

SUPPLY CHAIN MANAGEMENT CONTRIBUTION TO ORGANISATIONAL SUSTAINABILITY

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ABSTRACT: Sustainability is an element that is increasingly considered within the organisation. Therefore, the aim of this scientific article is to explore the contributions of supply chain management (SCM) to organisational sustainability. The study was based on a closed-ended question distributed to strategic managers from eleven business sectors, and the answers to this question were selected according to our objectives and grouped to generate six questions that were applied through a questionnaire to a total of 220 companies from the three economic sectors, companies that have implemented sustainable SCM practices. The main findings from the descriptive analysis used for the data show that sustainability practices integrated into SCM, such as sustainable sourcing, green design, and supply chain loop. Improving relationships with suppliers and customers by promoting closed-loop corporate social responsibility (CSR) values has a positive impact on organisational sustainability. These practices reduce environmental impact, improve financial performance, enhance reputation, and increase stakeholder satisfaction. The main conclusion of this study is that the adoption of sustainable SCM practices is critical to organisational sustainability. Organisations must prioritise sustainability in their SCM decisions to ensure their long-term success.

KEY WORDS: sustainable supply chain management, organizational sustainability, corporate social responsibility.

1. INTRODUCTION

Sustainability is a term that is often used today to describe actions and practices that ensure the long-term well-being of the planet and its inhabitants. The notion of sustainability dates back to the early 1970s, when a journal called *Blueprint for Survival* published articles and studies by more than 30 experts, whose recommendations included living in tiny, deindustrialized communities (Mentzer et al., 2007). Since then, the term has evolved and expanded to encompass a wide range of environmental, social, and economic concerns (Portney, 2015). Essentially, sustainability refers to the ability of a system

to withstand impacts over time with various disruptive factors, gaining flexibility. This includes environmental sustainability, which focuses on the impact of human activities on the natural environment, and social sustainability, which focuses on the impact of those activities on human societies. Economic sustainability is also essential, as companies need to balance their financial performance with their social and environmental responsibilities. Therefore, Sustainability should be viewed through economic, environmental, and social lenses. Economics is best represented graphically by a Venn diagram with three intersecting circles, this is usually placed in the center of the three stacked concentric circles.

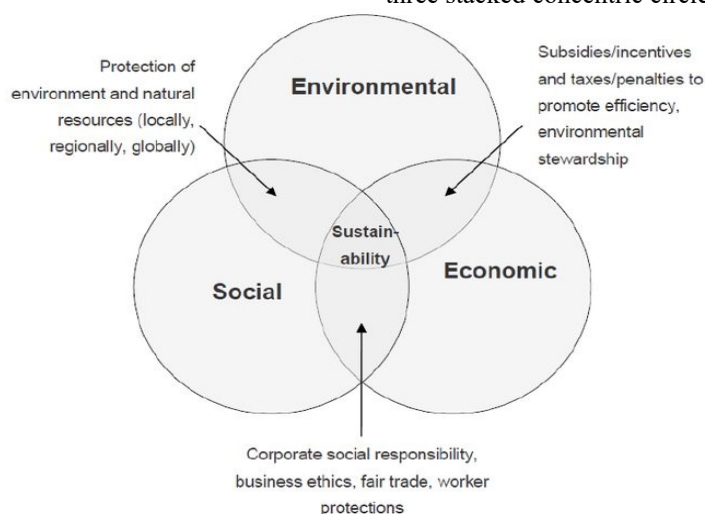


Figure 1. Sustainable development diagram
Source: Rosen, Kishawy (2012)

The concept of supply chain management (SCM) emerged in the 1980s when globalisation and technological developments created new opportunities for organising and managing the flow of goods and services from suppliers to customers and refers to the coordination of activities involved in the production and delivery of goods and services. This includes everything from sourcing raw materials to designing, manufacturing, transporting and distributing products (Geyi, 2021). Effective SCM requires companies to balance operational objectives with the needs of customers, suppliers and other stakeholders. This coordination of activities has become crucial to business operations and success in today's globalised economy. In addition to coordination, another strength for customers is the integration of all activities involved in producing and delivering goods and services to them, including sourcing, procurement, production, transportation, distribution and service.

Supply chain management has become an increasingly critical function for businesses as globalisation and digitalisation have created new challenges and opportunities for managing the flow of goods and services from raw materials to the end customer. This issue in the last decade has gained significant attention in the academic and business communities due to its potential to improve organizational sustainability (Christopher, 2016; Mentzer et al., 2007).

According to the current research, SCM strategies are important for decreasing environmental impacts, improving financial performance, and increasing stakeholder satisfaction, proving that sustainability is becoming a vital factor in SCM decision making (Thong, Wai-Peng, 2018).

Given the importance of sustainability and SCM, it is not surprising that these two concepts are closely related. This is why companies that are able to integrate sustainability into their SCM practices can reap significant benefits, including improved brand reputation, cost savings and reduced risk. However, achieving these benefits requires a deep understanding of the complex relationships between these two elements. As such, there is a growing need to understand the interplay between the two concepts so that companies can effectively integrate sustainability into their SCM strategies (Carter, Rogers, 2008; Sarkis, Adenso-Diaz, 2010).

Despite the growing interest in supply chain sustainability, it remains unclear why some organisations are more successful than others in adopting and implementing sustainable practices. However, we believe there is a lack of awareness of what drives the adoption of sustainable SCM methods and what barriers prevent firms from doing so. As such, organisations that prioritise sustainability in SCM decisions can improve their environmental performance, financial performance, reputation and stakeholder satisfaction. However, there are existing barriers to the use of sustainable SCM practices, including organisational culture and leadership. To overcome these barriers, organisations need to develop a culture focused on sustainability, provide leadership support and respond to stakeholder pressure.

In this first part, the conceptual elements of sustainability and supply chain were discussed and their importance in the modern organization was presented. The second part consists of a study of the literature and presents research papers in which authors have addressed the contributions of SCM in the context of organisational sustainability. The papers have been selected based on the relevance of the topic addressed which is in line with the issue addressed in this paper. The third part consists in applying a questionnaire on a number of 220 companies, from Transylvania Romania, companies belonging to the three

economic sectors. The findings of this study provide valuable information to organisations wishing to improve their sustainability performance through sustainable SCM practices.

2. LITERATURE REVIEW

The literature on SCM and sustainability has grown significantly in recent years, with numerous studies highlighting the importance of sustainable practices for organisational success. (Sánchez-Flores et al., 2020).

This section provides a review of the relevant literature on sustainable SCM, focusing on identified problems and proposed solutions. One of the main issues addressed in the literature is the environmental impact of SCM. Researchers have highlighted the need to reduce greenhouse gas emissions, minimise waste and conserve natural resources. Sustainable sourcing is one of the key practices identified in the literature to address these issues, but only to the extent of sourcing materials and products from suppliers that meet certain environmental and social criteria. This practice can help organizations reduce their environmental impact while also improving their reputation and meeting stakeholder expectations (Cruz et al., 2018).

Another issue highlighted in the literature is the need to incorporate green design into the product development process. Eco-design involves designing products to minimise their environmental impact throughout their life cycle. By considering environmental factors at the design stage, organisations can reduce waste, increase efficiency, and improve their environmental performance (Kang, Gao, 2016).

Closed-loop supply chains are another solution proposed in the literature to address environmental concerns. Closed-loop supply chains involve the recovery and reuse of materials and products at the end-of-life. This practice can reduce waste and conserve resources while providing cost savings for organizations (Srivastava, 2007).

In addition to environmental concerns, the literature also addresses the need to improve financial performance through sustainable SCM. Sustainable practices can reduce costs and increase efficiency, leading to improved financial performance. For example, sustainable sourcing can help organizations reduce supply chain risks, lower costs, and improve supplier relationships (Chen, Paulraj, 2004).

The literature also highlights the importance of stakeholder satisfaction in sustainable SCM. Stakeholders, including customers, employees and communities, expect organisations to act responsibly and sustainably. Organisations that prioritise sustainability in their SCM decisions can meet stakeholder expectations and improve their reputation (Brammer, Walker, 2011).

Despite the benefits of sustainable SCM, there are several challenges and barriers to its adoption. One of the main challenges identified in the literature is the lack of awareness and understanding of sustainable SCM practices. Organizations may not be aware of the potential benefits of sustainable practices or lack the knowledge and expertise to implement them (Cruz et al., 2018).

Organisational culture is another barrier to the uptake of sustainable SCM practices. Organizations with a culture that prioritizes short-term financial goals and traditional supply chain practices may be resistant to change and slow to adopt sustainable practices (Panigrahi et al., 2019).

Leadership is also essential to embrace sustainable SCM practices. Leaders who prioritize sustainability and provide the

necessary resources and support can drive change and encourage the use of sustainable practices (Srivastava, 2007).

Stakeholder pressure is another factor that can influence the practice of sustainable SCM practices. Customers, investors and other stakeholders can influence organisational decision-making by demanding sustainable practices and transparency in SCM (Brammer, Walker, 2011).

Supply chain digitisation is an issue that has great influence on the supply chain and how it is managed, contributing greatly to the efficiency and effectiveness of the whole system from an economic, social and environmental perspective (Minculete et al., 2022).

Sustainable SCM is a holistic view of supply chain technologies and processes that go before the spotlight of inventory, traditional cost and delivery views, (Mulwa et al., 2015) which is based on the principle that socially responsible practices and products are not only great for the environment but are quite important for long-term profitability (Sambrani, Balakrishna, 2016).

An exergetic analysis for modeling and calculating the consumed exergy for sustainable supply chains was done by researchers considering different objectives of financial, social and environmental aspects of selecting the most sustainable supply chain for production and distribution of outputs (Boukherroub et al., 2015; Naderi et al., 2021).

In summary, the literature on sustainable SCM highlights the importance of environmental, financial and social sustainability for organizational success. Sustainable sourcing, green design and closed-loop supply chains are some of the key practices identified to address environmental concerns. Organisational culture, leadership and stakeholder pressure are some of the factors that can influence the use of SCM practices. The literature provides valuable information for organisations looking to improve their sustainability performance and prioritise sustainability in their SCM decisions.

3. RESEARCH

The increasing focus on sustainability has led organisations to adopt sustainable SCM practices. SCM refers to the integration of environmental, social and economic considerations into the design, planning, execution and monitoring of supply chain activities. This integration of sustainability into SCM has been shown to have benefits such as reduced environmental impact through lower carbon emissions, improved social outcomes, increased profitability and increased investor confidence in companies that report on sustainability (Szabo et al., 2023).

While there are many pros to this, organisations face several challenges when implementing sustainability practices in the supply chain, including lack of resources, lack of awareness and unwillingness to adapt on the part of suppliers. In order to understand these challenges, we felt it necessary to identify the important elements through a direct approach from experienced supply chain managers in different industries, an approach that would give us a realistic pulse on the importance of awareness of sustainability practices within their industry.

The aim of this research is to explore the contributions of sustainable SCM practices to enhance the contribution of sustainable development of organizations.

Specifically, the research aims to:

- Investigate the relationship between the adoption of sustainable SCM practices and the environmental, social and economic performance of organisations.
- Identify the challenges faced by organisations when implementing sustainable SCM practices.
- Explore strategies that organisations can use to overcome these challenges.

Hypotheses

- H1. Sustainable SCM practices can contribute significantly to the development of organisations.
- H2. Organisations that become aware of and adopt sustainable SCM practices see significant improvements in their performance from environmental, social and economic perspectives.

All industries within economic sectors can benefit from the use of sustainable SCM concepts. Sustainable SCM techniques can benefit any industry that uses sourcing of raw materials, manufacturing of goods or services and distribution of these items to customers or other businesses.

Research methodologies

The data used for this study was collected by conducting a survey of 220 companies in Transylvania Region, Romania that have implemented sustainable SCM practices. The companies were randomly selected 20 per industry considering the following aspects: implementation of sustainable SCM practices, availability of survey participation, company size, and accessibility. The survey ran from March 2022 to June 2023 and was designed to collect data on the contributions of sustainable SCM practices to the sustainable development of organizations, the challenges organisations face when implementing sustainable SCM practices, and the strategies organisations can use to overcome these challenges.

The survey was distributed to organisations in a range of industries that are part of the three economic sectors and included exclusively closed-ended questions that resulted from an open-ended question. This helped to identify the most common issues from the managers who agreed to answer the question. The closed questions were designed to collect quantitative data on the adoption of sustainable chain management practices.

The data initially collected was qualitative and was the basis for the survey from which we collected the quantitative data. These are analysed to identify the challenges that organisations face when implementing sustainable SCM practices and the strategies that organisations can use to overcome these challenges, as well as to investigate whether there is a relationship between the implementation of sustainability at the organisational level and the performance of organisations on the dimensions considered in the study.

The first step in achieving the proposed objectives was to ask an open-ended question to one strategic level manager in each of the eleven industries. The aim was to find out the main benefits of adopting sustainable SCM practices. The open-ended question was addressed to strategic level managers with 5-10 years of experience in SCM from two randomly selected companies from each industry. The second step was to select six of the most common answers from the many responses received and formulate a questionnaire based on them. The third step was to apply the questionnaire designed to obtain answers to the questions asked. Note that the questions were distributed via the Google Forms platform. To simplify things from a time

perspective, we set each question to be closed by measuring the answers on a range scale with values between 1 and 5. Respondents had to give a score in this range, depending on the importance of the aspect of the question in relation to the activity of their company. The quantitative data obtained were processed to obtain industry-wide averages. The averages obtained for each industry were converted into percentages so that their sum was 100%. The results obtained were interpreted through a

descriptive analysis, which showed the priorities of the industries in each sector.

Open question:

- What are the main benefits of adopting sustainable SCM practices?

Table 1. Responses processed into survey items

Item no.	Answers
I1	Improve relationships with suppliers and customers by promoting CSR values.
I2	Reduce environmental impacts and increase long-term sustainability of the business.
I3	Reduce sourcing risks by assessing and selecting suppliers that meet environmental and social standards.
I4	Enhance reputation and brand by promoting commitment to sustainable and responsible practices.
I5	Increase operational efficiency by reducing waste of energy, materials and resources and optimising supply and production processes.
I6	Access new business opportunities by meeting growing consumer demand for sustainable and socially and environmentally responsible products and services.

Thus, these responses have been used as a basis, with small adjustments added as appropriate to the context to allow us to scale the responses.

Figures 2, 3 and 4 show the most common answers derived from the general question, grouped into six closed questions that we

refer to as items and mark with I. The data obtained from the questionnaire were measured using the Likert scale. At the same time, after obtaining the numerical data, they were processed into percentage data for better understanding.

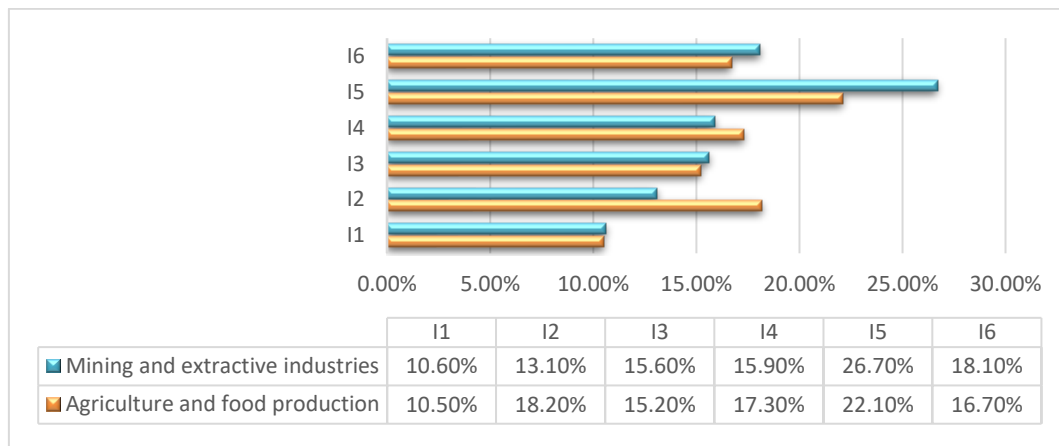


Figure 2. Situation of responses by components first economic sector

In the mining and quarrying industry, the highest weighted response of 26.7% was for improving operational efficiency by reducing energy waste. This was followed by new business opportunities by meeting growing consumer demand for sustainable and socially and environmentally responsible products and services scoring 18.1%. The industry also had a relatively high score for improving its reputation through sustainable practices of 15.9%. The lowest weighted response of only 10.6%, was for promoting corporate responsibility values. This suggests that the industry is focused on maximizing productivity and mitigating risks related to natural resource extraction.

Agriculture and food production have as their first priority the improvement of operational efficiency, which represents 22.1% of the industry's sustainability concerns. The second most critical priority is increasing long-term sustainability at 18.2%, followed by meeting the growing demand for sustainable products and services at 16.7%. As can be seen, the lowest priority is improving supplier relations by promoting CSR values with a score of 10.5%. In conclusion, we also see in this industry an awareness and orientation towards sustainability which means that the profitability of companies is on an upward trend in terms of investors reporting on the adoption of sustainability policies and their implementation in this industry.

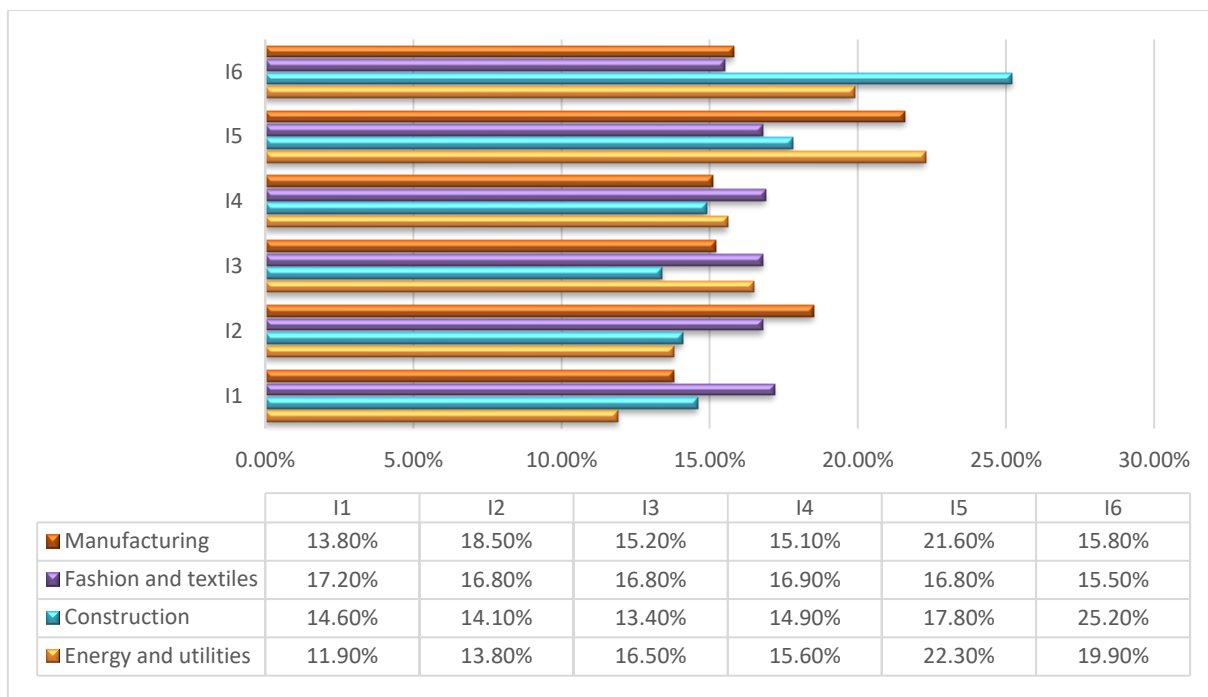


Figure 3. Situation of responses by components in the secondary economic sector

Improving efficiency by optimising supply and production processes is the main sustainability objective of the manufacturing sector under consideration, accounting for 21.6% of its priorities. Long-term sustainability ranks second at 3.1%, a percentage of the main objective. With an average of around 15.5% of responses, we note that they are: selecting suppliers that meet environmental standards, promoting commitment to sustainable practices paying more attention to market demands for sustainable products and services. The lowest weighting is that of promoting CSR values. However, this latter weight, although the lowest from the responses received, is not disregarded, as the percentage differences are not large. This shows that the sector's priorities include strengthening connections with stakeholders and streamlining production procedures.

In the fashion and textile industry the situation is changing compared to the manufacturing sector, with the priority being the promotion of CSR values in the relationship with customers and suppliers with 17.2%. The second concern as can be seen is to improve reputation and brand by promoting commitment to sustainable and responsible practices with 16.9%. The score of 16.8% percent was equally achieved by: reducing environmental impact and increasing the long-term sustainability of the business, reducing sourcing risks by assessing and selecting suppliers that meet environmental and social standards and increasing operational efficiency by reducing energy, material and resource waste and optimizing sourcing and production processes, which shows the importance the textile industry

places on sustainability. In last place with 15.5% are business opportunities by meeting growing consumer demand for sustainable products and services. So we can see a new perspective on sustainability in the textile industry that prioritizes environmental elements over business opportunities.

For the construction industry, the highest priority is accessing new business opportunities, accounting for 25.2%. The second most important element at 17.8% is reducing waste of energy, materials and resources. We see in the graph an average of 14% for items 1, 2 and 4, the difference being only a few tenths of a percent from which we can deduce a coagulation of responses towards CSR combined with sustainability. However, risk reduction is the lowest priority for this industry, with 13.4%.

In the energy and utilities industry, the highest weighted response was for improving efficiency, with a weight of 22.3%. This was closely followed at 19.9% by meeting growing consumer demand for sustainable and responsible products and services. The industry also had a relatively high weighting in selecting suppliers that meet environmental and social standards with a value of 16.5%. The lowest weighted response was to improve relationships with suppliers and customers by promoting CSR values being only 11.9%. This suggests that the industry is focused on improving efficiency and mitigating risks, which may be related to the critical nature of the services they provide.

The tertiary sector is presented in Figure 4 through the five industries considered in the study.

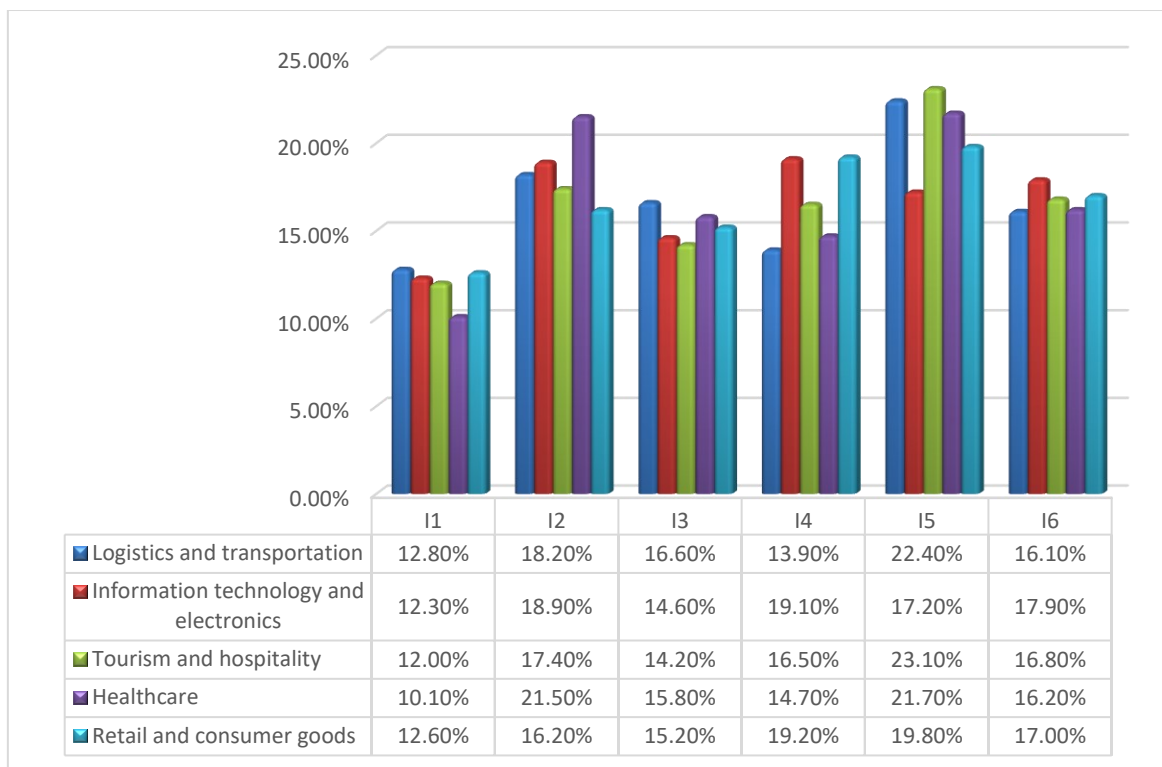


Figure 4. Situation of responses by components in the tertiary economic sector

In the logistics and transport industry, the highest weighted response was for improving efficiency with a value of 22.4%. This was followed by reducing environmental impact and increasing the long-term sustainability of the business with 18.2%. A relatively high weighting can be seen for item 3 which focuses on reducing supply risks by assessing and selecting suppliers that meet environmental and social standards, this item scoring 16.6%. The lowest weighted response was for improving relationships with suppliers and customers, this was 12.8%. This suggests that the industry is focused on improving supply chain operations and minimizing risk.

The response with the highest weight in the information technology and electronic goods industry, at 19.1%, was for increasing reputation. This was followed by 18.9% by prioritizing increasing long-term sustainability. This industry had the lowest weight for risk mitigation at 14.6%. This shows that this sector should focus more on generating a favorable brand image and cultivating connections with consumers.

In tourism and hospitality, improving operational efficiency achieved by reducing material, resource, and energy waste scored highest at 23.1%, followed by 17.4% for reducing environmental impact and increasing long-term sustainability of the business. The industry's share for hazard reduction was 14.2%, which was quite high. The lowest score of only 12% was achieved for promoting CSR values. This shows that the industry is focused on improving user experience and

operational efficiency while reducing the risks associated with travel and hospitality services.

In the healthcare industry, the highest weighted response was similar in importance to the previous industries, scoring 21.7% for increasing operational efficiency by reducing waste of energy, materials and resources and optimising supply and production processes. Just 0.2% behind is increasing the long-term sustainability of the business. The industry also had a relatively high 16.2% share for accessing new business opportunities. The lowest weighted response was for improving relationships with suppliers and customers by promoting CSR values being only 10.1%. This suggests that the industry is focusing on operational efficiency and sustainability together accounting for 43.2% of all responses.

The highest weighted response in the retail and consumer products category was 19.8% for optimising supply and production processes. At 19.5%, the industry also had a relatively high weighting for enhancing reputation through sustainable and responsible practices. At the opposite pole the lowest weighted response of 12.6%, was for reducing impact. This indicates that the industry is focused on improving brand image and customer interactions while streamlining supply chain processes.

Figure 5 shows an overview of the situation analysed by industry within each sector.

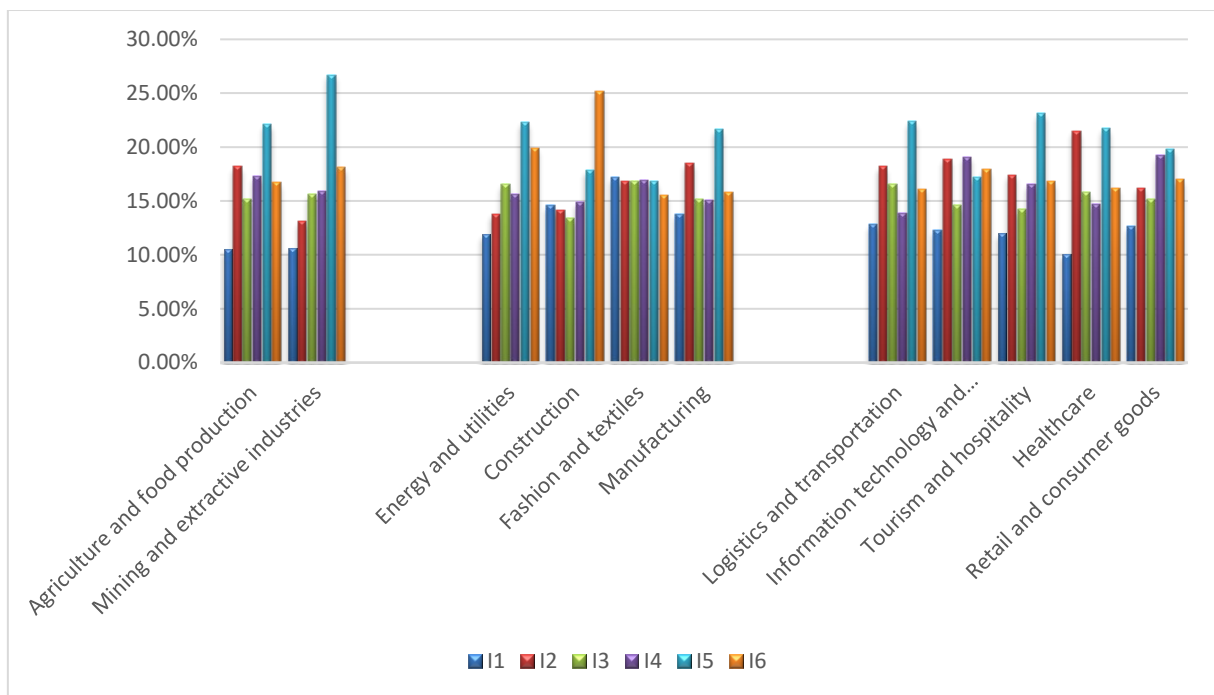


Figure 5: Overview of the results of the questions in relation to economic sectors

As can be seen, in the figure above at the level of the eleven industries considered, item number 5 on increasing operational efficiency by reducing waste of energy, materials and resources and optimising supply and production processes has the highest importance, at the opposite pole is item number 1 which shows that the relationship with suppliers and customers through the promotion of CSR values is a more sensitive topic that could draw negative aspects on companies.

4. CONCLUSIONS

The study found that sustainable SCM practices have a significant impact on the sustainable development of organizations, thus confirming the first hypothesis formulated at the beginning of the research. Adoption of these practices leads to improvements in the performance of organizations in the three dimensions: environmental, social, and economic. Their implementation among organizations directs them toward success in reducing their environmental impact. Reducing greenhouse gas emissions, using resources efficiently, managing waste properly, and protecting biodiversity are just some of the practices through which organizations become greener and contribute to environmental conservation. On the social side, sustainable SCM practices have the potential to enhance an organization's relationships with employees, local communities, and other stakeholders. By promoting safe and healthy working conditions, respect for human rights, and active community involvement, organizations can create a positive reputation and contribute to the social and economic development of the communities in which they operate. Sustainable SCM practices also have positive effects on the economic performance of organizations.

By streamlining procurement processes, reducing costs and managing risk, organisations become more competitive in the market and gain financial advantages. At the same time, more and more investors are turning to companies that adopt sustainable practices because they are seen as more reliable and future-proof. Organisations that realise the importance of sustainability and integrate it into their strategy are more likely

to attract investment and have a better image in the financial market.

The paper also identified some challenges associated with implementing sustainable SCM practices. One of these challenges is the lack of resources needed to implement and monitor sustainable practices. Allocation of additional funds and resources may be needed to develop organisational capacity and implement new practices. Lack of awareness and understanding of the long-term benefits of sustainable management can also be a barrier to implementing these practices.

Education and training of employees is crucial to develop a culture of sustainability in organisations and to encourage the adoption of sustainable practices in the supply chain. It is important to provide relevant training and information about the importance of sustainability, the long-term benefits and how each employee can contribute to it. In this way, a solid knowledge and skills base can be created in the organisation that facilitates the implementation and monitoring of sustainable management practices.

Another barrier identified in the study is supplier resistance to adopting sustainable supply chain practices. Organisations may find it difficult to convince suppliers to comply with the required sustainability standards and criteria. To overcome this challenge, it may be necessary to establish strong partnerships with suppliers, provide them with support and guidance in implementing sustainable practices, and develop clear criteria for assessing suppliers from a sustainability perspective.

In conclusion, the results of this study show that sustainable SCM practices have a significant impact on the sustainable development of organizations. These practices lead to improvements in organizations' environmental, social and economic performance, thus also confirming the second hypothesis formulated at the beginning of the study. However, their implementation can be accompanied by challenges such as lack of resources, awareness, and supplier resistance. Organizations that realise the importance of sustainability and adopt appropriate practices can achieve significant improvements in their performance and become more attractive

to investors. By effectively managing their supply chain and integrating sustainability into their strategy, organizations can

actively contribute to the sustainable development of society and gain long-term competitive advantages.

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