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ORIGINAL PAPER

THE ROLE OF ENVIRONMENTAL COOPERATION AND COLLABORATION IN SUPPLIER RELATIONSHIP MANAGEMENT

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ABSTRACT. **Background:** This article aims to determine the role of environmental cooperation and collaboration in supplier relationship management. The following concepts are introduced: supplier relationship management, environmental cooperation and environmental collaboration. Supplier relationship management aims at building bonds with suppliers that exceed the transactional approach to market cooperation. Environmental cooperation and collaboration involve all operations that are performed with the active or passive involvement of suppliers and their clients. Firstly, the concept of supplier relationship management is described. Secondly, the characteristics of environmental cooperation and environmental collaboration are introduced. Next, the observations and findings are presented. Finally, the conclusions and recommendations for future research are described.
Methods: The research method used is an analysis of Polish and foreign literature related to the subject of environmental cooperation and collaboration in the context of supplier relationship management.
Results: The results concern the validity of considering environmental cooperation and collaboration as a significant field of supplier relationship management and developing a conceptual framework for environmental cooperation and collaboration in the context of building relationships with suppliers.
Conclusions: The conclusions concern the types of environmental interaction and relationships with suppliers, taking into account the role of mutual trust, commitment and goal consistency between buyer and supplier.

Key words: environmental cooperation, environmental collaboration, supplier relationship management, building relationships with suppliers, buyer-supplier relationships.

INTRODUCTION

The rapid development of information technology, telecommunications and business interdependencies has accelerated globalization. Progressing globalization has led to the deeper integration of supply chains, resulting in the building of stronger relationships, cooperation and collaboration between participants in those chains. The idea of buyer requirements regarding environmental issues and supplier readiness to meet them is supported by Caniëls et al. [2013]. On the other hand, the growing environmental consciousness of end customers, corporate social responsibility and the concept of sustainable development highlight environmental issues in the supply chain. This article aims to determine the role of two forms of interaction with suppliers: environmental cooperation and collaboration (ECaC) in supplier relationship management (SRM).

Cooperation with suppliers is seen as a way to provide alignment in the supply chain [Vachon et al. 2009]. In contrast to cooperation, collaboration requires active engagement from all sides involved [Polenske 2004]. It includes maintaining standardised operations, joint planning, sharing knowledge, information and processes, synchronizing, interfacing and investing for better operations, systems and processes in the supply chain [Soosay et al. 2008]. Furthermore, there are theories that environmental collaboration is

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positively related to logistical and technological integration with suppliers [Vachon and Klassen 2006]. Moreover, Vachon et al. [2009] support the statement that a high degree of cooperation with suppliers is linked with a greater supply chain alignment regarding competitive priorities.

SUPPLIER RELATIONSHIP MANAGEMENT

Managing cooperation with suppliers is strictly related to managing the relationships with them. It has become a crucial issue in modern supply chain management and a key area of many enterprises. In addition to customer relationship management, SRM "forms critical linkages that connect firms in the supply chain" [Lambert, Schwieterman, 2012]. Inter-firm linkages were confirmed to enhance firm performance in the context of environmental collaboration [Grekova et al. 2016]. Schuh et al. [2014] formulated a list of questions to be answered by the company that wishes to establish SRM:

1. At the company level, what do we want from this supplier?
2. What type of behaviour do we want to drive with this supplier?
3. How do we want to structure the relationship with this supplier?
4. How do we ensure we are aligned internally when dealing with this supplier?
5. What are the appropriate tools and models for managing the interactions with this supplier?

When considering answers to those questions, the company should decide whether it wishes to concentrate on cooperation or collaboration with suppliers – if any, since cooperation does not necessarily require the active participation of the supplier in an operation, e.g. supplier assessment or organizing training for the suppliers. In that case, the supplier can only disclose the necessary information or take part in an activity coordinated by its client company. Cai and Yang [2008] support the significance of cooperative norms in supplier performance. They propose such norms to be an effective governance form to manage relationships with suppliers.

SRM has been proved to provide many benefits for the company, e.g.: minimalizing transaction costs, creating value through internal capabilities and external resources and reducing risks of dependency and availability [Lintukangas 2010]. Piercy [2009] pointed out that in order to form an alliance or joint-venture with a partner-supplier, the client company needs to convince its supplier that it is a reliable way to invest resources. In other words, the client company must "sell the customer to the company", as well as "sell the company to the customer". Similar issues can be encountered in any cooperation. Liu et al. [2012] show that many aspects of SRM, such as knowledge sharing, continuous commitment and relationship investment might be affected by justice and fairness perceived mutually by both supplier and client. Furthermore, Hill et al. [2009] illustrate that other factors affecting SRM are trust and unethical behaviour.

Autry and Golicic [2010] show that the relation between supplier relationship strength and supplier performance might be presented using a relationship-performance spirals model. Miocevic and Crnjak-Karanovic [2012] indicate that there is a correlation between SRM practices and organizational buying effectiveness. Emiliani [2010] underlines the connection between SRM and ethical aspects of purchasing, including non-zero-sum and win-win methods.

The framework developed and tested by Nyaga et al. [2010] points out that there is a positive relation between conducting collaborative activities and the building of successful relationships with suppliers. The above considerations show that building relationships with suppliers involves many types of cooperation and collaboration with them. Therefore, managing relationships with suppliers and cooperation and collaboration with them are parallel concepts.

ENVIRONMENTAL COOPERATION WITH SUPPLIERS

Cooperation with suppliers in the B2B market concentrates on economic issues. However, environmental issues in the B2B market are getting more and more significant for many reasons, e.g. the growing environmental consciousness of end customers. One of the areas of cooperation most pertinently discussed with suppliers is environmental cooperation. Activities such as eco-design, end-of-life management and other environmental joint goals and activities might be perceived as essential elements of relationships with suppliers.

The following areas of environmental cooperation with suppliers can be distinguished [Sosnowski 2018]:

- research and development,
- building an environmental protection strategy in the global supply value chain,
- ecodesign,
- environmental innovations,
- fulfilling the environmental requirements of clients,
- implementation of green supply chain management practices,
- implementation of ISO 14001 environmental management system,
- joint planning of environmental goals and activities,
- greening the suppliers,
- green purchasing,
- green supplier development.

De Marchi [2012] pointed out the relevance of such areas as environmental innovation and R&D cooperation in environmental cooperation with suppliers. Zhu et al. [2010, 2011] show the developing role of green purchasing and circular economy practices, such as internal environmental management, eco-design and investment recovery, as factors influencing environmental cooperation with suppliers. Many factors are affecting environmental cooperation with suppliers. Bala et al. [2008] referred to greening suppliers as a form of environmental cooperation. Chiou et al. [2011] also highlighted the importance of greening suppliers and green innovation. Environmental innovation is also pointed out by Yarahmadi and Higgins [2012] as an element of the framework for multiparty cooperation that is positively related to supplier cooperation. Wong et al. [2012] discussed the possibility of improving supplier performance with environmental cooperation. Implementation of the ISO 14001 environmental management system might also be a critical factor in environmental cooperation with suppliers. Nawrocka et al. [2009] described its role in this context as "facilitating". De Marchi et al. [2013] pointed out the role of suppliers in building the environmental strategy in the global value chain.

Concepts such as green supply chain management (GSCM) and green purchasing also support environmental cooperation with suppliers. Zhu et al. [2008], Chan et al. [2012] and Ninlawan et al. [2010] listed environmental cooperation with suppliers as a measurement item for the implementation of GSCM practices.

It can be concluded that some of its activities require the active participation of both sides (supplier and its client) while some require the active participation of one side and only passive participation (e.g. sharing environmental information and good environmental practices) of the other side.

ENVIRONMENTAL COLLABORATION WITH SUPPLIERS

Vachon and Klassen [2008] define environmental collaboration as: "the direct involvement of an organization with its suppliers and customers in planning jointly for environmental management and environmental solutions". Such solutions include joint environmental activities and joint planning of environmental goals [Vachon, Klassen 2008]. The significant impact that collaborative planning has on supply chain performance is supported by Petersen et al. [2005]. Soosay et al. [2008] developed a classification of different types of collaboration in the supply chain: strategic alliances, joint ventures, cooperative arrangements, virtual collaboration

and vertical, horizontal and lateral integration. All of the above types of collaboration differ in characteristics and potential benefits, but all types may concern environmental issues.

The following dimensions of collaboration exist in the supply chain: information sharing, goal congruence, decision synchronization, incentive alignment, resource sharing, collaborative communication, and joint knowledge creation [Cao, Zhang 2011]. The issue of their role in interactions with suppliers might provide a vital research area.

The following significant barriers to collaboration within the supply chain were identified by Barratt [2004]: lack of attention regarding front-end agreements and the choice of a partner to collaborate with. However, Vachon and Klassen [2008] support the statement that there is a positive relation between environmental collaboration and different dimensions of manufacturing performance. On the other hand, Green et al. [2012] show that environmental collaboration and monitoring practices among supply chain partners have been found to lead to improved environmental and organizational performance. Furthermore, Albino et al. [2012] support the statement that there is a positive linkage between improving the environmental performance of a company and the development of collaborative partnerships with its suppliers.

Gunasekaran et al. [2015] developed an environmental collaboration research framework that places environmental collaboration as the highest level of interaction with suppliers. The question that remains open is if there might be other higher levels of interaction with the supplier: environmental supplier development and environmental supplier integration.

RESEARCH METHODOLOGY

In order to achieve the aim of this paper, a review of literature related to the discussed topic was performed in October of 2018, using the following scientific databases: Science Direct, Emerald Insight, Wiley, Springer and Taylor and Francis. Articles from 2008-2018 were taken into account. The following keywords were used:

- "environmental cooperation" AND "suppliers",
- "environmental collaboration" AND "suppliers".

Then an analysis of the chosen sources with a particular emphasis on the potential linkages between ECaC and SRM was performed. In order to do so, the snowballing approach was used. The results are presented in Table 1 and in the Observations and Findings section of this paper.

Table 1. The results of the literature review

Database	Number of records for the keywords (years 2008-2018)	
	"environmental cooperation" AND "suppliers"	"environmental collaboration" AND "suppliers"
Emerald Insight	23	47
Science Direct	53	138
Springer	69	42
Taylor & Francis	26	34
Wiley	52	22

Source: own elaboration

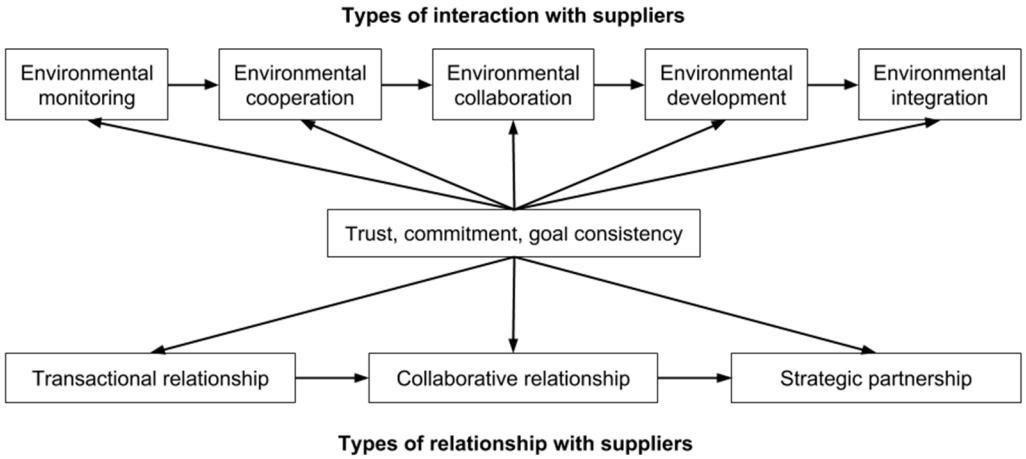
OBSERVATIONS AND FINDINGS

There are theories that environmental cooperation and collaboration are linked with the development of relationships with suppliers. Thus, they might play an essential role in supplier relationship management provided that the focal company attaches importance to its environmental performance.

As a result of the above considerations, a conceptual framework for environmental cooperation and collaboration in the context of building relationships with suppliers was developed (see Fig. 1).

Nyaga et al. [2010] developed a model that linked collaborative activities with relationship outcomes using trust and commitment and proved that collaborative activities are positively related to relationship outcomes and that buyers might gain performance benefits from collaborative relationships with suppliers. Fawcett et al. [2012] came to analogical conclusions with trust as a catalyst of collaborative relationships with suppliers. The significance of building trust in order to develop cooperative relationships with

suppliers is also supported by Johnston et al. [2004]. Furthermore, Kim et al. [2010] show that one of the significant determinants of interfirm cooperation is goal consistency.



Source: own elaboration

Fig. 1. Framework for environmental cooperation and collaboration in the context of building relationships with suppliers

Table 2. Literature review – supplier relationship management

Authors (year)	Focus
Autry, Golicic (2010)	Linkage between relationship strength and performance of a buyer-supplier relationship
Cai, Yang (2008)	Development of cooperative norms in the buyer-supplier relationship: the Chinese experience
Emiliani (2010)	Examination of the key recommendations of purchasing management regarding supplier relationships
Hill et al. (2009)	Trust in buyer-supplier relationships
Johnston et al. (2004)	Role of trust in cooperative relationships with suppliers
Lambert et al. (2012)	Macro level cross-functional view of SRM
Lintukangas (2010)	SRM capability
Liu et al. (2012)	Influence of justice on dyadic relationship performance in the buyer-supplier context
Miocevic et al. (2012)	Relationship between supply chain orientation and key supplier relationship management
Nyaga et al. (2010)	Collaborative relationships in buyers' and suppliers' perception
Piercy (2009)	Impact of strategic relationships between functions in supplier organizations

Source: own elaboration

Table 3. Literature review- environmental cooperation and collaboration

Authors (year)	Focus
Albino et al. (2012)	Role of inter-organizational collaboration in environmental performance
Bala et al. (2008)	The strategy and procedures to spread green purchasing practices
Barratt (2004)	Context for collaboration in supply chain
Caniëls et al. (2013)	Supplier participation in green initiatives
Chan et al. (2012)	Relationship among environmental orientation, green supply chain management (GSCM) activities and corporate performance
Chiou et al. (2011)	Relations between greening the supply chain, green innovation, environmental performance and competitive advantage
De Marchi (2012)	Relationship between firms' R&D cooperation strategies and their propensity to introduce environmental innovations
De Marchi et al. (2013)	Environmental management at the value chain
Fawcett et al. (2012)	Role of trust in collaborative relationships with suppliers
Green et al. (2012)	Impact of green supply chain management practices on environmental and organizational performance
Grekova et al. (2016)	Potential of environmental collaboration with suppliers and customers to induce environmentally sustainable improvements
Govindan et al. (2015)	Green supplier selection and evaluation
Gunasekaran et al. (2015)	Trends and future research directions in green supply chain collaboration and incentives
Kim et al. (2010)	Inter-organizational cooperation in buyer-supplier relationships
Nawrocka et al. (2009)	Role of ISO 14001 in environmental supply management practices
Ninlawan et al. (2010)	Green activities evaluation of green supply chain management
Petersen et al. (2005)	Impact of collaborative planning with suppliers
Polenske (2004)	Competetive, collaborative and cooperative relationships within the networks of firms and regions
Razaei et al. (2016)	Environmental criteria of supplier selection

Authors (year)	Focus
Soosay et al. (2008)	Role of collaborative relationships in continuous innovation in the supply chain
Vachon, Klassen (2006)	Environmental collaboration and integration in supply chain
Vachon, Klassen (2008)	The impact of environmental collaborative activities on manufacturing performance
Vachon et al. (2009)	Linkage between strategic alignment in the supply chain and the type of interactions with suppliers.
Wong et al. (2012)	Role of green operations and the influence of environmental management capability of suppliers on firm performance and pollution reduction
Yarahmadi (2012)	Green innovations and environmental cooperative activities of firms
Zhu et al. (2010)	Environmental-oriented supply chain cooperation
Zhu et al. (2011)	Environmental supply chain cooperation
Zhu et al. (2008)	Evaluation of green supply chain management (GSCM) practices implementation

Source: own elaboration

Hence, trust, commitment and goal consistency were used as factors affecting the development of environmental cooperation and collaboration in the context of building relationships with suppliers.

The following types of interaction with suppliers are distinguished: environmental monitoring, environmental cooperation, environmental collaboration, environmental development and environmental integration. The types of relationships with suppliers were also listed: transactional relationships, collaborative relationships and strategic relationships. They illustrate the level of involvement of buyer and supplier in the mutual interaction and in the mutual relationship, which is affected by trust, commitment and goal consistency.

CONCLUSION AND RECOMMENDATIONS FOR FUTURE RESEARCH

The presented framework for environmental cooperation and collaboration in the context of building relationships with suppliers uses a different kind of interaction with suppliers. The questions that remain unanswered and might provide a basis for future research are the following:

1. Are there any premises for developing a conceptual framework for environmental (or green) supplier development and environmental supplier integration as an extension of the proposed framework for environmental cooperation and collaboration in the context of building relationships with suppliers?
2. What specific activities or practices are companies using in environmental cooperation with their suppliers in terms of the implementation of such concepts as GSCM or green purchasing?

The answers to the above questions might provide a valuable supplement for research on the topic of environmental issues in the supply chain, such as green supply chain management and green purchasing.

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ROLA WSPÓŁPRACY I WSPÓŁDZIAŁANIA ŚRODOWISKOWEGO W ZARZĄDZANIU RELACJAMI Z DOSTAWCAMI

STRESZCZENIE. **Wstęp:** Niniejszy artykuł ma na celu określenie roli współpracy środowiskowej i współpracy w zarządzaniu relacjami z dostawcami. Wprowadzono następujące pojęcia: zarządzanie relacjami z dostawcami, współpraca środowiskowa oraz współdziałanie środowiskowe. Zarządzanie relacjami z dostawcami ma na celu budowanie więzi z dostawcami, które wykraczają poza wymianę handlową. Współpraca i współdziałanie środowiskowe obejmują wszystkie operacje wykonywane przy aktywnym lub pasywnym zaangażowaniu dostawców i ich odbiorców. Na początku opisano koncepcję zarządzania relacjami z dostawcami. Następnie wprowadzono cechy współpracy środowiskowej i współpracy w zakresie ochrony środowiska. Dalej przedstawiono obserwacje. Na końcu opisano wnioski i zalecenia dotyczące przyszłych badań.
Metody: Zastosowaną metodą badawczą jest analiza literatury polskiej i zagranicznej związanej z tematyką współpracy i współdziałania środowiskowego w kontekście zarządzania relacjami z dostawcami.
Wyniki: Wyniki dotyczą znaczenia współpracy i współdziałania środowiskowego jako istotnego obszaru zarządzania relacjami z dostawcami oraz opracowania ram koncepcyjnych dla współpracy i współdziałania środowiskowego w kontekście budowania relacji z dostawcami.
Wnioski: Wnioski dotyczą rodzajów interakcji środowiskowych i relacji z dostawcami, z uwzględnieniem roli wzajemnego zaufania, zaangażowania i spójności celów między nabywcą a dostawcą.

Słowa kluczowe: współpraca środowiskowa, współdziałanie środowiskowe, zarządzanie relacjami z dostawcami, budowanie relacji z dostawcami, relacje dostawca-odbiorca.

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