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EMPIRICAL MODEL FOR MEASURING THE IMPACT OF CORPORATE SOCIAL RESPONSIBILITY ON FINANCIAL PERFORMANCE OF SOUTH AFRICAN MINING COMPANIES

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Emmanuel Obinali OBIOHA[1], Solomon Olanrewaju AKINBOYE[2]
[1,2]Department of Finance and Investment, Faculty of Economics and Finance Tshwane University of Technology Pretoria, Ga-Rankuwa Gauteng, South Africa
Corresponding author: Emmanuel Obinali Obioha
E-mail: emmanuelobioha910@gmail.com

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Abstract:
Since 1950, corporate social responsibility has been receiving scholarly and managerial importance yet its implementation and evaluation remains untapped. The non-existence of a robust tool for measuring the impact of corporate social responsibility on financial performance of South African mining companies via social and environmental dimensions has continued to be a serious concern in literature and in practice. Thus, the focus is to develop this model by collecting a quantitative data through a census of 45 mining companies listed at Johannesburg Stock Exchange (JSE), located in Gauteng and subscribing to Socially Responsible Investment (SRI) index and empirically testing the established theoretical linkages of corporate social responsibility (i.e. social and environmental performance) across their factors/elements with measures of financial performance and putting the tested linkages together. Factor analysis was utilized for data reduction, Chi-square tested for association between categorical variables, Cronbach alpha for internal consistency and reliability of instruments. The findings revealed significant associations between corporate social responsibility, corporate social and environmental performance. Similarly, results suggest that corporate social responsibility performance can translate to financial performance through the elements of social and environmental performance. The implication is that corporate managers can achieve competitive advantage and increase profit by factoring the elements of social and environmental performance, shareholder value, revenue, operational efficiency and access to capital into their decision making models/systems.

Keywords: Corporate Social Responsibility Performance, Environmental Performance, Financial Performance, Social Performance.

INTRODUCTION

Over the years, there are significant concerns in the world, specifically in the developing nations like South Africa regarding the social and environmental negligence in mining companies' operations (Hamann, 2003; Kirat, 2015; Odeku, 2017; Caitlin, 2019; Beji, Yousf, Loukil & Omri, 2021). The mining companies' operational strategy has been only to extract the economically-viable minerals without rehabilitating the land and polluted surroundings such as rivers, forests and farmlands (Mariri & Chipunza, 2011; Diale, 2014; Amidu, Liu & Sesay, 2017; Odeku, 2017; Chuang & Huang, 2018; Tomas, 2019; Baloch, Tan, Kamran, Nawaz, Albashar & Hameed, 2021). As a result, internal and external stakeholders are constantly reproving the mining companies to be sustainable by re-examining the impact of their operations on the environment and the communities.

The United Nations (UN) through its sustainable development goals (SDG) is calling for the global environmental and social protection, restoration and promotion of sustainable use of terrestrial ecosystems (compare for this and the following statements UN, 2015, 2020; GRI, 2015;

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WBCSD, 2015; Kazemikhasragh, Cicchiello & Pietronudo, 2021; Obioha, 2024). Sustainable management of forests, oceans and seas, gradual transformation of habitable lands into deserts caused by climate change or by destructive use of the lands. Companies and mining companies in particular therefore are expected to take serious action to tackle climate change and its impact head-on through education and by integrating climate change strategies/projects in line with the international and national provisions in the area where they are located in terms of carbon emission, energy efficiency, increase water and material use efficiency. Corporate social responsibility (CSR) has been receiving significant recognition as a highly desired firm strategy for achieving host communities' wellbeing and firms' social and environmental performance by looking beyond profit motives of shareholders, into social, and environmental issues relating to the environment and host communities (Hamann, 2003; Amidu et al., 2017; Zhao, Wu and Chen, 2022; Fatima & Elbanna, 2022; Haji, Coram, and Troshani, 2023). As CSR continues to exert its grip in mining companies' operations and systems, understanding its application and evaluation is necessary for both university and business (Beji et al., 2021; Fatima & Elbanna, 2022; Soobaroyen, Ramdhony, Rashid, and Gow, 2023).

Although several research has been performed on the dimensions of CSR and financial performance via social as well as environmental performance in the developed and developing nations yet there is no empirical, single, systematic and integrated model to assess this relationship (Kanwal, Khanam, Nasreem, & Hameed, 2013; Wilson, 2022; Yi, Tanveer, Bin & Xue, 2022). Nevertheless, many of these researches have absolutely failed to deal with the major concerns that will attract the majority investors, communities and corporate social responsibility managers on board (Porter & Kramer, 2011; Beji et al., 2021). CSR can be a good thing but the question is, does it translate to financial performance (FP). The best way to bring these investors and CSR managers on board is to assess the effect of CSR on financial performance of mining companies through the pathway of social and environmental performance (Zerbini, 2017; Graafland & Smid, 2019; Laguir, Laguir & Tchemeni, 2019; Aracil, Gomez-Bengoechea & Moreno-de-Tejada, 2022). In South Africa the problem is that research on mining companies has focused on corporate Governance, CSR and Sustainability but none has directly linked CSR to financial performance or developed a system/model that can assess corporate performance (Mariri & Chipunza, 2011; Diale, 2014; Dube & Maroun, 2017; Odeku, 2017; Chuang & Huang, 2018; Namalie and Maria, 2019; Caitlin, 2019; Jung, Bae & Kim, 2022). The probable impact of this problem is the inability of mining companies in quantifying its progress in social and environmental engagements resulting in poor socio-economic practices, human rights records, environmental degradation, community wellbeing and economic development. Thus, the objective of this research, therefore is to develop an empirical model for measuring the impact of corporate social responsibility on financial performance of mining companies in Gauteng Province of South Africa after establishing the following hypothesis:

To determine theoretically and empirically a relationship or link between mining companies' CSR and social performance via socio-economic practices and human rights records.

To establish theoretically and empirically a link or relationship between a mining company's CSR and environmental performance through its factors/elements like environmental process conscious and environmental product conscious.

To determine theoretically and empirically whether CSRP can translate to financial performance by establishing the relationship between the factors/elements of social and environmental performance (i.e. socio-economic practices, human rights records, environmental process and product conscious) on the measures of financial performance (i.e. shareholder value, revenue, operational efficiency and access to capital).

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Hence, organisations, specifically the mining companies that prioritize domestic conventions and global values regarding the environment and socio-economic development like labour, human rights, anti-corruption practices and corporate governance as well as environmental process and product conscious may add substantial value to its shareholders vis-à-vis the consumers and community (Schaltegger and Wagner, 2006; WBCSD, 2015; George, Luminița, Mihai and Irina, 2020; Saxton, Ren, & Guo, 2021)

Theoretical Framework and Linkages for the Development of the Model. Theoretical framework spells out the fundamental concepts/principles on which the study theme is based. In other words, it shows the awareness of the important ideas, theories and concepts to the research issue and other fields that relate to the broader areas of the knowledge being considered (Jarvis 2013; Christopher and Collins, 2018).

To understand the impact of corporate social responsibility on the financial performance of South African mining companies, this paper considers the stakeholder theory. Stakeholder theory states that an organisation is sustainable if its business operation is consistent with the demands of its stakeholders and of course the shareholders (Donoher, 2017; Rosati and Faria, 2019; Silva, 2021; Kazemikhasragh et al., 2021; Erin, Bamigboye and Oyewo, 2022). Organisation must not only be limited to a system that maximises shareholder profit, but also one that fulfils all stakeholders' expectations (Donoher, 2017; Rosati and Faria, 2019; Schniederjans and Khalajhedayati, 2020; Chowdhury, Paul, Sianaki & Quaddus, 2020). This implies that companies must operate responsibly to the interest and concerns of the stakeholders like government, community/society, customer and shareholders for their continued existence and performance.

Sustainable companies are faced with compliance pressures from both within and outside stakeholders (Dara et al., 2020). Mining companies, therefore, need to adopt and integrate relevant approaches and systems into their business models to avoid disfavour from customers and the public (Donoher, 2017; Rosati and Faria, 2019; Jha & Rangarajan, 2020). Corporate houses must conform to an increasing number of domestic principles and global ideals controlling the environment, labour, human rights, anti-corruption practices and corporate governance (Székely and Knirsch, 2005; GRI, 2015; WBCSD, 2015; Avlonas and Nassos, 2020; Schoeneborn, Morsing and Crane, 2020).

For the development of the model, the paper considers the following linkages/dimensions across their factors/elements and their impacts on CSR and financial performance:

Theoretical Linkages.

Link 1: Impacts of Mining Companies CSR on Corporate Social Performance (I.E. Socio-Economic Practices and Human Rights Records). Companies engage in corporate social responsibility in order to maintain their corporate reputation, and regain its legitimacy among stakeholders through better stakeholder relations (Grant, 2008; Yinyong, Manisha & Yoon, 2016; Mingming, Xiaodan & Jerry, 2017; Jialong, Zulfiquer, Xianzhe & Wenlong, 2019). Mass (2018), explained that corporate social responsibility and corporate social performance generally imply that corporations are answerable to a wide range of stakeholders such as employees, customers, governments and local communities. Thus, the focus of corporate social responsibility is on the behaviour or strategy of a firm, while corporate social performance is the product of this behaviour (Wood, 2010; Mass, 2018). Hence, a company's good record of CSR can translate to corporate social performance. For more insight on the role or impact of CSR on corporate social performance this study furthermore, considers the associations between CSR on the factors/dimensions of corporate social performance i.e. corporate socio-economic practices and human rights records as follows:

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CSR and Corporate Social Performance Via Socio-Economic Practices. CSR activities/programs can enhance corporate socio-economic practices by alleviating poverty via creation of employment, sponsoring community business, earnings, development of structures and establishment of municipal services like fitness centres and associations that may lead to better institution and speedy sustainable development (Aragon & Rud, 2013; Mawejje, 2018; Patrick, Frank & Dianah, 2019). According to Patrick et al. (2019), corporate socio-economic performance is the resultant effect of CSR actions. They further explained that CSR agrees with the stakeholder theory which advocates that firm's resources should not only be utilized by the firm but should also affects its socio-economic practices leading to corporate social as well as financial performance.

CSR and Corporate Social Performance Via Human Rights Records. Corporate social responsibility activities/programs which leads to good human rights records should contribute towards the uplift of the community through creation of local employment, community training programs for knowledge transfers and access to essential services (Guiliani & Macchi, 2014; Esteves, Factor, Vanclay, Gotzmann & Moreiro, 2017; Lidewij & Frank, 2018). According to Lideij and Frank (2018), corporate human rights refers to the extent to which an organization protects the welfare of its employees, the neighbors and the country citizens where they are located even also in the countries where they are not located. Thus, corporate social responsibility through good record of human rights can help to build good relationships with affected environment, reputation, influence the financial market assessment of companies and hence, increase the financial performance (Jijeleva & Vanclay, 2017).

Link 2: Impacts of Mining Companies CSR on Corporate Environmental Performance (I.E. Environmental Process and Product Conscious). Corporate environmental performance refers to the act a corporation takes to address its environmental footprint by adopting the process and practices that are more energy-efficient that generate fewer pollutants (Marilyn & Thomas, 2016; Willice, 2016; Chuang & Huang, 2018; Patrick, Frank and Dinnah, 2019). Corporate social responsibility performance is the corporate commitment to environmental and social norms that improves the quality of life not only for its employees but for the wider community and society thus leading to economic development (WBCSD, 2015; Chuang & Huang, 2018). Corporate social responsibility in terms of environment is very crucial for environmentally sensitive industries like mining due to the potential environmental damage resulting from their business activities/operations (Chuang & Huang, 2018). This link considers the impacts of CSR on the factors/elements of corporate environmental performance (i.e. environmental process and product conscious) in the following ways:

CSR and Environmental Performance Via Environmental Process Conscious. Organizations, especially mining companies are faced with increasing institutional and competitive pressures to enhance environmental performance due to increase in environmental disasters (Banyte & Gadeikiene, 2010; Nik, Shaiful & Nor, 2015; Pavlos, Stelious & Naomi, 2019). As a result, business organizations are turning to corporate social responsibility as its payback tool. It seeks to integrate environmental consideration into their operation and activities (Nik, Shaiful & Nor, 2015). Walls, Berrone and Phan (2012) and Pavlos, Stelious & Naomi (2019), defined corporate environmental process conscious as corporate environmental responsibility/performance that describes the degree to which a company reduces the impacts of its wastes and emissions on the environment by changing its production patterns by ensuring that inputs e.g. materials, energy, water, equipment equals outputs e.g. products, bye-products. In other words, CSR enforces corporate environmental process conscious which allows mining companies the opportunity of supplying environmental friendly and competitively-priced goods and services by gradually reducing ecological impacts and

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resource intensity of its products. There is therefore, a positive link between CSR and environmental performance via environmental process conscious.

CSR and Environmental Performance Via Environmental Product Conscious. Environmental product conscious or eco-efficiency is the degree to which a mining company becomes environmental friendly by changing their production pattern for its products and services portfolios in order to reduce or avoid environmental impacts (Doluca, Wagner & Block, 2018; Dara, 2020). Edwards (2010) and Jenifer, Giulia, Luca & Santiago (2018), stated that quality environmental friendly products a function of CSR can obviously help mining firms to build their reputation or brand value in the market. Thus, a well-thought out CSR via corporate environmental product conscious can lead to corporate environmental performance (Jenifer et al, 2018; Graafland & Smid, 2019; Ettinger et al., 2021).

Link 3 Impact of CSRP (i.e. Corporate Social and Environmental Performance) On Mining Companies' Financial Performance. CSR is referred to as corporate behaviour which primarily incorporates stakeholders' social and environmental concerns into the company's business strategies and decision making models for achieving financial performance (Oberserder, Schlegelmilch & Murphy, 2013; Zhihong, Tien-Shih & Joseph, 2018). According to Aguinis (2011), CSR is the "context-specific organizational actions and policies that take into account stakeholders' expectations and the triple bottom line performance i.e. economic, social and environmental performance". CSR activities are ways of improving or sustaining a safer and cleaner environment for the whole society (Titi, Jianling & Tamokloe, 2019; Caitlin, 2019; Tomas, 2019).

CSR can increase sustainability, competitiveness and financial performance if managed and measured across the factors/elements of corporate social and environmental performance (Boesso & Michelon, 2013; Bohas &, 2016).

Hence, a company is perceive to achieve corporate social performance and greater financial performance if it improves its reputation among its main stakeholders (Waddock & Graves, 1997; Pablo, 2017).

In this section/linkage the paper examines the relationship between CSRP, a factor of corporate social and environmental performance such as socio-economic practices, human rights records, environmental process and product conscious and measures of financial performance like shareholder value, revenue, operational efficiency and access to capital.

Impact of CSRP (i.e. Corporate Socio-Economic Practices) On Shareholder Value, A Measure of Financial Performance. CSRP, refers to as the corporate adherence to the ethical norms and corporate strategies leading to sustainable economic development that takes care of its employees as well as the wider community and the society (WBCSD, 2015; Chuang & Huang, 2018; Graafland & Smid, 2019; Laguir et al., 2019).

CSR has increasingly become an important issue in mining companies for promoting socio-economic practices that meet the demands of various stakeholders such as consumers, investors, governments and the community in general (Minchung & YongHee, 2014; Julie, 2017; Bucaro, Jackson & Lill, 2020; Beji, Yousf, Loukil, & Omri, 2021). It was found that CSR and corporate socio-economic practices are positively related to stock returns but not significantly associated with equity risk. Likewise, CSR a function of corporate socio-economic practices like community donations, education and hospitals can significantly increase shareholder's value by improving stock returns however, no significant relationship with equity risk was found. To maximize shareholder value, Julie (2017) and Marx, De Swardt, Smith & Erasmus (2019) explained that stock price appreciations and rising dividends payments are expected to be prioritized since companies based their indicators

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and managerial performance on stocks and dividends instead of traditional measures of product market share.

Impact of CSRP (i.e. Corporate Socio-Economic Practices) On Revenue a Measure of Financial Performance. The exploration of mineral deposits by the mining companies has the potential to generate new and possibly substantial revenues for host communities or countries and the shareholders which is possible through CSRP (Sachs & Warner, 2019). Revenue generated from mining activities can raise standards of living and socio-economic development for current and future generations if properly managed with the help of corporate social responsibility performance (CSRP) (Ovesen, Hackett, Burns, Mullins & Roger, 2018; Sachs & Warner, 2019).

Impact of CSRP (i.e. Corporate Socio-Economic Practices) On Operational Efficiency a Measure of Financial Performance. Obioha (2024), described operational efficiency as the ability to strike a balance between input and output i.e. mass balance in relation to cost. Thus, improvement in operational efficiency can increase the mining companies' bottom lines, resulting in better financial performance (Schaltegger, Hörisch & Freeman, 2019; Obioha, 2024). Conversely, in a situation where CSR actions results in high cost in socio-economic practices and human rights records, mining firms may still engage in them with the view that there will be increase in bottom line in the other areas like reputation, licence to operate and risk profile. (Wilburn & Wilburn, 2013; Bucaro, Jackson, & Lill, 2020; Obioha, 2024).

Impact of CSRP (i.e. Corporate Socio-Economic Practices) On Access to Capital a Measure of Financial Performance. A company that engages in socio-economic practices like donations, building of community hospitals, schools, roads as a result of CSRP attracts customers, access to capital and financial performance (Gitman, 2019; Chu, Chen & Gan, 2020; Aracil, Gomez-Bengoechea and Moreno-de-Tejada, 2022). Access to capital can steer/drive the growth of companies and their ability to invest in the future (Marney & Tarbert, 2018; Gitman, 2019; Obioha, 2024). According to Gitman (2019), two components dictate availability and cost of capital: expected rate of return and risk. The higher the risk on an investment, the higher is the rate of return required by investors.

Impact of CSRP (i.e. Corporate Human Rights Records) On Shareholder Value a Measure of Financial Performance. Examples of human rights abuses include communities' exposure to health hazards like toxins, taking of community's private land without commensurate compensation as well as violation of the community members' right to personal security (United Nations Global Compact, 2018; David, 2019). These acts unfortunately destroy the community's farmland which in turn lessens their standard of living. Conversely, mining companies that have good human rights records through the practice of CSR by not exposing the community to health-harming toxins, improve in communities farmland may lead to attraction and retention of customers as well as increase in shareholder value and financial performance (United Nations Global Compact, 2018; Gitman, 2019; Chu et al., 2020; Aracil, Gomez-Bengoechea & Moreno-de-Tejada, 2022).

Impact of CSRP (i.e. Corporate Human Rights Records) On Revenue a Measure of Financial Performance. British Petroleum's (BP) efforts to eradicate human rights abuses consistent with the sustainable development goals (SDGs) have built public trust in their company, strengthen their reputation, market competitiveness and financial resources (PepsiCo, 2011; UN, 2015). Corporate social responsibility performance obtained by way of significantly ending violence against the torture of children e.g. child labour can build good human rights records, brand value/reputation, influence the financial market assessment of companies and hence, increase the revenue and financial performance of the company (Fraering and Minor, 2013; Gitman, 2019; Bartikowski & Berens, 2021; Ahmed, Khan and Ozturk, 2021).

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Impact of CSRP (i.e. Corporate Human Rights Records) On Operational Efficiency, a Measure of Financial Performance. CSR projects that the relocation and reparation strategies and measures for human rights violations must comply with human rights standards (Lidewij and Frank, 2018). Thus, companies that achieved CSRP and corporate social performance through eradicating human rights abuses can enjoy operational efficiency, build public trust in their companies, and strengthen their reputation and financial resources (Sharon, 2002; SustainAbility, 2001; Ettinger et al., 2021; Aracil, Gomez-Bengoechea & Moreno-de-Tejada, 2022; Obioha, 2024).

Impact of CSRP (i.e. Corporate Environmental Process Conscious) On Shareholder Value, a Measure of Financial Performance. Mining companies' environmental impacts stem from their overindulgences to the society and the environment e.g. natural resource diminution, land dilapidation, pollution, emissions, energy consumption and waste dumping and these impacts are measured/assessed by their environmental track (Hengky, Charbel, Ana, Douglas, Samuel & Muhammad 2018; Lu & Wang, 2021; Obioha, 2024). To address these environmental impacts mining companies can through the practice of CSR achieve environmental performance by being environmental process conscious through the minimisation of any hostile environmental effects with its manufacturing processes and practices, e.g. changes to materials/equipment resulting in good public image, substantial societal and shareholder value (Farmaki, 2019; Ge & Li, 2021; Lu & Wang, 2021).

Impact of CSRP (i.e. Corporate Environmental Process Conscious) On Revenue, A Measure of Financial Performance. The ability of organisations in managing their environmental affairs concerning the natural environment, resources consumption and carbon emission leads to their environmental performance (Song, Yang, Lu, Li & Zeng, 2014; Wang & Xiu, 2019; Wachira and Mathuva, 2022). Thus, to achieve CSR performance and environmental performance, mining companies need to be environmental process conscious i.e. adopting environmental-friendly equipments and processes that ensure continuous cost-effective production that can attract and retain customers thereby leading to firm's revenue (Asit, 2019; Wang & Xiu, 2019). Hence, corporate machinery is dependent upon revenue because it pays for employees, capital and investments, pays dividends to shareholders and makes R&D possible (Gitman, 2019; Vu Minh Ngo, 2020; Ahmed, Khan and Ozturk, 2021).

Impact of CSRP (i.e. Corporate Environmental Process Conscious) On Operational Efficiency, A Measure of Financial Performance. Jenifer, Giulia, Luca & Santiago (2018), stated that operational efficiency is a response from business for producing and improving environmentally friendly products and services as well as start-up cleaner production processes. Thus, mining companies can through the practice of operational efficiency that encourages technological capabilities, strict compliance to employee training, supply chain management, and stakeholder communication become environmentally friendly and achieve CSR performance, environmental and financial performance (Voicu, 2018; Mikael, 2019).

Impact of CSRP (i.e. Corporate Environmental Process Conscious) On Access to Capital, A Measure of Financial Performance. According to literature, environmental performance asserts that companies that voluntarily implement environmental management strategy like environmental process conscious beyond compliance with environmental regulations are deemed to have access to capital that can boost their growth (Nishitani, 2011; An & Pivo, 2018; Kimitaka, Nurul, Shinji & Hardinsyah, 2019). Arguably CSR reduces operational risk by encouraging environmental related investments that results in easier access to capital or a reduced cost of capital (An & Pivo, 2018; Albuquerque, Koskinen & Zhang, 2018; Piet, Rogier, Nils & Erkam, 2019). Thus, CSR can lead to

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financial performance through the pathway of corporate environmental process conscious and access to capital.

Impact of CSRP (i.e. Corporate Environmental Product Conscious) On Shareholder Value, A Measure of Financial Performance. The onus is on companies to significantly reduce their environmental costs/impacts on the environment and the community in view of the pressure from internal and external stakeholders (Lehmaan, Bach & Finkbeiner, 2016; Zhongqiang Bin, Jinglong &, 2018). Hence, CSR can achieve corporate environmental and financial performance through environmental product conscious. Mining companies' environmental impacts come by way of their products' materials from production to disposal. CSR therefore defines corporate environmental product conscious as the degree whereby a mining company can be environmentally friendly by refurbishing its product and service collection to lessen the hostile environmental impacts throughout a product's life cycle for the attraction and retention of customers (Lehmaan, Bach & Finkbeiner, 2016; Fatima, 2020; Ge, & Li, 2021). Thus, the value of a product is measured by its market value which impacts on shareholder value and ultimately financial performance (Fatima, 2020; Ge, & Li, 2021).

Impact of CSRP (i.e. Corporate Environmental Product Conscious) On Revenue, A Measure of Financial Performance. CSR engenders sustainable products, one of the approaches to achieve cleaner production, reduce environmental impacts/costs and builds revenue and financial performance (Hossain, 2018; Kim, 2019; Fatima, 2020; Chien, Sadiq, Nawaz, Hussain, Tran & Le, 2021). Producing and selling quality environmental products in a value-led manner e.g. Ford Inc. and Ben & Jerry's The Body Shop, can actually help to increase firms' brand value and reputation in that market (Ford Inc., 2011; Kim, 2019; Obioha, 2024).

Impact of CSRP (i.e. Corporate Environmental Product Conscious) On Operational Efficiency, A Measure of Financial Performance. CSRP is a function of corporate environmental performance that produces operational efficiency, environmental products conscious and financial performance (Reimer, Van Doorn, & Heyden, 2018; Stekelorum, Laguir, & Elbaz, 2019). Thus, operational efficiency is the firm's managerial proficiency in translating inputs to equal outputs in the production process for maximum benefits/financial performance (Husain, 2018; He-Boong & Joosh, 2019; Asit, 2019; Lu & Wang, 2021).

Impact of CSRP (i.e. Corporate Environmental Product Conscious) On Access to Capital, A Measure of Financial Performance. CSRP plays a crucial role in achieving corporate environmental performance/quality by advocating for environmentally friendly design, waste minimization, demand-side management, product stewardship and full-cost accounting resulting to firm's increase in resources (Wong, Miao, Cui & Tang, 2016; Dayuan, Cuicui, Lu, Xiaohong, Shenggan & Yini, 2017; Kim, 2019; Lu & Wang, 2021; Yi, Tanveer, Bin & Xue, 2022). Jens and Klaus (2019) described corporate environmental product conscious as any form of innovation that reduces environmental products impacts through efficient and responsible use of natural resources e.g. materials, water, energy and waste can achieve sustainable development, environmental performance, CSR performance as well as financial performance.

Hence, the above literature demonstrates a positive relationship between corporate social responsibility, social and environmental performance and the mining companies financial performance via the factors/elements and measures.

Linking Themes. On the basis of the above literature, three theoretical links between corporate social responsibility, social, environmental and financial performance across their factors and measures were established:

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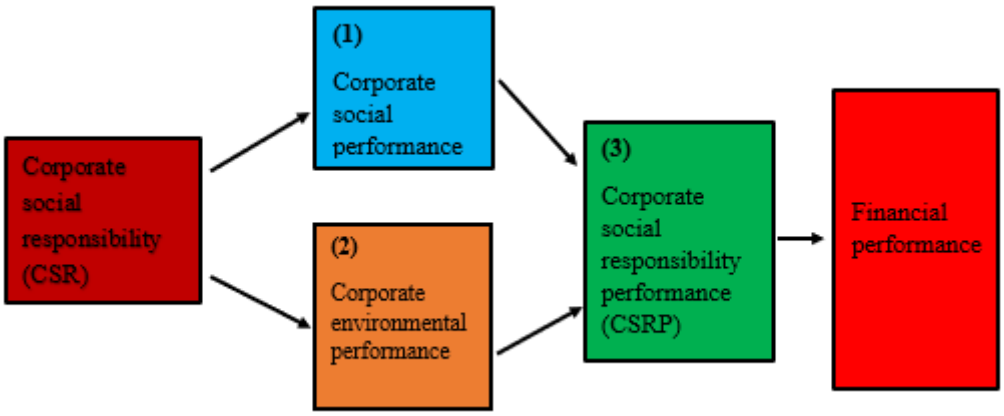
1. Link 1: Impacts of mining companies CSR on corporate social performance (i.e. socio-economic practices and human rights records)
2. Link 2: Impacts of mining companies CSR on corporate environmental performance (i.e. environmental process and product conscious)
3. Impact of mining companies' CSRP (i.e. socio-economic practices, human rights records, environmental process and product conscious) on measures of financial performance (i.e. shareholder value, revenue, operational efficiency and access to capital)



(Source: Author)

Figure 1. Tested theoretical linkages for measuring corporate social responsibility on financial performance

Links, 1-2 were tested to determine whether CSR actions via socio-economic practices, human rights records, environmental process and product conscious can translate to corporate social and environmental performance. Link 3 tested if CSRP via the factors/elements of social and environmental performance (i.e. socio-economic practices, human rights records, environmental process and product conscious) can give rise to increased measures of financial performance (i.e. shareholder value, revenue, operational efficiency and access to capital) for the development of the model.

METHODS

The paper adopted a quantitative approach and the quantitative data was collected using a structured questionnaire developed by the researcher. The questionnaire was to be used to gather data from the targeted 45 mining companies listed at Johannesburg Stock Exchange (JSE), located in Gauteng and subscribing to Socially Responsible Investment (SRI) index (JSE, 2019), in order to determine the impacts of corporate social responsibility (CSR) on financial performance via social and environmental dimensions. Due to the small number of the population and to avoid possible bias, a census was to be conducted on all the 45 companies in the population. The questionnaire comprised three sections where section 1 dealt with organizational characteristics. Section 2, provided the relationships between corporate social performance, corporate environmental performance and CSR. Section 3 dealt with the relationships between CSRP (i.e. elements/factors of social and environmental performance) and measures of financial performance. The data consisted of 6 categories, ranging from 1 being clearly expressed as "strongly disagree" (SD) or "extremely low importance" (ELI) to 5 as "strongly agree" (SA) or "extremely high importance" (EHI), and 6 as

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"do not know" (DNK). In order to have a significant, divergence and accurate analysis of the state of affairs in all the mining companies, two questionnaires were to be completed from each company by those responsible for the company's CSR, i.e. social and environmental issues, who are financial practitioners and environmental managers.

Data was analysed by employing SPSS version 23.0. Since data was categorical, Cronbach Alpha as well as pilot study was used to ensure internal consistency and reliability of the instruments. The pilot result showed that the questionnaire was thorough and suited for the study's aims. Chi-square tested for the association between two categorical variables and factor analysis was used to reduce the data items. For ethical consideration each respondents received a letter on "request for permission to do research", that outlined the study subject, overarching goal, confidentiality was ensured (i.e. right to privacy and identity protection), all respondents' names and companies' names were kept secret.

To achieve the objective of the study, the paper adopts the following twofold approaches:

- Deriving from the information gathered through questionnaires completed by the financial practitioners and environmental managers of the said 45 companies constituting the socially responsibility investment (SRI) index at the Johannesburg Stock Exchange (JSE, 2019), the paper empirically tests the linkages between corporate social responsibility (i.e. social and environmental performance) and their important factors along the measures of financial performance.
- Putting these linkages together an empirical model for measuring how corporate social responsibility affects financial performance of South African mining companies via social and environmental dimensions were developed.

RESULT AND DISCUSSION

Given the literature review, study methods and the determined linkages, this section focuses on data analysis, interpretation, and the presentation of results/findings in accordance to the survey questionnaire.

Respondents' Information. The target population was all 45 mining companies in Gauteng province of South Africa, listed in the JSE and subscribing to Socially Responsible Investment (SRI) index. However, only 40 of them complied/participated, resulting in (88.89%) response rate. According to the method section above, two personnel completed the questionnaire from each mining company. Thus, in all 80 data were obtained from the 40 companies that responded. The legal status of the mining companies are, public Ltd (97.5%, n=78) and private (Pty) Ltd (2.5%, n=2). The geographical location of the respondents are Eastern Cape (10%, n=8); Free State (13.75%, n=11); Gauteng (22.5%, n=18; Kwazulu-Natal (6.25%, n=5); Mpumalanga (5%, n=4); Northern Cape (5%, n=4); Limpopo (8.75%, n=16) and Western Cape (8.75%, n=7). Number of employees in the mining companies are, 101 -500 (8.75%, n=7); 501 – 1000 (18.75%, n=15); 1001-5000 (38.75%, n=31); 5001-10000 (23.75%, n=19) and >10000 (10%, n=8). The respondents' functions include, environmental managers (31.25%, n=25); financial practitioners (30%, n=24); production manager (33.75%, n=27) and others (5%, n=4).

Data Analysis. Data was analysed using Stata V15 software package. The results were summarised in terms of absolute and relative frequencies. Frequency analysis, crosstab analysis, chi-square test, and symmetric measure analysis were among the statistical analyses. In a frequency distribution, the values of a numerical variable were tallied into a series of numerically ordered classes. A class interval is a set of values for each class that are mutually exclusive. The class midpoints are the numbers that are midway between each class's bottom and upper borders. In a

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relative frequency distribution, each class represents the relative frequency, or proportion, of each group's total. In a percentage distribution, each class represents a percentage of the total for each group (Leedy and Ormrod, 2021).

The association between two or more survey questions is shown in a crosstab analysis. It shows how different groups of respondents responded to the survey questions in a side-by-side comparison. The Chi-square test for independence, also known as Pearson's Chi-square test or the Chi-square test of association, is used to see if there is a relationship between two categorical variables because the data is categorical (Leedy & Ormrod, 2021). According to the Chi-square test, if $P<0.05$, then the variables are significantly associated. Symmetric measure analysis: Phi and Cramer's V are both tests of the strength of association. In a table format, the results/findings from the analysed data are summarized.

Reliability Tests.

Table 1. Cronbach's alpha test showing how mining companies care about the environment by implementing social strategies, tools and initiatives

Item	Obs	Sign	Item-test correlation	Item-rest correlation	Average inter-item covariance	Alpha
Sec2Q6.1	80	+	0.3471	0.2353	0.1206584	0.7637
SecQ6.2	80	+	0.6650	0.5263	0.0955933	0.7302
SecQ6.3	80	+	0.4906	0.3653	0.1117695	0.7517
SecQ6.4	80	+	0.7482	0.6842	0.1013957	0.7221
Sec2Q6.5	80	+	0.4203	0.2132	0.1143381	0.7811
Sec2Q6.6	80	+	0.7211	0.6132	0.0937723	0.7183
Sec2Q6.7	80	+	0.5261	0.3847	0.1080007	0.7497
Sec2Q6.8	80	+	0.7165	0.6436	0.1021982	0.7250
Sec2Q6.9	80	+	0.2390	0.1004	0.1125727	0.7779
Sec2Q6.10	80	+	0.5923	0.4647	0.1039163	0.7396
Sec2Q6.11	80	+	0.6133	0.4767	0.1010562	0.7377
Test scale					0.1071296	0.7639

The table 1 above, was the reliability analysis for item Sec2Q6.1 to Sec2Q6.11 in the sub-section of current social and environmental issues. Alpha score value for Sec2Q6.5 was the highest with an alpha score value of 0.7811. All other items have alpha scores that were above 0.7 and alpha scores range between 0.7183 and 0.7779. Therefore reliability was accepted because the alpha score value is 0.7639 which is more significant than 0.7, the cut-off point.

Table 2. Cronbach's alpha test on priority place on mining companies' social problems faced

Item	Obs	Sign	Item-test correlation	Item-rest correlation	Average inter-item covariance	Alpha
Sec2Q7.1	80	+	0.4026	0.2748	0.0990569	0.7052
Sec2Q7.2	80	+	0.5735	0.4811	0.0924854	0.6834
Sec2Q7.3	80	+	0.3268	0.1525	0.1027135	0.7248
Sec2Q7.4	80	+	0.5150	0.4146	0.0949674	0.6906
Sec2Q7.5	80	+	0.4659	0.3461	0.0960348	0.6967
Sec2Q7.6	80	+	0.6214	0.5203	0.0879372	0.6741
Sec2Q7.7	80	+	0.7275	0.5995	0.0736454	0.6466
Sec2Q6.8	80	+	0.8443	0.6875	0.0523105	0.6198

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Sec2Q7.9	80	+	0.5236	0.3807	0.0907775	0.6900
Sec2Q7.10	80	+	0.3006	0.0915	0.1054098	0.7415
Test scale					0.0895336	0.7132

The table 2 shows that mining companies' problems on the environment in terms of social issues faced with the communities are reliable because the alpha is greater than the cut-off point of 0.7.

Table 3. Cronbach's alpha test on the level at which mining companies' care about the environment by implementing environmental tools, strategies and systems

Item	Obs	Sign	Item-test correlation	Item-rest correlation	Average inter-item covariance	Alpha
Sec2Q8.1	80	+	0.4459	0.3724	0.1340769	0.8164
Sec2Q8.2	80	+	0.5208	0.4501	0.1310438	0.8121
Sec2Q8.3	80	+	0.5490	0.3957	0.1197475	0.8189
Sec2Q8.4	80	+	0.7412	0.6679	0.1136981	0.7916
Sec2Q8.5	80	+	0.7531	0.6712	0.1097306	0.7891
Sec2Q8.6	80	+	0.6816	0.6062	0.1119335	0.7985
Sec2Q8.7	80	+	0.7046	0.6248	0.1169933	0.7955
Sec2Q8.8	80	+	0.5236	0.4118	0.1254405	0.8129
Sec2Q8.9	80	+	0.5968	0.4924	0.1209764	0.8062
Sec2Q8.10	80	+	0.6135	0.5013	0.1184512	0.8055
Sec2Q8.11	80	+	0.3153	0.1558	0.1365404	0.8379
Sec2Q8.12	80	+	0.6297	0.5152	0.1166667	0.8042
Test scale					0.1218084	0.8211

Table 3 indicates that with the help of CSR the rate at which mining companies care about the environment by implementing environmental tools, strategies and systems are reliable, Cronbach's alpha is greater than the cut-off point of 0.7.

Table 4. Cronbach's alpha test on the mining companies' acceptance of environmental problem faced

Item	Obs	Sign	Item-test correlation	Item-rest correlation	Average inter-item covariance	Alpha
Sec2Q9.1	80	+	0.7888	0.7431	0.3588134	0.9293
Sec2Q9.2	80	+	0.8695	0.8285	0.3376672	0.9245
Sec2Q9.3	80	+	0.7971	0.7487	0.3527649	0.9286
Sec2Q9.4	80	+	0.7740	0.6997	0.3353266	0.9325
Sec2Q9.5	80	+	0.7570	0.7019	0.3585262	0.9308
Sec2Q9.6	80	+	0.8092	0.7524	0.3381687	0.9284
Sec2Q9.7	80	+	0.7552	0.6990	0.3580376	0.9309
Sec2Q9.8	80	+	0.8244	0.7783	0.3447274	0.9270
Sec2Q9.9	80	+	0.7492	0.6834	0.3510974	0.9318
Sec2Q9.10	80	+	0.8709	0.8330	0.3336977	0.9241
Test scale					0.3468827	0.9355

Table 4 displayed the Cronbach's alpha test result of the mining companies' acceptance of the environmental problems/issues faced which is reliable since that alpha result is greater than 0.7 the cut-off point.

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In summary, the mining companies are faced with the problems of caring about the environment and the above test confirmed the realities of those problems and the efforts made. Thus, the Cronbach's alpha of all the sub-sections are reliable.

Table 5. Cronbach's alpha test on the linkage between corporate social performance, environmental performance and CSR

Item	Obs	Sign	Item-test correlation	Item-rest correlation	Average inter-item covariance	Alpha
Sec3Q11.1	80	+	0.9482	0.9062	0.4918724	0.9520
Sec3Q11.2	80	+	0.9476	0.9087	0.509928	0.9516
Sec3Q11.3	80	+	0.9547	0.9168	0.482356	0.9490
Sec3Q11.4	80	+	0.9460	0.9036	0.4995885	0.9527
Test scale					0.4959362	0.9631

Table 5 indicates that there is a positive relationship between CSR and social and environmental performance with the help of the elements/factors of social and environmental performance (i.e. socio-economic practices, human rights, environmental process and products conscious). The reason is that Cronbach's result exceeds the cut-off point of 0.7.

Table 6. Cronbach's alpha test on the linkage between CSR performance (i.e. corporate social performance) and financial performance

Item	Obs	Sign	Item-test correlation	Item-rest correlation	Average inter-item covariance	Alpha
Sec4Q15.1	80	+	0.6685	0.4496	0.4304012	0.6905
Sec4Q15.2	80	+	0.7085	0.5063	0.398714	0.6621
Sec4Q15.3	80	+	0.8194	0.6134	0.2780864	0.5871
Sec4Q15.4	80	+	0.7507	0.4851	0.3476337	0.6774
Test scale					0.3637088	0.7191

Table 6 illustrates the reliability test result (0.7191) on the linkage between CSR performance (i.e. corporate social performance) and financial performance that is greater than the cut-off point of 0.7. Hence, this link is reliable since the result is larger than the cut-off point 0.7.

Table 7. Cronbach's alpha test on the linkage between CSR performance (i.e. corporate environmental performance) and financial performance

Item	Obs	Sign	Item-test correlation	Item-rest correlation	Average inter-item covariance	Alpha
Sec4Q19.1	80	+	0.8015	0.6677	0.8229424	0.8622
Sec4Q19.2	80	+	0.8231	0.6970	0.7899691	0.8515
Sec4Q19.3	80	+	0.8911	0.7898	0.6584362	0.8134
Sec4Q19.4	80	+	0.8906	0.7783	0.6363683	0.8200
Test scale					0.726929	0.8738

Table 7 demonstrates that the linkage between CSR performance through the pathway of corporate environmental performance and financial performance is reliable because the test result is more significant than the cut-off point of 0.7.

Validity, Pilot Study. This study with the help of a pilot test/study ensured the validity of the instruments by analyzing and comparing the results of the data for a particular criterion through

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both face-to-face and telephonic interviews and correlates them with the results of data of the same criterion from the questionnaires and it showed that the questionnaire was thorough and met the study's aims.

The Empirical Linkages/Associations.

Link 1: CSR and Elements/Factors of Corporate Social Performance (I.E. Socio-Economic Practices and Human Rights Records). This link illustrates the respondents' viewpoints on the association between mining companies' CSR and corporate social performance via the elements/factors of corporate social performance (i.e. socio-economic practices and human rights records). The results obtained were as follows:

The majority of respondents i.e. (90%, n=72) were of the opinion that for an organization to achieve CSR performance, the elements of corporate social performance, (i.e. corporate socio-economic practices), are of extremely important. Most especially, when a mining company dynamically and positively uses its possessions to support communities, its neighbors and even the regions it decides not to do business will eventually translate to CSR performance. This result conforms to the findings of Mawejje (2018) and Patrick, Frank and Dianah (2019) who found that CSR activities/programs can enhance corporate socio-economic practices by decreasing poverty by creating jobs, encouraging rural business, revenue, infrastructures, building and supply of public facilities such as healthcare centres and schools that may lead to better institution and rapid economic growth.

Limitation: While (8.5%, n=7) disagreed, (1.25%, n=1) was neutral about the above claims

Similarly, (90%, n=72) of the respondents think that for an increase in CSRP, the other element of corporate social performance (i.e. corporate human rights) are necessary. Especially where the mining companies are actively and constructively contributing to the protection of human rights for its employees, its neighbors' and indeed all host country residents. Again, this result is in line with the findings of Lidewij & Frank (2018) and Kim (2019) who said that CSR activities/projects should respect human rights and contribute to their progressive realisation at the local projects level through: effective impact mitigation in relation to local communities and the natural environment: the creation of local employment and other benefits to local communities; training programs that facilitate knowledge transfers to local communities; and improving access to essential services. Thus, communities' interest are increased towards companies with high and good records of human rights and vice versa.

Limitation: (7.5%, n=6) disagreed with the claims while (2.5%, n=2) were neutral.

These claims were proven with the Chi-square tests as under:

Table 8. Chi-square test on the relationship between CSR and corporate social performance

Variable 1	Variable 2	P/values (1&2)	Association
CSR performance	Corporate social performance: Socio-economic practices	0.000	Significant 0.000<0.05
	Human rights records	0.217	Related but not significantly 0.217>0.05

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There is mixed results in terms of the relationship between CSR and the corporate social performance via the elements/factors of social performance. In the first instant CSR is significantly associated to corporate social performance since the statistical result is less that (0.000<0.05). This indicates that the probability of CSR translating to corporate social performance is high. A mining company that practices CSR by being socio-economic friendly i.e. investing and donating in the community where it is located can achieve corporate social performance. The result is consistent with the findings of Mawejje (2018), Patrick, Frank & Dianah (2019) and Long (2022) who advocate that CSR activities/programs can enhance corporate socio-economic development by reducing poverty through creation of employment, promotion of local business, infrastructures development and provision of public facilities such as health centres and schools. Conversely, the other element/factor of corporate social performance i.e. human rights records is associated but not significantly. Implying that the probability of CSR giving rise to corporate social performance is low.

Link 2: CSR and Elements/Factors of Corporate Environmental Performance (I.E. Environmental Process Conscious and Environmental Product Conscious. In this link the respondents' opinions were demonstrated on the ability of a sound CSR translating to corporate environmental performance via the element/factors of corporate environmental performance i.e. environmental process and product conscious. According to them, for an organization to achieve increased CSR performance, the elements of corporate environmental performance i.e., environmental process conscious and environmental product conscious along with their tenets are extremely high important. The following results were obtained in this linkage:

The majority of the respondents (86.25%, n=69) agree that the element/factor of corporate environmental performance i.e. environmental process conscious can translate to CSR performance. This result conforms to the findings of Nik, Shaiful & Nor (2015) and Pavlos, Stelious & Naomi (2019) who found that a company that reduces any adverse environmental impacts relating to its production processes, i.e. by reducing its materials, equipment and energy intensity on the environment can achieve CSR performance. In other words, by maximizing the sustainable use of their renewable resources. Thus, companies are turning to corporate social responsibility as a remuneration instrument to integrate environmental consideration into their operations and activities.

Limitation: While (1.25%, n=1) disagree to the above claims, (12.50%, n=10) were neutral.

Similarly, for the other element of corporate environmental performance, the majority of the participants (90%, n=72) were of the opinion that a good record of CSR performance can translate to corporate environmental performance through the pathway of environmental product conscious. This result conforms to the result/findings of Chuang & Huang (2018) and Wilson (2022) who stated that mining companies that reduces their products' environmental impacts by adhering to the environmental principles in the course of production may enjoy good record of CSR and environmental performance. Thus, the ability of any mining company structuring and remolding its product and service range in respect to the national and international environmental approved norms and policies, e.g. United Nations Sustainable Development Goals (UNSDGs)

Limitations: (8.75%, n=7) disagree and (1.25%, n=1) is neutral of the conclusions.

The above claims are verified with a Chi-square test as follows:

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Table 9. Chi-square test on the relationship between CSR and corporate environmental performance

Variable 1	Variable 2	P-values (1&2)	Association
CSR performance	Corporate environmental performance: Environmental process conscious	0.000	Significant 0.000<0.05
	Environmental product conscious	0.001	Significant 0.001<0.05

There is a positive association between CSR performance and corporate environmental performance because corporate environmental process and product conscious are significantly associated with CSR. This implies that the probability of a mining company that is actively engaging in CSR practices achieving environmental performance is high. Chuang and Huang (2018), Bezzola, Günther, Brugger and Lefoll, (2022) found that a positive CSR performance enhances corporate environmental performance which can effectively lessen energy and material use of their product and service as well as waste generation, resulting in cost savings. In other words, corporate environmental performance has a significant effect on corporate social responsibility performance, implying robust environmental performance greater influence on market competitiveness and financial performance.

Link 3: CSR Performance (i.e. Corporate Social and Environmental Performance) And Financial Performance. This link seeks to communicate the respondents' opinion on the relationship between CSR performance and financial performance of South African mining companies via socio-economic practice, human rights records, environmental process and product conscious. In other words, it focuses on demonstrating the impact of mining companies' socio-economic practices, human rights records, environmental process and product conscious, factors of CSRP on the measures of financial performance i.e. shareholder value, revenue, operational efficiency and access to capital.

Dimension of CSRP Via Corporate Social Performance and Financial Performance. The majority of the respondents (92.5%, n=74) agree that CSR performance can translate to shareholder value, a measure of financial performance. In other words, corporate socio-economic practice, a factor of CSR and social performance can lead to financial performance via shareholder value. This result is in line with the findings of Dayuan, Cuicui, Lu, Xiaohong, Shenggang & Yini (2017) and Pham & Tran (2020) who found a positive relationship between CSR performance and financial performance. The higher the CSR disclosure score is, the greater financial performance a company can have. In a similar manner, Adeneye & Ahmed (2015) used bivariate and multivariate analysis to analyse data of some firms in the United Kingdom and found positive relationship between CSR and financial performance. On the basis of their findings, recommendation was made that for UK firms to enjoy better and stronger financial performance more corporate social responsibility actions must be encouraged (NgocBich, 2017). Mining companies that are entrenched in CSR through socio-economic activities like building school, hospitals and employing local staff potentially enhances market value of their firm, sales growth and operating profit margins by attracting and retaining customers.

Limitation: While (5%, n=4) disagree with the above claim, (2.5%, n=2) remain neutral

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Similarly, the same number of participants (92.5%, n=74) strongly agree that CSR performance obtained through socio-economic practices can translate to firms' revenue a factor/element of financial performance. This is evident from the increase in brand equity, customer choice, superior product line, research and development (R&D), changes to pricing or market share for the existing product. Again, the result is confirmed by Ovesen, Hackett, Burns, Mullins & Roger (2018) and Sachs & Warner (2019) who found that revenue generated from mining activities can raise standards of living and socio-economic development for current and future generations when properly managed through the CSR.

Limitation: (2.5%, n=2) were neutral with the claims, (5%, n=4) do not know about that.

Again, the majority of the respondents (77.5%, n=62) believe that the organisations engagement in CSR via socio-economic practices can bring about an increase in firms' operational efficiency in minimization of cost, maximization of resource productivity, positive workplace atmosphere, employee productivity resulting in financial performance. Thus, mining companies that have sound record of socio-economic activities by investing in the communities brought about by active CSR practices essentially enjoy economy of scale in productivity, resources, employee hiring and retention rates as well as operational efficiency and financial performance. These results are in agreement with the findings of Wilburn & Wilburn (2013) who found that organisations that embark in active CSR initiatives like social and environment enjoy increase in operational efficiency which directly affects the bottom line, resulting in increased financial performance.

Limitation: (18.75%, n=15) are neutral and (3.75%, n=3) do not know about these claims.

Finally, a greater number of the respondents (88.75%, n=71) unanimously agree that CSR through the pathway of socio-economic practices can translate to access to capital and financial performance. This result is in line with the findings of Mawejje (2018), Patrick, Frank & Dianah (2019) and Long (2022) who found that CSR programs can enhance corporate socio-economic practices/development by reducing poverty through creation of employment, promoting local business, infrastructures development, customers, sales, profits, access to capital and financial performance. Hence, mining companies that have access to capital by investing in CSR and socio-economic aspects of social performance can drive growth and financial performance.

Limitation: (11.25%, n=9) of the respondents are neutral of the above claims

On the other element of CSR i.e. corporate human rights records, the majority of the participants (90%, n=72) are of the opinion that a good human rights records can translate to shareholder value and financial performance by increasing the market value of the firm, sales growth and operating profit margins. This result concurs with the findings of Tomas (2019) and Titi, Jianling & Tamokloe (2019). According to them, CSR can be strategically managed to add value to the company by improving its human rights records, attract customers, sales and profit resulting to shareholder value, financial and social performance.

Limitation: While (6.25%, n=5) of the respondents are neutral of the claims, (3.75%, n=3) do not know of these claims

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Furthermore, a larger part of the respondents (92.5%, n=74) are of the opinion that CSR capable of producing good human rights records can increase firms' revenue by way of brand equity, customer choice, superior product line, research and development (R&D) activities resulting to financial performance. This results is supported by the findings of Lidewij & Frank (2018) who found that for corporate social responsibility to achieve revenue and financial performance mining companies should identify and address all human rights risks and impacts that arise from their project activities and business relationships.

Limitation: (1.25%, n=1) of the respondents disagree with the claims, (1.25%, n=1) is neutral and (5%, n=4) say they do not know about these claims.

The majority of the participants (91.25%, n=73) are of the opinion that for CSR to translate to mining firms operational efficiency and financial performance an excellent human rights records are of extremely important. Again this result conforms to the contribution of Lidewij & Frank (2018) who says that mining companies that invest in CSR in order to eradicate corporate human rights abuses have built public trust in their companies and helped them strengthen their reputation/brands, operational efficiency and financial resources.

Limitation: While (1.25%, n=1) of the respondents disagree with the above claims, the same number (1.25%, n=1) is neutral and (6.25%, n=5) do not know about the claims.

Finally, in this dimension, most of the respondents (90%, n=72) claim that a mining company that practices CSR and are able to eradicate human rights abuses can attract investors, enjoy stability in marketplace, have potential for growth, boast of strong earnings and access to capital thereby leading to financial performance. Goyal, Rahman & Kazmi (2013) and David (2019) confirmed these results with the contribution that companies with good human rights records and access to capital normally build strong trust with its stakeholders, steer growth and achieve financial performance via progressive CSR.

Limitation: While (2.5%, n=2) of the respondents are neutral of the claims, (7.5%, n=6) do not know about the claims

To prove the link between CSRP, corporate social performance i.e. socio-economic practices, human rights and financial performance, Chi-square test was conducted as under:

Table 10. Chi-square test on the relationship/impact of CSR performance i.e. socio-economic practices, human rights records and financial performance

Variable 1	Variable 2	P/values (1&2)	Association
CSRP i.e. Corporate social performance i.e. Socio-economic practices	Measures of financial performance: Shareholder value	0.015	Significant 0.015<0.05
	Revenue	0.029	Significant 0.029<0.05

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Human rights records	Operational efficiency	0.001	Significant 0.001<0.05
	Access to capital	0.004	Significant 0.004<0.05
	Shareholder value	0.003	Significant 0.003<0.05
	Revenue	0.008	Significant 0.008<0.05
	Operational efficiency	0.000	Significant 0.000<0.05
	Access to capital	0.000	Significant 0.000<0.05

The above test for the relationship between CSRP (corporate social responsibility performance) via its elements/factors and measures of financial performance revealed significant associations at different levels/dimensions, signifying high probability of CSR performance translating to financial performance. Thus, the above results of the respondents are valid and reliable. Thus, by prioritizing the above, especially through corporate social responsibility, socio-economic practices, human rights and measures of corporate financial performance, mining companies could achieve social and financial performance. Hence, there is a positive relationship between CSRP, corporate social performance and financial performance of mining firms. This result is supported by Willice (2016) and Mingming, Xiodan & Jerry-Glen (2017). According to the authors, CSR is the efforts that mining firms can take to enhance their relations with the communities in which they operate, through dialogue and partnership in alleviating the potential social impacts (i.e. socio-economic practices and human rights records) leading to social and financial performance of the society and the company.

Dimension of CSRP Via Elements of Corporate Environmental Performance and Financial Performance. The majority of the respondents (97.5%, n=78) are of the opinion that CSR performance can lead to financial performance via the pathway of environmental process conscious and shareholder value. Generally, mining companies that are environmental process conscious have a good public image and enjoy substantial societal and shareholder value as well as financial performance. This result is justified by the findings of Hengky, Charbel, Ana, Douglas, Samuel & Muhammad (2018). According to the authors, CSR is conventionally considered to have the capacity to reduce mining companies' adverse environmental process impacts through changes in their production processes resulting to shareholder value and financial performance. However, on the other hand only (2.5%, n=2) of the respondents do not support the above claims.

Additionally, (88.75%, n=71) of the participants believe that for mining companies to achieve financial performance they must have a strong CSR in place capable of influencing their environmental sustainability and revenue through increase in brand equity, customer choice, superior product line, research and development (R&D), changes to pricing or market share for existing product. Wang & Liu (2019) support this result, through their findings which say that mining companies' production is significantly influenced by the growing CSR issues reflected in environmental process awareness of individuals, communities, companies, and government entities leading to corporate environmental performance, revenue and financial performance.

Limitation: While (1.25%, n=1) of the respondents is neutral of the claims, (10%, n=8) say they do not know about the claims.

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The largest number of the respondents (93.75%, n=75) strongly agree that for mining companies to achieve environmental performance and financial performance, CSR issues, such as environmental process conscious and operational efficiency become inevitable. A company that minimizes cost and resource productivity, has positive workplace atmosphere and enjoys employee productivity by way of CSR practice and environmental process conscious can achieve operational efficiency and environmental and financial performance. This results conform to the findings of Jenifer, Giulia, Luca & Santiago (2018) and Mikael (2019) who found that to achieve sustainable development, environmental and financial performance, mining companies are looking at CSR issues/practices as a way of being environmental process conscious and achieve operational efficiency in producing environmentally friendly products, start-up cleaner production processes and provide environmentally friendly services.

Limitation: (1.25%, n=1) is neutral and (5%, n=4) do not know about these claims.

Finally, majority of the participants (97.5%, n=78) are of the opinion that CSR can translate to environmental and financial performance via environmental process conscious and access to capital. According to the respondents, mining companies can achieve environmental and financial performance if they embark on CSR, environmental process conscious production resulting to access to capital through strong earnings by attracting investors, customers, and stability in marketplace performance. Similarly, this result conforms to the findings of Kimitaka, Nurul, Shinji & Hardinsyah (2019). According to the authors, for a mining company's CSR to improve environmental management strategy and financial performance, favourable cost-benefit relationship of environmental process conscious, regulation, customer attraction and retention as well as access to capital are of extremely importance.

On the other element of CSR i.e. corporate environmental product conscious, majority of the respondents (91.25%, n=73) believe that a positive relationship exist between CSR i.e. environmental product conscious, shareholder value and financial performance. According to Fatima (2020) and Ge & Li (2021) CSR enhances the value of a firm through growth in products' sales, operating profit margins, dividend and share price appreciation, earnings per share, shareholder value and ultimately financial performance. This implies that for mining organisation to achieve corporate financial performance, CSR and its element of corporate environmental performance (i.e., environmental product conscious) are of high importance.

Limitation: Only (2.5%, n=2) of the respondents are neutral and (6.25%, n=5) are unaware of these claims.

Additionally, on the result of the element of CSR i.e. corporate environmental products conscious on revenue a measure of financial performance, ((91.25%, n=73) were of the opinion that CSR can be drivers of mining companies' revenue and financial performance. This claim agrees with the findings of Hossain (2018); Kim (2019) and Fatima (2020) who found that CSR may have the capacity to promote cleaner production, reduce environmental impacts/costs and build revenue and financial performance. In literature CSR can significantly increase brand equity, customer choice, superior product line, research and development (R&D), changes to pricing or market share resulting in revenue as well as financial performance.

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Limitation: (2.5%, n=2) and (6.25%, n=5) of the participants say that they are neutral and do not know about these claims respectively.

(93.75%, n=75) of the respondents agree that CSR can impact on the operational efficiency of the mining companies' operations thereby producing environmental friendly products that attracts and retain customers thus leading to financial performance. This result conforms to the findings of Stekelorum, Laguir, & Elbaz (2019) who found that mining companies' CSR has the incentive of improving the operational efficiency giving rise to environmental conscious products that minimizes cost, maximizes resource productivity, positive workplace atmosphere and employee productivity resulting to environmental and financial performance.

Limitation: While (3.75%, n=3) of the participants are neutral to these results (2.5%, n=2) were unaware of these claims.

Finally, (93.75%, n=75) agree that CSR practices can influence mining companies access to capital seen as strong earnings, attraction of investors, stability in marketplace performance and high current ratios which are functions of environmental product conscious, environmental and financial performance. Again this result agrees with the findings of Kim (2019) and Lu & Wang (2021) who found that CSR is a crucial factor in producing environmental product conscious that translates to access to capital, growth and ability to invest in future resulting to environmental and firm's financial performance.

To prove the above results statistically the following Chi-square test was obtained:

Table 11. Chi-square test

Variable 1	Variable 2	P/Values (1&2)	Association
CSRP i.e. Corporate environmental performance e.g.	Measures of financial performance:		
Environmental process conscious	Shareholder value	0.009	Significance 0.009<0.05
	Revenue	0.000	Significance 0.000<0.05
	Operational efficiency	0.000	Significance 0.000<0.05
	Access to capital	0.006	Significance 0.006<0.05
Environmental product conscious	Shareholder value	0.000	Significance 0.000<0.05
	Revenue	0.000	Significance 0.000<0.05
	Operational efficiency	0.000	Significance 0.000<0.05
	Access to capital	0.000	Significance 0.000<0.05

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Similarly, in this dimension, there are significant associations at all levels between CSRP and financial performance via the elements of corporate environmental performance i.e. environmental process and product conscious. This signifies high probability of CSRP translating to financial performance. In the first instant, the result illustrates a positive relationship between CSRP i.e. corporate environmental process conscious and elements of financial performance such as shareholder value, revenue, operational efficiency and access to capital. This result agrees with the findings of Willice (2016) and Lu & Wang (2021). According to these authors CSRP represents the efforts a corporation takes to assess its environmental footprint/damages and to manage/address its negative impact on the environment, such as adopting environmental friendly production processes and practices that are more energy-efficient that generate fewer pollutants thereby driving sales, growth and profit resulting to financial performance.

Additionally, the statistical test result revealed a positive relationship between CSRP and financial performance through the pathway of environmental product conscious. Indicating a high probability of CSRP translating to mining companies' financial performance via production of environmental product conscious. This is possible because environmental product conscious a factor of CSRP is significantly associated with the measures of financial performance like shareholder value, revenue, operational efficiency and access to capital. This result is consistent with the discoveries of Lu & Wang (2021). According to these authors, CSR performance drives/compels mining companies in becoming environmentally friendly by devising or remolding its product and service collection to curtail hostile environmental impacts throughout a product's life cycle for the attraction and retention of customers resulting in sales, profits, shareholder value, revenue and financial performance.

Development of the Model. Following the method, the model for measuring the impact of corporate social responsibility (CSR) on financial performance of mining companies in South Africa and the world was developed by joining all the theoretical and empirical hypothesis/linkages as in Fig 2. The study examines the role/part played by each linkage/hypothesis in the development of the model as follows:

Concerning Link 1: (CSR and Elements/Factors of Corporate Social Performance (I.E. Socio-Economic Practices and Human Rights Records). On the one hand, there is a significant association between CSR and corporate social performance via socio-economic practices. This implies a high probability of CSR translating to corporate social performance. Thus, mining companies engaging in CSR activities that actively support socio-economic practices by providing secured and inexpensive housing as well as simple services for the elevation of shantytowns in the community where they are located and even where they are not may achieve firm's social performance. Additionally, when they are significantly, reducing frauds, bribing in their forms and sustainably engaging in providing basic services to enhance inclusive and sustainable urbanization can drive corporate social performance.

On the other hand, CSR demonstrates a low probability in translating to corporate social performance due to its insignificant association with the mining companies human rights records. Nevertheless, CSR actions may enhance mining company's social performance via good human rights records through discouraging child's labour, slavery and by advocating for peaceful and comprehensive societies at all levels.

Concerning Link 2: CSR and Elements/Factors of Corporate Environmental Performance (I.E. Environmental Process Conscious and Environmental Product Conscious. There are significant associations between CSR and all the elements of corporate environmental performance

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i.e. environmental process and product conscious. Signifying high probabilities for CSR in driving corporate environmental performance.

In the first case, mining companies' CSR strategic structures have the propensity in driving environmental process conscious by conducting their production in a manner that is environmentally acceptable by the community. Furthermore, by being environmental process conscious an effective mining companies' CSR should be capable of fighting climate change and its impact on the environment by integrating climate change measures in terms of carbon emission, energy efficiency, increase in water and material use efficiency for corporate environmental performance. Thus, mining companies that are environmental process conscious stand to benefit in good public image and enjoy substantial societal and shareholder value as well as environmental and financial performance.

Additionally, for mining organisations to remain relevant and competitive, CSR is required as a response to improve environmental products conscious, start-up cleaner production process, provide environmentally friendly services hence achieving environmental performance. Thus, corporate environmental product conscious refers to the extent to which a company has entrenched environmental principles all the way through a product's life cycle by designing or remolding its product and services collections or groups to decrease the adverse environmental impacts. In other words, quality environmental products conscious can clearly help firms to build their reputation or brand value in the market system.

Concerning Link 3: CSR Performance (i.e. Corporate Social and Environmental Performance) and Financial Performance. In this linkage, there are significant associations between all the elements/factors of CSR performance and measures of financial performance. Hence, demonstrating high probability of CSR performance translating to financial performance via the elements of corporate social and environmental performance as well as measures of financial performance.

Considering the impact of CSR performance on financial performance via corporate social performance (i.e. socio-economic practices, human rights) and measures of financial performance. It is seen that mining companies CSR performance has high propensity in translating to financial performance because there is positive relationship between corporate socio-economic practices and all the measures of financial performance i.e. shareholder value, revenue, operational efficiency and access to capital. This indicates that CSR performance actions that documents high socio-economic practices by satisfying the needs and demands of the community where they are located will positively affect all the measures of financial performance. Thus, mining companies' CSR performance initiatives that aim at supporting comprehensive and sustainable economic growth, productive employment through socio-economic development strategies that inspire creative accomplishments, good job opportunities and free enterprise can translate to social, economic and financial performance.

Additionally, there is a high probability of CSR performance driving mining companies' financial performance by documenting good human rights records that can attract and retain customers, growth, brand value/reputation, shareholder value, revenue, operational efficiency and access to capital. Mining companies' CSR performance that tremendously increase human rights records by working towards bringing an end to fraud, bribery, smuggling and all forms of cruelty against children can lead to social and financial performance.

Likewise, there are significant associations between CSR performance and financial performance via all the elements of corporate environmental performance i.e. environmental process and product conscious and all the measures of financial performance. Signifying high probability of

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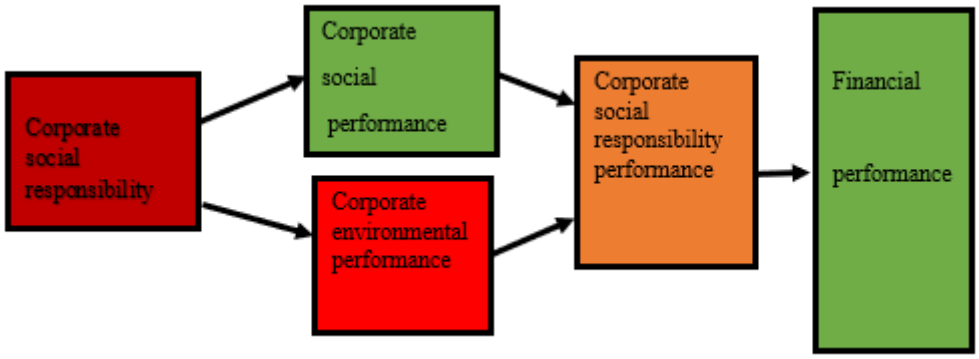
CSR performance translating to financial performance. Thus, mining companies that are building enormous infrastructures, promoting comprehensive and sustainable mechanization as well as practice innovation undoubtedly may enjoy strong brands, reputation, competitive advantage through the production and sale of superior products in a value-led manner. By being more environmental process and product conscious firms can significantly increase their bottom lines and societal values thereby achieving environmental and financial performance.



(Source: Author)

Figure 2. Integrated framework for measuring corporate social responsibility

The objective of this study is demonstrated in Fig 1, i.e. the development of a single, systematic and integrated model for measuring the impact of corporate social responsibility on financial performance through the pathway of corporate social performance and corporate environmental performance. Corporate social responsible managers need to know that a robust model for the assessment of CSR performance should be able to translate to financial performance if the elements of corporate social and environmental performance i.e. socio-economic practices, human rights records, environmental process and product conscious are in line with all the measures of financial performance such as shareholder value, revenue, operational efficiency and access to capital. Hence, the model has revealed the necessary corporate dimensions, initiatives and linkages as well as the significant elements/factors that the mining industry should prioritize in order to be sustainable and add value to its stakeholders (i.e., communities, societies, government, employers and the shareholders).

CONCLUSION

This study has revealed the methodology for establishing the extent to which CSR impacts on corporate social performance, the degree to which CSR can impact on corporate environmental performance as well as the extent to which corporate social responsibility performance (CSRP) affects the measures of financial performance for the development of an empirical, single, systematic and integrated model for measuring the impact of CSR on financial performance of mining companies in South Africa. Data was collected from the constituents of Johannesburg Stock Exchange subscribing in Socially Responsible Investment Index which are socially and environmentally sustainable to determine theoretically and empirically how the linkages and the vital factors impacting on the intensity of the relationship between CSR performance and financial performance.

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The first linkage developed the relationship between CSR and social performance via the elements of corporate social performance i.e. socio-economic practices and human rights records. The result illustrates significant associations implying positive relationship between CSR and corporate social performance. Strong socio-economic practices and positive human rights records obtained through investment in CSR can translate to corporate social performance. The paper also found direct linkages/associations between CSR and corporate environmental performance via elements of corporate environmental performance i.e. environmental process and product conscious. Thus, CSR enforces corporate environmental process and product conscious to progressively reduce ecological impacts and resources intensity throughout the products' whole life, thereby allowing mining companies the opportunity of delivering goods and services that satisfy human needs and brings about quality of life at competitive prices

Additionally, the paper found that there is high probability in CSRP translating to financial performance when all the elements of corporate social and environmental performance (i.e. socio-economic practices, human rights records, environmental process and product conscious) are consistent with all the measures of financial performance like shareholder value, revenue, operational efficiency and access to capital. CSRP is a corporate behaviour that technically incorporates social and environmental concerns into business processes and core strategies in line with the needs of their stakeholders. It can be systematically and tactically managed to add value, foster sustainable development, social, environmental and financial performance to governments, communities and shareholders.

Hence, the research contributes to development science in the field of corporate social responsibility an empirical, single, systematic and integrated measuring system/tool for determining the impact of CSR on financial performance of mining companies, governments or municipalities in South Africa or the world. The model may be suitable for evaluating strategies, investment target, competitive advantage, profits and growth. The research recommends that organisations especially mining companies and governments in South Africa and the world should prioritize the key elements/factors of corporate social and environmental performance as well as the measures of financial performance as enumerated in this research for the achievement of CSRP, corporate social performance (CSP), corporate environmental performance (CEP), corporate financial performance (CFP) and community/societal development.

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