

To this end, [5] point out that Boston Consulting Group conducted an international survey based on at least 1,500 company managers, the findings of this latter one demonstrated that nearly 72% of industry managers revealed that they have not had developed no clear approach to introduce the concept of sustainability within their business organizations. That is an intriguing result since the findings also revealed that almost 90% of respondents argued that implementing sustainability in the supply chain can have negative effect over strategic decision making. A sustainable company will contribute towards sustainable development by providing economic, social, and environmental benefit. The international growing concerns regarding environmental issues such as climatic change, pollution and social issues associated with poverty, health, working circumstances, safety and inequity, have pushed business organization to incorporate sustainability principles into their daily business activities.

II.2. Sustainable Supply Chain Management (SSCM)

To have a deep understanding about the concept of SSCM, studies by [45]; [44]; [47]; [48], [50]; [51]; [55] start their examinations into backgrounds of SSCM by outlining the following definitions. [45]; [44] cogitate the sense of SSCM by quoting a description made by [50]; [51]; [55] point out that “The SC involves all operations including the flow and production of goods from raw materials to after sale products. Material and information flow both upstream and down-stream activities of the supply chain. In light to this, SCM is the combination of the aforementioned activities through enhanced SC relationships to achieve a sustainable competitive benefit.” When developing his understanding about SSCM, research by [51]; and [55] view SSCM as the systemic process, strategic management of the traditional business operations and the strategies throughout this business operations in a specific corporation and amid businesses within the SC with the goal of developing the long-run performance of the single corporations and the SC as a whole” [15]. [10]; [4]; [3]; and [27]. Furthermore, [3]; and [27] develop a second explanation by [3]; [4]; and [29], which describe SSCM, as a process of integrating key business activities from consumers through initial suppliers that delivers goods, services, and information, which increase worth for consumers and other participants” [55]; [39]. Additionally, [38]; [39]; and [41] describe SSCM as: “A development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” [3]. [4]; [10]; [15]; and [27] report that SC has been gradually viewed as the core of contemporary competition. Supply networks are complex and provide opportunities for companies to create valued and matchless skills and achieve a strategic advantage over their competitors [33]; [35]; [38]; [39]; and [41]. SSCM has originated from the acknowledgement of the strategic significance of procuring and supply operations both in attaining the company’s long-run performance, and in handling sustainability concerns in business performance [45]; [44]; [47]; [48], [50]; [51]; and [55]. As an academic field, SSCM has been developing during the past decade.

[33]; [35]; [38]; [39]; [41]; and [42] describe sustainability as a process of meeting present demands without compromising the capacity of future generation to meet their needs also. Furthermore, Studies by [45]; [44]; [47]; [48], [50]; [51]; [55]; and [59] point out that sustainability refers to the productions of products and creation of services employing processes and systems, which do not generate pollution into the environment; conservation of energy and natural wealth; economically viable; safe and healthful for employees, communities and customers; and socially and creatively rewarding for all stakeholders. SSCM is solely based on three bottom lines, which are environmental, social, and economic effect of goods and service [61]. The purpose of developing a sustainable supply chain system is based on creating, keeping and thriving long-run environmental benefits [60]. There exist several reasons that force companies to apply sustainability principles into their SCM such as laws enforcement and regulations establish by the government as whole, with the objective of ensuring their social responsibility to the public, and due to some economical and business paybacks [55]; [39]. Introducing sustainability principles into business organization’s activities has merely an objective of ensuring the management of social, economic, and environmental benefits [31]. Such incorporation is seen a profit for the company to increase competitive advantages.

III. Methods

A quantitative methodology was used in the present study, deploying a survey that was conducted based on a questionnaire as the primary data and secondary data from previous studies. The collection of primary data was done anonymously due to political issues in many states members of the SADC region. The design of the questionnaires was solely set to explore the feasibility of developing SSCM within mining sector of SADC. At least a total of 1 453 valid responses were collected from the 1 480 questionnaires. Only 1 423 respondents answered to the questions. Our sample collected answers from different mining companies of different size. Therefore, it is believed that the findings of this research will increase awareness regarding SSCM practices in this part of the SADC region.

IV. Results

The purpose of this section is to present and analyze the collected data in accordance with the research methodology that was deployed during data collection. And these are presented in the figure 1 below

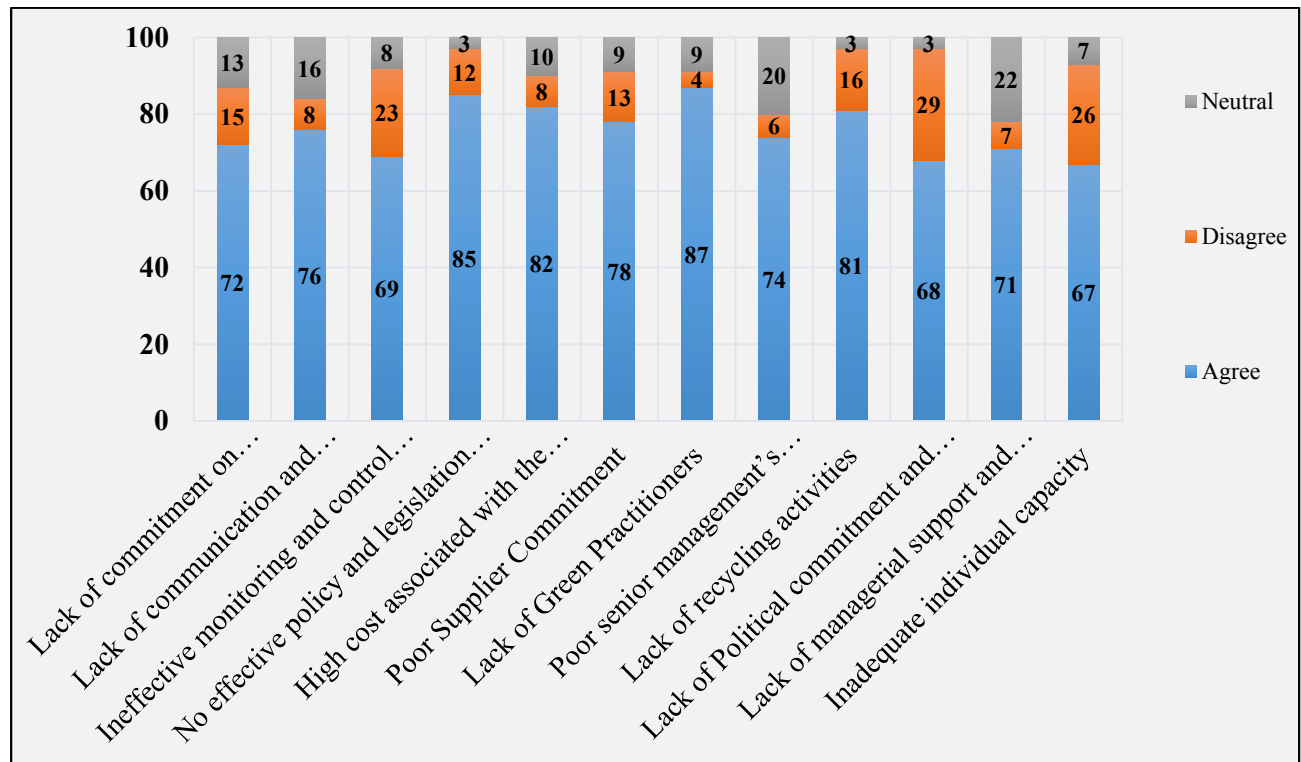


Figure 1. Major barriers in mining sector of the SADC region

IV.1. Lack of commitment on environmental deterioration

The results from the survey conducted on this sub-section are illustrated on the figure 1 above. In accordance with 72% of the respondents report that social development and economic growth are the major factors that are in the interest of the mining sector, however considers the environmental protection as least important. And this can be noticed from the results illustrated in the figure 1 above. The respondents also revealed that they know about the environmental deterioration created by the mining industries' operations, such as release of carbon dioxide into the environment, river and soil during the mining operations. The respondents revealed that the environmental degradation issues are not fully included in the scope by the investors.

IV.2. Lack of communication and knowledge sharing

From this figure, it can be depicted that 76% of the respondents strongly agree that there is a lack of commitment from all stakeholders involve in the mining sector to improve environmental aspect by organizing training programs in order to raise awareness about green system. [13] backs this barrier by pointing out that when knowledge sharing is well-established within a green supply chain can push stakeholders to create new capabilities for effective measures. Training and education are important elements to successful implement SSCM within any organization, while developing strong communication among all stakeholders would help the any organization to adopt green practices [52]; [55]. In addition, the respondents indicated that they are not fully aware about the significance of implementing sustainability principles into SCM, and, they do not know about the advantages associated such practice.

IV.3. Ineffective monitoring and control system

At this point, it has been indicated by 23% of respondents that there are monitoring and controlling systems that are put in place that serve to control and monitor the number of small particles into the environment, which are generated from the production process. However, 69% of the respondent report that the system put in place is not properly applied and is not effective. For this reason, the respondents consider pollution as an inherent component of running

business within the mining sector. They even stated that for pollution to be fully mitigated the mining sector should close, because according to them there is no way to reduce pollution with the current monitoring and control system. That means, the implementation of SSCM will require up-grading the present controlling and monitoring system to a more holistic one. Therefore, the current monitoring and controlling system is a factor that does not help to keep the environment green.

IV.4. No effective policy and legislation direction

As it can be seen from the figure above, most of the participants revealed that the current policy and legislation is not effective when it comes to environmental deterioration. It is believed that the government is not enough explicit and does not assist preventing the environment from deteriorating. From this statement, it can be believed that the environmental risk is not a priority for the government. That means, the government must consider it as a priority to force mining industries to effectively adopt it and efficiently apply it. [55] point out also this barrier by stating that generally government legislation forbids mining sector to destroy the environment with the release of toxic air and water pollution by deploying technologies, which control or clean gas emission from production process. Here as it can be noticed from the graph above most of respondents indicate that the government should enforce the present policy and regulations by being more strict and severe when the mining sectors do not comply. They also state that the safety and protection of the environment is not taken lightly by the government. They continued by claiming that unless SSCM is seriously considered and properly enforced, the current government regulation is a mere intention to protect the environment.

IV.5. High cost associated with the implementation of SSCM

Generally, customers go for least cost; hence this requires the cost involved in incorporating sustainably principles must not be high to allow organizations to offer their products at lower cost. However, research by [22] report that developing SSCM is costly and require a significant amount of funds specifically for small to medium enterprises. [33] also point out that even though most of the small to medium enterprises are aware about the economic benefit that may be generated from making supply chain environmentally friendly. But, these enterprises seen cost as the main barrier for developing SSCM in a business organization. As it can be depicted from the figure, respondents strongly agree that cost is a serious concern in implementing SSCM. They believe that if enough funds are allocated for such change, the implementation of SSCM would be feasible. To sum up, respondents agree that the development of SSCM needs significant capital investment because it is a long-term investment. Additionally, SSCM requires new world-class technologies, which can easily detect and control the waste produced. That is why, it always says the more you become green, the more you become expensive.

IV.6. Poor Supplier Commitment

Here, the respondent reported that can contribute significantly to the implementation of SSCM. However, suppliers are not fully involved in this process of changing from ordinary supply chain to sustainable one. That means, suppliers are not ready and prepared to partake in this process due to their poor commitment as revealed by respondents. Hence, supplier's commitment can in somehow influence the development of SSCM in mining sector. Therefore, they are advised to demonstrate some intellect regarding the SSCM.

IV.7. Lack of Green Practitioners

From the results above, mining sector in many SADC states members do not have green practitioners. In fact, it was reported by respondent that there are not well-trained and well experienced green specialists. Therefore, it is believed that to effectively develop SSCM, there must be enough green specialists who can do their job well. With the presence of skilled green specialists, organization see a way of cutting costs, increasing competences and demonstrating certain social and environmental responsibility within a professional manner.

IV.8. Poor senior management's commitment

[54] argue that commitment from senior management is extremely significant for the success of any project. In the case of this study, commitment from senior management would be a key driver for environmental protection action. For example, it can promote and support the activities associated with the development of SSCM. In this sense, participants report that there is a poor commitment from their senior managers concerning the protection of the environment. Their main objective is solely based on economic growth of the company even if they are not environmental friendly. However, if they are competitive in the market they see no problem with environment

deterioration. Therefore, this is also a main challenge that hinders the green activities in the mining sector of the SADC region

IV.9. Lack of recycling activities

They respondents report that most mining companies are not engaged recycling activities. Engaging in recycling activities can create economic and environmental advantages for communities especially the waste from mining sector are harmful to human being health. Respondents believe that recycling can play a critical role in mitigating the need for new landfills as well as their related costs. To sum up, respondent indicated that recycling can participate in developing the mining industrial as in most cases the recycled materials are used as raw materials for manufacturing and other utilizations.

IV.10. Lack of Political commitment and support

[54] point out that both political commitment and support are essential factors that can facilitate and influence green activities in mining industries. [52]; and [55] argue that several public and private organizations are experiencing shortage of knowledge and skill for assessing different options in terms of their environmental facets and effects. This might cause all stakeholders feel averse to priorities green activities because they need tangible knowledge of which environmental requirements are important for a specific product group. [15]. [10]; and [4] show that the challenges associated with the assessment involve the ambiguity on how to describe a green product and how to weight the relative significance of various life-cycle performance indicators. Further, there is a perceived shortage of tangible product selection guidance, creating issues in determining greener goods alternatives. Additionally, there is a view of shortage of knowledge or means for possible assessment and follow up of the life cycle oriented information. This backs the idea that there is lack of management and distribution of best practices in many establishments.

IV.11. Lack of managerial support and practical tools

[7]. [8]; [9] discover lack of managerial support and practical tools as an additional cause affecting green activities. [15] on the other hand, look at the private firms fail to implement green activities practices because they do not have regulatory demands and clear regulatory charter for criteria development, assessment and integration, and to compare different options and to follow up the supplier performance. [42] point out that comparing to the single principles considerations, the life cycle perspective adds to the complexity of green activities within that the amount and range of acquiring benchmarks is increasing and needs to cover several phases of a product life cycle. The scope is stretched out to consider not only the characteristics of the product per se, however also how it has been manufactured and distributed, and its environmental effect during use and disposal phases. Additionally, the lack knowledge, cost matters and lack of clarity in regulation, business firms indicate poor supplier commitment and industry specific factors.

IV.12. Inadequate individual capacity

Deficient individual capacity is also another barrier preventing the implementation of SSCM. The capacity aspect may be associated with knowledge, understandings over environmental concerns, environmental education. The feeling of incapacity or insufficiency may also stem from an absence of eagerness or rational understanding. [22]; [23]; and [32] recommended managers, as well as procuring managers to have a diversity of attitudes toward environmental concerns, and sometimes also have an indecisive view concerning the potential and immediate costs and gains of green initiatives. Education and particularly training of buyers within public and private organizations needs to become more widespread in integrating SSCM elements in the operations of mining companies.

V. Conclusion and Recommendations

The present study aimed at investigating the challenges hindering the incorporation and implementation of sustainability practices into the supply chain activities. The Mining sector in SADC region was selected as a case study. The reasons of conducting such research in SADC mining sector is firstly because there is a lack of research regarding this topic. And secondly, because SADC has got some of the world's richest mineral resources as shown in table 1 above. Two sources of data were used; firstly, primary data was gathered from a survey conducted in five Southern countries. Whilst, the secondary data was obtained from the previous studies done in the same field. After collection and analysis of findings, it has been noticed that there are 12 major challenges that are preventing the development of SSCM such challenges are lack of commitment on environmental deterioration, lack of communication and knowledge sharing, ineffective monitoring and control system, lack of effective policy and legislation direction, high cost associated with the implementation of SSCM, poor supplier commitment, lack of green practitioners, poor senior managements' commitment, lack of recycling activities. It light of this, the following recommendations should be considered: The

study recommends that mining industries should organize seminars and workshops to alert all the stakeholders involved concerning the benefits of SSCM and the importance to embrace it. Because, the development of SSCM would be easier when all the stakeholders are informed about advantages of SSCM. Secondly, it is recommended to mining firms to engage in training sessions to enhance the skills and knowledge of their all industries practitioners about SSCM. Because, when all the industries practitioners are well-educated and trained concerning the environmental rules and the policy, therefore will increase awareness and knowledge about the negative impact of mining operations on the environment and how the damage can be mitigated. Thirdly, mining industries should highly consider the level of damage on the environment created by mining operations and its impact on the communities implicates and teaches this philosophy to its personnel who would implement the SSCM vision within the company. Fourthly, the supplier should be fully committed and being involved at earlier stage to understand the principle of green to the community where the suppliers also could think of making the supply of green goods affordable for all customers to acquire green goods. This can assist in lessening the global warming due to fact that the users will consume products that are environmentally friendly.

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