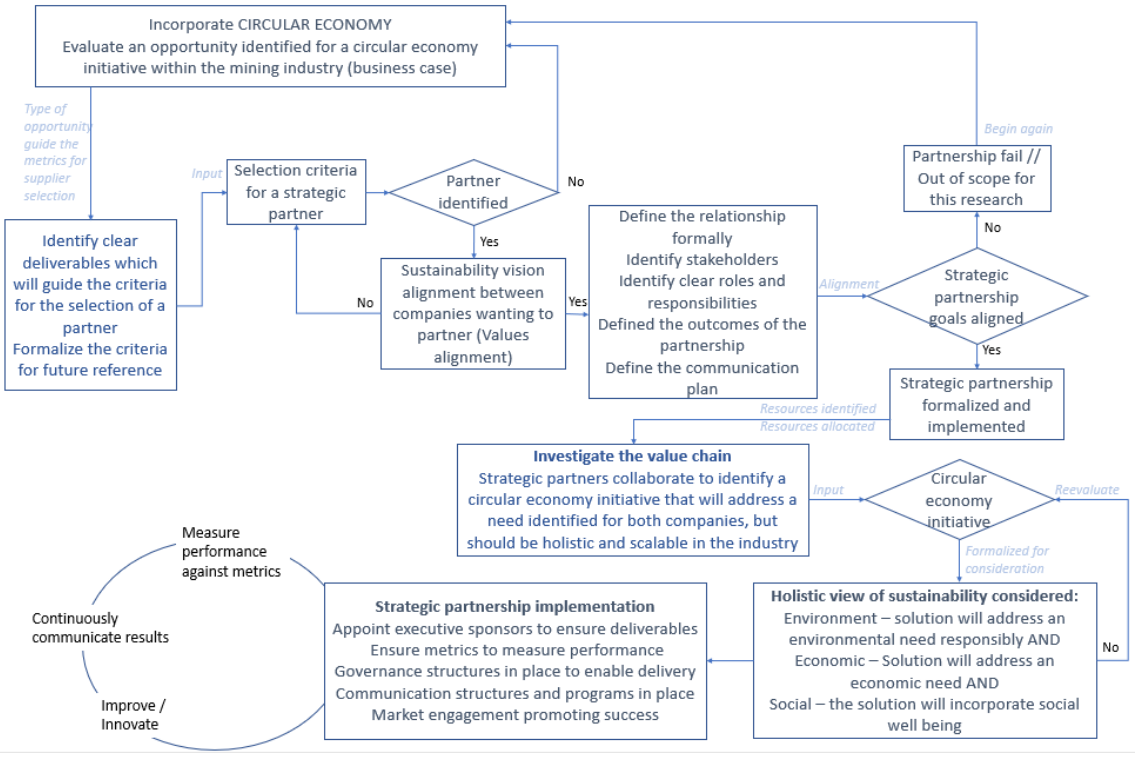


Figure 30: Framework consideration for CE strategic partnerships
Source: Developed by the author from an adaptation of the conceptual framework presented in Chapter 6

7.3. Research contribution

The research analysis and the extant literature were complementary, suggesting a contribution to the literature through the inclusion of the contributions of mining industry players and their views. The research contributes to the literature on competitive advantage and green partnering by introducing the concept of circular economy strategic partnerships in the mining industry. The contribution is described below.

Existing literature on circular economy and its application in the mining industry is limited. This research hence contributes to the literature providing a conceptual framework that can be referenced when developing circular economy partnerships for the mining industry that is a major contributor the country's GDP (McDiarmid, 2021). An extension of the literature focus on the benefit of delivering results to enhance stakeholder confidence of the companies partnering to develop solutions in an area that is not well developed.

7.4. Business contribution

Used OTR mining tyres creates a waste, environmental and reputational liability for the mines that discard these tyres, as well as the supplier that supplied them. Mining companies are pressured to remove the stockpiles of waste tyres from their sites, as these tyres pose a fire and subsequent environmental risk. Mining companies should ideally partner with these key suppliers to identify and deliver on commitments to reduce the tyre waste problem. If a circular economy program that incorporates all the elements of sustainability, is implemented to address the waste issue, the waste tyres are optimised, reducing the waste stockpiles at the mine sites with the potential to create jobs, whilst enhancing the environment. Job creation will result in social upliftment impacting on the economy.

Mining is an international and interconnected global industry, with various mining companies using the same suppliers. The nature of the industry led to the preference of inter-firm relationships that aim to create superior value for both firms in the partnership (Cowan et al., 2015). Businesses need to transition and incorporate circular economy into their framework to address the global issue, namely sustainability. As circular economy is a new concept in the mining industry, and due to the scale of the issue of an unsustainable make, use, and dispose-of model in the industry, the industry needs to consider incorporating circular economy into its business strategy. With the nature of the value chains, which spans the globe, mining is well-positioned to impact the value stream both upstream and downstream.

Companies need to focus on how they can deliver to their broader stakeholder groups by leveraging their resource capabilities (Tate & Bals, 2018). It is further important that the industry focuses on all the pillars of sustainability when incorporating circular economy initiatives, namely environmental opportunities, involving societies and surrounding communities, and identifying initiatives that can contribute to the economy, optimising existing, available resources (De Baldo & Anghela, 2020).

Circular economy should not only be viewed as a waste management mechanism. Through optimising the waste tyres, impacting on the communities, economy, and the environment, it ties with the resource based theory which incorporates all aspects of creating value through sustainability (Tate & Bals, 2018) and as such, create a competitive advantage.

It is recommended that the industry markets/encourages circular economy partnerships throughout their networks to improve visibility of these initiatives, to encourage the industry to change. Clear metrics on delivery should be communicated and success and learnings need to be communicated/shared.

The mining industry should not wait for stakeholders to mandate circular economy solutions but should proactively seek circular solutions that can contribute to the industries' drive towards carbon neutrality.

7.5. Recommendations for managers and/or stakeholders

The value chain in mining spans multiple continents and as such, positively changing the industry can have a global impact. Implementing global circular economy strategic partnerships can impact the finances, reputation, or risk models of a mining company and/or its suppliers. It is critical for the responsible manager who is accountable for the structuring, implementation, and management of these partnerships to embrace the responsibility of driving the outcomes to success.

The conceptual framework presented in Figure 30 provides commercial and sustainability professionals with a detailed tool for the structuring of circular economy strategic partnerships. The tool is generic, but highlights key considerations when designing a partnership, that include, but are not limited to:

- The identification of a circular economy goal within and across the companies.
- The selection of the correct partner to expand on this goal through a practical, implementable, and scalable initiative.
- The alignment of values between the parties.
- The determination of a business case for the partnership, centred around circular economy.
- The formalisation of the partnership with clear metrics to be delivered on.
- Ensuring that the metrics span across all the levels of sustainability.
- The governance of the relationship.

A mindset shift is required in the mining industry to ensure that a more proactive approach can be followed to deliver on the required initiatives to address sustainability constraints globally. The mining industry has networks spanning the globe and can significantly influence how resource extraction is managed upstream through suppliers and downstream through their clients.

7.6. Limitations of the research

The limitations of the research discussed in this section will explore the limitations of the study as a whole. These general limitations are not exhaustive but highlight the key areas the author identified as areas that may have impacted the thoroughness of the study.

The author is a novice and does not have experience in research question designs or interviewing techniques. Although this did not hamper the research, it may have provided a limitation on the quality of the questions and subsequent answers that contributed to the research data.

This research focused on a major mining company with participants based at the various corporate offices and a mine site, a major mining company with participants representing a mine site, and a junior mining company with representatives representing a mine site. These participants represent a subset of the broader mining industry, which consists of major, junior, artisanal, and exploration mining operations. The views expressed, were hence limited to three mining companies from a sector that is represented on most continents.

The mining supplier sample was limited to two tyre OEMs and one tyre service provider. Although these OEMs are the largest players in the market, the research excluded the insights of smaller tyre manufacturers and the impact that strategic partnerships may have on them.

Strategic partnerships that span beyond the mining company and the tyre OEMs were not investigated. The research excluded insights of local host communities, entrepreneurs, or NGOs that operate in the areas where mines operate.

Circular economy is not an established practice in mining, and the research took into consideration company-specific applications of circular economy. The research did not take into consideration the broader industry view of circular economy, comparing various mining peers with each other, or investigating the impact of these partnerships with downstream clients of the mining industry.

The research did not investigate circular economy implementation or initiatives in the mining industry. No consideration was given to upstream or downstream opportunities, or how these opportunities should be investigated as part of a strategic partnership.

7.7. Ethical considerations

The author has an extensive network within the mining industry, having worked in the industry for over 16 years. Upon receiving ethical clearance, major and minor mining companies were approached to partake in the research study (Appendix C Approval letter request to companies). Once approval were obtained, the author engaged with the key contacts in these companies to understand who would be best placed within those companies that have experience in the research topic and supporting questions. Each nominated person were individually approached through an invitation email (Appendix B) with supporting documentation from the mining company (Approval letter from the mining company) and the draft consent form (Appendix D Informed consent form), requesting their participation. A similar approach were followed for the suppliers.

All participants were treated equally. The author attempted to place participants at ease engaging in non-work related conversation prior to the interview commencing. Participants were not paid for their contribution but were thanked in advance and when the interview concluded.

The author accommodated the times of the participants to ensure participants were not inconvenienced. Where an issue arose, participants were made aware (i.e. bad sound quality, language barriers) and if their inputs were not used, they were thanked and advised as to the reasons why not. The participants whose response were not used, were removed from the data input sheet in its entirety. All participants were guaranteed anonymity.

7.8. Suggestions for further research

The research revealed the following areas recommended for further research. The recommendations are categorised as follows.

Circular economy in the mining industry:
Further research could identify potential areas for circular economy project development that do not only focus on waste management in mining. Although this is a practical problem, metrics that provide broader guidance on what an inclusive circular project could look like, could assist the industry.

An investigation is proposed of successful circular economy program implementation on mines, and a draft framework that could provide operators guidance on how to measure for success.

Further research on the value chains in mining would be useful to understand circular economy models in the resource extraction process, which will allow mining companies to become involved in the entire value stream of the mined ore

Circular economy strategic partnerships
Further research that may extend the literature, includes an investigation of time consideration on strategic partnerships and how they can impact the competitive advantage of the companies that enter the strategic partnership. An understanding of partnerships, how they are implemented and dissolved within different time frames, will provide information on how a competitive advantage can be achieved, and support circular economy strategic partnership initiatives.

Further research in defining the metrics to measure the success (or failure) of circular economy strategic partnerships in mining, will expand the literature of Sánchez-Ortiz et al., (2020).

Value identification of circular economy strategic partnerships
The research could investigate and expand on communication strategies, particularly on how circular economy strategic partnerships will be positioned and communicated within a company to internal stakeholders, hence how the circular economy program, supported by a strategic partnership will be communicated to external stakeholders, and what the core message should be external stakeholders that will contribute to the value perception

A research gap could be addressed by determining the value proposition of incorporating circular economy into ESG and CSR strategies.

Competitive advantage

The research could investigate opportunities for circular economy integration into the mining industry and what successful implementation of circular economy programs in the mining industry would entail. It could expand existing literature on whether circular economy strategic partnerships have indeed contributed to a competitive advantage where these partnerships were implemented

General

The research population could include a larger portion of mining suppliers and not only selected mining tyre OEMs.

The research could investigate the metrics that need to be established that will indicate the success of a circular economy strategic partnership. The research could further investigate what metrics should be measured to ensure that the circular economy strategic partnership delivers on the value expectation from investors.

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APPENDICES

APPENDIX A INTERVIEW PROTOCOL

Research questionnaire

The interview questions followed a semi-structured approach, and interviewees were not discouraged when they veered of the answer to a question, as this allowed for insights into what the interviewees deemed important. The qualitative interviewing process further allowed for departure from the structured questions to ask follow-on questions to gain further understanding of an interviewee's perspective where required (Bell et al., 2019).

The questions were grouped into themes, with each theme aiming to gain insights into the interviewee's perspectives. The questions was used as part of the interview guide to ensure all interviewees were asked the same questions.

The interview guide will focus on the following topic areas and subsequent questions:

Introduction and confirmation of confidentiality

The introduction was written out and read to each participant. It described to the interviewee the aim of the research, the rationale behind the research and the topics covered. The introduction was done verbally, with a write-up provided to the interviewee if they requested it prior to the interview. The introduction affirmed the confidentiality of the information shared during the interview and that no information will be quoted with specific reference to an individual. It confirmed that themes will be selected from the interviewees response to develop a theory, that the interviews will be transcribed, and that the interviewee will have the option to remain anonymous or have his/her name included. It further confirmed that roles will be generic where interviewees want to remain completely anonymous.

The read out introduction and questions follow below:

Good day

I would like to thank you for accepting the invite for this interview. This interview forms part of the data collection for my research paper to complete my Masters in Philosophy: International Business Studies. I have selected you to form part of the study group as you are deemed knowledgeable in any one of these fields: the area of sustainability, supplier partnerships, and value identification. The information gathered in this interview will be analyzed in conjunction with information gathered from the response of all selected interviewees. The aim of the interview is to gain some insights on your view of circular economy, strategic partnerships, and the value that this could bring to the companies that partake in these partnerships.

Confidentiality

Should you wish to remain anonymous, please advise if I can use your role title and if not, kindly recommend a role title likened to yours. All responses will be transcribed by myself and included in my final research paper unless otherwise agreed. All responses will be treated as confidential. And all identifiers will be removed.

Demographics of the interviewee

The demographics of the interviewee is important to ensure that the interviewee is a knowledgeable agent with experience in, or exposure to the topics discussed. The demographics questionnaire will be used as the Introductory questions.

1. What is your name?
2. How old are you? (Please provide your age range)
3. What is your role in the organization?
4. What are your qualifications pertaining to your role? (Graduate, experience)
5. How long have you been employed in your current role?
6. Have you always worked in mining or been affiliated with companies involved in mining?

Concept of circular economy

It is important to establish that the interviewee understand the concept of circular economy, can relate it to the business in which he/she operates and can articulate any opinions or thoughts on the matter.

Where an interviewee has not heard of the concept, he/she will be prompted. The following description can be given, retrieved from the Hellen MacArthur Foundation website, https://www.ellenmacarthurfoundation.org/circular-economy/concept

"Looking beyond the current take-make-waste extractive industrial model, a circular economy aims to redefine growth, focusing on positive society-wide benefits. It entails gradually decoupling economic activity from the consumption of finite resources and designing waste out of the system. Underpinned by a transition to renewable energy sources, the circular model builds economic, natural, and social capital. It is based on three principles:

- *Design out waste and pollution*
- *Keep products and materials in use*
- *Regenerate natural systems"*

7. Are you familiar with sustainability concepts?
8. Why is sustainability important?
9. Do you know what circular economy is?
10. Can circular economy contribute to sustainability goals and how?
11. Does your company have programs that either investigate or implement circular economy programs?
12. Do you think circular economy has a role to play in mining/your industry as a whole?

13. What role do you think mining/your industry could play to promote circular economy?

Supply Chains

14. Are you familiar with the concept of product value chains?
15. Do you think mining/supplier supply chains understand a product value chain?
16. Using tyres as an example, is it important for them to understand a value chain, and why?
17. Do value chains relate to circular economy?

Strategic partnerships

18. How would you define a strategic partnership?
19. Who benefits from a strategic partnership if the partnership is between the mining company and a supplier?
20. What are the key factors of a strategic partnership?

Value perception

21. Do you think there is value in partnering with a supplier/a mining company to actively seek sustainability solutions through a circular economy approach?
22. Would you promote, support or buy shares in either company, rather than another company that operates in the same industry and why?
23. Can a circular economy strategic partnership that is successfully implemented, better the image of both companies that form part of the strategic partnership?
24. Can a circular economy strategic partnership contribute meaningfully to social and environmental requirements including but not limited to job creation, community upliftment, waste reduction, and the enhancement of the environment?

Competitive advantage and conclusion questions

25. Would a successful circular economy strategic partnership provide confidence that the companies can provide sustained value for all role players?
26. Do you think a circular economy strategic partnership differentiates the companies that form this partnership and why?
27. What is the potential for shareholder confidence to be elevated, due to the perceived competitive advantage that is created by venturing into a circular economy?
28. What is the potential for perceived value to be boosted due to the competitive advantage that is created by venturing into a circular economy?

The interview was concluded by asking if there are any questions or further comments from the interview's perspective. The participants were thanked for their participation and affirmation were provided on the confidentiality of their responses.

APPENDIX B INVITATION EMAIL TO PARTICIPANTS

Good afternoon (selected participant)

I am completing the final year of my Masters in Philosophy - International Business Studies.
My research will focus on strategic partnerships and the perception of competitive advantage for companies that partake in such a relationship.

Attached, please find a request letter to engage with employees from your organization through interviews on their perceptions and experience of strategic partnerships. The interview questions are generic and not focused on your company.

All interviews will be confidential with all references to any company or individual removed. Each individual will be able to withdraw from the interview at any time.

I will greatly appreciate your favourable consideration of my request.

Cariné van der Merwe

APPENDIX C APPROVAL LETTER REQUEST TO COMPANIES

For attention: []
[Title]
[email]

[Address of the company approached]

[Date]

Dear Sir / Madam

Re: Permission to conduct research at Hummingbird Resources

My name is Carinéli van der Merwe
I am the current Global Supply Manager – Tyres and Regional Specialist HME for Anglo American, based in South Africa.
I am studying for a Master's degree in Philosophy – International Business Studies at GIBS.

I am conducting research on multinational organizations' value perceptions of a circular economy strategic partnership, with a focus on the supply chain and sustainability team's impact on these relationships.
The research will entail collecting data via interviews with select employees and I would like to invite individuals from the organization to participate in these interviews. If they agree, they will be asked to be interviewed and I anticipate the interviews to take a maximum of 60 minutes. I would appreciate if I can record the interview to be able to transcribe the responses.

Participants will be asked to give their written consent before the research begins. Their responses will be treated confidentially, and identities (their names and the name of the organization) will be anonymous. Individual privacy will be maintained in all published and written data resulting from the study.

The results will be communicated as part of my dissertation.

The research participants will not be advantaged or disadvantaged in any way. They will be reassured that they can withdraw their permission at any time during this project without any penalty. There are no foreseeable risks in participating in this study. The participants will not be paid for this study.

I therefore request permission in writing to conduct my research at your organization. The permission letter should be on your organization's headed paper, signed and dated, and specifically referring to myself by name and the title of my study.

Please let me know if you require any further information. I look forward to your response as soon as is convenient.

Yours sincerely,

Carine van der Merwe
082 857 6380
20820497@mygibs.co.za

Prof Alet C Erasmus
082 784 2467
erasmusa@gibs.co.za

APPENDIX D INFORMED CONSENT FORM

Informed consent letter for interviews

Re: Interview for the purpose of completing research for an M.Phil International Business Studies

Dear Sir / Madam

I am conducting research on multinational organizations' value perceptions of a circular economy strategic partnership.

Our interview is expected to last one hour maximum (60 minutes), and will help us understand how a circular economy strategic partnership among multinational organizations can create value perceptions that will create a competitive advantage for all role players?

Your participation is voluntary, and you can withdraw at any time without penalty.

By signing this letter, you are indicating that you have given permission for:

- the interview to be recorded;
- the recording to be transcribed by myself, who will be subject to a standard non-disclosure agreement;
- verbatim quotations from the interview to be used in the report, provided they are not identified with your name or that of your organisation;
- the data to be used as part of a report that will be publicly available once the examination process has been completed; and
- all data to be reported and stored without identifiers.

If you have any concerns, please contact my supervisor or me.

Our details are provided below.

Researcher name: Carine van der Merwe

Email: 20820497@mygibs.co.za

Phone: 0828576380

Research supervisor name:Prof Alet C Erasmus

Email:erasmusa@gibs.co.za

Phone: 082 784 2467

Signature of participant: _____ Date: _____

Signature of researcher: _____ Date: _____

APPENDIX E LIST OF CODES

Circular economy		Competitive advantage
Action on CE		catches attention
benefits of CE		Commercial value
Budget for CE		competitive advantage
CE benefit societies		create meaningful change
CE contribute to Sustainability		develop ideas
CE is a new concept		Differentiate if companies change
CE programs		Doing the right thing
CE reduce costs		Exploring different opportunities
Company run CE programs		for the greater good
Opportunity of CE		longevity
Realise value in CE		pipeline of opportunities
Recent awareness of CE		position our commitments
Role of CE in mining		Reputation
Role of mining in CE		Respectable
Understanding of CE		strategic work differentiators
value in partnering to seek CE		strong brand names
Circular economy strategic partnerships		**Cost**
CE SP bring meaning to social and environment		Cost and profit
CE SP contributes to economy		cost benefit due to CE
CE SP create sustained value		cost to sustainability
CE SP creates a positive view		Drive the wrong agenda (cost)
CE SP creates awareness		economic benefit
CE SP differentiate companies		Financial commitment
CE SP drives efficiency		financial performance
CE SP employment		Impact on the economy / GDP
CE SP improve image of both		investment required
CE SP limitations		margin
CE SP needs to be done properly		our investment in circular economy & sustainability
Clear goals defined with SP		Reduce cost
Climate change		Should cost models
carbon footprint		Sourcing strategies
Climate change		supply chain purchasing power
energy resources		TCO conversation
environmental footprint		Total cost of ownership value
Government awareness of CO2		**Development**
Population growth		Community improvement
Reduce degradation		Create different industries
urgency		Improve peoples lives
Communication		Job creation: recycling
Clear communication		Local area development
communication on CE		mining smarter
communication on SP		Opportunity to develop
Conversations		opportunity in doing business
executive engagements		transition
Expertise		Upskilling / educate
Feedback loops		

generational thing		
marketing		
Publicize		
Factors of strategic partnerships		**Mindset**
Factors of SP: Aligned values		hate these words
Factors of SP: Alignment		lifestyle
factors of SP: alignment on Strategic objectives		Luxury of choice
Factors of SP: Business case		materialistic
Factors of SP: Buy-in		maturity
Factors of SP: Clear direction		Mindful of impact
Factors of SP: Clear goals / ambition		mindset change
Factors of SP: Commitment of resources		More responsive
Factors of SP: Commitment to work together		needs to become very personal
Factors of SP: Define responsibilities		vulnerable
Factors of SP: Defined value		**Perceptions**
Factors of SP: Due diligence		Image: employee buy in
Factors of SP: Engagement		Image: employee satisfaction
Factors of SP: Financial benefit		Image: Financial benefit
factors of SP: Integrity		Image: rewarding
Factors of SP: Joint risk and reward		Image: Supplier perspective
Factors of SP: Key facilitator		Image: transformational value in sustainbility
Factors of SP: Leverage of strengths		Impact of mining
Factors of SP: Map out goals		myopic view 'cause you only looking at price and you're not looking at value
Factors of SP: Openness		New normal
Factors of SP: Plan		New trend
factors of SP: Time		Perception of shareholders
Factors of SP: Transparency		Perception of supply chain
factors of SP: Trust		Perception of value in waste
Factors of SP: Win win		Perception: Shift in mindset
Investor sentiment		positive impact in terms of longevity
Investor want: Action on sustainability commitments		Public perception changes
Investor want: Long term investment		Reasons for supporting
Investor want longevity		very hard to articulate
know what market wants		**Results**
Shared value creation		Impact
shareholder confidence boosted		it's not just lip service
shareholder perspective		Measurables
strengthen investor confidence		Pro-active approach
Visibility of results		Real results impact shareholder view
What investor look for		Results more important than perception
Leading Change		Spin off CE using products differently
Future view		Technology supporting initiatives
game changing		Validating impacts
holistic approach		**Risk**
Industry changes		just different priorities

Innovate		liability
Innovative solutions		license to mine
Lead the industry		misalignment in goals
minimize impact		narrowly focused
Need to reform		Problems develop strategic partnship
Need to work smarter		Reduce liability
Our decision impact		Risk
prosperous future		Self interest
		Supplier frustration with SPs
		uncertainty
Stakeholders		**Sustainability**
independent commercial entities		Sustainability an afterthought
Influence governments		sustainability definition
key account management people		Sustainability innovation
service orientated company		Sustainability is multi tiered
Society demands		sustainable practices moving forward
Stakeholder engagement		Sustainable service models
Supplier choice		water resources
Supplier focus		**Value Chain**
Support mining		product as a service
Strategic partnerships		Product life cycle
importance of aligned values		Quality of product/service
importance of partnerships		Reintroduced into value chain
Limited SPs		Responsible buying
Long term partnership		Reuse products
Mutual beneficial		Supplier value chain
Optimise strategic partnerships		Understanding of value chains
Partnerships will govern the success		useful life of goods
relationships		using less
sincere		Value chain part of CE
Skills to develop partnerships		**Value perception**
SP engagement		Potential for perceived value
SP investment from both parties		Quantify value
Strategic agreements/contracts		Value creation
Strategic partnership		Value definition
Strategic partnership definition		Value of CE difficult to determine
Strategic partnerships relates to how we spend money		value of integrity
Supplier role in CE SP		Value perception of CE SP
sustainable relationships		**Waste**
symbiotic relationship		Recycle
Take a risk		Reduce waste
Take time		Repurpose waste
Transforming		Repurpose what we buy
Trust		Transforming waste
Who benefits from SP		value in waste
win win		Waste as a consequence
		waste management strategy

APPENDIX F ETHICAL CLEARANCE APPROVAL

Screengrab of the Ethical Clearance obtained from GIBS

GIBS ETHICAL CLEARANCE APPLICATION FORM 2021/22

G. APPROVALS FOR/OF THIS APPLICATION

When the applicant is a student of GIBS, the applicant must please ensure that the supervisor and co-supervisor (where relevant) has signed the form before submission

STUDENT RESEARCHER/APPLICANT:

29. I affirm that all relevant information has been provided in this form and its attachments and that all statements made are correct.

Student Researcher's Name in capital letters:	CARINE VAN DER MERWE
Date:	30 Jul 2021
Supervisor Name in capital letters:	ALET ERASMUS
Date:	30 Jul 2021
Co-supervisor Name in capital letters:	
Date:	30 Jul 2021

Note: GIBS shall do everything in its power to protect the personal information supplied herein, in accordance to its company privacy policies as well the Protection of Personal Information Act, 2013. Access to all of the above provided personal information is restricted, only employees who need the information to perform a specific job are granted access to this information.

Decision:

Approved

REC comments:

Date: 06 Aug 2021