



## COMPETITIVE INSTRUMENTS PREFERRED BY CUSTOMERS VERSUS THE LEVEL OF PRO-ENVIRONMENTAL ACTIVITIES IN A SUPPLY CHAIN

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**ABSTRACT. Background:** The development of competitive advantage through the implementation of green supply chains is an interesting and a desirable way of the company's development from the perspective of social requirements. However, it is not always reflected in the requirements, which are posed by the market. The objective is therefore to conduct empirical studies as well as to design a model, which shall identify the relationships between the supply chain level of the engagement in pro-environmental activities and competitive instruments preferred by customers.

**Methods:** In order to conduct the research, we conducted direct interviews with the use of a survey questionnaire. The subjects of the survey were medium and big production enterprises located in Wielkopolskie Voivodship.

**Results and conclusions:** One of the findings of the conducted research, among others, was the conclusion that imposing pro-environmental demands from the side of direct customers leads to a higher level of company's engagement in this area. At the same time, we determined that the market requirements regarding environmental aspects are low. Therefore, there's an urgent need to develop some incentives, which are activating in this area of suppliers.

**Key words:** green supply chain, competition, sustainable supply chain.

### INTRODUCTION

In the source literature, the issue of competitiveness and pro-environmental activities in supply chains is usually discussed in the framework of the competitiveness of the studied companies and their supply chains. In these discussions, competitiveness represents the company's potential, such as resources, skills and capacity, which provide advantage over other enterprises. At the same time, in these studies, it is proved that the implementation of green activities in a supply chain has got a positive influence not only on external stakeholders, but also allows the enterprises, which collaborate in this area, to build their competitive advantage.

Among others, Yang et al. [2013] prove that internal green practices and external green collaboration have positive impacts on green performance, which in turn helps to enhance firm competitiveness. [Yunus and Michalisin2016] They explain, why green supply chain management (GSCM) practices are capable of possessing the characteristics of strategic assets and distinctive competencies, respectively, and thus are sources of sustainable competitive advantage. Longoni and Cagliano[2015] show to companies that traditional operations strategies focusing on specific competitive priorities (e.g. low price) are being replaced by more holistic strategies that include sustainability priorities and also by these, which focus on pro-environmental activities. On the other hand, Chiou et al. [2011] think that greening the suppliers leads

to green innovation and competitive advantage. Green product innovation significantly positively affects both firm performance and competitive capability. Ar [2012] comes to the similar conclusions. He thinks that green product innovation significantly positively affects both firm performance and competitive capability. Masoumiket al. [2014] concludes, on the basis of the literature review that the most research points to the positive relationship between operations concerning green activities and the gained competitive advantage. Moreover, these authors design a model involving the investigation of the relationships between pro-environmental activities and each element of a competitive advantage.

Discussions continue also with reference to the theories, which support the explanation of the phenomena in the area of GSCM. These theories are, among others, natural RBV, resource-based view, NRBV [Yunus and Michalisin 2016] stakeholder and resource orchestration theories [Wong et al. 2015].

The studies include the view on the covered issues from the perspective of the advantages gained by a company.

It is an extremely valuable, but relatively narrow framework, because it doesn't present the conditions of competition.

Thus, in this research, we apply a proprietary research perspective, which aim is to design a model enabling to identify the relationships between the level of the engagement in the pro-environmental activities of companies along the supply chain and the competitive instruments preferred by customers. The adopted objective has, above all, a descriptive and explorational character. The implementation of this objective is vital not only from the perspective of science, but also from the perspective of business practice. Competitive factors adding up to competitive areas may either limit pro-environmental activities of enterprises or stimulate them. Thus, discovering these factors will allow to give the right direction to the policy of environmental protection both on macro- and microeconomic level.

In this study, "competitive factors" are alternatively called "competitive instruments", however, in the source literature, "competitive instruments" are usually specified as one of several elements making up competitive factors.

Therefore, determining whether enterprises with a higher level of engagement in pro-environmental activities in a supply chain operate in a different type of market conditions, i.e. whether they meet expectations of a different type – we take as the research problem.

Giving the answer to the above question requires investigating:

- What areas of pro-environmental activities in a supply chain are popular among enterprises and what is the level of these activities?
- Does the market environment and specifically the institutional customers of products impose pro-environmental demands on their suppliers and what is the position of these demands relative to other demands?
- What are the relationships between the covered activities and competitive factors?

It is the approach valuable from the scientific perspective, but also because, apart from standard competitive factors in a supply chain [Li et al. 2004; Mathuramaytha 2011], the research includes factors, which are related to environmental protection.

The enterprises, on which people impose demands not only related to price, costs, time and other types of standard competitive instruments, but also related to environmental protection [Chun et al. 2015], are probably stimulated to develop in such direction of activities. Thus, in this study, we formulated the following assumptions:

- general level of the implementation of pro-environmental activities differentiates enterprises in terms of the priority of competitive instruments,
- implementation level of pro-environmental activities in each activity type (area) differentiates enterprises in terms of the priority of competitive instruments.

## OPERATIONALIZATION OF THE RESEARCH

The pro-environmental activities, which are undertaken in horizontally integrated enterprises, are the key element of green supply chain management. In this study, we apply a proprietary definition, according to which, green supply chain management consists in: product designing and managing product flow up and down the supply chain by the participants of these processes, with particular focus to the need of environmental protection.

These activities are all kinds of activities, which are undertaken for environmental protection from the stage of product design, through its moving in the whole supply chain, to the stage of the bottom-up flow in a supply chain. Green supply chain management is at the same time a part of sustainable supply chain management (SSCM). Carter and Rogers [2008] broadly define SSCM as: the strategic, transparent integration and achievement of an organization's social, environmental, and economic goals in the systemic coordination of key interorganizational business processes for improving the long-term economic performance of the individual company and its supply chains. Pro-environmental activities are also the element of an even broader concept, which is commonly known as sustainable development, also called the concept of triple bottom line.

We tried to confront the scope of the activities described with the competitive factors, which are preferred by customers.

Competitiveness originates from competition and is its element. Competitiveness is the capacity of the entity to compete. Competitive analysis consists in identifying competitive areas and factors building the competitiveness of a company. As a result of their implementation and meeting the market conditions, enterprises try to gain the competitive advantage in various dimensions.

Activities performed in green supply chains and competitive factors, vital from

the perspective of suppliers, have been identified on the basis of the source literature review, including in particular the studies systematizing the knowledge on GSCM [Wong et al. 2015] and publications, in which competitive factors in supply chains are discussed [Urbańczyk 2012].

Among the activities, the following areas (types) with the sample tests items can be distinguished:

- conducting supplier audits of environmental compatibility in the area „activities addressed to the suppliers”,
- having a systemic, long-term programme aiming at undertaking pro-environmental activities on the line supplier – enterprise in the area “managing suppliers”,
- creating the possibility for customers to check whether the company's suppliers meet the environmental requirements in the area “activities on the line enterprise – customer”,
- collaborating with the suppliers, for whom environmental criteria are vital in the process of supplier selection in the area „managing in the line enterprise – customer”,
- developing the policy of using warehouse infrastructure, which includes pro-environmental solutions in the area “logistics”,
- planning logistic network including environmental criteria in the area „managing the supply chain”,

In all, we selected thirty-seven test items, which make up eight constructs.

In this study, we also identified the competitive factors (in the literature also known as competitive instruments), which can be presented in a condensed form as constructs making up thematic areas. For example:

- timeliness of deliveries, flexibility of deliveries in the area „delivery performance”,
- geographic proximity, providing logistic services by the supplier in the area “delivery conditions”
- prices of the products offered, sufficient range of products in the area “product”,

- stabilized financial situation of the company, company's image and brand in the area "market"
- expected solid partnership in conflict situations, trust in the area „relations”,
- business opportunities in pro-environmental activities, possibility of environmental control over lower tier suppliers in the area "environment".

In all, we selected twenty-eight test items, which make up six constructs.

The test items were measured on Likert's five-point scale, where for each activity "1" represents a very low level of implementation, whereas "5" – a high level of implementation. While for competition "1" represents "very low priority", whereas "5" represents „very high priority".

The subjects of the research were large and medium production enterprises in Wielkopolskie Voivodship, which were randomly selected from the database bought in the Central Statistical Office. Among 180 randomly selected records, 73 entities correctly completed the survey.

## AREAS OF PRO-ENVIRONMENTAL ACTIVITIES AND COMPETITIVE FACTORS IN A SUPPLY CHAIN – RESEARCH RESULTS

To make the comparison of mean values, in the groups tested with the use of the analysis of variance, statistically sound, we should first evaluate, whether the variables have distributions approximate to normal. For this purpose, we used Shapiro-Wilk test. The mean summary values, standard deviations, values of S-W test and their statistical significance as well as Cronbach's coefficient alpha for pro-environmental activities and competitive instruments are presented in Table 1. (The reason why we chose Shapiro-Wilk test instead of the most commonly used Kolmogorov–Smirnov test are recommendations of some researchers, who think that the first test is the most accurate among the four most commonly used tests in statistical analysis: Kolmogorov–Smirnov, Shapiro-Wilk, Lilliefors test, Anderson-Darling test, regardless of the size of the group tested [Razali and Wah 2011]).

Table 1. Descriptive statistics, S-W test and Cronbach's alpha for the level of the implementation of pro-environmental activities and the priority of different competitive factors

Tabela 1. Statystyki opisowe, test S-W oraz  $\alpha$  -Cronbacha dla poziomu implementacji aktywności środowiskowych oraz ważności różnych czynników konkurencyjności

Constructs	<i>M</i>	<i>SD</i>	<i>S-W</i>	<i>p</i>	<i>α</i>	
Activity	General	117,6	25,51	0,987	0,634	0,94
	Activities addressed to the suppliers	15,07	4,84	0,964	0,033*	0,84
	Managing suppliers	12,68	3,23	0,967	0,053	0,68
	Activities on the line enterprise – customer	14,89	4,81	0,973	0,122	0,85
	Managing in the line enterprise – customer	12,29	3,27	0,986	0,622	0,62
	Logistics	16,62	4,21	0,982	0,363	0,80
	Supply chain	14,53	4,49	0,978	0,231	0,76
	Product/ package – structure	18,74	4,16	0,958	0,017*	0,77
	Product/ package – supply chain	12,78	3,62	0,978	0,217	0,72
Instruments of competition	Delivery efficiency	22,18	2,56	0,845	0,000*	0,80
	Environment	14,51	4,64	0,979	0,000*	0,89
	Market	19,41	3,17	0,955	0,274	0,71
	Product	18,82	3,19	0,960	0,011*	0,70
	Relations	15,26	2,48	0,967	0,021*	0,67
	Delivery conditions	15,45	2,40	0,966	0,054	0,42

\* significant Shapiro-Wilk test values indicating that the distribution is not normal

Due to unacceptable internal consistency of one of the constructs, we will not consider delivery conditions as a competitive instrument in further analysis. The other values range from  $\alpha = 0,62$  to  $\alpha = 0,94$ , so from acceptable

to excellent level of consistency, which allows to include them in the further analysis.

In the Chart 1 below, we show the mean values of the implementation level of pro-

environmental activities in different areas for all companies (where “1” represents “very low

level”, whereas “5” represents “very high level” of implementation).

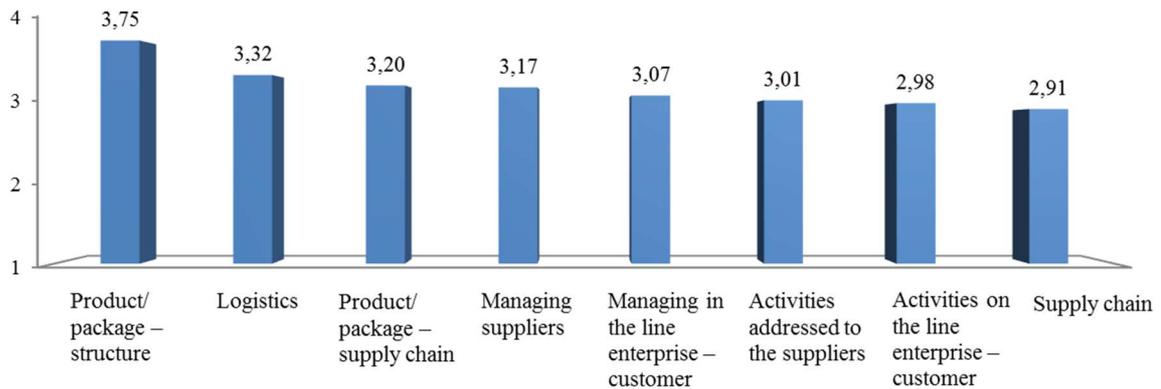


Fig. 1. Level of pro-environmental activities in a supply chain in each thematic area

Rys. 1. Poziom aktywności prośrodowiskowe w łańcuchu dostaw w poszczególnych tematycznych obszarach

Among the surveyed enterprises, the highest level of pro-environmental activities relates to: operations concerning packaging and product at the level of a chain element and the supply chain (for example: collaborating with suppliers in order to develop environmentally-friendly products, efforts to eliminate harmful substances from products), logistic operations (for example: developing the policy of using environmentally-friendly warehouse infrastructure). The lowest level of engagement relates to general aspects

concerning supply chain management (for example: supply chain risk analysis in the context of the natural environment).

In the Chart 2 below, by analogy, we show the mean values of the priority of each competitive instrument for all companies (where “1” represents “very low priority”, whereas “5” represents “very high priority” of the instrument).

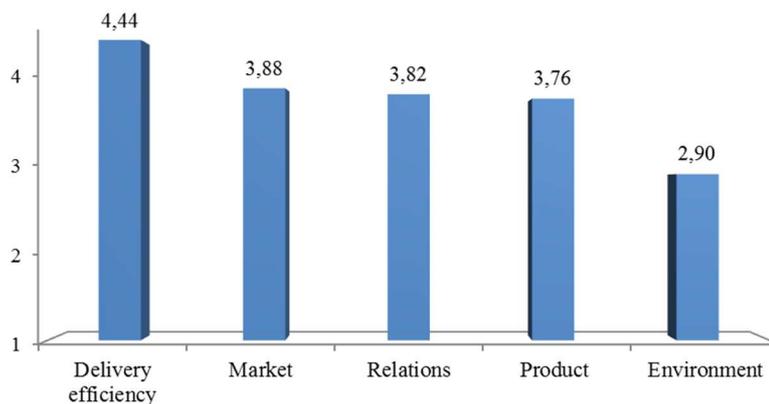


Fig. 2. Priority of competitive instruments for institutional customers of production companies

Rys. 2. Znaczenie elementów konkurencyjności dla instytucjonalnych odbiorców towarów produkcyjnych

The results show that market factors and delivery performance have the highest priority for the customers of the production companies surveyed. However, the values from each area are convergent, with the exception to the

environmental factors, which currently are not so important when choosing market partners from the upper levels of a supply chain.

## LEVEL OF THE IMPLEMENTATION OF PRO-ENVIRONMENTAL ACTIVITIES VERSUS COMPETITIVE FACTORS – RESEARCH RESULTS

In the course of the further tests, we formulated detail hypotheses according to the thematic areas making up each construct.

In the first group of the hypotheses we assume that:

*the general level of the implementation of pro-environmental activities differentiates enterprises in terms of the priority of the following competitive instruments:*

- H1. delivery performance
- H2. environment
- H3. market
- H4. product
- H5. relations

In the second group of the hypotheses we identify the following detail hypotheses:

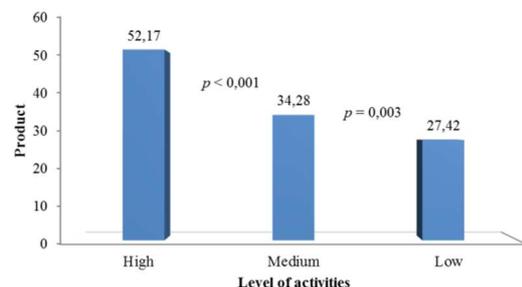
*The level of the implementation of the pro-environmental activities concerning operations focused on suppliers differentiates enterprises in terms of the priority of the following competitive instruments:*

- H6.1. delivery performance
- H6.2. environment
- H6.3. market
- H6.4. product
- H6.5. relations

By analogy, we formulate the hypotheses according to the areas of the pro-environmental activities related to: supplier management (H7.1-H7.5), operations focused on customers (H8.1-H8.5), customer management (H9.1-H9.5), logistics (H10.1-H10.5), supply chain (H11.1-H11.5), product structure (H12.1-H12.5), product management in a supply chain (H13.1-H13.5).

To verify the hypotheses, we divided the enterprises tested with regard to the level of the implementation of pro-environmental activities with the use of quartiles, which, as a result, allowed to distinguish the 3 levels: high, medium and low. This procedure was applied for the general level of the activities and for the activities in each area.

Subsequently, we conducted single variant analysis, in order to test H2 and H5 and we proved that the level of the implementation of pro-environmental activities differentiates enterprises in terms of the significance of the environment as a competitive instrument in collaboration decision-making process for a direct customer  $F(2, 70) = 16,99$ ,  $p < 0,001$ ,  $\eta^2 = 0,33$ . (Interpretation of Eta-squared effect size coefficient:  $\eta^2 = 0,02$  weak effect,  $\eta^2 = 0,13$  medium effect,  $\eta^2 = 0,26$  strong effect). Interpreting Eta-squared, we may claim that the effect is strong. The enterprises, in which the level of the implementation of pro-environmental activities is high, focus more on the environment as a competitive instrument in the process of beginning the collaboration with a direct customer ( $M = 18,44$ ,  $SD = 4,45$ ) than the enterprises, in which the level of the implementation of these activities is medium ( $M = 14,32$ ,  $SD = 3,31$ ) or low ( $M = 10,94$ ,  $SD = 4,31$ ). The mean values and variance are shown in the chart. H2 was confirmed by the data.



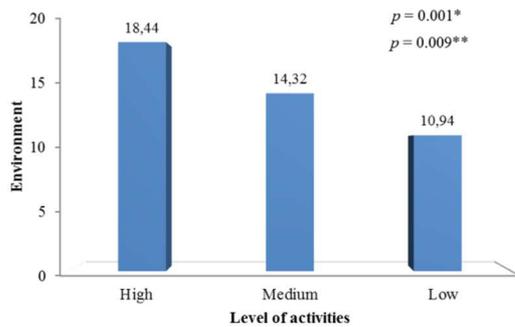
\* mean differs at the level of  $< 0,05$

Fig. 3. Descriptive statistics for data: the level of activity vs. product

Rys. 3. Statystyki opisowe dla danych: poziom aktywności – produkt

Subsequently, we conducted Kruskal-Wallis test for variables, which distributions differ from normal distribution and verified H1, H3 as well as H4. It turned out that the level of the implementation of pro-environmental activities differentiates enterprises in terms of the significance of a product as a competitive instrument in collaboration decision-making process for a direct customer  $H(I) = 13,69$ ,  $p = 0,001$ . The enterprises, in which the level of the implementation of pro-environmental activities is high, focus more on the product as a competitive instrument in the process of

beginning the collaboration with a direct customer (rank 52,17) than the enterprises, in which the level of the implementation of these activities is medium (rank 34,28) or low (rank 27,42). The rank values for each level of the implementation of the activities are shown in the chart (Chart 3 and Chart 4). H4 was confirmed.



\*Significance of a variance from 1 to 3 gr  
 \*\* Significance of a variance from 1 to 2 gr

Fig. 4. Descriptive statistics for data: the level of activity vs. environment  
 Rys. 4. Statystyki opisowe dla danych: poziom aktywności – środowisko

When analysing the data divided into thematic areas of the activities, we conducted

single variance analysis for these areas and competitive instruments, which have normal variable distributions. We tested the following hypotheses: H7.2, H7.5, H8.2, H8.5, H.9.2., H9.5, H10.2, H10.5, H11.2, H11.5., H32.2, H13.5. In all cases, the level of the implementation in each area of the activities differentiates enterprises in terms of the significance of the environment as a competitive instrument. The results for each area of the activities are as follows: suppliers – management  $F(2, 70) = 11,935$ ,  $p < 0,001$ ,  $\eta^2 = 0,245$ , customers – activity  $F(2, 70) = 7,89$ ,  $p < 0,001$ ,  $\eta^2 = 0,26$ , customer – management  $F(2, 70) = 4,45$ ,  $p = 0,015$ ,  $\eta^2 = 0,113$ , logistics  $F(2, 70) = 7,47$ ,  $p = 0,001$ ,  $\eta^2 = 0,176$ , supply chain  $F(2, 70) = 11,90$ ,  $p < 0,001$ ,  $\eta^2 = 0,254$ , product and packaging - ŁD  $F(2, 70) = 15,52$ ,  $p < 0,001$ ,  $\eta^2 = 0,307$ . To check, which levels of the implementation of the pro-environmental activities differentiate enterprises in terms of the significance of the environment as a competitive instrument, we used post-hoc Least Significant Difference test. It is the most commonly used post hoc test for variance analysis. The results are presented in Table 2.

Table 2. Results of post-hoc Least Significant Difference test  
 Tabela 2. Wyniki testu post hoc NIR

		Environment
Managing suppliers	high	$M = 16,54, SD = 4,3$
	medium	$M = 15,57, SD = 3,9^*$
	low	$M = 11,29, SD = 4,0$
Activities on the line enterprise – customer	high	$M = 17,11, SD = 4,7^*$
	medium	$M = 11,30, SD = 4,0$
	low	$M = 12,42, SD = 4,4$
Managing in the line enterprise – customer	high	$M = 16,84, SD = 5,5^*$
	medium	$M = 14,33, SD = 3,4$
	low	$M = 12,67, SD = 4,7$
Logistics	high	$M = 16,80, SD = 4,2^*$
	medium	$M = 14,41, SD = 4,1^*$
	low	$M = 11,90, SD = 4,4$
Supply chain	high	$M = 18,10, SD = 3,6^*$
	medium	$M = 13,96, SD = 3,7$
	low	$M = 12,24, SD = 4,7$
Product and package	high	$M = 18,00, SD = 4,6^*$
	medium	$M = 14,62, SD = 3,4^*$
	low	$M = 11,00, SD = 4,0$

\* We identified the least significant differences  $p < 0,05$  with a cell below in each area of the activities

Hypotheses H7.2, H8.2, H.9.2, H10.2, H.11.2, H13.2. were therefore confirmed by the analysed data.

Subsequently, we conducted Kruskal-Wallis test for variables, which distributions

differ from normal. In this way, we verified the following hypotheses: H.6.1-H6.5., H7.1, H7.3, H.7.4, H8.1, H8.3, H.8.4, H9.1, H9.3, H.9.4, H.10.1, H.10.3., H10.4, H.11.1, H.11.3., H11.4, H12.1.5-H.12.5, H13.1., H13.3, H13.4. We discovered that the level of

the implementation in such areas as: suppliers – activity, product and packaging – structure significantly differentiates enterprises in terms of the significance of the environment as a competitive instrument, respectively:  $H(I) = 6,02$ ,  $p = 0,049$  and  $H(I) = 6,36$ ,  $p = 0,041$ . The enterprises, in which the level of the implementation of pro-environmental activities is high in the area: suppliers - activity, focus more on the environment as a competitive instrument in the collaboration decision-making process for a direct customer (rank 46,02) than the enterprises, in which the level of the implementation of these activities is low (rank 30,25).

Identical relationship we found in the area: product and packaging – structure: high level (rank 46,5) versus low level (rank 29,92). Therefore, the hypotheses H.6.2 and H12.2 were confirmed. Also, we discovered that the level of the implementation in the area suppliers – activity significantly differentiates enterprises in terms of the significance of the product as a competitive instrument  $H(2) = 6,45$ ,  $p = 0,040$ . The enterprises, in which the level of the implementation of pro-environmental activities is high in the area: suppliers - activity, focus more on the product as a competitive instrument in the collaboration decision-making process for a direct customer (rank 46,14) than the enterprises, in which the level of the implementation of these activities is low (rank 29,39). Therefore, H6.4 was confirmed.

## **RESULTS AND PROPOSAL OF FUTURE RESEARCH**

Through our reflections in this study, we tried to expand the knowledge in the field of management, including in particular green supply chain management. It is believed that the creation of pro-environmental activities in horizontally-integrated companies can be a critical success factor in supply chain management [Ab Talib et al. 2015]. In this study, we assume that apart from typical motivators supporting the implementation of GSCM [Malviya and Kant 2016] the market requirements of customers are equally important.

Because of the conducted research, among others, we identified the competitive factors, which are vital from the perspective of the supplier's choice, taking into considerations the environmental factors. It is a rare approach [Wu and Barnes 2016], since in such studies as this one, usually only pure business factors are included. Based on the research, we proved that the factors connected with environmental protection are of marginal significance and compared to other requirements, which suppliers meet are placed at the very end positions. In this study, we also distinguished pro-environmental actions using their proprietary classification, which definitely includes a broader set of the tested items than we can meet in the source literature. We determined that in the field of the environmental actions, companies engage mostly in the development of packaging and products. Moreover, based on the tests with the use of the proprietary model, we assumed that imposing pro-environmental demands by customers is related to the higher level of the engagement of companies in the area discussed. We currently notice the discord between the global pro-environmental trends in supply chains (broadly discussed in the source literature) and competitive conditions, in which the companies located in Poland operate. Perhaps the consolidation of the analyses using the positioning approach (developed by Michael Porter), including the analysis of the industry character (presented in numerous studies [Kusi-Sarpong et al. 2015; Chiu and Hsieh 2016; Aziz et al. 2016]) and emphasizing the importance of the environment, in which companies operate - would provide a partial explanation of the existing situation and would allow to develop some countermeasures.

Finally, broadening the analyses in the scope of competitive potential, competitive advantages and competitive position, which weren't included in this study, would be much more important from the research point of view [Stankiewicz 2005].

At the current stage of the research, we can say that suppliers should be activated in the discussed area of actions.

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## INSTRUMENTY KONKUROWANIA PREFEROWANE PRZEZ ODBIORCÓW VERSUS POZIOM AKTYWNOŚCI PROŚRODOWISKOWYCH W ŁAŃCUCHU DOSTAW

**STRESZCZENIE. Wstęp:** Wypracowanie przewagi konkurencyjnej drogą implementacji zielonych łańcuchów dostaw jest interesującą i pożądaną z punktu widzenia społecznych oczekiwań drogą rozwoju przedsiębiorstw, niemniej nie zawsze ma to odzwierciedlenie w wymaganiach, jakie stawia rynek. W związku z powyższym celem podjętych rozważań jest opracowanie modelu umożliwiającego zidentyfikowanie zależności występujących między stopniem zaangażowania przedsiębiorstw w działalność prośrodowiskową realizowaną wzdłuż łańcucha dostaw, a instrumentami konkurowania preferowanymi przez odbiorców oraz przeprowadzenie badań empirycznych.

**Metody:** W celu przeprowadzenia badań przeprowadzono wywiady bezpośrednie na podstawie kwestionariusza ankiety. Podmiotem badań były średnie i duże przedsiębiorstwa produkcyjne zlokalizowane w województwie wielkopolskim.

**Rezultaty i wnioski:** W wyniku przeprowadzonych badań między innymi ustalono, iż stawianie wymagań prośrodowiskowych ze strony bezpośrednich odbiorców wiąże się z wyższym poziomem zaangażowania przedsiębiorstw w omawianym obszarze zagadnień. Jednocześnie stwierdzono, że oczekiwania rynkowe dotyczące aspektów środowiskowych są niskie. Istnieje zatem pilna potrzeba wypracowania bodźców aktywizujących w tym obszarze odbiorców.

**Słowa kluczowe:** zielony łańcuch dostaw, konkurencja, zrównoważony łańcuch dostaw.

## **DIE AKZEPTANZ VON UMWELTBASIERTEN WETTBEWERBS-STRATEGIEN BEI VERBRAUCHERN IM VERHÄLTNIS ZU AUSGEWÄHLTEN PRO-UMWELT-AKTIVITÄTEN IN DER HERSTELLUNGS- UND LIEFERKETTE**

**ZUSAMMENFASSUNG. Einleitung:** Die Erarbeitung des Wettbewerbsvorteils in Form der Implementation von grünen Lieferketten ist ein interessanter und aus der Sicht der sozialen Erwartungen erwünschter Weg der Unternehmensentwicklung, dennoch findet dies nicht immer eine Widerspiegelung in den Anforderungen, die der Markt stellt.

Im Zusammenhang damit ist das Ziel der angenommenen Überlegungen die Bearbeitung eines Modells, das die Identifizierung von Abhängigkeiten hinsichtlich der Engagement-Skala der betreffenden Betriebe in die Umwelttätigkeit gemäß der Lieferkette und den von Empfängern bevorzugten Konkurrenzmitteln sowie eine Durchführung von empirischen Untersuchungen ermöglicht.

**Methoden:** Für die Zwecke der Erforschung der Problemstellung wurde ein Fragebogen erstellt, der auf Interviews beruhte. Gegenstand der Forschung waren mittelgroße und große Fertigungsunternehmen von der Region Wielkopolska (Großpolen).

**Ergebnisse und Fazit:** Als Ergebnis der Studie wurde unter anderem festgestellt, dass die Umweltaanforderungen seitens der Verbraucher mit einem höheren Grad der Beteiligung der einzelnen Unternehmen an der Lösung der Problemstellungen im betreffenden Bereich zusammenhängen. Es wurde ferner festgestellt, dass die Markterwartungen, die Umweltaspekte anbetreffen, als niedrig wahrgenommen werden. Es besteht demzufolge eine dringende Notwendigkeit, die in diesem Bereich die Empfänger aktivierenden Anreize zu erarbeiten.

**Codewörter:** grüne Lieferkette, Wettbewerb, nachhaltige Lieferkette

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