

# Motivators for and Barriers to Sustainable Supply Chain Practices Implementation

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## Abstract

**Purpose:** It is nowadays believed that the effective implementation of the principles of sustainable development in companies requires cooperation in entire supply chains. Companies are guided by various motivators and face various barriers to the implementation of sustainable supply chain practices (SSCPs); however, so far, no attention has been given to examining the relationship between them. Thus, the aim of the paper is to examine such relationships.

**Design/methodology/approach:** The paper presents the results of a survey conducted on a sample of 500 companies. The aim of the paper is achieved by examining Spearman's correlation coefficient.

**Findings:** In most cases, a positive correlation is observed between the motivators for and barriers to SSCP implementation. Additionally, such dependence occurs more often for external motivators, compared to internal motivators.

**Research implications:** The activities supporting the implementation of SSCP should concentrate on strengthening internal motivators in companies (e.g., by propagating relevant knowledge) as well as overcoming internal barriers. The importance of external motivators seems to be reduced by the coexistence of barriers.

**Originality/value:** This paper contributes to supply chain and sustainable development literature by identifying a positive correlation between motivators for and barriers to SSCP implementation. Such a finding may be important to policymakers, as it suggests that concentrating merely on motivating companies to implement sustainability principles may not be sufficient if it is not accompanied by barrier-breaking mechanisms.

**Keywords:** supply chain sustainability, sustainable supply chain practices, motivators, barriers.

**JEL:** Q01, Q20, Q50, M11, M14

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## Motywatory i bariery wdrożenia praktyk zrównoważonego łańcucha dostaw

### Streszczenie

**Cel:** obecnie uważa się, że skuteczne wdrażanie zasad zrównoważonego rozwoju w firmach wymaga współpracy w całym łańcuchu dostaw. Firmy kierują się różnymi motywatorami i napotykają różne bariery we wdrażaniu praktyk zrównoważonego łańcucha dostaw; jednak dotychczas nie badano zależności między nimi, co jest celem prezentowanego artykułu.

**Metodologia:** w artykule przedstawiono wyniki badania ankietowego przeprowadzonego na próbie 500 firm. Cel pracy został osiągnięty poprzez zbadanie współczynnika korelacji Spearmana.

**Wyniki:** w większości przypadków obserwuje się dodatnią korelację pomiędzy motywatorami i barierami we wdrażaniu praktyk zrównoważonego łańcucha dostaw. Dodatkowo taka zależność występuje częściej w przypadku motywatorów zewnętrznych niż wewnętrznych

**Implikacje badawcze:** działania wspierające wdrażanie praktyk zrównoważonego łańcucha dostaw powinny koncentrować się na wzmacnianiu wewnętrznych motywatorów w firmach (np. poprzez propagowanie odpowiedniej wiedzy) oraz pokonywaniu wewnętrznych barier. Znaczenie zewnętrznych motywatorów wydaje się być pomniejszone przez współistnienie barier.

**Oryginalność/wartość:** artykuł stanowi wkład w literaturę związaną z łańcuchem dostaw i zrównoważonym rozwojem, identyfikując pozytywną korelację między motywatorami i barierami we wdrażaniu praktyk zrównoważonego łańcucha dostaw. Takie odkrycie może być ważne dla decydentów, ponieważ sugeruje, że koncentrowanie się wyłącznie na motywowaniu firm do wdrażania zasad zrównoważonego rozwoju może nie wystarczyć, jeśli nie towarzyszą mu mechanizmy przełamywania barier

**Słowa kluczowe:** zrównoważony łańcuch dostaw, praktyki zrównoważonego łańcucha dostaw, motywatory, bariery.

## 1. Introduction

The concept of sustainable development has become so popular in recent years that it is difficult to find a significant international organization or government that does not somehow relate to it (Elliott, 2013; Tomislav, 2018). Contemporarily, it is believed that the successful implementation of sustainability principles requires cooperation in entire supply chains (see Beske et al., 2014; Govindan, 2018). Supply chain sustainability takes into account the environmental, social and economic aspects of supply chain components throughout the life cycle of products and services (see Hassini et al., 2012; Seuring & Müller, 2008).

Companies' engagement in sustainable development is frequently discussed under the topic of sustainable supply chain practices (SSCPs), although terminological confusions in this regard may be observed<sup>1</sup> (Diabat et al., 2013; Perotti et al., 2012; Yunus & Michalisin, 2016). Golicic and Smith (2013) generally defined these practices "as activities or actions taken to reduce or eliminate the environmental impact of supply chain management-related functions or processes" (2013, p. 80). When implementing specific SSCPS, companies are guided by various motivators, but also face various barriers to their implementation. Identifying these motivators and barriers

may, among others, contribute to better planning of incentive and support systems for companies deciding to implement the idea of supply chain sustainability. Research conducted in the context of the emerging economy of the Polish market shows that properly selected public support instruments for sustainable development practices may be of key importance for their implementation and improvement of the competitiveness of companies that initiate them (Jankowska et al., 2021).

Previous studies have identified the main motivators for and barriers to SSCPs implementation, also in various cultural and industry contexts (Chkanikova & Mont, 2015; Sajjad et al., 2015; Tura et al., 2019). However, to my best knowledge, the relationship between such motivators and barriers has not been studied so far. Investigating such dependences would be difficult in qualitative research, which dominated the extant studies (Post & Altman, 2017; Tura et al., 2019; Walker et al., 2008). Thus, the aim of the paper is to examine the relationships between motivators for and barriers to SSCPs implementation. First, a literature review on the motivators for and barriers to SSCPs implementation is presented. Second, the research methodology is discussed. Third, the results of empirical research are presented. This part presents the frequency of indications of the occurrence of motivators for and barriers to SSCPs implementation and the correlations between them. The paper ends with a discussion of the main conclusions, a proposal for further research, and a specification of research limitations.

## 2. Motivators for and Barriers to Implementing Supply Chain Sustainability – Literature Review

Identification of motivators and barriers is often the first step to initiate the process of change and implementation of programs covering social and environmental issues (Narimissa et al., 2020; Pinto & Allui, 2020; Post & Altman, 2017). Their analysis at an early stage of implementing such programs may contribute to the success of this process (Ansari & Kant, 2017). Various general motivators for companies' commitment to sustainable development are indicated. Some researchers emphasize that this type of involvement may be beneficial for shaping the company's competitive advantage by, for example, influencing the level of costs, revenues, improving resource management or improving the company's image. Others assume that it is mainly a reaction to changes in legal regulations that enforce appropriate adjustments of activities. Others perceive them through the prism of PR activities, assuming that the involvement of companies in sustainable development is mainly a facade. Similarly, various barriers to such involvement are indicated – from the lack of support from owners and managers, through the negative impact on the financial performance of companies, to the lack of appropriate legal regulations.

Table 1 presents classifications of motivators for and barriers to companies' engagement in sustainable development as well as similar concepts (e.g., circular economy, CSR) proposed in extant literature. It also gives some information about the research type and scope. The full list of identified motivators and barriers with their categorization is presented in the appendix. As indicated by Table 1, qualitative research has dominated so far when investigating motivators for and barriers to sustainable development practices implementation, which calls for additional quantitative research.

Table 1

*Classifications of Motivators for and Barriers to Involvement in Sustainable Development in Extant Studies*

Authors	Research subject	Research description	Motivators	Barriers
(Post & Altman, 2017)	Motivators for and barriers to engaging in practices beneficial for the natural environment from the perspective of the process of changes in the company	A series of "best practice" case studies	<ul style="list-style-type: none"> <li>• Compliance-based,</li> <li>• Market-driven,</li> <li>• Value-driven</li> </ul>	<ul style="list-style-type: none"> <li>• Industry barriers,</li> <li>• Organizational barriers</li> </ul>
(Walker et al., 2008)	Motivators for and barriers to involvement in the green supply chain management	Interviews with representatives of seven public and private sector organizations	<ul style="list-style-type: none"> <li>• Internal,</li> <li>• External: regulatory, customers, competition, society, suppliers</li> </ul>	<ul style="list-style-type: none"> <li>• Internal: cost, lack of legitimacy,</li> <li>• External: regulation, poor supplier commitment, industry specific</li> </ul>
(Sajjad et al., 2015)	Motivators for and barriers to involvement in the sustainable supply chain management	Case studies of four large New Zealand based companies	<ul style="list-style-type: none"> <li>• Internal: instrumental, normative,</li> <li>• External: market drivers, government, social factors</li> </ul>	<ul style="list-style-type: none"> <li>• Internal,</li> <li>• External</li> </ul>

Table 1 – continued

Authors	Research subject	Research description	Motivators	Barriers
(Agyemang et al., 2019)	Motivators for and barriers to involvement in circular economy	Study utilized both qualitative and quantitative methods including a designed questionnaire survey and interviews in Pakistani automobile manufacturing sector	<ul style="list-style-type: none"> <li>• Internal,</li> <li>• External</li> </ul>	<ul style="list-style-type: none"> <li>• Internal,</li> <li>• External</li> </ul>
(Tura et al., 2019)	Motivators for and barriers to involvement in circular economy	Case studies of four organizations	<ul style="list-style-type: none"> <li>• Environmental,</li> <li>• Economic,</li> <li>• Social,</li> <li>• Institutional,</li> <li>• Technological and informational,</li> <li>• Supply chain,</li> <li>• Organizational</li> </ul>	<ul style="list-style-type: none"> <li>• Economic,</li> <li>• Social,</li> <li>• Institutional,</li> <li>• Technological and informational,</li> <li>• Supply chain,</li> <li>• Organizational</li> </ul>
(Chkanikova & Mont, 2015)	Motivators for and barriers to involvement in the sustainable supply chain	Semi-structured interviews with food retailers, with primary focus on Swedish conventional supermarket chains	<ul style="list-style-type: none"> <li>• Resource factors,</li> <li>• Regulatory factors,</li> <li>• Market factors,</li> <li>• Social factors</li> </ul>	<ul style="list-style-type: none"> <li>• Resource factors,</li> <li>• Regulatory factors,</li> <li>• Market factors,</li> <li>• Social factors</li> </ul>
(Agudo-Valiente et al., 2017)	Motivators and barriers and their impact on the level of involvement in corporate social responsibility	Quantitative research on a sample of 416 Spanish firms	<ul style="list-style-type: none"> <li>• Subjective</li> <li>• Objective</li> </ul>	<ul style="list-style-type: none"> <li>• Subjective</li> <li>• Objective</li> </ul>
(Giunipero et al., 2012)	Motivators for and barriers to involvement in the sustainable supply chain	The research utilized the Delphi method	<ul style="list-style-type: none"> <li>• High,</li> <li>• Medium,</li> <li>• Low</li> </ul>	<ul style="list-style-type: none"> <li>• High,</li> <li>• Medium,</li> <li>• Low</li> </ul>

Source:

The most accepted division of the motivators for and barriers to the implementation of SSCPs is into internal and external (Agyemang et al., 2019; Sajjad et al., 2015; Walker et al., 2008). Additionally, Sajjad et al. (2015) proposed to divide internal motivators into instrumental and normative. The first include motivators that treat sustainable development initiatives as instruments for shaping the company's competitive advantage. They include, in the first place, financial benefits – the possibility of reducing costs (e.g., purchase of raw materials, energy costs) or increasing revenues (increasing sales or offering products at higher prices). This category also includes an increase in innovativeness of companies, improving resource efficiency, productivity and organizational capacity (Agyemang et al., 2019; Giunipero et al., 2012; Pinto & Allui, 2020; Tura et al., 2019).

The second category of internal motivators for implementing supply chain sustainability initiatives refers to the attitudes of owners and employees of companies, and is termed normative motivators (Sajjad et al., 2015). In this context, the most often indicated are the values of owners/shareholders (Haddock-Fraser & Tourelle, 2010; Pinto & Allui, 2020; Walker et al., 2008) or top management (Agudo-Valiente et al., 2017; Giunipero et al., 2012; Kulatunga et al., 2013; Narimissa et al., 2020; Pinto & Allui, 2020; Sajjad et al., 2015; Tay et al., 2015; Walker et al., 2008), who can play the role of change leaders. Some studies indicate, however, that the initiative to implement sustainable development practices may come from employees, and the implementation itself requires their support (Dhull & Narwal, 2016; Kulatunga et al., 2013; Tay et al., 2015; Walker et al., 2008). It is also assumed that adopting the corporate citizenship attitude in the organization increases employees satisfaction and motivation to work by building a positive image of the company in which they work (Casey & Sieber, 2016).

There is no common agreement on how to divide external motivators for implementing SSCPs; however, three groups seem to dominate: regulatory factors, market factors, and social factors (Chkanikova & Mont, 2015; Sajjad et al., 2015; Walker et al., 2008). Regulatory factors include a necessity or willingness to adjust to legal or other regulations (e.g., organizations granting specific certificates). Adaptation to this type of regulation may have a positive impact on the company's operations (e.g., by obtaining a specific certificate, obtaining funding). It may also have a negative impact in the case of non-compliance with specific regulations (e.g., penalties for failure to comply with environmental standards) (Dhull & Narwal, 2016; Giunipero et al., 2012). The market factors cover pressure from other business entities – customers, suppliers, but also initiatives taken by competitors. They may also include resource-related (Chkanikova & Mont, 2015) or technological (Tura et al., 2019) factors. Social factors refers to pressure from the society, NGOs, media or other social groups (Chkanikova & Mont, 2015; Dhull & Narwal, 2016; Lambin & Thorlakson, 2018; Post & Altman, 2017).

The barriers to implementing supply chain sustainability practices can also be divided into internal and external (Agyemang et al., 2019; Sajjad et al., 2015; Walker et al., 2008). The internal barriers often include limited financial possibilities or high costs of implementing particular solutions (Chkanikova & Mont, 2015; Wittstruck & Teuteberg, 2012). Although commitment to sustainable development may contribute to improving the company's competitive position in the long term, in the short term it is often associated with the necessity to incur significant financial outlays, which for many companies is a serious obstacle (Chkanikova & Mont, 2015; Tura et al., 2019; Walker et al., 2008). Another internal barrier may be the lack of knowledge and awareness about specific initiatives that can be implemented (Sajjad et al., 2015). It is also emphasized that some companies lack the skills and knowledge necessary to implement sustainable development initiatives as it is too much of an organizational effort for them (Zhu & Sarkis, 2004). Just as the involvement of internal stakeholders can be an important motivator, the lack of such involvement (especially on the part of managers) can be an important barrier to the implementation of SSCPs. Disengagement may be due to a lack of recognition of the benefits that sustainability initiatives can bring to firms (Wittstruck & Teuteberg, 2012).

External barriers include all the forces in the companies' environment, which may be perceived as obstacles to the implementation of specific sustainable development solutions. These obstacles most often result from the characteristics of other links in the supply chain – suppliers and customers. They may be related to their inability or lack of readiness to cooperate in the field of sustainable development (e.g., providing means of production or purchasing products that meet specific environmental or social standards) (Sajjad et al., 2015; Walker et al., 2008). They may also result from the limited scope of cooperation and communication in the supply chain – as Seuring & Müller (2008) indicate, cooperation in a sustainable supply chain should be more intensive as compared to a “traditional” supply chain. Limited cooperation in the initial state may therefore constitute a significant barrier to involvement in supply chain sustainability.

### 3. Research Methodology

To achieve the aim of the paper, quantitative research was conducted in September 2020 with the use of the CATI (Computer-Assisted Telephone Interview) technique and a standardized survey questionnaire. Applying the CATI technique in survey research allows for a higher response rate as compared to, for example, postal survey. The respondents were drawn from the “PI total database” covering 1,113,035<sup>2</sup> companies located in Poland. The research intention was to get responses from 500 companies. To reach this target, 2011 companies had to be contacted, i.e., 500 out of 2011 companies answered the survey (24.9% response rate was achieved). Companies from

26 different industries participated in the study, including industries with relatively large environmental impact (e.g., mining, food) and relatively small environmental impact (e.g., professional and consulting services).

The pool included firms of various industries and sizes; however, the number of microenterprises in the pool was deliberately limited to 20% due to their lower expected involvement in sustainable development activities (in 2019, over 72% of micro-enterprises were the self-employed who most often provided work services for one company as typical employees and should not be regarded as separate enterprises (Statistics Poland, 2020). The size structure of companies participating in the study is presented in Table 2.

Table 2  
*Size Structure of Respondent Companies*

Company size	All companies N = 500	
	n	p
Micro-enterprises	100	20.0%
Small enterprises	240	48.0%
Medium-sized enterprises	125	25.0%
Large enterprises	35	7.0%

N – number of companies in the sample; n – number of companies of a given size; p – proportion of companies of a given size

Source: Based on the author's own research.

The respondents were representatives of the top management of the firms. First, the manager responsible for issues related to sustainable development or CSR was asked to participate in the survey. If such a position did not exist in the company, a member of the board of directors responsible for relations with key links in the supply chain was asked to answer the survey questions. The respondents were told about the anonymous processing of information received from them. It was expected that one respondent would answer a survey question.

As part of literature studies, motivators for and barriers to engaging in sustainability-related initiatives were identified. They are presented in the appendix, with indication how they were classified by various authors. The preliminary list of motivators and barriers presented in the appendix was tested in the course of a pilot study. The pilot study took the form of IDIs (individual direct interviews) with 4 prospective respondents representing companies from various sectors. The participants of the pilot studies were managers responsible for sustainable development issues, in each case



employed in the Polish subsidiaries of MNCs. The aim of this stage was to limit the relatively long list of motivators and barriers to the ones which might actually influence companies' approach to sustainable supply chain practices implementation in Poland. The results of the pilot study were critically analyzed, and finally 10 motivators and 6 barriers were selected (see Tables 3 and 4). The selected motivators and barriers were the basis for the development of the questionnaire used in the CATI research. In the question on motivators, the respondents were asked to indicate which of the 10 motivators listed in Table 3 direct the sustainability-related activities of their company in supply chains (with possible "yes" or "no" answers for each of the motivators). Similarly, in the question about barriers, they were asked for adequate answers regarding the 6 barriers indicated in Table 4.

The empirical data analysis has two stages. First, the frequency of indications of motivators for and barriers to the sustainable supply chain practices implementation is presented. An analysis of frequency of indications is one of the methods applied when studying motivators and barriers in a quantitative research (Agudo-Valiente et al., 2017; Agyemang et al., 2019); however, so far qualitative researches with a limited sample dominated in similar studies (Giunipero et al., 2012; Tura et al., 2019; see, e.g., Walker et al., 2008). Second, the correlation between the motivators and barriers included in the research is presented in order to achieve the aim of the paper, which is to identify the relationships between them. Spearman's correlation coefficient was measured. Calculations were made with the use of IBM SPSS.

## 4. Research Results and Discussion

The first stage of the presented empirical analysis is the study of the frequency of indications of the occurrence of the motivators and barriers included in the research. Table 3 presents the obtained empirical results concerning the motivators for the implementation of SSCPs. The declarations of companies are dominated by external motivators, and among them regulatory factors – adjustment to legal regulations is the only motivator indicated by more than 50% of respondents, and willingness to obtain specific certificates is the third motivator indicated by about 1/3 of respondents. The importance of regulatory motivators was also reported in other studies, some of them mentioned it as one of the most important drivers of SSCPs implementation (Giunipero et al., 2012).

Subsequently, companies are motivated to implement SSCPs by market factors (customer and supplier requirements), which is also consistent with prior studies (Agyemang et al., 2019; Walker et al., 2008). Among external motivators, only social factors (social pressure) seem to have little impact on companies' decisions regarding the implementation of sustainable

development. This may result from the cultural specificity of the Polish market and the lack of such expectations towards companies. It may be also a result of a small number of NGOs promoting such initiatives or their low strength.

Table 3

*Motivators for Implementing Supply Chain Sustainability – Research Results*

<b>Motivator</b>	<b>Type of motivator</b>	<b>Indications N=500</b>
adjustment to legal regulations	external	n=275 p=55.0%
customer requirements	external	n=236 p=47.2%
willingness to obtain specific certificates	external	n=165 p=33.0%
supplier requirements	external	n=90 p=18.0%
shareholder requirements	internal	n=37 p=7.4%
subsidy from EU funds	external	n=16 p=3.2%
internal initiative of the company's employees	internal	n=10 p=2.0%
social pressure (e.g., NGOs)	external	n=8 p=1.6%
reputational threat / crisis in the firm	internal	n=3 p=0.6%
financial motivators	internal	n=3 p=0.6%

N – number of companies in the sample; n – number of companies declaring the occurrence of a specific motivator; p – proportion of companies declaring the occurrence of a specific motivator

*Source:* Based on the author's own research.

Internal motivators have almost no influence on decisions regarding the implementation of supply chain sustainability. Only shareholder requirements, which are normative motivators, are indicated by a noticeable group of respondents (7.4%). That number is difficult to compare with other studies – qualitative research reported shareholder support as one of the major drivers of SSCPs implementation (e.g., Walker et al., 2008), but in other quantitative research it is not indicated by a large number of respondents (e.g., Agyemang et al., 2019).

Particularly surprising are such rare indications of motivators relating to the improvement of the company's competitive position, which are often cited as one of the most frequently declared motivators for implementing supply chain sustainability (Agyemang et al., 2019; Sajjad et al., 2015; Walker et al., 2008). Perhaps the results obtained in the presented research are related to the lack of knowledge among Polish companies about possible SSCPs and their impact on business performance. This would indicate the need to promote knowledge on this subject on the Polish market.

Table 4 presents the respondents' declarations regarding the barriers to the implementation of supply chain sustainability. In the case of barriers, internal factors have a slightly greater influence on the decisions of companies. The biggest barrier, indicated by over 50% of respondents, is the high costs of implementing SSCPs, which is consistent with the results of other studies (Giunipero et al., 2012; Sajjad et al., 2015; Tura et al., 2019; Walker et al., 2008). Limited knowledge of possible sustainable supply chain solutions and big organizational effort necessary to implement solutions also seem important obstacles reported by ca. 20% of respondents, a result also consistent with other studies. In fact, the barrier of lack of knowledge may be even greater – to some extent it is suggested by the results of research on motivators and not noticing the benefits of implementing supply chain sustainability for competitive advantage. This may indicate that a certain group of respondents is characterized by a lack of knowledge about their lack of knowledge on supply chain sustainability practices.

Table 4

*Barriers to Implementing Supply Chain Sustainability – Research Results*

<b>Barrier</b>	<b>Type of barrier</b>	<b>Indications N=500</b>
high costs of implementing initiatives	internal	n=280 p=56.0%
limited cooperation and communication in the supply chain	external	n=166 p=33.2%
limited knowledge of possible sustainable supply chain solutions	internal	n=116 p=23.2%
big organizational effort necessary to implement solutions	internal	n=99 p=19.8%
no or little potential benefit to the firm	internal	n=34 p=6.8%
reluctance of partners in the supply chain to implement solutions	external	n=8 p=1.6%

N – number of companies in the sample; n – number of companies declaring the occurrence of a specific barrier; p – proportion of companies declaring the occurrence of a specific barrier

*Source:* Based on the author's own research.

Limited cooperation and communication in the supply chain, as an external barrier, is indicated by about 1/3 of the respondents and is the second most frequently indicated barrier. It is interesting to what extent this barrier can be overcome thanks to the efforts of individual companies interested in implementing SSCPs and to what extent it requires support from external entities, e.g. government.

In the second stage of the analysis, the correlation coefficient between the motivators and barriers included in the research is measured. Both motivators for and barriers to implementing supply chain sustainability have been grouped into external and internal (see Table 5).

As shown by the data presented in Table 5, in 24 cases a statistically significant relationship between motivators for and barriers to implementing SSCPs was observed. Interestingly, in as many as 22 of these cases, the correlation coefficient took a positive value, which means that the presence of motivators for SSCPs implementation in the company is generally associated with the coexistence of barriers (details on the relationship between specific motivators and barriers are included in Table 5). The inverse relationship was observed only in two cases. The first is “adjustment to legal regulations” and “limited knowledge of possible sustainable supply chain solutions”, for which the correlation coefficient is -0.122. It seems understandable, as appropriate regulations may indicate specific practices that should be implemented by companies, which eliminates the barrier of limited knowledge. A similar relationship was observed between “willingness to obtain specific certificates” and “high costs of implementing initiatives”, but in this case its explanation is more problematic and may require additional research. It should also be noted that the relationship between the studied variables is weak in each case – the correlation coefficients do not exceed the value of 0.3.

The coexistence of motivators and barriers may be explained by the fact that companies that intend to implement SSCPs, which is manifested by the presence of motivators, still face many barriers in the course of the implementation. Their encounter may have a negative impact on the initial intentions to implement the principles of sustainable development.

Statistically significant relationships were more often observed for the relationships between external motivators and barriers to SSCPs implementation (also taking into account a greater number of motivators from this group). Therefore, it can be assumed that the presence of external motivators, as compared to internal motivators, is more often associated with the presence of barriers to SSCPs implementation. This regularity is only slightly reduced by the fact that a negative correlation coefficient was observed in the case of 2 relationships of external motivators and internal barriers. This may indicate a smaller importance of external motivators for the implementation of the principles of sustainable development, due to the accompanying barriers.

Table 5  
Motivators for and Barriers to Implementing Supply Chain Sustainability – Correlations

	Internal barriers				External barriers			
	high costs of implementing initiatives	limited knowledge of possible sustainable supply chain solutions	big organizational effort necessary to implement solutions	no or little potential benefit to the firm	limited cooperation and communication in the supply chain	reluctance of partners in the supply chain to implement solutions		
External motivators	adjustment to legal regulations	<b>.251**</b>	<b>-.122**</b>	-0.060	-0.075	-0.037	0.051	
		Correlation coefficient						
			Significance (2-tailed)	<b>0.006</b>	0.182	0.094	0.413	0.253
	customer requirements	-0.082	<b>.259**</b>	<b>.129**</b>	<b>.142**</b>	-0.029	0.071	
		Correlation coefficient		<b>0.000</b>	<b>0.001</b>	0.525	0.113	
			Significance (2-tailed)	<b>0.000</b>	<b>0.004</b>	0.047	<b>.246**</b>	0.046
	willingness to obtain specific certificates	<b>-.106*</b>	0.078	<b>.136**</b>	0.047	<b>.246**</b>	0.046	
		Correlation coefficient		<b>0.002</b>	0.295	<b>0.000</b>	0.304	
			Significance (2-tailed)	<b>0.017</b>	<b>0.002</b>	<b>0.000</b>	<b>0.000</b>	
	supplier requirements	-0.004	0.051	<b>.241**</b>	0.060	<b>.101*</b>	0.065	
	Correlation coefficient		<b>0.000</b>	0.184	<b>0.024</b>	0.148		
		Significance (2-tailed)	<b>0.925</b>	<b>0.000</b>	<b>0.000</b>	0.065		
subsidy from EU funds	<b>.092*</b>	<b>.115**</b>	0.025	<b>.177**</b>	0.065	<b>.158**</b>		
	Correlation coefficient		<b>0.010</b>	<b>0.000</b>	0.148	<b>0.000</b>		
		Significance (2-tailed)	<b>0.039</b>	0.581	<b>0.000</b>	<b>0.000</b>		
social pressure (e.g., NGOs)	0.049	<b>.119**</b>	<b>.138**</b>	<b>.092*</b>	<b>.113*</b>	-0.016		
	Correlation coefficient		<b>0.008</b>	<b>0.002</b>	<b>0.039</b>	<b>0.011</b>		
		Significance (2-tailed)	0.276	<b>0.002</b>	<b>0.039</b>	0.717		

Table 5 – continued

	Internal barriers				External barriers		
	high costs of implementing initiatives	limited knowledge of possible sustainable supply chain solutions	big organizational effort necessary to implement solutions	no or little potential benefit to the firm	limited cooperation and communication in the supply chain	reluctance of partners in the supply chain to implement solutions	
shareholder requirements	0.004	<b>.170**</b>	<b>.265**</b>	0.075	<b>.125**</b>	0.025	
	Correlation coefficient						
	Significance (2-tailed)	<b>0.000</b>	<b>0.000</b>	0.092	<b>0.005</b>	0.579	
internal initiative of the company's employees	-0.046	0.057	-0.035	-0.039	-0.010	<b>.096*</b>	
	Correlation coefficient						
	Significance (2-tailed)	0.304	0.204	0.389	0.829	0.033	
reputational threat / crisis in the firm	0.017	0.080	<b>.092*</b>	0.082	0.055	-0.010	
	Correlation coefficient						
	Significance (2-tailed)	0.710	0.074	<b>0.039</b>	0.218	0.825	
financial motivators	-0.088	<b>.141**</b>	-0.038	-0.021	-0.055	-0.010	
	Correlation coefficient						
	Significance (2-tailed)	0.050	<b>0.002</b>	0.392	0.221	0.825	

\*\* Correlation significant at the level of 0.01 (2-tailed). \* Correlation significant at the level of 0.05 (2-tailed).

Source: Based on the author's own research.

## 5. Conclusions

The paper contributes to the sustainable development and supply chain literature, indicating that the most common is a positive correlation between the motivators for and barriers to SSCPs implementation. This means that companies that are motivated to implement the principles of sustainable development at the supply chain level are likely to experience barriers to such implementation as well. Thus, in similar studies, it is necessary to take into account both these aspects of SSCPs implementation and their interdependence.

Further research in this area should take into account a dynamic perspective. It is interesting to what extent the motivators and barriers to SSCPs implementation appear sequentially in companies. It would also be valuable to find out how such sequencing affects the process of implementing and accepting the principles of sustainable development in the company. It seems that such research should take the form of a long-term case study.

The paper also has some practical implications. Regulations and a support system for the implementation of SSCPs should strengthen motivators for such implementation and reduce barriers thereto. The conducted research shows that companies are motivated to implement SSCPs mainly externally, by regulatory factors and market factors. It seems, therefore, that support is mainly required for the group of internal motivators. It is all the more important as the occurrence of external motivators, as compared to the presence of internal motivators, is more often associated with the presence of barriers to SSCPs implementation. Thus, the importance of external motivators for the implementation of solutions consistent with the principles of sustainable development may be reduced by the coexistence of barriers. As far as barriers themselves are concerned, internal ones dominate, and it is on them that support measures should focus.

The support system may include the effective promotion of knowledge about the importance of sustainable development, benefits for companies and the society achieved through the implementation of specific SSCPs and possible practices themselves. Propagating such knowledge among companies should contribute to understanding how supply chain sustainability can positively affect their competitive position (including their financial performance) and thus increase the motivation to engage in it. At the same time, it could contribute to reducing the limited knowledge barrier. Similar knowledge propagated among the society should increase social pressure on companies and increase the importance of normative motivators in companies (related to managers', owners-shareholders' and employees' motivation).

Another element of the support system should include financial and organizational support to eliminate other internal barriers. It also seems that the organizational support itself may contribute to the reduction of the

financial barrier by reducing the organizational effort from the company. This type of support, in special cases, could apply to entire supply chains, which would, in a way, force an increase in cooperation between their links.

There are some limitations of the presented research, especially in terms of the selection of the research sample and the examined motivators for and barriers to SSCPs implementation. The selection of the research sample was not completely random, because the percentage of micro-enterprises participating in the study was limited in advance. This limits the representativeness of the sample. The possible motivators and barriers to SSCPs implementation were based on previous studies, but also limited in the course of the pilot study. However, it is possible that the final selection of motivators and barriers was biased.

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### Endnotes

- <sup>1</sup> In literature, different terms are used when studying these phenomena, e.g. sustainable business practices (Ortiz-de-Mandojana & Bansal, 2016), sustainable development initiatives (e.g. Halati & He, 2018), sustainable supply chain practices (Gopal & Thakkar, 2016; Tay et al., 2015; Wagner & Svensson, 2010), sustainable supply chain management practices (Morali & Searcy, 2013), green supply chain practices (Vachon, 2007), environmental collaboration practices (Małys, 2022) or environmental supply chain management practices (Walker et al., 2008).
- <sup>2</sup> As of September 2020.

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## Appendix

*Motivators for and Barriers to Sustainable Development Practices.*

<b>Motivator</b>	<b>Classification</b>	<b>Authors</b>
Cost reduction	Internal, instrumental, economic, medium	(Agyemang et al., 2019; Giunipero et al., 2012; Kulatunga et al., 2013; Legrand et al., 2012; Post & Altman, 2017; Tura et al., 2019; Walker et al., 2008)
Sales, revenues increase	Internal	(Agyemang et al., 2019; Giunipero et al., 2012; Kulatunga et al., 2013)
Increase in innovativeness, developing new products, increasing the value generated	Internal, instrumental, economic, market	(Agyemang et al., 2019; Pinto & Allui, 2020; Post & Altman, 2017; Tura et al., 2019; Walker et al., 2008)
Improving resource efficiency, productivity and organizational capacity	Internal, instrumental, environmental, medium	(Agyemang et al., 2019; Kulatunga et al., 2013; Legrand et al., 2012; Post & Altman, 2017; Sajjad et al., 2015; Tura et al., 2019)
Internal initiative (employees, managers)	Internal, normative, subjective, high	(Agudo-Valiente et al., 2017; Giunipero et al., 2012; Kulatunga et al., 2013; Pinto & Allui, 2020; Walker et al., 2008)
Shareholders, investors and owners expectations	Internal, normative, subjective, resource factors	(Agudo-Valiente et al., 2017; Chkanikova & Mont, 2015; Haddock-Fraser & Touelle, 2010; Legrand et al., 2012; Pinto & Allui, 2020; Walker et al., 2008)
Ethical / moral reasons (of a social and environmental nature)	Internal, normative, medium	(Legrand et al., 2012; Pinto & Allui, 2020; Walker et al., 2008)
Adapting to global trends, following market leaders or other competitors	Internal, subjective, environmental, market, medium	(Agudo-Valiente et al., 2017; Agyemang et al., 2019; Chkanikova & Mont, 2015; Kulatunga et al., 2013; Sajjad et al., 2015; Tura et al., 2019)
Technological development enabling the implementation of solutions	Internal, technological and informational	(Agyemang et al., 2019; Tura et al., 2019)
Support from the headquarters (as part of extensive international structures)	Internal	(Agyemang et al., 2019)
Adaptation to regulations	External, regulatory factors, government, objective, institutional, high	(Agudo-Valiente et al., 2017; Agyemang et al., 2019; Chkanikova & Mont, 2015; Giunipero et al., 2012; Kulatunga et al., 2013; Post & Altman, 2017; Sajjad et al., 2015; Tura et al., 2019; Walker et al., 2008)

## Appendix – continued

<b>Motivator</b>	<b>Classification</b>	<b>Authors</b>
Funding from governmental, international, or other support programs	External, institutional, low	(Kulatunga et al., 2013; Post & Altman, 2017; Tura et al., 2019)
Obtaining environmental or social certificates	External, regulatory factors, institutional, low	(Giunipero et al., 2012; Post & Altman, 2017; Tura et al., 2019)
Buyers' expectations	External, customers, market, medium	(Agyemang et al., 2019; Chkanikova & Mont, 2015; Giunipero et al., 2012; Haddock-Fraser & Tourelle, 2010; Kulatunga et al., 2013; Legrand et al., 2012; Pinto & Allui, 2020; Post & Altman, 2017; Sajjad et al., 2015; Walker et al., 2008)
Improving the company's performance, improving the competitive position	External, competition, market, medium	(Chkanikova & Mont, 2015; Giunipero et al., 2012; Kulatunga et al., 2013; Pinto & Allui, 2020; Sajjad et al., 2015; Walker et al., 2008)
Supplier expectations	External, suppliers, market, resource factors	(Chkanikova & Mont, 2015; Haddock-Fraser & Tourelle, 2010; Legrand et al., 2012; Sajjad et al., 2015)
The growing importance of cooperation and transparency in the supply chain (including international relations)	External, suppliers, subjective, supply chain	(Agudo-Valiente et al., 2017; Agyemang et al., 2019; Tura et al., 2019; Walker et al., 2008)
Improving the company's image	External, market, social, objective, resource factors	(Agudo-Valiente et al., 2017; Chkanikova & Mont, 2015; Kulatunga et al., 2013; Legrand et al., 2012; Pinto & Allui, 2020; Sajjad et al., 2015; Tura et al., 2019; Walker et al., 2008)
Pressure from various groups (communities, NGOs, media)	External, social, value-driven, objective, social	(Agudo-Valiente et al., 2017; Agyemang et al., 2019; Chkanikova & Mont, 2015; Haddock-Fraser & Tourelle, 2010; Pinto & Allui, 2020; Post & Altman, 2017; Sajjad et al., 2015; Tura et al., 2019; Walker et al., 2008)
Risk management	External, social, objective	(Agudo-Valiente et al., 2017; Agyemang et al., 2019; Pinto & Allui, 2020; Sajjad et al., 2015; Walker et al., 2008)

## Appendix – continued

<b>Barriers</b>	<b>Classification</b>	<b>Authors</b>
High implementation costs, lack of financial resources	Internal, cost, economic, resource factors, high	(Agudo-Valiente et al., 2017; Agyemang et al., 2019; Chkanikova & Mont, 2015; Giunipero et al., 2012; Legrand et al., 2012; Pinto & Allui, 2020; Sajjad et al., 2015; Tura et al., 2019; Walker et al., 2008)
Non-compliance with the current goals of the organisation (most often of a financial nature)	Internal, cost, economic, medium	(Agudo-Valiente et al., 2017; Agyemang et al., 2019; Giunipero et al., 2012; Pinto & Allui, 2020; Tura et al., 2019; Walker et al., 2008)
Incompatibility with the current mode of operations	Internal, cost, organizational, low	(Agyemang et al., 2019; Tura et al., 2019)
	Internal, cost, technological and informational, resource factors	(Agudo-Valiente et al., 2017; Agyemang et al., 2019; Chkanikova & Mont, 2015; Legrand et al., 2012; Pinto & Allui, 2020; Tura et al., 2019; Walker et al., 2008)
Lack of knowledge about possible solutions	Internal, cost, technological and informational, resource factors	(Agyemang et al., 2019; Chkanikova & Mont, 2015; Kulatunga et al., 2013; Legrand et al., 2012; Pinto & Allui, 2020; Sajjad et al., 2015; Tura et al., 2019; Walker et al., 2008)
Difficulties in implementation and management	Internal, cost	(Agyemang et al., 2019; Kulatunga et al., 2013; Legrand et al., 2012)
Lack of appropriate infrastructure and technological solutions	Internal, technological and informational	(Agyemang et al., 2019; Sajjad et al., 2015; Tura et al., 2019)
Lack of support from employees, managers	Internal, lack of legitimacy, medium	(Agyemang et al., 2019; Giunipero et al., 2012; Kulatunga et al., 2013; Sajjad et al., 2015)
Lack of interest from shareholders	Internal, lack of legitimacy	(Pinto & Allui, 2020)
Functional organizational structure	Organizational	(Tura et al., 2019)
No government support, inadequate legal regulations	External, regulatory factors, institutional, supply chain, medium	(Agudo-Valiente et al., 2017; Agyemang et al., 2019; Chkanikova & Mont, 2015; Giunipero et al., 2012; Kulatunga et al., 2013; Pinto & Allui, 2020; Sajjad et al., 2015; Tura et al., 2019; Walker et al., 2008)

## Appendix – continued

<b>Barriers</b>	<b>Classification</b>	<b>Authors</b>
Lack of customer interest	Social, market	(Chkanikova & Mont, 2015; Kulatunga et al., 2013; Pinto & Allui, 2020; Sajjad et al., 2015; Tura et al., 2019)
Suppliers are not ready for implementation	External	(Pinto & Allui, 2020; Sajjad et al., 2015)
Conflict, unwillingness to cooperate and ambiguities regarding responsibility in the supply chain	External, poor supplier commitment, supply chain, medium	(Agyemang et al., 2019; Tura et al., 2019; Walker et al., 2008)
Conservative industry habits	External, industry specific, low	(Agudo-Valiente et al., 2017; Agyemang et al., 2019; Tura et al., 2019; Walker et al., 2008)
National culture, lack of social awareness	Social, low	(Giunipero et al., 2012; Kulatunga et al., 2013; Tura et al., 2019)