KnE Social Sciences
EBEEC
Economies of the Balkan and Eastern European Countries
Volume 2023

Research Article

Supply Chains and Corporate Social Responsibility Orientation: An Interpretive Structural Modeling Approach

Giannis T. Tsoulfas

Department of Agribusiness and Supply Chain Management, Agricultural University of Athens, 1st km of Old National Road Thiva-Elefsis, GR32200 Thiva, Greece

ORCID
Giannis T. Tsoulfas: https://orcid.org/0000-0003-4538-9016

Abstract.
Corporate social responsibility (CSR) operations are becoming increasingly important for businesses throughout the world. It is critical to understand how stakeholders perceive these actions to achieve the intended CSR advantages. The nature of CSR motivation has been extensively discussed, yet there are still gaps in the literature, including CSR orientation. Individual enterprises are no longer pitted against one another in modern global competitiveness; instead, a company's supply chains (SCs) are opposed to those of its competitors. To be competitive, SC partners must be aware of stakeholders' expectations, which are increasingly focused on sustainable practices. Apart from financial performance, organizations are increasingly held liable for the environmental and social impacts of not just their own operations, but also the operations of their whole SCs, which may include second, third, or higher-tier suppliers. As a result, from raw material extraction through product recycling, an integrated approach to SC management necessitates the development and maintenance of relational capacities across SC partners. In SC collaborations, a company's commitment to CSR can be a critical aspect. Managing CSR becomes more difficult as SCs get more sophisticated and multitiered, and it attracts greater attention. In this paper, the key drivers that shape CSR orientation are identified based on the literature and are classified into three categories: internal, external, and SC related. A conceptual model is formulated using interpretative structural modeling and MICMAC to identify interrelationships among these drivers, based on the opinions of experts from the Greek market and academia.

Keywords: supply chain, corporate social responsibility, drivers, interpretive structural modeling, Greece

Corresponding Author: Giannis T. Tsoulfas; email: giannis@aua.gr

Published: 1 February 2023

Publishing services provided by Knowledge E

Selection and Peer-review under the responsibility of the EBEEC Conference Committee.

1. Introduction

Expectations and demands for companies to undertake more effective social roles in society have grown. Corporate social responsibility (CSR) is currently regarded as among the most significant fundamental business practices [1]. Treating customers, workers, and business partners fairly, supporting societal causes, maintaining and enhancing

the natural environment, and so on are all examples of socially responsible behavior. CSR is a wide concept that has been defined in a variety of ways in this regard [2]. As a result, many businesses have taken a keener interest in CSR and have made investments in CSR and associated activities. Furthermore, businesses have just lately began looking for a viable way to achieve reciprocal growth for both business and society. This is a departure from the typical CSR model of utilizing corporate revenues to fund social initiatives. Companies have acknowledged that they must support the corporation's long-term growth while also applying their corporate skills to address key societal concerns [3]. The supply chain (SC) paradigm has become the dominant form of sustainable growth for businesses in an increasingly harsh competitive climate. CSR may encompass not just the growth of individual businesses, but also the fulfillment of CSR across the whole SC. It is difficult to maintain the old method of rivalry between businesses. Rather, it is the competition among SCs that matters. CSR has steadily been the focus of SC management in order to gain a sustainable competitive advantage [4].

In this paper the key drivers that shape CSR orientation are identified based on the literature. These drivers are classified in three categories: internal, external, and SC related. A conceptual model is formulated using interpretative structural modeling (ISM) to identify inter-relationships among these drivers, based on opinions of experts from the Greek market and the academia. The remainder of the paper is structured as follows: In section 2 the connection between CSR and sustainable SCs is outlined. In section 3 the methodology employed is presented followed by the results in section 4. The paper ends with the conclusions in section 5.

2. Corporate social responsibility and sustainable supply chains

The notion of sustainability considers not just the short-term rewards, but also the company's long-term viability. The fundamental idea of corporate sustainability is that corporations should fully integrate social and environmental aims with financial goals, and justify their welfare operations to a wider range of stakeholders through transparency and reporting methods [5]. The formalization of CSR, as well as associated instruments and organizational tools, have sparked increased attention among academics and practitioners [6]. Companies utilize CSR disclosures to inform stakeholders about their social and environmental objectives, practices, and accomplishments. CSR disclosures indicate a company's views toward diverse stakeholders' interests as well as its commitment to long-term development. Customer loyalty and brand recognition are

improved, regulatory fines are reduced, the cost of equity capital is reduced, and competitive advantage and long-term value are increased when CSR is communicated [7]. Firms generate CSR reports voluntarily to decrease informational asymmetries between the company and the market, to inform stakeholders, to manage risk, and to develop a positive reputation. Firms' sustainability disclosure policies, in turn, pave the way for higher company value and shareholder returns. These advantages, however, may only be realized if businesses can ensure the legitimacy of their CSR initiatives [8]. Since its conceptualization, CSR has been an area of debates and criticism which are founded both on the objections regarding the actual mission of corporations and the honesty of their intentions. A growing body of research refers to fairwashing and greenwashing, which aim at misleading various stakeholders and create a glorified image for organizations [9, 10, 11]. Nevertheless, CSR is a notion which has a focal role in the governance of contemporary organizations and shapes their relationships with various stakeholders.

Due to global competitiveness and the role of global SCs, approaches such as outsourcing of non-core operations to developing nations and short product life cycles, are becoming increasingly critical. The focus of management has shifted from rivalry among enterprises to competition among supply networks. The capacity to form tight, long-term relationships with suppliers and various important partners has become a critical component of gaining a competitive edge [12]. Global SCs have become more dynamic as a result of increased economic globalization, innovations in manufacturing and information technology, and improvements in logistics. As businesses take advantage of these new possibilities, they will encounter new problems in enforcing their own CSR rules throughout their worldwide and complicated supplier networks [13]. The misbehavior of a company's partners, in particular, can severely harm a company's sales and image throughout the SC [14].

In SCs, a new kind of cooperation emerges: producers make items with CSR traits by engaging in CSR activity, while retailers are responsible for publicizing the manufacturers' social responsibility behavior. As a result, both parties work together to enhance the reputation of SCs to fulfill customer needs. This type of collaboration frequently develops into a long-term and solid partnership [4]. The strategic benefit of CSR initiatives has been increasingly apparent in recent years, and the issue has gained great attention [15]. As a result, claims from a variety of stakeholders are helping to change the structure of global SCs [16].

3. Methodology

To deal with the research objective which was stated in the introduction a three-step process was followed:

1. An experts' group was formed to provide their valued opinions.
2. Based on the literature, the key drivers that shape CSR orientation with respect to the participation in SCs were identified.
3. A combination of two techniques was used to map the complex structural relationship between the above key drivers.

These steps are presented in the sequel.

3.1. The experts group

The experts' group consisted of 11 individuals (7 male, 4 female) from the following industries: Academia (2), Chemicals (1), Food (1), Healthcare (1), Logistics (1), Mining (1), Pharmaceuticals (1), Textile (1), Tobacco (1), Utilities (1). Their age and experience are presented in Figure 1. The experts from the academia have expertise on research on management of people and organizations and CSR aspects, which is reflected in their publication record. All business experts hold middle or senior managerial positions and are engaged in governance and CSR activities in their organizations. It must be noted that they are not representing their sector in any way and that their opinions strictly reflect their personal views on the topics studied. The formulation of the experts' group was the result of the writer's network of acquaintances. Thus, the results cannot be generalized in any way, but they provide some insights that can be further explored and extended.

The experts' group had the following tasks to accomplish:

1. To critically assess the key drivers that were identified from the literature so that a final set of drivers is formulated (see subsection 3.2).
2. To indicate the pairwise relationships between the drivers (see subsection 3.3).
3. To revisit their choices after being informed about the prevailing choices that were made in the previous round.

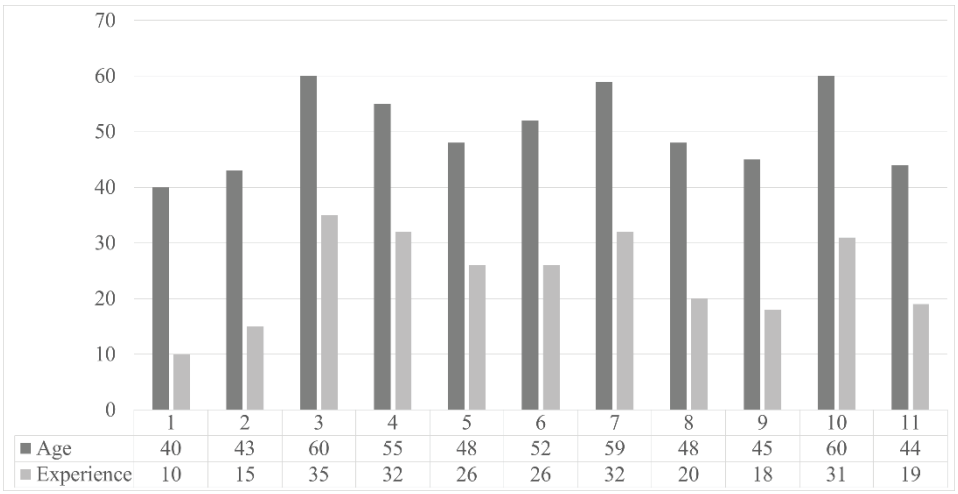

Figure 1: Age and experience of experts.

3.2. Corporate social responsibility orientation and supply chain participation: key drivers

The Scopus database was used in order to find articles that refer both to CSR and SC management. The initial set consisted of 344 journal papers written in English, without any time limitation (as of the end of April 2022). A content-based selection followed, based on the abstracts of these papers and a set of 141 journal papers was formed. By studying the articles, a tentative list of key drivers was prepared. This list was screened by the experts' group and after their suggestions the final list was formulated. Eventually, the drivers were classified in three categories and are presented in the following sub-sections.

3.2.1. External drivers

Firms' commitment to CSR is a response to pressures from outside stakeholders. This viewpoint is congruent with the institutional theory, which states that organizations must gain legitimacy by adhering to the requirements of the external environment in order to flourish [17]. The following key drivers fall in this category:

1. *Market pressures (EX1)* – Top management and executives have a strong economic reason to control the perception of CSR report readers to fulfill market expectations and boost business image and worth [17]. Consumer demand and legislation have fueled a growing trend among businesses to incorporate sustainable strategies. This pressure has prompted businesses to rethink their tactics to reduce their

negative environmental impact. The capacity of an organization to integrate, construct, and reconfigure its processes and systems to adhere to environmentally sound processes is now a major success element in meeting market adaption needs. Companies of all sizes are now adopting these techniques and adapting their goals, ambitions, and objectives to be more sustainable [18, 19].

2. *Societal pressures (EX2)* – Companies experience increasing pressure to communicate about their CSR engagements from a number of different publics. One particularly important group is that of young consumers who will be the most influential consumer group in the upcoming years [20]. Managers must choose CSR initiatives that respond to a variety of societal demands with consideration. Firms look to the needs and requirements of various stakeholders in their particular regions of operation to influence their activity choices. Certain social efforts may be viewed as less or more essential by different stakeholders and ethnicities. As a result, businesses prioritize CSR initiatives that are essential to their closest stakeholders. As a result, companies choose some social and environmental initiatives above others when it comes to CSR [21].

3. *Regulatory pressures (EX3)* – The firm's CSR response and outcomes are influenced by the institutional context. Increased regulatory demands on the company connected to CSR compliance may emerge from the high institutional quality, which can improve the CSR-financial performance connection [1, 7]. Environmental management systems and CSR guidance are examples of voluntary self-regulation that businesses can use to combat regulatory pressures. This is because companies that employ environmental management systems can develop unique environmental management skills that allow them to respond to regulatory constraints. Furthermore, businesses can only gain a competitive advantage by developing internal capabilities that align CSR implementation with a proper communication strategy to external stakeholders [22, 23]. Moreover, regulatory reforms such as the Directive 2014/95/EU (also referred to as European Non-Financial Reporting Directive) aim at the disclosure of non-financial and diversity information depending on the company size.

3.2.2. Internal drivers

Companies can use CSR operations to not just passively fulfill the demands of the organizational structure in order to gain legitimacy, but they can also take a more

"proactive" approach, employing CSR to gain a competitive advantage [7]. The following key drivers fall in this category:

1. *Corporate strategy (IN1)* – Managers' perceptions of the advantages of implementing an integrated sustainability-oriented scheme offer a clear picture of the possible performance implications of implementing a sustainable business strategy. The use of performance indicators indirectly encourages the integration of sustainability into the business strategy, educating organizational culture, helping the formulation and execution of sustainable initiatives, and assessing strategic success by underlining the importance of sustainability concerns [24]. Organizational challenges have a noteworthy influence in strategy creation and implementation. Organizational structure, in particular, is widely accepted as having an impact on strategy through its direct impact on strategic decision-making activities and strategy implementation. The structural characteristics of authority centralization, formalization, and complexity have been found to affect decision-making [6].

2. *Organization's culture (IN2)* – The corporate culture is a collection of common references in the organization that has evolved over time in response to the company's difficulties. It represents all that is valued in the company, including the dominant leadership style, staff management, organizational values, strategic goals, and everything that distinguishes the company. It aids in maintaining group cohesion, improving adaption, and increasing motivation [25]. CSR behavior is ingrained in a company's corporate culture, which drives its commercial value; variances in CSR policy might represent demand discrepancies among stakeholders [26, 27]. Internal structures and relationships with external partners can all benefit from a firm's organizational culture that allows for the integration of stakeholder viewpoints in CSR. Moreover, the perception of an organization's culture may influence stakeholders' views on CSR and sustainability [28].

3. *Competitive advantage (IN3)* – Many companies throughout the world are increasingly recognizing the value of incorporating social responsibility programs into their business models in order to gain a long-term competitive advantage [13, 29]. The Natural Resource Based View framework was introduced in line with the scientific community's increased interest in elements connected to CSR. It claims that the management of environmental and social concerns that occur as a result of CSR actions may contribute to the creation of competitive advantage [13, 30]. Although CSR cannot be regarded as a complete solution to socioeconomic and environmental issues, it may be utilized as a strategy for increasing company

awareness via the establishment of an organizational environmental culture that provides competitive benefits over rivals [31, 32, 33].

4. *Reputation (IN4)* – Companies that include CSR into their strategy stand out from the competition, get support from stakeholders, and strengthen their company reputation. The degree to which stakeholders view a corporation as "good" or "poor" is reflected in corporate reputation, which is a perceptual construct that captures stakeholders' overall judgment of a company. As a result, corporate reputation develops through time as an appraisal of prior views or representations of the organization [34, 35]. CSR may be viewed as a type of investment that can be used to improve or preserve a company's image. Investing in CSR activities sends a message to stakeholders and may have a direct impact on a company's reputation. Socially responsible businesses, as important members of society, are more likely to build favorable reputations among their stakeholders by achieving their expectations [36].

3.2.3. SC related drivers

The SC cannot be managed only by a top-down strategy focused on enforcing CSR criteria. Among scholars and practitioners, a new relational view on governance is gaining traction as a strategic alternative that can lead to more responsible societal behaviors and sustainable development. Cross-sectoral partnerships and alliances between governmental organizations, civil society organizations, and businesses are increasingly being considered as a means of achieving more sustainable development patterns and overcoming the limitations of top-down approaches to promoting sustainability [16]. The following key drivers fall in this category:

1. *The focal company of the supply chain (SC1)* – The focal firm is the SC member that offers leadership and has the most influence over SC actions and decisions, including promoting sustainable SC management. The focal firms are those that oversee the SC, provide direct client interaction, and develop the product or service being delivered. The focal company's job is also to handle the government's, customers', and stakeholders' external pressures and incentives [37, 38]. CSR is no longer limited to a single company; it is increasingly encompassing the entire SC. To put it another way, corporations are expected to act socially responsibly not just within their own legal boundaries. They are also held liable for the environmental

and labor abuses of their worldwide business partners, such as suppliers, third-party logistics providers, and middlemen, even if they have no control over them [12, 39, 40].

2. *Proximity to the end customer (SC2)* – For enterprises operating across many nations, where the concept of CSR has both a local and an international dimension, the significance of geographic proximity to local and global beneficiaries in molding citizens' awareness of CSR is critical. While contributions at local and global level are ethically legitimate and desirable, their strategic value for business necessitates a knowledge of the elements that influence stakeholders' perspectives on these problems [41, 42]. Geographic proximity makes it easier to value CSR benefits with less asymmetric information. It also facilitates the formation of close social networks and increases the likelihood of certain strategies used by long-term institutional investors to influence managers' decision-making. Finally, shareholders can also be members of the same community and benefit from good CSR practices [43, 44].

3. *Geographical range of activities (SC3)* – Organizations' worldwide business plans need a convergence of their CSR agendas, in which the firm can pursue a global CSR strategy to deal with issues of global concern, or a local CSR strategy to promote matters in the local community. Distant CSR occurs all around the world, focusing on social concerns that are not related to the organization's headquarters. Persons who live in the area where the firm is based have higher aspirations and doubts regarding distant CSR activities [45]. Firms with a closer proximity to urban areas and financial centers enjoy several advantages, including face-to-face contact, knowledge spillovers, and access to specialized personnel and suppliers. Firms located near financial centers are more accountable to external constituents and more sensitive to pressures from various organizations, therefore gaining legitimacy via social and environmental disclosure may be more important for them [42].

4. *Partners' requirements (SC4)* – Employees, NGOs, customers, and the media are among the many stakeholders who want corporations to behave responsibly, and their scrutiny typically extends to upstream SC partners' behaviors [46]. Many corporate clients are worried not just about their own CSR standards, but also those of their suppliers. The rising popularity of CSR activities throughout the world is due in part to the recurrent failures of legislation and regulations to protect stakeholders, who demand companies to engage in CSR to safeguard their own

interests [13]. While a downstream company's CSR plan may be severely harmed by its suppliers, the situation gets even more challenging when the company is international. Due to globalization, the majority of multinational corporations' foreign suppliers are based in developing nations. While the distance makes it difficult to monitor the supplier's production operations, cultural and other variables will exacerbate the situation. In addition, unlike other contract legal terms, CSR clauses are based on frameworks that give firms guidelines for evaluating the efficacy of their proposed CSR policies and evaluating the CSR ideas provided [14].

5. *Mutual economic benefits for supply chain partners (SC5)* – Companies have enhanced economic motivation to implement a tougher, more aggressive CSR strategy as customers become more conscious of the social worth of the things they purchase and as the quantity of conformist grows. In these turbulent times, practitioners must not only change their CSR approach, but also be forward-thinking. Knowing that the market is shifting in such a way that consumers will pay more attention to a product's social value as their ethical disposition toward a SC's CSR performance improves, a company may decide to invest gradually in SC CSR programs or even accept a current profit loss in exchange for a preserved corporate image and long-term growth [15, 47].

6. *Mutual environmental benefits for supply chain partners (SC6)* – Individuals see local environmental concerns as more important and relevant, which leads to increased participation. Individuals are also motivated to behave in an ecologically friendly manner to alleviate the effects of climate change as environmental concerns become more relevant and have a more local impact. Local pro-environmental acts can also stimulate long-term behavior change, encouraging a local society to engage in a wider range of ecologically beneficial activities [43]. High-polluting companies are eager to leverage technology innovation to promote socially responsible business practices and get greater environmental gains [48]. The immense potential for developing coordination methods to improve the operational performance of green SCs is highlighted while evaluating the impact of various forms of SC collaboration using agreements among SC members [49, 50, 51].

7. *Mutual organizational benefits for supply chain partners (SC7)* – Multi-stakeholder efforts that address issues of mutual interest are the bedrock of SC collaboration and are critical for adopting long-term management strategies [50]. Ensuring

supplier participation in CSR activities is an important step in ensuring SC sustainability. To guarantee that their suppliers conform with CSR norms, companies have introduced relevant requirements in their SCs through CSR criteria in purchase agreements. Different players are involved in the transmission of these needs, whether at the intra-organizational or inter-organizational level [46]. SC partners may inspire each other with a favorable business image and develop reputational capital by participating in CSR initiatives. CSR efforts can provide favorable signals to all of a company's stakeholders regarding its financial and operational health [15].

3.3. Interpretive Structural Modelling and MICMAC

Warfield first launched ISM in 1973 [52]. It may be used to detect and establish the contextual link between various aspects related to a certain issue. It may be used to generate a map of complicated interactions and to impose order and direction on the complexity of key component relationships. The ISM technique has been employed in a variety of research in numerous sectors, demonstrating its value in efficiently utilizing expert opinion [53, 54]. Experts asked to indicate the pairwise relationship between the drivers as follows:

1. V – Happening of factor *i* will lead to the happening of factor *j* in one direction only.
2. A – Happening of factor *j* will lead to the happening of factor *i* in one direction only.
3. X – Happening of factor *i* will lead to the happening of factor *j* and vice versa.
4. O – Factors *i* and *j* are independent of each other.

After that a series of numerical transformations takes place that take into consideration the transitivity rule: if variable *i* is related to variable *j* and variable *j* is related to variable *k* then variable *i* is necessarily related to variable *k*.

The *Matrice d'Impacts Croises-Multiplication Applique a Classement* (MICMAC) [55] was introduced in order to group a system's variables according to their dependency relationships. It follows the ISM approach, and it is commonly utilized to comprehend and examine the variables' driving and dependence powers [56].

Recently, SmartISM was introduced as an online solution to implement the ISM technique and MICMAC analysis [57]. SmartISM is available at http://smartism.sgetm.com/

TABLE 1: The Initial Reachability Matrix.

Variables	EX1	EX2	EX3	IN1	IN2	IN3	IN4	SC1	SC2	SC3	SC4	SC5	SC6	SC7
EX1		A	V	V	V	O	O	V	A	V	V	O	V	O
EX2			A	V	V	O	O	V	A	V	V	O	V	O
EX3				V	V	O	O	V	O	V	V	O	V	O
IN1					X	X	V	A	O	V	V	V	V	X
IN2						V	V	O	O	O	V	V	V	X
IN3							A	A	O	A	A	V	A	A
IN4								A	A	V	O	V	A	A
SC1									O	O	V	V	V	V
SC2										O	V	O	O	O
SC3											A	X	V	X
SC4												V	V	V
SC5													X	X
SC6														X
SC7														

TABLE 2: The Final Reachability Matrix.

Variables	EX1	EX2	EX3	IN1	IN2	IN3	IN4	SC1	SC2	SC3	SC4	SC5	SC6	SC7	Driving Power
EX1	1	1*	1	1	1	1*	1*	1	0	1	1	1*	1	1*	13
EX2	1	1	1*	1	1	1*	1*	1	0	1	1	1*	1	1*	13
EX3	1*	1	1	1	1	1*	1*	1	0	1	1	1*	1	1*	13
IN1	0	0	0	1	1	1	1	0	0	1	1	1	1	1	9
IN2	0	0	0	1	1	1	1	0	0	1*	1	1	1	1	9
IN3	0	0	0	1	1*	1	1*	0	0	1*	1*	1	1*	1*	9
IN4	0	0	0	1*	1*	1	1	0	0	1	1*	1	1*	1*	9
SC1	0	0	0	1	1*	1	1	1	0	1*	1	1	1	1	10
SC2	1	1	1*	1*	1*	1*	1	1*	1	1*	1	1*	1*	1*	14
SC3	0	0	0	1*	1*	1	1*	0	0	1	1*	1	1	1	9
SC4	0	0	0	1*	1*	1	1*	0	0	1	1	1	1	1	9
SC5	0	0	0	1*	1*	1*	1*	0	0	1	1*	1	1	1	9
SC6	0	0	0	1*	1*	1	1	0	0	1*	1*	1	1	1	9
SC7	0	0	0	1	1	1	1	0	0	1	1*	1	1	1	9
Dependence Power	4	4	4	14	14	14	14	5	1	14	14	14	14	14	

and provides a convenient way to apply ISM and MICMAC. This tool was used for the purpose of this research and the results are presented in the next section.

4. Results

As stated in 3.1, each member of the experts' group made an initial assessment of the relationships among the drivers that shape CSR orientation with respect to the participation in supply chains. After that, the prevailing choices were made available to the experts, and they were asked to revisit their initial choices. The final set of choices was formed based on the prevailing choices after the second round and is presented in Table 1.

The above matrix is checked for transitivity and the Final Reachability Matrix is formed, as shown in Table 2.

The Conical Matrix is the row- and column-wise ordered Final Reachability Matrix on the basis of the different levels of drivers and is presented in Table 3. The Conical

TABLE 3: The Conical Matrix.

	4	5	6	7	10	11	12	13	14	8	1	2	3	9		
Variables	IN1	IN2	IN3	IN4	SC3	SC4	SC5	SC6	SC7	SC1	EX1	EX2	EX3	SC2	Driving Power	Level
IN1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	9	1
IN2	1	1	1	1	1*	1	1	1	1	0	0	0	0	0	9	1
IN3	1	1*	1	1*	1*	1*	1	1*	1*	0	0	0	0	0	9	1
IN4	1*	1*	1	1	1	1*	1	1*	1*	0	0	0	0	0	9	1
SC3	1*	1*	1	1*	1	1*	1	1	1	0	0	0	0	0	9	1
SC4	1*	1*	1	1*	1	1	1	1	1	0	0	0	0	0	9	1
SC5	1*	1*	1*	1*	1	1*	1	1	1	0	0	0	0	0	9	1
SC6	1*	1*	1	1	1*	1*	1	1	1	0	0	0	0	0	9	1
SC7	1	1	1	1	1	1*	1	1	1	0	0	0	0	0	9	1
SC1	1	1*	1	1	1*	1	1	1	1	1	0	0	0	0	10	2
EX1	1	1	1*	1*	1	1	1*	1	1*	1	1	1*	1	0	13	3
EX2	1	1	1*	1*	1	1	1*	1	1*	1	1	1	1*	0	13	3
EX3	1	1	1*	1*	1	1	1*	1	1*	1	1*	1	1	0	13	3
SC2	1*	1*	1*	1	1*	1	1*	1*	1*	1*	1	1	1*	1	14	4
Dependence Power	14	14	14	14	14	14	14	14	14	5	4	4	4	1		
Level	1	1	1	1	1	1	1	1	1	2	3	3	3	4		

Matrix is used to draw the digraph, which illustrates the hierarchical directional structure of drivers and is shown in Figure 2.

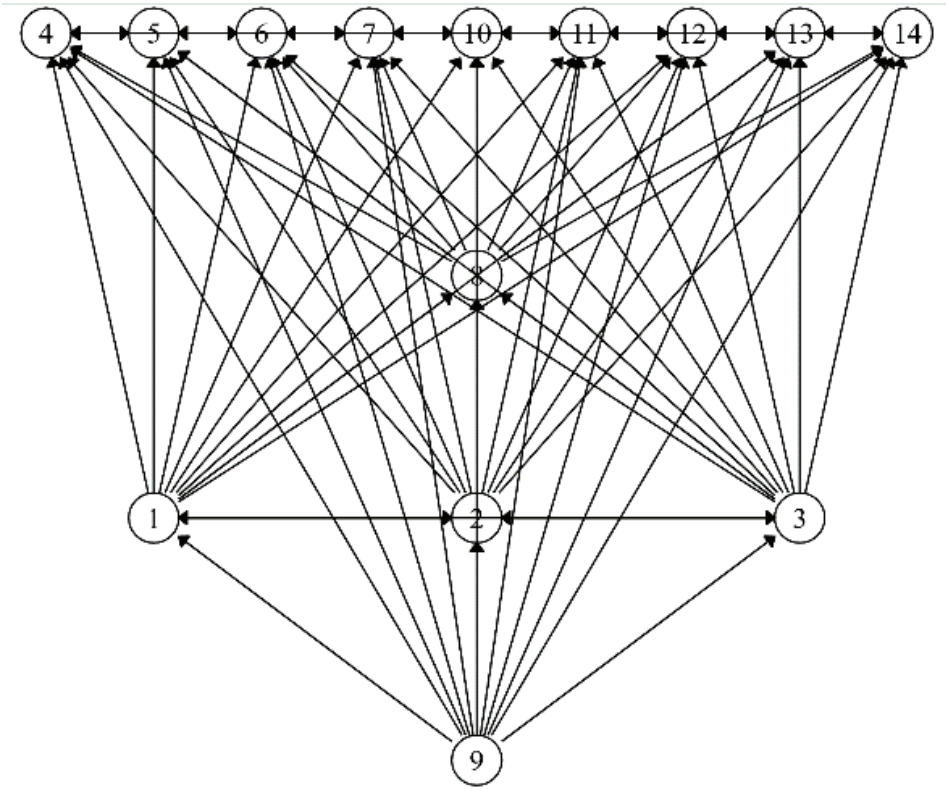

Figure 2: The digraph.

The Reduced Conical Matrix (Table 4) transforms the digraph into the final model (Figure 3) with fewer edges while keeping the digraph drivers' structure and reachability.

In the MICMAC analysis, based on their dependency and driving power levels, which are depicted on the horizontal and vertical axes, the drivers are mapped onto a two-dimensional grid. These values range from 1 to the total number of drivers, that is, 14.

Table 4: The Reduced Conical Matrix.

Variables	IN1	IN2	IN3	IN4	SC3	SC4	SC5	SC6	SC7	SC1	EX1	EX2	EX3	SC2	Driving Power	Level
IN1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	9	1
IN2	1	1	1	1	1*	1	1	1	1	0	0	0	0	0	9	1
IN3	1	1*	1	1*	1*	1*	1	1*	1*	0	0	0	0	0	9	1
IN4	1*	1*	1	1	1	1*	1	1*	1*	0	0	0	0	0	9	1
SC3	1*	1*	1	1*	1	1*	1	1	1	0	0	0	0	0	9	1
SC4	1*	1*	1	1*	1	1	1	1	1	0	0	0	0	0	9	1
SC5	1*	1*	1*	1*	1	1*	1	1	1	0	0	0	0	0	9	1
SC6	1*	1*	1	1	1*	1*	1	1	1	0	0	0	0	0	9	1
SC7	1	1	1	1	1	1*	1	1	1	0	0	0	0	0	9	1
SC1	1	1*	1	1	1*	1	1	1	1	1	0	0	0	0	10	2
EX1	0	0	0	0	0	0	0	0	0	1	1	1*	1	0	13	3
EX2	0	0	0	0	0	0	0	0	0	1	1	1	1*	0	13	3
EX3	0	0	0	0	0	0	0	0	0	1	1*	1	1	0	13	3
SC2	0	0	0	0	0	0	0	0	0	0	1	1	1*	1	14	4
Dependence Power	14	14	14	14	14	14	14	14	14	5	4	4	4	1		
Level	1	1	1	1	1	1	1	1	1	2	3	3	3	4		

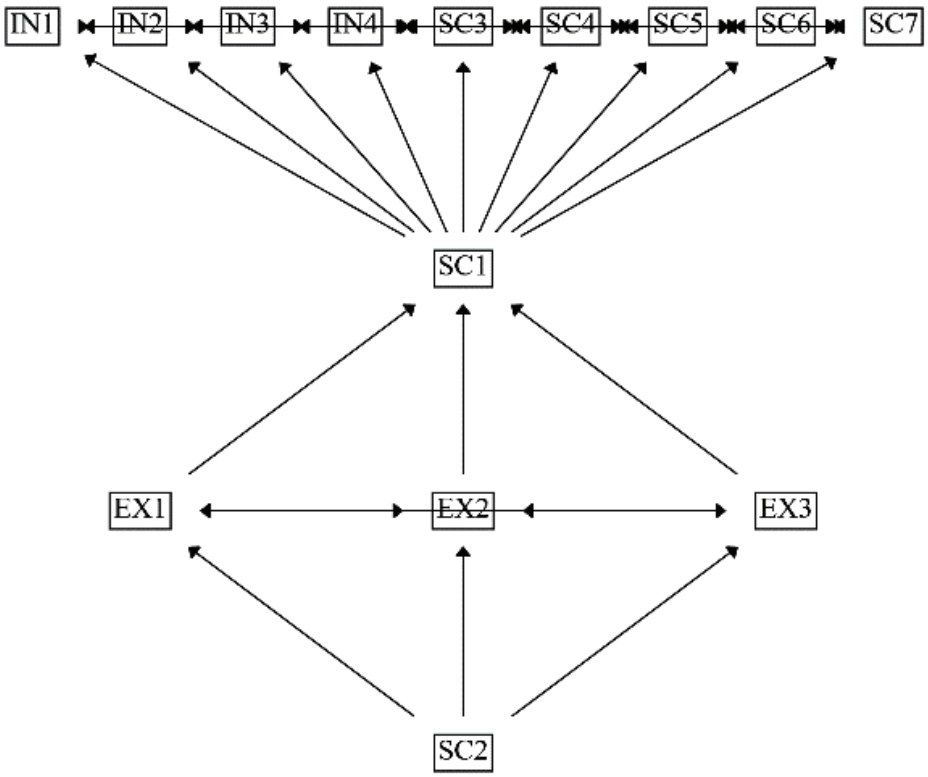

Figure 3: The final model.

The axes meet in the middle, making four quadrants. Autonomous drivers, which have weak driving and dependence power, are found on the bottom-left quadrant. These are somewhat cut off from the rest of the system. The dependent drivers are found in the bottom-right quadrant and have a low driver power but a high dependence power. In this case no drivers were found in these two quadrants. The up-right quadrant comprises linkage drivers with high driving and dependence power. These are unstable, which indicates that any action taken on them will have an impact on other drivers. This quadrant has 9 variables in this case. Furthermore, they were discovered to share the same traits. The independent variables on the up-left quadrant have a high driving

power but a low dependence power. This quadrant has 5 variables in this case. The results are shown in Figure 4.

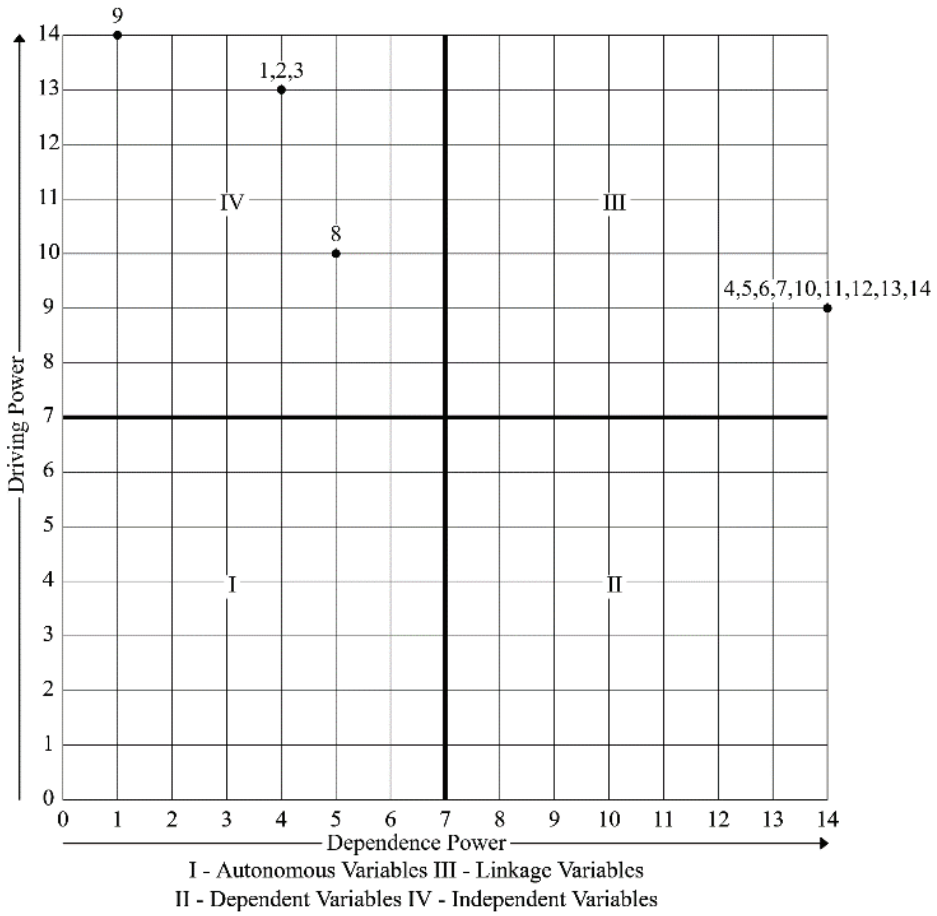

Figure 4: MICMAC Diagram.

5. Conclusion

The main aim of this research was to analyze and synthesize the key drivers that shape CSR orientation. In accomplishing this aim, numerous studies focusing on the connections of CSR with SC management were employed. The results led to the classification of relevant drivers in three major categories. Company features such as size, industry, financial performance, corporate governance components such as board size and independence, and kinds of ownership, notably foreign, government, and institutional ownership, all impact internal drivers [22]. In addition, corporate polices and concerns also influence CSR engagement. External drivers include several factors originating for the external micro- and macro-environment, which cannot be easily

controlled by firms. The last category of SC related drivers includes the forces that stem from the participation of companies in SCs of varying complexity and geographic scope. A conceptual model was created using ISM and MICMAC to identify inter-relationships among these drivers, based on opinions of experts from the Greek market and the academia.

The study is not free from limitations as the selective review covered articles published in the English language, which are indexed in Scopus. Moreover, it is natural to expect a varying level of developments depending on the companies' countries of activity. Apart from revisiting the proposed key drivers, future research could focus on the particularities of various sectors as well as on country-specific differences in terms of prioritization and motivation. Moreover, although it seems rational to claim that size does matter, empirical studies are necessary to support this argument.

References

[1] Karmani M, Boussaada R. Corporate social responsibility and firm performance: Does institutional quality matter? Journal of Applied Accounting Research. 2021;22(4):641–662.

[2] Alniacik U, Alniacik E, Genc N. How corporate social responsibility information influences stakeholders' intentions. Corporate Social Responsibility and Environmental Management. 2011;18(4):234–245.

[3] Park KO. How CSV and CSR affect organizational performance: A productive behavior perspective. International Journal of Environmental Research and Public Health. 2020;17(7).

[4] Battisti E, Nirino N, Leonidou E, Thrassou A. Corporate venture capital and CSR performance: An extended resource based view's perspective. Journal of Business Research. 2022;139:1058–1066.

[5] Oprean-Stan C, Oncioiu I, Iuga IC, Stan S. Impact of sustainability reporting and inadequate management of ESG factors on corporate performance and sustainable growth. Sustainability. 2020;12(20):1–31.

[6] Maccarrone P, Contri AM. Integrating corporate social responsibility into corporate strategy: The role of formal tools. Sustainability. 2021;13(22).

[7] Zhang Y, Yang F. Corporate social responsibility disclosure: Responding to investors' criticism on social media. International Journal of Environmental Research and Public Health. 2021;18(14).

[8] García-Sánchez IM, Hussain N, Khan SA, Martínez-Ferrero J. Assurance of corporate social responsibility reports: Examining the role of internal and external corporate governance mechanisms. Corporate Social Responsibility and Environmental Management. 2022;29(1):89–106.

[9] She C, Michelon G. Managing stakeholder perceptions: Organized hypocrisy in CSR disclosures on Facebook. Critical Perspectives on Accounting. 2019;61:54–76.

[10] de Jong MDT, Huluba G, Beldad AD. Different shades of greenwashing: Consumers' reactions to environmental lies, half-lies, and organizations taking credit for following legal obligations. Journal of Business and Technical Communication. 2020;34(1):38–76.

[11] Ginder W, Byun SE. To trust or not to trust? The interplay between labor-related CSR claim type and prior CSR reputation of apparel retailers. Journal of Retailing and Consumer Services. 2022;65.

[12] Andersen M, Skjoett-Larsen T. Corporate social responsibility in global supply chains. Supply Chain Management: An International Journal. 2009;14(2):75–86.

[13] Dai R, Liang H, Ng L. Socially responsible corporate customers. Journal of Financial Economics. 2021;142(2):598–626.

[14] Wu Y, Li H, Gou Q, Gu J. Supply chain models with corporate social responsibility. International Journal of Production Research. 2017;55(22):6732–6759.

[15] Zhang M, Ma L, Su J, Zhang W. Do suppliers applaud corporate social performance? Journal of Business Ethics. 2014;121(4):543–557.

[16] Tencati A, Russo A, Quaglia V. Sustainability along the global supply chain: The case of Vietnam. Social Responsibility Journal. 2010;6(1):91–107.

[17] Zhang Z, Chen H. Media coverage and impression management in corporate social responsibility reports: Evidence from China. Sustainability Accounting, Management and Policy Journal. 2020;11(5):863–886.

[18] Curado C, Mota A. A systematic literature review on sustainability in family firms. Sustainability. 2021;13(7).

[19] Sun W, Zhao C, Cho CH. Institutional transitions and the role of financial performance in CSR reporting. Corporate Social Responsibility and Environmental Management. 2019;26(2):367–376.

[20] Schmeltz L. Getting CSR communication fit: A study of strategically fitting cause, consumers and company in corporate CSR communication. Public Relations Inquiry. 2017;6(1):47–72.

[21] Cheruiyot-Koech R, Reddy CD. Corporate social responsibility preferences in South Africa. Sustainability. 2022;14(7).

[22] Ali W, Wilson J, Husnain M. Determinants/motivations of corporate social responsibility disclosure in developing economies: A survey of the extant literature. Sustainability. 2022;14(6).

[23] Demirel P, Kesidou E. Sustainability-oriented capabilities for eco-innovation: Meeting the regulatory, technology, and market demands. Business Strategy and the Environment. 2019;28(5):847–857.

[24] Hristov I, Chirico A, Ranalli F. Corporate strategies oriented towards sustainable governance: Advantages, managerial practices and main challenges. Journal of Management and Governance. 2022;26(1):75–97.

[25] Elhajjar S, Ouaida F. Identifying the drivers of resistance to corporate social responsibility: The case of Lebanese SMEs. Qualitative Research in Organizations and Management: An International Journal. 2020;15(4):543–560.

[26] Alexandridis G, Hoepner AGF, Huang Z, Oikonomou I. Corporate social responsibility culture and international M&As. British Accounting Review. 2022;54(1).

[27] Liakh O, Spigarelli F. Managing corporate sustainability and responsibility efficiently: A review of existing literature on business groups and networks. Sustainability. 2020;12(18).

[28] Adzimah ED, Lei L, Ishawu M. Organisational culture influences on corporate social responsibility and sustainable procurement in a service sector industry. Journal of Psychology in Africa. 2020;30(5):390–396.

[29] Padilla-Lozano CP, Collazzo P. Corporate social responsibility, green innovation and competitiveness – Causality in manufacturing. Competitiveness Review. 2022;32(7):21–39.

[30] Hart SL. A natural-resource-based view of the firm. The Academy of Management Review. 1995;20(4):986.

[31] Bacinello E, Tontini G, Alberton A. Influence of corporate social responsibility on sustainable practices of small and medium-sized enterprises: Implications on business performance. Corporate Social Responsibility and Environmental Management. 2021;28(2):776–785.

[32] Mello MMM, Freitas WRS, Teixeira AA, Caldeira-Oliveira JH, Freitas-Silva LG. Corporate social responsibility in agribusiness: Evidence in Latin America. Journal of Agribusiness in Developing and Emerging Economies. 2021;11(5):538–551. 33.

[33] Zhang Q, Ahmad S. Analysis of corporate social responsibility execution effects on purchase intention with the moderating role of customer awareness. Sustainability. 2021;13(8).

[34] Jiang H, Cheng Y, Park K, Zhu W. Linking CSR communication to corporate reputation: Understanding hypocrisy, employees social media engagement and CSR‐related work engagement. Sustainability. 2022;14(4).

[35] Swaen V, Demoulin N, Pauwels-Delassus V. Impact of customers' perceptions regarding corporate social responsibility and irresponsibility in the grocery retailing industry: The role of corporate reputation. Journal of Business Research. 2021;131:709–721.

[36] Xu L, Zhao Y, Wang C, Ponnapalli AR. Corporate social responsibility and corporate reputation: The moderating roles of CEO and state political ideologies. Social Responsibility Journal. 2022;18(3):501–517.

[37] Pohlmann CR, Scavarda AJ, Alves MB, Korzenowski AL. The role of the focal company in sustainable development goals: A Brazilian food poultry supply chain case study. Journal of Cleaner Production. 2020;245.

[38] Seuring S, Müller M. From a literature review to a conceptual framework for sustainable supply chain management. Journal of Cleaner Production. 2008;16(15):1699–1710.

[39] Liu Y, Quan B, Li J, Forrest JY. A supply chain coordination mechanism with cost sharing of corporate social responsibility. Sustainability. 2018;10(4).

[40] Sen S, Bhattacharya CB, Korschun D. The role of corporate social responsibility in strengthening multiple stakeholder relationships: A field experiment. Journal of the Academy of Marketing Science. 2006;34(2):158–166.

[41] Puncheva-Michelotti P, Hudson S, Michelotti M. The role of proximity to local and global citizens in stakeholders' moral recognition of corporate social responsibility. Journal of Business Research. 2018;88:234–244.

[42] Zamir F, Saeed A. Location matters: Impact of geographical proximity to financial centers on corporate social responsibility (CSR) disclosure in emerging economies. Asia Pacific Journal of Management. 2020;37(1):263–295.

[43] Bhalla N. Examining the impact of issue salience, issue proximity, situational motivation, and communicative behaviors on environmental CSR outcomes. Sustainability. 2022;14(5).

[44] Chang K, Kabongo J, Li Y. Geographic proximity, long-term institutional ownership, and corporate social responsibility. Review of Quantitative Finance and Accounting. 2021;56(1):297–328.

[45] Kulczycki W, Mikas S, Koenigstorfer J. Where to engage in CSR? The influence of social cause proximity on attitude toward small-sized (vs large-sized) sporting goods

retailers. Sport, Business and Management: An International Journal. 2017;7(5):497–514.

[46] Stekelorum R, Laguir I, Elbaz J. Transmission of CSR requirements in supply chains: Investigating the multiple mediating effects of CSR activities in SMEs. Applied Economics. 2019;51(42):4642–4657.

[47] Xia Y, Zu X, Shi C. A profit-driven approach to building a “people-responsible” supply chain. European Journal of Operational Research. 2015;241(2):348–360.

[48] Wang W, Zhao XZ, Chen FW, Wu CH, Tsai S, Wang J. The effect of corporate social responsibility and public attention on innovation performance: Evidence from high-polluting industries. International Journal of Environmental Research and Public Health. 2019;16(20).

[49] Asif MS, Lau H, Nakandala D, Fan Y, Hurriyet H. Adoption of green supply chain management practices through collaboration approach in developing countries – From literature review to conceptual framework. Journal of Cleaner Production. 2020;276:124191.

[50] Chauhan C, Kaur P, Arrawatia R, Ractham P, Dhir A. Supply chain collaboration and sustainable development goals (SDGs). Teamwork makes achieving SDGs dream work. Journal of Business Research. 2022;147:290–307.

[51] Chauhan C, Singh A. Modeling green supply chain coordination: Current research and future prospects. Benchmarking: An International Journal. 2018;25(9):3767–3788.

[52] Warfield JN. Developing interconnection matrices in structural modeling. IEEE Transactions on Systems, Man, and Cybernetics. 1974;SMC-4(1):81–87.

[53] Iqbal M, Ma J, Ahmad N, Hussain K, Usmani MS. Promoting sustainable construction through energy-efficient technologies: An analysis of promotional strategies using interpretive structural modeling. International Journal of Environmental Science and Technology. 2021;18(11):3479–3502.

[54] Kundu GK, Perwez SK. ISM-MICMAC approach for analysis of project-based learning barriers. Journal of International Education in Business. 2022;15(1):9–31.

[55] Duperrin JC, Godet M. Methode de hierarchisation des elements d’un systeme. Report No. R-45-41. Paris; 1973.

[56] Onososen AO, Musonda I. Perceived benefits of automation and artificial intelligence in the AEC sector: An interpretive structural modeling approach. Frontiers in Built Environment. 2022;8.

[57] Ahmad N, Qahmash A. SmartISM: Implementation and assessment of interpretive structural modeling. Sustainability. 2021;13(16):8801.