

Article

The Relationship between Corporate Sustainability Disclosure and Firm Financial Performance in Johannesburg Stock Exchange (JSE) Listed Mining Companies

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Received: 18 April 2019; Accepted: 28 June 2019; Published: 20 August 2019



Abstract: Whether corporate sustainability disclosure (CSD) affects profitability remains indistinct to many firms. This paper examines the relationship between corporate sustainability disclosure and return on investment. The sample of this study consisted of ten Johannesburg Stock Exchange (JSE)-listed mining companies, and the data was extracted from sustainability reports for a period of five years from 2010 to 2014. In this regard, data collection was undertaken by the adoption of a content analysis approach. A multi-regression analysis was used to analyze the relationship between environmental disclosure and return on investment. The same statistical mechanism was employed to determine the association involving social disclosure and return on investment. Results show that there is a negative relationship between environmental disclosure and return on investment. On the other hand, the research reveals that there is also a positive association between social disclosure and return on investment. This implies that an increase in corporate reporting of social issues results in heightened financial performance through an increase in return on investment. This study recommends the adoption of corporate social disclosure as it will encourage firms to be socially responsible, while also generating financial benefits. Further studies can be conducted about the change from voluntary corporate social disclosure to mandatory disclosure.

Keywords: corporate social disclosure; environmental disclosure; social disclosure; financial performance

1. Introduction

In recent years, there has been a steady rise in the volume of corporate sustainability disclosures by companies [1]. As a consequence, business entities as members of the community are expected to solve or address social, as well as environmental matters, in such a way that aims to add value societies [2]. Thus, corporate sustainability disclosures are aimed to improve financial performance, draw the best employees and to inspire leaders [3]. Corporate sustainability disclosure is the reporting tool to account for sustainability investment in the host of business community [4]. Despite the increase for corporate responsibility, most of the impact of a firm's operation on the environment is still voluntarily disclosed [5]. Moreover, levels of corporate sustainability disclosures are still very low [6,7]. This has resulted in inadequate disclosure of social and environmental responsibility issues, due to unavailability of data by disclosing corporations, and because there is no demand for the social and environmental data, this is due that costs exceed benefits [8].

Moreover, while corporate sustainability disclosure is perceived as a voluntary practice, it has financial implications brought by firm social and environmental investments [9]. For instance, inability to report on social and environmental issues has costs also such as penalties, fines, tight regulations,

bad publicity and shrinkage in customer's database [8]. Ahamed, Almsafir and Al-Smadi [10] argue that corporate sustainability disclosure does not require expensive resources which capably lower corporate profitability. Moreover, Iqbal, Ahmad, Hamad, Bashir, and Sattar [11] argue that firms should be responsible to society and go beyond the shareholder's wealth creation.

However, some managers do not believe that corporate sustainability disclosure is vital to ensuring the survival of their companies in a tense, competitive economic situation, as well as informing the society which has the privilege to be informed about social and environmental impacts [8]. On the other hand, some managers are aware of the gains derived from disclosing social and environmental practices, but they are limited from reporting such information at an acceptable level, due to cost-benefit issues [8,12].

However, Ahmad, Ahmed and D'netto [13] claim that many successful corporations have been criticized for causing social problems, such as environmental pollution, inequality, injustice and poverty. Such scenarios are existent because corporations have focused on maximizing shareholder's value without regard for sustainability [14]. Gunawan, Djajadikerta and Smith [15] investigate the extent of corporate sustainability disclosure in Indonesia. They found that the amount of disclosure was limited because managers are unaware of the benefits of corporate sustainability disclosure. It has been postulated that reporting sustainability investment information is essential for companies to project a positive image, gain public credibility and competitive advantage [9], hence, increasing firm financial performance. However, Iqbal et al. [11] state that corporate sustainability disclosure adds expenses to the business, which reduces the level of firm financial performance. Similarly, Patten [16] argued that the reporting of social and environmental impacts has costs and threats; hence, competitors and regulators may use such against the interests of the firm resulting in the decrease of margins.

However, corporate sustainability disclosures in many countries are voluntary, and there are no formal rules or regulations concerning the form and content of disclosure [13]. Therefore, several issues have been expressed about corporate social reporting because the published data may be unreliable, companies are being selective about the information to be disclosed, and sustainability reports are not comparable from year to year or with other entities [17].

Moreover, environmental impacts caused by burning of fossils fuels, cutting down of trees, transport, industrialization and farming leads to the emission of greenhouse gases into the atmosphere [18]. Carbon monoxide, methane, ozone, water vapor and nitrous oxide are gases that cause global warming. These emissions may have a significant impact on the corporate world and the ordinary activities of the firms [19]. The impact can be through government regulation, such as carbon tax which will increase costs, thereby reducing profitability [20]. Therefore, this has led to an increase in corporate sustainability disclosure in order to reduce the increase of global warming in the atmosphere [19]. In this vein, organizations are also required to manage water resources not only as a socially responsible act. In this regard, as such, water disclosure produces vital benefits to the company. Firstly, it assists in enhancing the company operational efficiency of sites that are engaged in production along with running of business operations [21]. Second, the company is able to ascertain the associated risks and opportunities of water to their business, which may possibly influence its financial condition, and, thus, support proper action. Thirdly, managing water-related social and environmental effects, along with water stewardship, sustains the social and legal license of the business to expand and reach larger markets [21].

At the corporate level, social issues, such as HIV/AIDS, have a significant negative impact on profitability. Companies that are socially responsible for reducing social problems (HIV/AIDS) are costly [22]. This means that shortages of skilled human resource and human resource costs are often as a result of HIV/AIDS, which hurts firm financial performance [23,24]. Moreover, in South Africa, owners/managers/governing boards are not aware of the impact of HIV/AIDS on profitability, due to the increase in employee benefits, such as medical care expenses, sick leave-loss of productive time, drugs and funeral benefits [25]. In light of these excessive expenditures, it is clear that the investors and shareholders would expect the managers to disclose Human Immunodeficiency Virus (HIV) and

Acquired Immune Deficiency Syndrome (AIDS) information in their Sustainability Reports voluntarily. Furthermore, the Global Reporting Initiative [26] emphasized on firms to understand the social and environmental impact of HIV/AIDS on their ordinary activities to adopt a strategic plan to address it. Moreover, the JSE and the Institute of Chartered Accountants encouraged a formal approach for HIV/AIDS disclosure by firms [27].

Contemporary, the main objective of the business is no longer a traditional practice of creating shareholders' value in the long run [28]. However, modern practices, managers are incorporating corporate sustainability initiatives into their strategies to meet all stakeholders' needs and ethical principles. Therefore, this will create sustainable value for all stakeholders that have an interest in any company.

Furthermore, the existing studies have revealed interesting and valuable contribution to the body of knowledge. They employed mostly Kinder Lydenberg Domini (KLD) index, reputable and disclosure ratings and financial amounts in measuring CSD [29–31]. Therefore, this study is different from previous studies as it has also brought new insight into the literature by employing new research variables in measuring environmental and social disclosure. More specifically, from the social disclosure point of view StatsSA, 2018 [32] reports that South Africa has one of the highest HIV/AIDS prevalence rates in Sub-Saharan Africa with an estimated 752 million people living with HIV and the productive age groups (15–49 years) have the highest infection ratings. Thus, there is no doubt that firms are incurring more expenses through the provision of anti-retroviral treatments to employees, heightened recruitment and training costs in cases where HIV-positive workers die or become incapacitated, general healthcare expenses, heightened death and disability benefits costs along with the cost of in-house HIV/AIDS management programs [33]. On that note, the integration of HIV/AIDS disclosure as a social reporting proxy argues and justifies on how the indicator significantly affects diverse economic facets of the business practice from its social perspective.

As such, reporting of both environmental and social issues is imperative to show in-depth commitment to green accounting initiatives and health accounting practices respectively by increased disclosure which motivates manager's legitimacy via enhancing information flow involving company top management and stakeholders, hence, reducing agency conflicts and increasing company market value [34,35]. In addition, previous studies demonstrated that participating in expanded environmental and social reporting generates harmonious relationships between company goals/norms, and those of the wider society, through legitimizing firm activities and enhancing its reputation and identity [34,35]. Furthermore, when the company commits to heightening its environmental and social reporting initiative, then it is a strategic approach of acquiring better support of influential stakeholders (for instance, labor unions, shareholders, interest groups, government) who are vital concerning corporate ability to generate profits and maintain sustainable operations. As well, demonstrating wider engagement to environmental and social disclosures initiates greater access to critical resources, for example, capital, as well as business contracts, through lowering health, safety along with political expenses by better corporate goodwill, image and legitimacy [36,37].

From the above literature, outline corporate perspectives which are capably detrimental to corporate performance if sustainability disclosure has not been implemented or vice versa. The study will focus on corporate sustainability disclosures and firm financial performance as this will permit the governing board to consider the cost versus benefit in providing corporate social and environmental disclosures. Therefore, in this study, the following objectives were formulated:

- To examine the relationship between corporate environmental disclosure and return on investment in South Africa among selected JSE listed mining companies;
- To examine the relationship between corporate social disclosure and return on investment in South Africa among selected JSE listed mining companies.

We delimited our study to South African mining companies as they are mandated to report on sustainability issues as per the JSE Socially Responsible Investment (SRI) Index. Furthermore, mining

companies in South Africa are facing pressure from different stakeholders to report on activities they are undertaking to mitigate environmental degradation, safety program and contribution to the society in which they operate [38]. Moreover, the South African mining industry has been a vulnerable sector to potentially demoralizing effect of HIV/AIDS because it is labor intensive [39]. With evidence of corporate sustainability issues in South Africa like global warming, Marikana massacre, third highest HIV/AIDS prevalence rate in the world, therefore, there is a need to examine the relationship between corporate sustainability disclosure and firm financial performance. This paper is divided into four parts: Section 2—theoretical framework; Section 3—data, variables and empirical models; Section 4—results; and Section 5—discussion; Our conclusions can be found in Section 6.

2. Theoretical Framework

2.1. Stakeholder Theory

Stakeholder theory also stipulates that society consists of different stakeholders with the imbalanced power to affect the operating activities of the business [6]. Essentially, Kaur and Lodhia [40] suggest an intricate connection among corporations with emphasis on managing stakeholders' interests. Therefore, the theory describes the association of stakeholder with the information they obtain [41]. Hence, there are three types of stakeholder theories, descriptive, instrumental and normative [42].

- Types of Stakeholder Theories

There are three types of stakeholder theories, descriptive, instrumental and normative [42]. Descriptive stakeholder theory is widely used in CSD [43]. As such, in this study, it is applicable as it allows the researcher to identify key stakeholders who have a relationship with the firm. This implies that these group stakeholders have different views on environmental and social disclosure. This type of theory is also known as managerial stakeholder theory. Moreover, the managerial stakeholder theory allows managers and executives to identify major stakeholders who support the company as a going concern [44]. Therefore, in this research study, the researchers selected the key stakeholders that represent the relevant groups of stakeholders, due to their impact on relevant activities of the firm.

- Characteristics of Descriptive Stakeholder Theory

Mitchell, Agle and Wood [45] suggested a model identify stakeholders based on their importance. This entails grouping stakeholder traits by means urgency, power and legitimacy. Urgency is where interested parties strive for their demands to be met as quickly as possible in the stakeholder relationship with the manager. Legitimacy is where specific engagements are within the anticipations and needs of the other interested group, either manager or stakeholder. Stakeholder power means the abilities of stakeholders to control the activities of the company. For instance, Islam and Deegan [46] examine how stakeholder power affects the strategic decisions of CSD in manufacturing firms in Bangladesh. They found that international buyers, which they regard as the most authoritative stakeholder, mostly affect their corporate social disclosure policies. Hence, [45] put forward that stakeholder power is the most critical trait of corporations to stakeholder interactions.

- The Different Types of Stakeholders and Their Impact on Firm

In this study, major stakeholders that influence CSD based on stakeholder power and attribute [47] are as depicted in Figure 1. This is because these stakeholders can control the activities of firms [48]. Figure 1 illustrates the association of the business with its stakeholders who are interested in corporate sustainability. The business has to report on corporate sustainability activities to all stakeholders in order to create sustainable value.

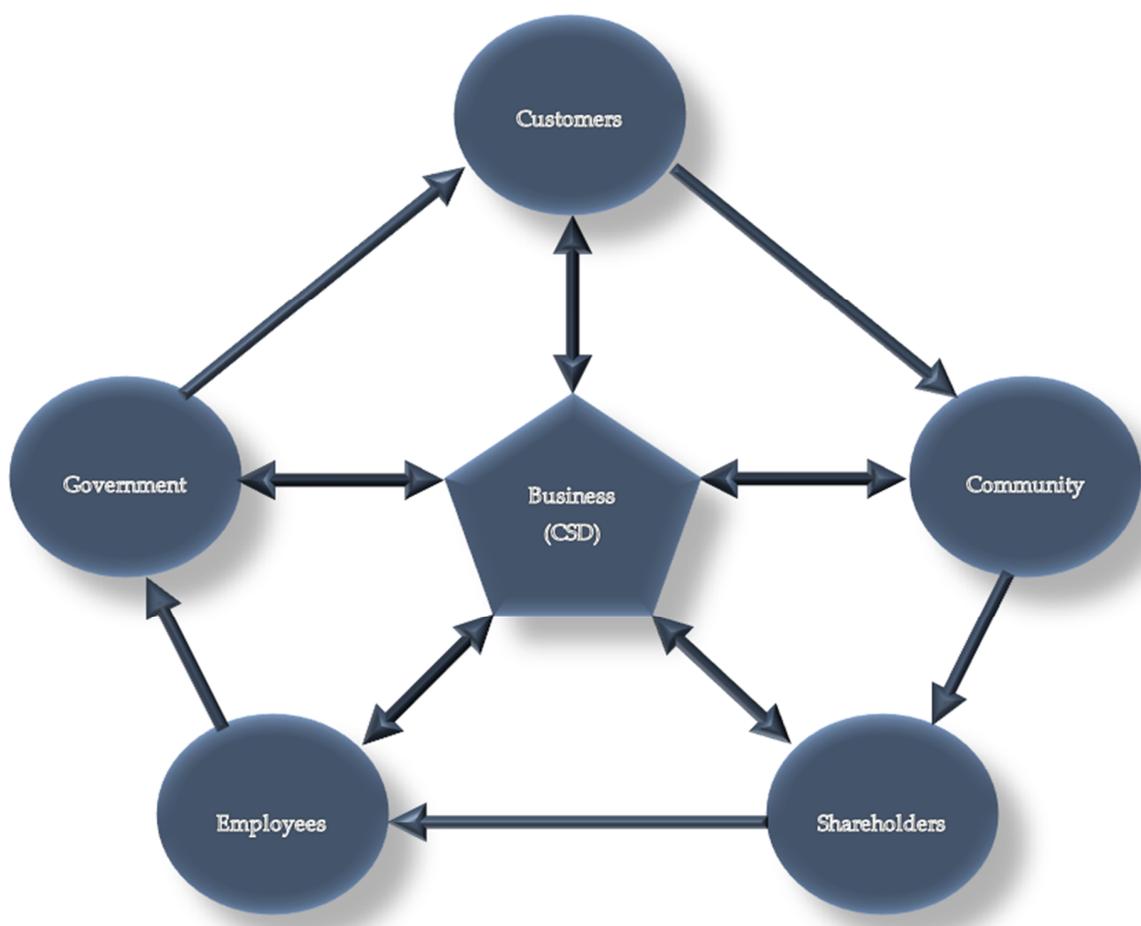


Figure 1. The diagram shows how the business is connected to its stakeholders who are interested in corporate sustainability. Source: Author's Concept.

From Figure 1, the needs for stakeholders in any business are explained below:

Shareholders—these are the owners of the firms. Therefore, the environment in which the entity operates and secures their investments and returns. Moreover, shareholders need to be informed about the negative and positive effects of a firm's action on the environment through sustainability reporting to improve firm sustainable practices. Massoud, Daily and Bishop [49] state that CSD has a direct influence on firms' market value by increasing the shareholders' value through increased earnings.

Government—the government is an essential stakeholder in the sense that it ensures compliance with environmental regulations and other social standards. However, should firms fail to comply with these environmental regulations, the going concern of the company may be threatened to force it into liquidation or to stop operating? On the other hand, CSD comes with issues, such as energy conservation, recycling, and the preservation of the environment. Therefore, governments can provide incentives that will result in more comprehensive CSD that decreases a firm's cost [50].

Employees—human resources information is vital in CSD. Employees play a significant role in supporting firms' going concern. Hence, the working environment should be safe and workable. Cooper and Owen [51] assert that significant workplace environmental issues include health and safety, working conditions, training, bursaries and worker satisfaction. According to Micah, Ofurum and Ihendinihu [52], the relationship between firms' profitability and employee information disclosure in 52 Nigerian firms revealed that employee information disclosure is positively correlated to profitability. This implies that there is a high demand for human capital information to stakeholders when reporting. Consequently, a good association with employees can result in better productivity, thereby reducing lawsuits, thereby reducing expenses and increased profitability [53].

Community—firms should be able to provide a social pact with the public, and the social pact assessment should be implemented. Often CSD draws on educational customs, business morals and community engagement to address issues, such as giving back to the society, public-private partnerships. Moreover, Callan and Thomas [53] state that community involvement often attracts tax deductions from local governments, thereby increasing profitability. Furthermore, Nwidobie [54] encourages firms to be a good corporate citizen to their host community to attract acceptance, maintain uninterrupted firm operation and enhance profitability. Carroll [55] notices that community contributions reveal the approaches in which a firm cooperates within the ethical environment towards lenders, consumers, suppliers, environment, communities and government thereby increasing shareholders' wealth in the long-run.

Customers—CSD is a way of informing customers about the quality and price of the product, as well as how the product has improved to increase customers' awareness. Consumers' view of the quality of goods and services and the firm's eco-friendly stance will attract positive impressions on the company brands, and indirectly increase a firm's financial performance [56].

Moreover, stakeholders engage with the firm through different channels. As such, stakeholder engagement involves ways of staying in contact with parties who influence the firm's activities indirectly or directly by providing resources [57]. Additionally, active stakeholder engagement can assist firms to increase their energy protection programs, as well as waste management. This engagement could add to the valued managerial abilities [58]. Santoso and Feliana [59] argue that these abilities can increase productivity in asset and resource management for improved profitability. Freedman and Patten [60] state that stakeholder satisfaction and engagement can affect a firm's financial performance. This can be achieved through the maintenance, development and creation of relations that provide critical resources to firms. Therefore, the core motive why firms engage in stakeholder engagement is to enhance profitability [48]. Aggarwal [61] argues that the neglect of stakeholders' interest may harm a firm's reputation, which would negatively affect its profitability. Therefore, firms should always engage with their key stakeholders for their survival.

In conclusion, the form of communication to stakeholders that is relevant to this study is the integrated report because it is a formal way to notify the stakeholders about its social and environmental practices and issues, as well as its credibility. Oliveira, Rodrigues and Graig [62] suggest that corporate sustainability reporting is a crucial instrument for negotiating the association between the firm and its stakeholders. Hence, firms maybe indebted to expand on sustainability actions that benefit the local societies in which they run their businesses and to avoid litigation risks.

2.2. Legitimacy Theory

One widely accepted theory consistent with CSD is the legitimacy theory, which contemplates the idea of social contract among firms and the community [63]. Chen and Roberts [64] opine that the legitimacy theory is a system-oriented outlook of the company about the community with an emphasis on the communication of firms' activities in reporting among the stakeholders. Therefore, firms should use resources in a way that cannot harm the environment and community at large.

The legitimacy theory also hypothesizes the actuality of a relationship among the firms and communities, with firms permitted to use resources to manufacture goods and services in exchange for creating wealth for the society [65]. Moreover, legitimacy arises when social morals of the firms are congruent to those of society. However, there are two types of legitimacy theories, strategic and institutional [66]. Institutional legitimacy theory considers the viewpoint of society as observing firm activities [66] and, it is not regarded as legitimacy, but seen as constitutive belief [67]. Moreover, strategic legitimacy theory applies to this study, as explained below because it puts the company as a significant player who seeks endorsements for its environmental and social activities.

Strategic legitimacy theory is either organizational theory or instrumental theory. It postulates that firms can formulate strategies that change their legitimacy stance, as well as foster resources through the firm's engagements to familiarize their actions and insights [68]. Therefore, a firm may seek approval

from an interested group within society. According to Dowling and Pfeffer [69], communication is one of the strategies that firms can use to showcase its corporate image of social legitimacy, since communication shows a pivotal practice in the legitimization progression. Therefore, Gray et al. [70] stipulate that data is a valuable tool to control stakeholders so that firms will get their endorsement. Thus, the CSD is an efficient way that a firm can prove to stakeholders that its actions are congruent with social and environmental norms.

However, firms attempt that equilibrium between managerial systems and shared systems can be regarded as a social contract between the business and the community [71]. Deegan [72] defines a social contract as expectations the society has about how the firms run their activities to create shareholders' wealth. On the other hand, when the firm fails to plan its social contract because of the erroneous belief in the society about the firm in the form of legitimate, economic and prohibitions it can lower the profitability [65]. Firms that face the legitimacy threat are less reputable and trustable. Hence, they are not guaranteed resources for their survival [73].

A firm will face a legitimacy threat after causing pollution [7], for example, BHP oil spill. According to Collins [74], an outburst and fire descended in the Gulf of Mexico on Deepwater Horizon in 2010. An estimated emission of about five million tubs of oil oozed out into waters and about 500,000 metric tonnes of carbon monoxide gas for 86-day leakage. This disaster destroyed hundreds of brittle coastlines, as well as threatened the occupants of the Gulf. BHP held accountable to the spillage and charged hundred billion dollars of expenses, including fines, penalties, and environmental restoration costs. Therefore, this constitutes legitimacy threat to the entity as a going concern [48]; hence, the legitimacy gap.

Once a firm fails to satisfy society, due to non-compliance with social and environmental practices, the social contract will be broken; hence, a legitimacy gap [48]. According to Pereira Eugénio, Costa Lourenço and Morais [75] state that legitimacy gaps arise when expectations of the society differ from that of the company's social practices. Legitimacy gaps are financial scandals and social and environmental disasters that affect a firm's financial performance. Therefore, firms should report their actions that are in line with social values, as asserted by Branco and Rodrigues [76]. These actions include job creation, social welfare investment and environmentally friendly products and services [77]. If firms do not alleviate their social and environmental disasters, society may force them to discontinue the operation of the firm by taking its license to operate [78], hence, inaccessible to resources and markets. Consequently, firms should close the legitimacy gaps to remain competitive.

In response to a broken social contract, firms will attempt to fix the breach through affirmative CSD to increase the firm's financial performance [79]. Corporate disclosures are meant to be a signal to measure whether firms are meeting social expectations. Furthermore, CSD is an effective way of convincing the society that their existence and their activities are legitimate [73]. Therefore, CSD is to legitimize the firm's activities to the society by providing environmental and social information. As a result, firms have to convince the society that its operations are congruent with their managerial systems or values [80] by providing annual corporate sustainability reports.

Legitimacy is the providing of information relating to CSD either in the integrated reports or sustainability reports [80]. Hence, firms use sustainability disclosure as a legitimizing instrument [81]. Moreover, it is used to assess how managers come up with CSD approaches to address legitimacy threats and make sure that firms fulfil their social contract, thereby justifying a going concern [82,83]. Therefore, the increase in sustainability reports is a need to shape business reputation with society [84]. Furthermore, CSD is an essential tool for corporate communication [81,85]. In this vein, corporate sustainability emanating from the legitimacy theory postulates that corporate sustainability reporting is an approach to legitimize a firm's going-concern [86].

However, CSD does not represent the actual corporate social and environmental practice of such firms [80]. There are other weaknesses of CSD, which include incoherence of the company's integrated financial reports; being retrospective, and unable to deliver a connection between sustainability concerns and the company's core tactic [87]. On the other hand, through CSD, many businesses prosper

in improving their legitimacy, interested party confidence, status, reputation and dependability, creating a set of incorporeal properties that ultimately improve their firm's profitability [88]. Additionally, multi-national firms also motivate CSD mainly through cost-benefit analysis [89].

Conclusively, this study examines the JSE mining firms, an industry for which environmental and social disclosure is an essential tool of organizational legitimacy. Therefore, this legitimacy theory is appropriate to this study because the selected mining firms need to invest in sustainability practices for it to be sustainable through complying with socially responsible practices.

2.3. Related Literature

The literature that supports the formulation of hypothesis for the study is discussed below.

2.3.1. Environmental Disclosure and Firm Financial Performance

Many studies have shown that environmental disclosure affects firm financial performance using meta-analysis [90,91]. One study, Endriakt et al. [90], suggested that the association is very strong when strategic approach underlying corporate environmental performance is proactive, not passive. They also revealed the reasonableness effects of methodological constructs, which may provide descriptions for the previous study findings. Similarly, Dixon-Flower et al. [91] discovered that small companies seem to profit from environmental practices than large companies. This was because small firms can reimburse for the lack of free resources by being flexible.

Moreover, these findings were consistent with the previous studies. Therefore, these studies found that environmental disclosure is positively associated with firm financial performance. However, these researches were limited for not having enough longitudinal data to measure the association between environmental disclosure and firm financial performance.

Most literature in Japanese examined the impact of environmental disclosure on firm financial performance using regression analysis [92,93]. Iwata and Okada [92] used greenhouse emission and greenhouse reduction as a proxy for environmental disclosure. Their results suggest that increase in greenhouse emission disclosure leads to an increase in financial performance-return on equity (ROE) in the whole sample and clean industries, as well as in the long run. Moreover, greenhouse reduction does not have significant effect on return on sales in the short run. However, there is no significant correlation between greenhouse emission reduction and firm financial performance. This research was limited to that the sample was not enough to reveal a longitudinal relationship.

Similarly, Albertini [93] measured environmental performance represented by environmental awards, accidents and investments; on the other hand, the firm value was represented by return on investment (ROI), earnings per share (EPS), ROE and Tobin's Q. The author's results show a strong positive relationship, due to the regional differences, the activity sector and the duration of the studies.

On the other hand, European studies have shown that environmental disclosure also has a mixed result on firm financial performance [94,95]. Misani et al. [94] analyzed the impact of environmental disclosure and financial profitability level of 127 listed firms in Italy. Using least square regression, they identified that there are mixed results between environmental disclosure and firm financial performance. Mixed results propose that companies do not adopt the costs of ineffective carbon management. However, the leading firms in environmental performance tend to achieve financial benefits. Therefore, this research pointed out the benefits of responsive firms to climate change-internal savings, emission rebates and incentives for carbon reduction.

Additionally, Hortvathova [95] analyzed the relationship between environmental performance and firm financial performance in the Czech Republic. The researcher used advanced methods of environmental practices. The findings show that the effect is negative between the variables above for the financial performance lagged with one-year lag, and it becomes favorable for two-year lag. Research findings from this study suggest that the Porter hypothesis embraces in the long term. The authors did not have adequate evidence about the intertemporal effects of environmental practices on financial profitability.

In contrast, McPeak, Devian and Seaman [29] and Wu, Liu, Sulkowski [96], researched on the effect of environmental practices disclosed on firm financial performance by sampling Standard and Poors 500 companies. McPeak et al. [29] sampled 302 companies and used KLD stat, which is a statistical tool to analyze trends in environmental and social performance. They found a negative association between the variables implying that firms might not harvest the full gains of their decisions towards being environmentally friendly. Also, Wu et al. [96] used frequency word count to analyze 10,000 reports for the period ending 2008. The authors document that additional environmental disclosure by firms indicates more implications which lowers profitability. They also point out that performing firms and highly leveraged firms often disclose lesser environmental impacts; hence, they comply with environmental regulations and laws.

Moreover, based on literature from American, European and Asian studies revealed that environmental disclosure lowers firm profitability [97–100]. Guidry et al. [98] used content analysis to measure environmental disclosure, whereas profitability was represented by leverage, firm size, Tobin Q and stock return. They suggested that negative results exist if financial control variable is incorporated when analyzing data. However, previous literature to date does not support the insertion of financial controls in environmental studies. Furthermore, Meng et al. [99] studied 533 companies in China, and their negative results revealed that they vary from voluntary to mandatory disclosure. They suggest that when measuring the link between sustainability disclosure and firm profitability in the emerging markets, one needs to be cautious, which tend to change, due to any form of ownership and binding rules in place.

Moreover, Smith et al. [97] sampled 49 Malaysian listed companies and used content analysis to measure the link between environmental disclosure score and return on assets (ROA). In their research, an inverse relationship existed different due priorities of reporting in Malaysian firms, as well as environmental laws. In support of this, Ho et al. [100] suggest that this might be as a result of national dissimilarities and environmental laws and regulations. From the above analysis, the researchers came up with the following hypothesis:

H1. *Environmental disclosure of JSE listed firms has a significant effect on return on investment (ROI).*

2.3.2. Social Disclosure and Firm Financial Performance

Many studies in Nigeria analyzed the link of social disclosure on firm financial performance using regression analysis [52,54,101]. In their studies, they found a strong relationship between the variables analyzed. Nwidobile [54] went on further to stipulate that this shows that more firms spend on their products; hence, more customers are lured to socially responsible companies leading to an increase in economic profit. This also encourages Nigerian firms to be good corporate citizens to their host society to attract the cost community aid, to maintain uninterrupted firm operation and to enhance profitability.

Furthermore, Micah et al. [52] sampled 52 firms, whereby social disclosure was represented by human resource. Their results show a positive correlation with financial performance, hence, revealing that there is a demand for human capital information to stakeholders when reporting. The researchers went to propose standard should be developed for human resource measurement and identification. This will allow the appraisal of human capital, homogeneity reporting and comparability of human capital traits. In Central and Eastern European countries, Fijalkowska, Zyznarska-Dworczak and Garszka [101], studied about CSD and firm financial performance. They employed panel regression analysis in measuring the association between CSD and firm financial performance. They used dummy variable and content analysis to measure corporate social responsibility and profitability was represented by ROA and ROE. The findings from their study stipulated that Banks with better financial efficiency have higher efficiency CSD initiatives.

In contrast, many studies in the United States of America examined the effect of employee disclosure on firm financial performance [102,103]. In these studies, firm financial performance was represented by ROA, ROE and EPS. Nawaiseh [102] extracted annual reports from 73 Jordanian listed

companies on Amman Stock Exchange which were analyzed by conducting a regression analysis, and the findings have shown a positive association between profitability measured by ROA on employee dimension. However, a negative relationship existed between CSD towards employees on ROE. Van der Laan et al. [103] sampled 734 Standard and Poor 500 firms for a period from 1997 to 2002. The researchers used hierarchical regression models to analyze data and found a negative and positive impact of bad and good social performance, respectively, on profitability. This difference was caused by information indifferent with which interested parties tend to evaluate the costs and benefits of social disclosure.

Additionally, in European countries, many studies also found mixed results between social disclosure and firm financial performance [104,105]. Garcia-Castro et al. [104] examined corporate disclosure dimensions in terms of employee relations, customer, product development, community relations and diversity issues against ROE, ROA, MVA and Tobin's Q representing firm financial performance. OLS regression analysis was used to prove whether KLD measures (Social disclosure) have a strong positive effect on the profitability of 658 firms from 1991–2005. The results show weak negative results when endogeneity is suitably taken into consideration. Similarly, Skudience et al. [105], sampled 86 firms consists of 62 large banks and 28 large insurance European listed firms for four years from 2005–2008. The financial data was downloaded from the reliable database (Financial Times Top 500).

Moreover, the sample included both cross-sectional and time series data and was constructed as a panel data. Correlation analysis shows that corporate social performance and profitability are negatively correlated with each other. However, using sample *t*-tests, there was a significant positive to ROA and ROA for firms involved in tactical and ad-hoc social disclosure. This study was limited to data, which contains an era of the global financial crisis (2007–2008).

In contrast, many studies have also shown that social disclosure negatively impacts firm financial performance [106,107]. Lopez et al. [106] examined 55 firms, which consisted of two groups, from Dow Jones Sustainability Index (DJSI) and Dow Jones Global Index (DJGI), in Europe. Independent variables were profit before tax, growth of revenues, market capitalization, ROA and cost of capital, whereas dependent the variable was corporate social responsibility practices. The findings show a short-term negative effect on financial performance. This implies that other companies will be inhibited from adopting corporate sustainability disclosure. Similarly, Cristomo [107] analyzed 296 Brazilian listed companies whereby customers and employees represented social disclosure. While profitability was proxy by return on equity and return on assets, they found a negative correlation between the variables stated above. This is because Brazilian companies are not enforced to report on social issues or impacts.

Previous studies were done in American, and Europe had shown that there is a U-shaped relationship between social disclosure and firm financial performance [108,109]. Nollet et al. [108] suggested that in order to embark on social initiatives to meet all stakeholders' needs; financial resources should be made available and corporate social expenditure pays off after the thresholds have been reached. Given the information above the hypothesis was formulated as follows:

H2. *Social disclosure of JSE listed firms has a significant effect on return on investment (ROI).*

3. Data, Variables and Empirical Models

3.1. Sampling and Method of Collection

This paper used ten (10) JSE listed mining firms to investigate the relationship between corporate sustainability disclosure and firm financial performance. This study used the entire mining firms listed on JSE Socially Responsible Investment because they are all mandated to disclose issues of social and environment in their sustainability reports. Therefore, simple purposive sampling was used to select mining companies listed on JSE's SRI index.

The financial indicators-return on investment, sales growth and leverage used in this study were collected from a reputable database owned by a firm called INET BFA. This database is the

leading financial data provider in Africa. However, environmental and social disclosure was collected from sustainability and integrated reports. These sustainability reports are regarded as necessary in sustainability, due to a high degree of credibility because they are prepared using the Global Reporting Initiatives Framework. The sustainability reports of companies under study were scrutinized from 2010 to 2014 as this allowed the data to be analyzed in depth. The data were collected from the JSE's website because the data is readily available and accessible.

Therefore, the data collection method adopted in this research is a quantitative content analysis because it aims to produce counts of the raw data in terms of the categories specified by the coding rules from sustainability reports [62]. Besides, quantitative content analysis was used as a data collection method, since the information is readily available on companies' websites. Quantitative content analysis is also used to establish the number of disclosures and the number of disclosures within the perspective companies' annual reports, recognizing that the latter indicates the importance of the issue of the reporting entity. This allowed the researcher to examine the relationship between corporate social disclosure and firm financial performance.

Content analysis was conducted by counting several lines or words strongly associated with themes regarding sustainability disclosure in the annual report of the company [110,111]. The most widely used statistical method to quantify corporate sustainability disclosure is the content analysis [112,113]. In recent studies, corporate sustainability disclosure was quantified using the number of pages, sentences, words, number of news types and number of disclosure items [114]. Therefore, in this study, words are used to quantify CSD.

3.2. Empirical Models and Variables

The model used to investigate the impact of corporate sustainability disclosure on firm financial performance was the panel data technique. Panelized data refers to a dataset constructed from recurring cross-sections and longitudinal sections over time [115]. Panel data analysis was performed using the data obtained from firms' annual integrated reports, sustainability reports and financial statements. The models used for panel analysis are fixed and random effects model. Hence, the following generalized random effects equation model is proposed;

$$y_{it} = \beta X_{it} + \alpha_i + \mu_{it} + \epsilon_{it},$$

where,

y = the independent variable with i individuals and t periods;

X_{it} = independent variable that varies with time;

α = the unknown intercept for each;

μ_{it} = the error associated with variables that occur between individuals;

ϵ_{it} = the error term associated with variables within each.

However, the fixed effects model assumes that the unobserved specific effect is correlated to the independent variable [116]. The following general fixed equation model will be employed;

$$y_{it} = \beta X_{it} + \alpha_i + \mu_{it},$$

where,

y = the independent variable with i individuals and t periods;

X_{it} = independent variable that varies with time;

α = the unknown intercept for each;

μ_{it} = the error associated with the fixed effects model.

Moreover, the Hausman test was employed to select the appropriate model in terms of random and fixed effects. This test allowed the researcher to examine the data using the Hausman test for

validity and results in achieving the aim and objectives of the study. Furthermore, Breuch-Pagan test was employed to test heteroscedasticity in the data, and also confirm the choice of random effect against the pooled ordinary least square model. The decision to use panel data (random and fixed effects models) is that the process consider individual-specific heterogeneity, improves data collinearity and provides more degrees of freedom, account for heteroskedasticity and/or autocorrelation through use of clustered standard errors and also control for issues, such as endogeneity when compared to the pooled ordinary least square [34,35]. In addition, findings from this study demonstrate that the correlation coefficients of the variables under study are not above 0.95, which illustrates that they do not suffer from multicollinearity [117].

In determining a relationship between corporate sustainability disclosure and firm financial performance, we formulated the multi-regression equation stated below:

$$\text{Financial Performance}_{i,t} = \beta_0 + \beta_1(\text{Disclosure}_{i,t}) + \beta_2(\text{Sales turnover}_{i,t}) + \beta_3(\text{Leverage factor}_{i,t}) + \epsilon_{i,t}, \quad (1)$$

where β_0 is the intercept; $i = 1, 2, \dots, N$ pertains to the cross section unit; $t = 1, 2, \dots, T$ refers to the time period; β_k is the gradient parameter; u_{it} is the random error; $\text{Disclosure}_{i,t} = \text{Environmental Disclosure; Social Disclosure and Financial}$.

In testing the equation above, corporate sustainability disclosure variables are the predictor variables while financial indicator-ROI, represented firm financial performance is the response variable. Sale growth and leverage are control variables as companies' characteristics can affect corporate sustainability disclosure and firm financial performance.

Additionally, empirical studies have mainly employed accounting based and market-based measures in determining firm financial performance [28]. Accounting based measures include return on investment, return on equity, sales growth, return on sales, EPS and cash flow [28]. However, market-based measures include Tobing q, Sharpe ratio, share return equity and cumulative abnormal return [28]. Therefore, accounting-based measures were employed in the study because of the reliability and credibility of audited financial data and measures are not affected by the market forces [7]. Therefore, return on investment was employed as firm financial ratio as it was used by the previous studies [118]. The ROI was used as the shareholders and investors expect to return on the initial capital invested in acquiring assets. However, social and environmental disclosure was proxy for corporate sustainability disclosure because in South Africa companies listed on JSE SRI are mandated to disclose their social and environmental activities. Therefore, social and environmental disclosure was represented by HIV/AIDS and water consumption, respectively. Moreover, corporate sustainability disclosure variables were not lagged as the purpose of the study was not to find a dynamic model. Sales growth and leverage were control variables employed in this study. Sales growth represents the increase in the firm's resources undertaking its environmental and social activities [119].

Therefore, many researchers used sales growth in their research [120,121] in order to justify their findings. Prior studies used this ratio as a proxy for corporate sustainability disclosure [118,122]. Leverage increases financial risk, such as agency costs and defaulting debt covenants, hence, reducing firm performance. Therefore, highly geared firms should increase the level of corporate disclosure [100]. Moreover, sustainability disclosure allows investors to analyze and make decisions about that firm's long-term financial obligation [123]. In summary, Table 1 explains how the research variables were measured.

Table 1. Research variable measurement.

Research Variable	Measurement
Environmental Disclosure	Quantitative Content Analysis (Word count)
Social Disclosure	Quantitative Content Analysis (Word count)
Return On Investment	Profit before tax ÷ Total Assets
Sales Growth	(Current Year Sales - Previous Year Sales) ÷ Previous Year Sales
Leverage	Total long-term debt ÷ Total Assets

Source: Authors' results.

4. Results

This section illustrates the results and discussion of the findings.

Table 2 shows 50 observations for five years for ten mining companies listed on the JSE SRI index. Table 2 shows an independent variable with a mean of 0.1890148, while dependent variables, and environmental disclosure and social disclosure is 8.46 and 29.84, respectively. Moreover, sales growth and leverage as control variables have a mean of 0.0895764 and 0.237122, respectively.

Table 2. Summary statistics for sample companies.

Variables	Observations	Mean	Std. Dev	Min	Max
Environmental Disclosure (EDY)	50	8.46	6.145215	1	30
Social Disclosure (SDY)	50	29.84	29.16901	1	117
Return On Investment (ROI)	50	0.1890148	0.280528	−0.208	0.92889
Sales Growth	50	0.0895764	0.193898	−0.496	0.65345
Leverage	50	0.237122	0.104103	0.0669	0.5115

Source: Authors' results.

However, the standard deviation which measures the dispersion of variables, the environmental disclosure has a deviation of 6.145215, and social disclosure has a dispersion of 29.16901. Return on investment has a deviation of 0.285276. Sales growth and leverage has a dispersion of 0.1938975 and 0.1041031, respectively.

In contrast, the maximum and minimum for environmental is 1 and 30 while for social disclosure is 1 and 117. As for independent variable is −0.20819 and 0.928893. However, sales growth has a minimum and maximum of −0.495868 and 0.653452 accordingly. Lastly, leverage as a control variable has 0.0669 and 0.5115, respectively.

Table 3 shows that there is a negative linear link between environmental disclosure and social disclosure of −0.1221. Likewise, environmental disclosure has a negative association between return on investment, sale growth and leverage of about −0.3126, −0.0433, and −0.1447, respectively. However, social disclosure has a positive association with return on investment. In contrast, social disclosure has a negative linear association with sales growth and leverage of −0.0599 and −0.0644, as shown in Table 3.

Table 3. Correlation coefficients among the variables under study.

Variables	EDY	SDY	ROI	Sales Growth	Leverage
EDY	1				
SDY	−0.1221	1			
ROI	−0.3126	0.3179	1		
Sales Growth	−0.0433	−0.0599	0.2158	1	
Leverage	−1.1447	−0.0644	−0.118	0.1147	1

Source: Authors' results.

From Table 3, the return on investment also has a positive relationship of 0.1258 with sales growth as one of the control variables. However, a negative association of −0.1180 is shown between return on investment and leverage. Lastly, a positive linear relationship of 0.1147 was found, as shown above, between sales growth and leverage. All the variables under study indicate that they have very low correlation coefficients, which are not strong, and, hence, close to one. This indicates that the 10 panelized data is free from the problem of multicollinearity.

However, panel data analysis models employed in this study were the random effects model and the fixed effects model. Therefore, random and fixed effect models were run to test the relationship between corporate sustainability disclosure and firm financial performance. Tables 4 and 5 illustrate the panel data results using random and fixed effects model for return on investment (ROI).

Table 4. Environmental disclosure and firm financial performance (ROI).

Variables	Random Effect Model		Fixed Effect Model	
	Coefficient	Standard Error	Coefficient	Standard Error
EDY	−0.0019603	0.0043171	−0.0004349 **	0.0044799
Sales Growth	0.2079847 **	0.0821838	0.1997456 **	0.0826443
Leverage	−0.9086022 ***	0.3401453	−1.0109839 ***	0.3677037
Constant	0.4024183	0.1236268	0.4166281	0.945937
Sigma_u	0.2714606		0.27508873	
Sigma_e	0.10778816		0.10778816	
Rho	0.86440187		0.86690334	
R ² : Within	0.2752		0.2789	
Between	0.0268		0.0131	
Overall	0.0584		0.0401	
Corr(u_i, Xb)	0 (assumed)		−0.1982	
F(3, 37)			4.77	
Prob > F			0.0066	
Wald (X ²)	14.25			
Prob > chi2	0.0026			
Hausman Test (X ²)	0.5804			
Breuch-Pagan Test (X ²)	0.0000			
Number. of Obs.	50	50	50	50

Notes: ***, **, mean significant at 1 and 5% significant level; Source: Authors' results.

Table 5. Social disclosure and firm financial performance (ROI).

Variables	Random Effect Model		Fixed Effect Model	
	Coefficient	Standard Error	Coefficient	Standard Error
Sdy	0.0017045	0.001128	0.0014069	0.001195
Sales	0.2031574 **	0.826091	0.1947259 **	0.810814
Leverage	−0.8515363 ***	0.3360223	−0.9922509 ***	0.3612355
Constant	0.3218711	0.1175239	0.3648733	0.0966802
Sigma_U	0.23270571		0.26553138	
Sigma_E	0.10583757		0.1053757	
Rho	0.8286008		0.86290789	
R ² : Within	0.3009		0.3048	
Between	0.0723		0.0505	
Overall	0.1059		0.0842	
Corr(u_i, Xb)	0		−0.1325	
F(3, 37)			5.41	
Prob > F			0.035	
Wald (X ²)	16.08			
Prob > chi2	0.0011			
Hausman Test (X ²)	0.6961			
Breuch-Pagan Test (X ²)	0.0000			
Number. of Obs.	50	50	50	50

Notes: ***, **, mean significant at 1 and 5% significant level; Source: Authors' results.

4.1. Fixed Effect Model for Environmental Disclosure and Return on Investment

Table 4 also shows significant statistics where the confidence interval was set at 95% and *p* values less than 5% regarded to be significant. It also shows that there is a negative association between ROI and environmental disclosure. This implies that the increase in environmental disclosure ROI decreases with 0.0004%. The findings also show that there is a significant positive link between sales

growth and ROI at the 5% significance level. This is shown by a coefficient of 0.1997456 with a p -value of 0.01. This depicts that increases in sales, there is also an increase in ROI by 0.1997%. Leverage has shown that it has a significant inverse association with ROI of -1.019839 at the 1% significance level. This suggests that the increase in gearing there is a decrease in ROI by 1.09%. Therefore, highly geared firms will experience a decrease in profits.

4.2. Random Effect Model for Environmental Disclosure and Return on Investment

Table 4 shows that ROI is negatively associated with environmental disclosure with a coefficient of -0.0019603 . This implies that a 1% increase in environmental disclosure reduces ROI by 0.00196%. Guidry et al. [98] suggested that the inverse results exist if financial control variables are incorporated when analysing data. However, prior studies do not support the insertion of financial controls in environmental studies. However, sales growth is also significantly positively associated with ROI at the 5% significance level. This shows that sales growth has a good impact on ROI. This will increase the firm financial performance of firms. This is as a result of an increase of environmentally friendly investment, such as energy saving equipment and introduction of electro fuels cells, which will decrease costs, hence, increasing revenue. Lastly, leverage is significantly negatively associated with ROI at the 1% significance level. This suggests that a 1% rise in leverage decreases ROI by 0.91%. Therefore, the increase in debt will erode ROI by paying finance costs. These results are consistent with Dragomir [124] findings.

4.3. Fixed Effect Model for Social Disclosure and Return on Investment

Table 5 shows that social disclosure is positively associated with ROI with a coefficient of 0.0014069—however, it is insignificant. This implies that firms disclose social impacts, thereby increasing profitability. Additionally, sales growth has significant positively related to ROI at the 5% significance level. The results show that sales have 0.1947259 positively associated with profitability represented by ROI.

Furthermore, from the Table 5, it shows that leverage is significantly negatively associated with ROI at the 1% significance level. This means that a 1% increase in leverage decreases ROI by 0.0992%. This suggests that as firms engaging in gearing their financial structure. This gearing will negatively reduce the earning of the firms.

4.4. Random Effect Model for Social Disclosure Return on Investment

From Table 5, social disclosure has a positive relationship with the return on investment with a coefficient of 0.0017045. This depicts that a 1% increase in social disclosure, return on investment will increase by 0.0017%, as shown in the Table 5. This is supported by Lan et al. [125] findings show that more profitable firms report more than those firms with lower profit margins. Moreover, sales growth has a significant positive relationship with ROI at the 5% significance level. This implies that sales growth increases the ROI by 0.2%. These results were consistent with prior studies [106,121]. The leverage has a significant inverse relationship with return on investment at 1% significance level. As the firm is increasing its debt, the ROI tends to decrease by -0.8515% . These results concur with Mathuwa and Kiweu [126] findings, which revealed that higher leverage has a negative contribution to profitability. However, these results incur with Guidra et al. [94] findings, which shows that companies which are highly geared engage additional social disclosure.

5. Discussion

The main objective of this study is to examine the relationship between corporate sustainability disclosure and return on investment among listed mining companies in South Africa for a period of five years, from 2010 to 2014. Therefore, the objective was to establish whether there is a relationship between environmental disclosure and return on investment. The other objective was also to establish the relationship between social disclosure and return on investment.

The statistical findings on environmental disclosure concur with JSE listed mining companies that agreed that environmental disclosure does not motivate their profitability. This research is based on South African practices from 2010 to 2014. This research such is consistent with prior studies by [29,66,96–98]. On the other hand, it contradicts the findings of previous research by Ngwakwe [79] and Ameer et al. [87]. In South Africa, based on the findings from this study, which shows a negative relationship. This shows that JSE SRI firms lack standard reporting requirements, which hinder environmental investment [14]. This might be caused by improper application of Global Reporting Framework guidelines disclosure, hence, lowers profitability. Therefore, firms are not adequately following specific frameworks for environmental disclosure, such as the Global Reporting Initiative Guidelines, as well as the lack of environmental audits. Additionally, South Africa does not have auditors with environmental audit skills to audit environmental reports [127].

Moreover, the other cause is the increase in environmental expenditures incurred by mining companies. South Africa has complex environmental liabilities. For instance, carbon reduction costs, energy saving costs, rehabilitation costs, fines and penalties. Some of these costs they do not add value to the profitability of the firm in the long run, such as penalties and fines as they are regarded as potential costs [128]. Furthermore, non-compliance with environmental violations disclosure laws has also impacted on firm profitability in the form of financial outlay. Additionally, firms might disclose environmental impacts in their sustainability reports for compliance reason, but without benefiting from reporting such impacts. Therefore, this will increase compliance costs, hence, decreasing profitability.

Furthermore, the link between sales growth and ROI was positive. This means that the increase in sales will increase profitability. Therefore, the sales growth was predominantly driven by rand prices of commodities. This indicates a normalization of production volumes after a decline, due to the global economic crisis of 2008, which extended to 2010.

On the other hand, the positive link was established between social disclosure and return on investment. These results were in line with previous studies [19,124,129]. However, these findings contradict previous studied by Brammer et al. [115] and Lopez et al. [103]. South African firms empower South African communities through social expenditure. However, firms are aimed at creating shareholders value, but may also have a business gain when incurring social expenditure as shown by the findings from this study. Social expenditure is aimed to uplift the society; hence, the government will grant a full tax deduction. Currently, in South Africa, firms with higher Black Economic Empowerment (BEE) ratings are likely to get government tender contracts, hence, increasing sales leading to the increase in profits [130]. For instance, if firms grant scholarships to people with poor backgrounds to meet BEE scorecard requirements. Tax authorities are likely to allow social expenditure as a tax deductible.

Furthermore, if companies donated to communities may enhance profitability [131]. For example, they are donating goods with the firm's logo. This means that firms are advertising through those goods, hence, increasing sales. These goods might be T-shirts, football kit and sponsoring local teams and school. Moreover, there is also a possibility of tax deductions available for donated goods. This will increase the firm's reputation, hence, maximizing shareholders value. Conclusively, sustaining and obtaining the essential skilled resources will need substantial investment to ensure well-organized and efficient workforce to upkeep future growth, and, therefore, profitability [132]. Many mining firms have internal training hubs and fund studies through scholarships, grants and loans. However, keeping skilled and competent employees has becomes progressively problematic in times of economic turnaround, with global competition for South Africa's exclusive skilled labor.

6. Conclusions

This study was designed to examine the relationship between corporate sustainability disclosure and firm financial performance among ten mining companies listed on JSE SRI. A quantitative research method was used in this research, since it was based on gathering secondary numerical data from sustainability reports and audited annual financial statements. Moreover, a multi-regression technique was used to test the link between the research variables. Results show that there is a negative relationship

between environmental disclosure and return on investment. On the other hand, the research revealed that there is also a positive association between social disclosure and return on investment. This implies that an increase in corporate reporting of environmental and social issues results in heightened financial performance (through an increase in return on investment). Therefore, firms are encouraged to report in their sustainability disclosure in order to gain financial benefits in the long run.

However, this paper recommends that companies may focus more on the current social activities, as well as to improve social disclosure policies, hence, being socially responsible. Moreover, the researcher also suggests the use of social disclosure to legitimize the firm's products and investment opportunities to customers and investors. Therefore, generating financial benefits. Also, this study recommends the adoption of social disclosure when regulators are making policies relating to sustainability in developing countries, such as South Africa. The researchers also recommend that there should be a regulation which will increase environmental disclosure.

Moreover, there should be consistent when reporting environmental activities. This study suggests that the negative association between environmental and return on investment should be seen as a temporary negative link. However, it should also be seen as beneficial in the long run. This study recommends that environmental and social impacts should be reported in the sustainability reports.

The limitation of this study is on the sample of the study were only ten mining companies were considered under the JSE SRI index. This may be inadequate to explain events in the mining sector; more so permit generalization of results. Therefore, affecting the validity and inference of the results. Content analysis has a limitation in the sense that it is subjective when it comes to coding.

However, this study encourages the South African government to make corporate sustainability disclosure mandatory in the future, since CSD is compulsory to those firms listed on the JSE SRI, but voluntary to some listed and unlisted firms. In ensuring that CSD, governments should establish environmental-related laws and regulations.

Moreover, the study may be of interest to the worldwide and local accounting, and other standard-setting bodies who are currently investigating the development of social and environmental disclosure guidelines and the regulations of these disclosures. Therefore, the findings from this proposed research will increase a higher level of awareness to the society through corporate social disclosure, as well as inducing a higher standard of acceptance to the entity's sustainability activities. The community can be, thus, able to hold the entities as socially responsible citizens and follow up company financial performances matters related to the entities. Lastly, this research will give room for investors to assess their sustainability investments in line with the firm financial performance so that they will achieve higher returns.

Furthermore, the existing studies have revealed interesting and valuable contribution to the body of knowledge. They employed mostly KLD index, reputable and disclosure ratings and financial amounts [29–31]. Therefore, this study is different from previous studies as it has also brought new insight into the literature by employing new research variables in measuring environmental [31], and social disclosure [25]. These new variables will be used as CSD measures in corporate sustainability studies.

In conclusion, further studies can be conducted on the change from voluntary corporate social disclosure to mandatory disclosure. Furthermore, other studies should not be limited to the mining sector only, but also to study other sectors within the South African economy. Researchers may need to increase the number of years from a five-year period to 30 years to examine the trends. Moreover, further studies can be conducted on how to quantify CSD activities in monetary value to increase reliance on sustainability reporting.

Author Contributions: T.M.W. was a graduate student under the supervision of F.G. This paper is the output of the dissertation that both authors have worked on.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest. The founding sponsors had no role in the design of the study; in the collection, analyses, or interpretation of data in writing of the manuscript, and in the decision to publish the results.

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