



## SUPPLY CHAIN COLLABORATION AND COST SAVING AS A RESULT OF RETURNS HANDLING PROGRAMMES IN RETAIL CORPORATIONS IN POLAND

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**ABSTRACT. Background:** The objective is to define on the basis of the literature as well as to test empirically the main factors that affect the cost saving of many retail chains, resulting from deliberate and conscious policies as well as organized activities in the area of product returns management.

**Methods:** Based on a survey developed for the study, standardized interviews were conducted with representatives of trade corporations in the apparel industry in Poland. The data collected were analysed statistically.

**Results:** The results of the statistical analysis showed that the analysed factors had a significant impact on cost saving. A company's ability to cooperate in the supply chain, limited for the purposes of the study to the distributor - retailer relationship, is relevant to the cost savings resulting from the policies of retail corporations in the area of reverse logistics. The integration of IT systems with suppliers and customers also influences the level of cost saving, as does collaboration within a team.

**Conclusions:** To date, studies in this field have not been conducted in Poland. A particularly important element seems to be the relationship between cooperation in the supply chain and the possible savings which this can generate. This study contributes to the growing trend of research into reverse logistics and emphasizes the role of retailers and cooperation in the supply chain.

**Key words:** returns handling, supply chain collaboration, clothing industry, cost savings.

### INTRODUCTION TO REVERSE LOGISTICS

Reverse logistics is an issue well-known to sales managers. In retail chains there are sometimes deliveries which do not comply with orders, the shelf stock may be too large, sales forecasts may turn out to be too optimistic, or an unprofitable outlet in a certain location is closed down, which means that any unsold goods have to be transferred to other shops. Returns can also be connected with errors in orders, errors in quantity, double shipments, incomplete shipments, problems in transport, or inter-warehouse transfers [Rogers, Tibben-Lembke 1999]. Reverse logistics

applies not only to FMCG goods, but also to seasonal goods and goods which are susceptible to fashion. The clothing industry is an example of the latter.

At the beginning of the supply chain there are suppliers of fabrics and accessories. Other links are designers, who prepare collections. In manufacturing plants, after consultations with designers, production plans are developed and orders are made of the raw materials necessary for production. Then the sales departments send batches of clothes to subsequent links, the distributors and shops.

Typically, designers and the teams responsible for preparing collections and

marketing prepare and bring to market two collections of clothing every year: spring-summer (March-August) and autumn-winter (August-October). Visible fluctuations in sales are associated with the periods of end-of-season sales and pre-holiday periods, when sales tend to grow. In the fashion industry it is important to predict the preferences and tastes of customers. Collections which are designed according to current fashion trends guarantee high sales.

Selling a new collection of clothes is inevitably accompanied by uncertainty. It is therefore important that the distributor and shops exchange information regarding the level of sales as well as each product category. Sharing information and systematic analyses allow them to modify the sales policy, manage inventory and plan promotional campaigns.

The level of product returns from the point of view of cooperation between the different actors in the supply chain is affected by factors such as new product development, sales forecasts, promotional campaigns, purchasing policy, production, trading conditions and product life cycle [Bernon, Cullen, and Gorst, 2008]. In the clothing industry it is important to adjust the inventories of seasonal products between warehouses and stores, as well as the unsold goods that a retailer (distributor) is entitled to return as the spring/summer and autumn/winter seasons change.

From the point of view of the consumer, in turn, manufacturers' guarantees and the possibility of making a complaint are important. Increasingly, the sales of products depend on these factors. Especially in the case of catalogue and online sales, but also in traditional stores, it often happens that customers buy a few items on the assumption that after trying them on at home they will return some of them to the shop.

Today, shopping has also become a way of life, where the sensation of pleasure experienced while walking around the shops is the main goal. Thus, customers spend a lot of time searching for appropriate clothing that will highlight their personality, prestige, or their membership of the particular social group with which they identify. Clothes should be an

expression of certain beliefs, opinions, and tastes; and emotions often outweigh usefulness. Liberal product returns policies implemented by shops allow indecisive customers to alter their decisions and return or exchange goods for up to one month after purchase. In this industry goods are rarely returned because of product damage or defects. On the other hand, retail chains sometimes get so called end-of-life products. An example of this can be the action of a chain of underwear shops, which in return for bringing worn garments offered discounts on a new collection.

All the aspects related to the movement of goods in a direction opposite to that which managers would wish for require more attention. Apart from the fact that the whole process requires ordering and formalising, it is also worth considering whether a conscious policy of retail chains in respect of returns management leads to savings. To this end, an empirical study has been conducted.

## **LITERATURE REVIEW AND RESEARCH CONCEPT**

An overview of research reports in the field of reverse logistics in foreign logistics journals led to identifying the key variables for the study of potential savings as well as their operational definitions. Based on the literature, the factors, together with the statements that describe them, which may be relevant for explaining any savings resulting from a deliberate and conscious returns management policy conducted by retail chains in the clothing industry were determined. These include: collaboration in the supply chain; the experience and competence of sellers; and the degree of computerization in handling returns.

In the analysis of the experience and competence of sellers the following statements were used: experienced and knowledgeable staff; competent management; skilled consultants and trainers; support from senior executives; team collaboration; a sufficient number of employees [Ho, 2012].

Collaboration in the supply chain is described by the following indicators: the accuracy of the information which is exchanged; joint access to databases; using inventory data available online; access to information from warehouses; trust between partners; long-term contracts; well-defined objectives, scope and responsibilities within any cooperation; joint arrangements for planning and forecasting; jointly agreed performance indicators; sharing risks and benefits with partners [Olorunniwo, Li 2010].

The degree of computerization of returns handling can be described by the following statements: passing information to all units of the company; prompt handling of returns procedures; effective planning of returns; effective handling of returns operations on a daily basis; the system is integrated with suppliers and recipients [Olorunniwo, Li 2010].

Savings as a theoretical construct are presented in the form of the following statements: we save a lot because of our returns operations; our returns policy improves our cost position relative to competitors; our reverse logistics programme results in considerable savings; our methods of dealing with returns incur lower costs associated with environmental protection [Jack, Powers, Skinner, 2010].

## RESEARCH SAMPLE

A questionnaire was designed based on the literature and interviews with the personnel of retail chains. Data were collected by students of Domestic and International Logistics at Poznań University of Economics. Out of 117 questionnaires 12 were excluded for formal reasons, leaving a total of 105 interviews to be included in the analysis. Quantitative research was conducted on a sample of retail chains operating in the clothing industry in Poland based on a directory of retailers. Taking into account the objectives of the study, standardised interviews were conducted with senior management staff representing the analysed retail chains. The research tool was a standardised interview questionnaire. The study was conducted in March and April 2013

on a sample of store managers of clothing industry.

## RESULTS, ANALYSIS AND DISCUSSION

To date, studies relating to the factors which affect the savings resulting from a returns management policy have not been conducted in Poland. The aim of this study is to test the correlation of the individual questions and the dependent variable - savings, understood as a potential for improving financial results. Thus, the correlation of individual questions (independent variables) and the dependent variable (the savings construct) was analysed. A particularly important element seems to be the relationship between cooperation in the supply chain and any possible savings resulting from deliberate and organized activities (a deliberate policy of a retail chain) in the area of reverse logistics.

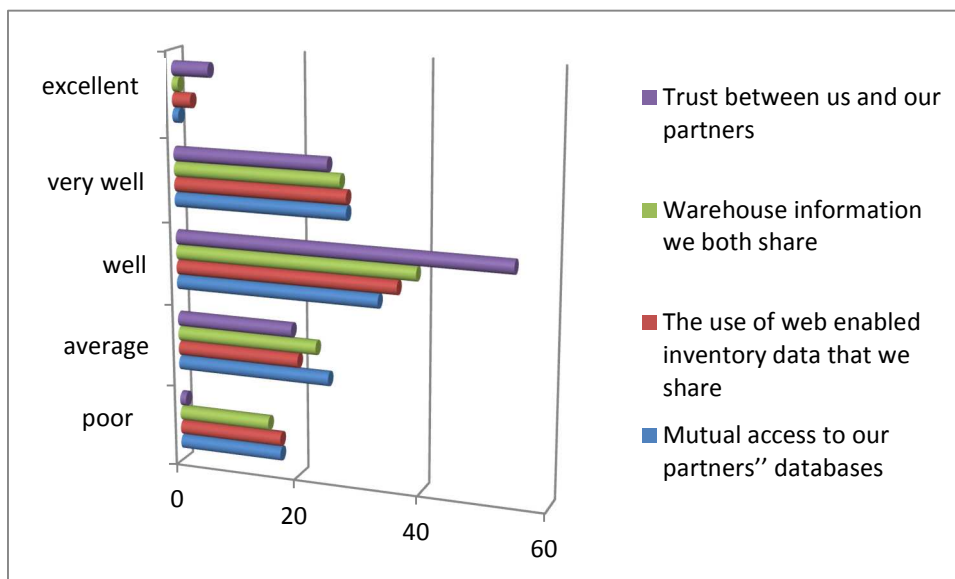
Collaboration in the supply chain was assessed in terms of the flow of information and practical cooperation, which is reflected in the choice of indicators describing joint planning in the field of logistics. The choice of such a set of indicators was dictated by the fact that information on stock levels and prior agreements between the supplier and the recipient at managerial level are crucial for effective cooperation between the various links in the supply chain: the supplier and the recipient and the logistics operator.

The results of the study (fig.1) indicate that the area of information exchange and the related area of trust are rated by employees as "well" with a tendency towards "Very well" (between 60 and 80% of indications) for all the predefined indicators. The sales personnel particularly highly evaluated the accuracy of the information exchanged and trust between partners.

Joint forecasting and planning, well-defined goals and scope of cooperation, joint performance indicators and the sharing of risks and benefits with partners as indicators measuring operational cooperation were generally evaluated as "Good" (over 50% of

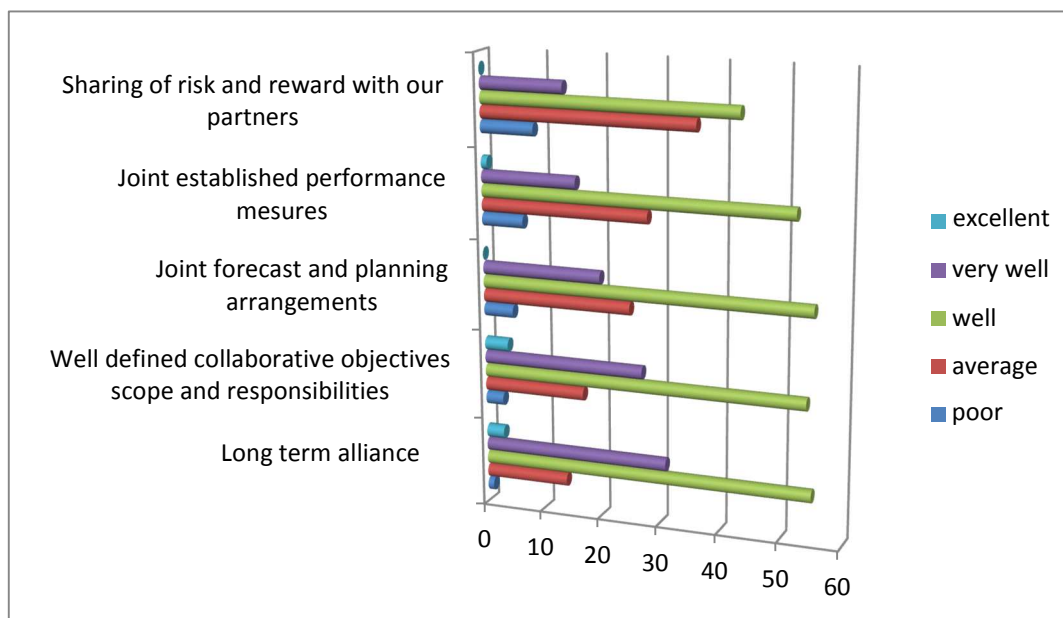
indications in each case). However, the assessment of this type of collaboration with partners in part tended towards "Very good" (in the case of long-term contracts and well-defined objectives, scope and responsibilities),

whereas the remaining three areas showed a tendency towards "Average" (fig.2).



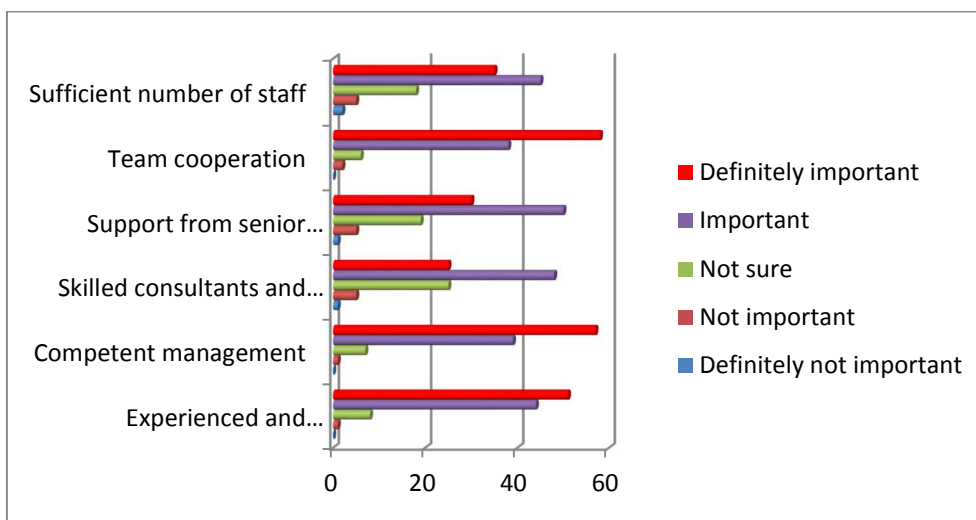
Source: findings of empirical research

Fig. 1. Assessment of information flow in the supply chain  
 Rys. 1. Ocena przepływów informacji w obrębie łańcucha dostaw



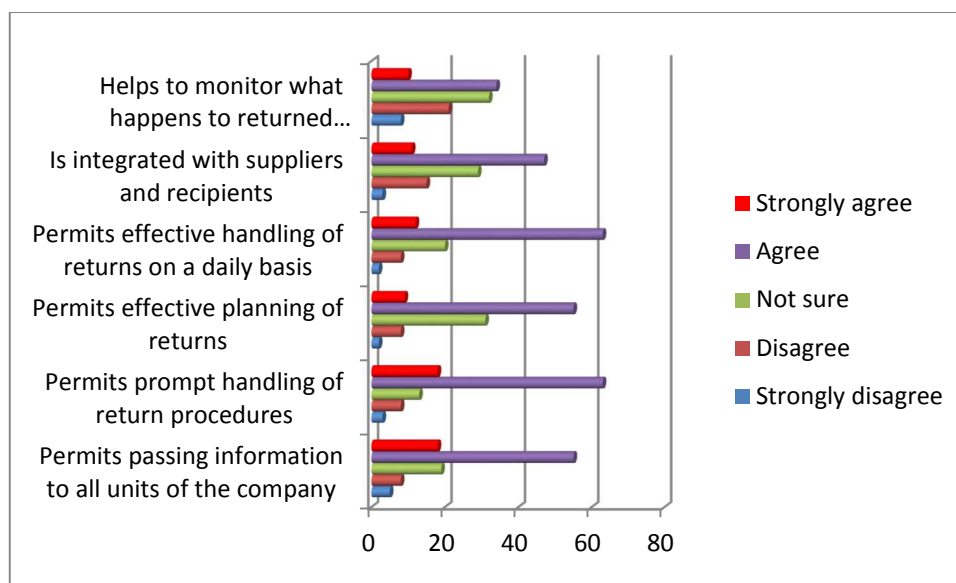
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Fig. 2. Practical cooperation between the retailer, the logistics operator and suppliers  
 Rys. 2. Praktyczna współpraca pomiędzy sprzedawcą detaliczną, operatorem logistycznym a dostawcami



Source: findings of empirical research

Fig. 3. The importance of experience and competences in terms of handling returns from the managerial perspective  
 Rys. 3. Istotność doświadczenia i kompetencji odnośnie obsługi zwrotów z punktu widzenia zarządzającego



Source: findings of empirical research

Fig. 4. Assessment of the IT system used by a retail chain  
 Rys. 4. Ocena systemu IT stosowanego w łańcuchu detalicznym

Managers asked about the importance of experience and competences in the field of reverse logistics (fig.3) generally agree that management and staff who are competent and experienced in handling returns are "Definitely important" (more than 50% of responses). Some respondents had doubts about the importance of training and support from the

executive level (the "Not sure" option had 19 indications, with a total of 80 "Important" and "Definitely important" answers). A clear majority declared that cooperation in a team is "Definitely important" (58 responses). Few of the respondents believed that the listed features do not matter at all (less than 5 responses for each statement).

As could be expected, the respondents rated highly the importance of IT systems in the studied companies regarding reverse logistics (fig.4). For each of the statements the answers "Agree" and "Strongly agree" accounted for between 44 and 81 responses. The greatest number of positive responses was recorded for the statements "The IT system used in our company permits effective handling of returns on a daily basis" and "permits prompt handling of return procedures." They were indicated by 75 and 81 respondents respectively.

As many as 72% of positive answers were chosen for the statement that the system "permits passing information to all units of the company" (fig. 4). Although there were 19 "Not sure" answers in this category, probably resulting from the ignorance of employees, in general the findings indicate that a large percentage of firms are integrated into IT systems not only within the chain but also with suppliers and recipients (58 positive responses). In the opinion of managers, computer systems make it possible to monitor what happens to returned goods (44 positive responses, 32 respondents did not have an

opinion, and 21 did not agree), and to effectively plan returns (64 positive responses, 31 people did not have an opinion, and 8 disagreed).

The savings that can be achieved through pro-active measures in the area of reverse logistics. In this case, a construct was used as a measuring tool, which consists of the four statements presented in Table 1.

A measure of the reliability of a construct is Cronbach's alpha, which determines the consistency of the items included in a given scale. In other words, it determines to what extent the items included in a given factor are similar to one another, and whether they relate to the same phenomenon - the same theoretical construct. A value for the alpha coefficient above 0.7 indicates that the scale is correct and confirms the correct construction of an indicator. A number of statisticians accept that the measure for the reliability of a Cronbach's alpha scale based on the correlation values between items should generally be above 0.6.

Table 1. Savings  
 Tabela 1. Oszczędności

	Statements	Median	Average
Savings (Jack et al., 2010) 1 – strongly disagree 5 – strongly agree Cronbach's alpha 0.67	1. We save a lot because of our returns operations	3	3.2
	2. Our returns policy improves our cost position relative to competitors	3	3.3
	3. Our reverse logistics programme results in considerable savings	3	3.2
	4. Our returns handling methods incur lower costs relating to environmental protection	3	3.3

Source: findings of empirical research

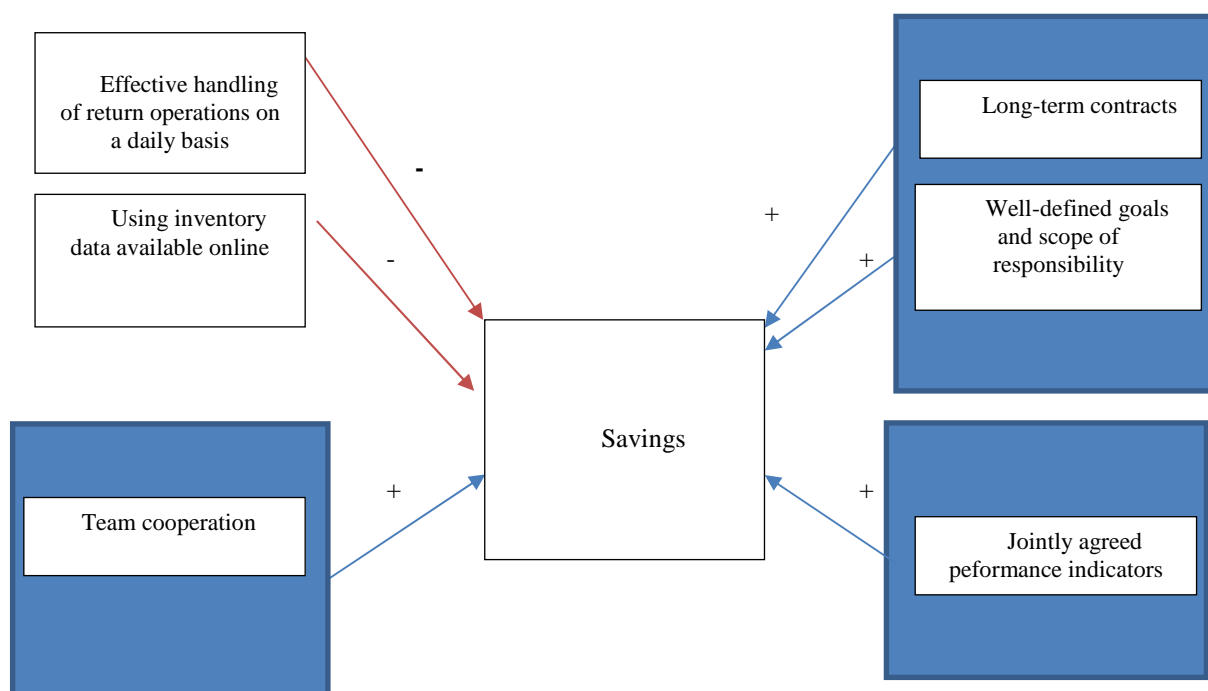
Based on the empirical data collected, correlations were tested between savings (construct) and collaboration in the supply chain, the experience of workers in handling returns as well as the IT system used for returns procedures. The collected data were analysed using Spearman's correlation, followed by a multiple regression analysis, and on this basis the following conclusions were formulated.

The results of the statistical analyses show that the analysed factors have a significant impact on savings. A company's ability to

cooperate in the supply chain, limited for the purposes of this study to the supplier - retailer relationship, affects savings resulting from the policies of retail companies in the area of reverse logistics. Not all the statements describing collaboration in the supply chain were empirically confirmed as determinants of savings. Well-defined goals and the scope of responsibility, long-term contracts as well as jointly agreed performance indicators are important for the level of savings. Also, team cooperation plays an important role with regard to the savings achieved as a result of a returns management policy

Using the forward stepwise regression method, a model was obtained, explained at the level of  $R^2=0.95$ . The results, presented graphically in Figure 5, are as follows: Using inventory data available online  $\beta= -0.49$ ,  $p=0.0002$ . Effective handling of returns

operations on a daily basis  $\beta = -0.35$ ,  $p=0.16$ ; Team cooperation  $\beta = 0.37$ ,  $p=0.007$ . Long-term contracts  $\beta = 0.73$ ,  $p=0.002$ . Well-defined goals and scope of responsibility  $\beta = 0.28$ ,  $p=0.045$ . Jointly agreed performance indicators  $\beta = 0.38$ ,  $p=0.00$ .



Source: findings of empirical research

Fig. 5. The factors determining potential savings with regard to reverse logistics  
 Rys. 5. Czynniki kształtujące potencjalne oszczędności w odniesieniu do logistyki zwrotów

The actual process of handling returns is not monitored, nor is it included in analyses, though possible because (as the data obtained show) there is sufficient computerization and information exchange with suppliers and logistics operators. A manifestation of the opportunism of suppliers is selling as many goods (disposing of the goods) to retailers as possible and leaving all matters relating to excess stock and selling products at a reduced price in the hands of retailers. Despite the fact that, as the collected data show, the process is measurable and controllable, there is no willingness to cooperate in the supply chain and share the benefits.

Effective handling of return operations on a daily basis ( $\beta= -0.35$ ,  $p=0.16$ ) causes an

increase in costs related to these procedures. A returns handling programme involves processes and activities specified by individual companies, including inventory control, processing, sorting and making decisions [Rogers, Tibben-Lembke 2001; Stock, Mulki 2009; Blumberg 2004]. The implementation of a procedure for returning goods to the supplier, which generates considerable costs, is a burden for the entire logistics system.

Using inventory data available online  $\beta = -0.49$ ,  $p=0.0002$  is a variable that is negatively correlated with the variable of savings resulting from a returns management policy. A possible explanation for this can be the fact that inventory management in the clothing industry involves transferring goods

between warehouses and shops, which increases the cost of operations related to transport and storage.

Long-term contracts, well-defined goals and scope of responsibility, as well as jointly agreed performance indicators are variables that are positively correlated with savings in reverse logistics. Such an understanding of cooperation in the supply chain is conducive to achieving long-term benefits by all the parties involved.

Team cooperation is very important in the work of sales personnel, as confirmed by the results obtained. Teamwork, particularly shift work, is based on good communication between employees. Effective transfer of information about customers, goods, transactions and returns creates opportunities for additional savings. However, it must be noted that some of the assumed dependencies were not confirmed and thus have no connection with the dependent variable.

Jointly agreed performance indicators are mostly the aftermath of a long-term contract and regular cooperation. Performance indicators make it possible to monitor results and progress based on interim analyses. Similarly, jointly defined goals and scope of responsibility help to avoid ambiguous situations, unnecessary delays and wrong decisions; thus streamlining returns processes and generating no additional costs.

IT systems, even if their standard is comparable with Western models, are not sufficiently used by senior management, thus their impact on savings was not ascertained. Performing multidimensional analyses and sales monitoring are the basis for effective decisions, and the integration of systems, in addition to its obvious advantages in operational activities, may also provide a basis for planning as well as developing sales policies and sales strategies for both individual stores and the entire chain. The qualifications of advisors and trainers were not included in the analysis as an explanatory variable. Training related to a company's returns policy, whether a liberal or a restrictive one, is rarely provided, as reflected in explorative research.

## LIMITATIONS

This analysis included only selected variables and including other significant variables in the model would certainly enhance the explanatory value and provide a more complete picture of the phenomenon.

Future studies could include additional dimensions which were not included in this project. Returns management is a complex issue and even the factors which are generally accepted in the literature and which were taken into account in this study are not able to fully explain this phenomenon.

The sample was restricted to clothing retail chains in two Polish provinces, which limits any inference from the study to the whole population.

Methodologically, the study was based not on hard data but on a questionnaire survey and the analysis is heavily based on the perceptions of the respondents.

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## WSPÓŁPRACA W OBREBIE ŁAŃCUCHA DOSTAW ORAZ OSZCZĘDNOŚCI WYNIKAJĄCE Z ROZWIĄZAŃ LOGISTYKI ZWROTÓW I DZIAŁALNOŚCI DETALICZNEJ W POLSCE

**STRESZCZENIE. Wstęp:** Celem jest zdefiniowanie na podstawie literatury oraz test empiryczny głównych czynników, które mają wpływ na osiągnięte przez sieci detaliczne oszczędności wynikające z celowej i świadomej polityki oraz zorganizowanego działania w zakresie zarządzania zwrotami produktów.

**Metody:** Na podstawie opracowanej ankiety, przeprowadzono wywiady standaryzowane z przedstawicielami korporacji handlowych w branży odzieżowej na terenie wielkopolski i Ziemi Lubuskiej. Zebrane dane poddano analizie statystycznej.

**Wyniki:** Wyniki analizy statystycznej pokazują, że na oszczędności istotnie wpływają analizowane czynniki. Zdolności firmy w zakresie współpracy w łańcuchu dostaw zredukowanej w badaniach do relacji dystrybutor – detalista mają znaczenie dla oszczędności wynikających z polityki korporacji handlowej w zakresie logistyki zwrotów. Integracja systemu IT z dostawcami i odbiorcami ma znaczenie dla poziomu oszczędności. Także dla osiągniętych oszczędności z tytułu realizowanej polityki w zakresie zarządzania zwrotami ma współpraca zespołu.

**Wnioski:** Studia w omawianym zakresie nie były dotąd przeprowadzane w Polsce. Szczególnie istotne wydają się zależności między współpracą w łańcuchu dostaw a możliwymi do osiągnięcia oszczędnościami z tego tytułu. Przeprowadzone studium wnosi wkład w rozwijający się nurt badań nad logistyką zwrotów i podkreśla rolę detalistów oraz współpracy w łańcuchu dostaw.

**Słowa kluczowe:** logistyka zwrotów, współpraca w łańcuchu dostaw, przemysł odzieżowy, oszczędności.

## KOOPERATION INNERHALB EINER LIEFERKETTE UND DIE AUS DER RETOUREN- UND KLEINHANDELLOGISTIK RESULTIERENDEN EINSPARUNGEN

**ZUSAMMENFASSUNG. Einleitung:** Das Ziel der Arbeit ist es, gestützt auf die Fachliteratur und einen empirischen Test, die Hauptfaktoren zu definieren, die die von Kleinhandel-Netzen erzielenden Einsparungen beeinflussen, die demzufolge auf gezielte und bewusste Politik sowie auf eine gut organisierte Vorgehensweise im Bereich des Retouren-Managements zurückzuführen sind.

**Methoden:** Anhand eines ausgearbeiteten Umfrage-Bogens wurden standardisierte Umfragen mit Vertretern von Handelseinrichtungen innerhalb der Bekleidungsbranche in Großpolen und im Lebuser Land durchgeführt. Die gewonnenen Daten wurden einer statistischen Analyse unterzogen.

**Ergebnisse:** Die Resultate der statistischen Analyse zeigen auf, dass die Einsparungen im wesentlichen Ausmasse von den analysierten Faktoren beeinflusst werden. Die Bereitschaft der Firma zur Kooperation innerhalb einer Lieferkette, die in der vorliegenden Studie auf die Relation Verteiler (Distributor) - Kleinhändler reduziert wurde, üben einen Einfluss auf die Einsparungen aus, die aus der Politik der Handelskörperschaft im Bereich des Retouren-Managements und der Retouren-Logistik resultieren. Eine gezielte Integration des IT-Systems mit den Lieferanten und Abnehmern hat eine Bedeutung in Bezug auf das Niveau der Einsparungen. Nicht ohne Bedeutung für die zu erzielenden Einsparungen infolge einer optimal betriebenen Politik im Bereich des Retouren-Managements bleibt auch das Team-Work.

**Fazit:** Die betreffenden Studien wurden bisher in Polen nicht durchgeführt. Die Abhängigkeiten zwischen der Kooperation innerhalb einer Lieferkette und den erzielbaren, daraus resultierenden Einsparungen scheinen hier besonders relevant zu sein. Die durchgeführte Studie trägt daher Interessantes zur sich entwickelnden Forschung über die Retouren-Logistik bei und weist auf die Rolle der Kleinhändler und den Belang der Kooperation in der Lieferkette hin.

**Codewörter:** Retouren-Logistik, Kooperation in der Lieferkette, Bekleidungsindustrie, Einsparungen

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