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## Peculiarities of Introducing Reverse Logistics in Supply Chains

One of the main problems of development of reverse logistics in supply chains in Russia is that its theoretical foundations are poorly developed. At the same time, in foreign companies this direction in logistics is widely applied. The article considers the problems of implementation and development of reverse logistics in the supply chains of online stores, which now are rapidly growing. The article gives a brief description of the current state of e-commerce in Russia and the USA, details the role of company return policy from the viewpoint of consumer preferences, and defines the interaction points of reverse logistics and supply chain management. In addition, it provides a classification and management scheme of reverse flows from the sphere of goods distribution and consumption taking into account waste and recyclables as well as lists possible options for the implementation and improvement of reverse policy of companies in today's market conditions.

**JEL classification:** D29, D39

**Keywords:** reverse logistics; return of goods; cost of returns; supply chain; e-commerce.

### Introduction

Following the development of logistics in Russia, many domestic organizations become eager to learn from foreign companies' experience of improving logistic processes to decrease costs of managing flows in supply chains, and look for the ways to optimize the movement of commodities and materials within logistic systems of different levels. The success in the issue can be equally brought about by improvements in the processes of goods return so as to involve them into circulation again, and introduction of advanced technologies aiming at reducing primary resources and replacing them with secondary resources without sacrificing the quality. The part of logistics studying this problem is reverse logistics. Currently, from the authors' standpoint, reverse logistics can be defined as a process of commodities' return from the spheres of distribution and consumption into the spheres of disposal and production so they can be resold, reused, refurbished, or should these actions be impossible, be correctly disposed of.

The present study attempts to determine the role of reverse logistics and peculiarities of its integration into existing structure of company logistic systems. In line with the goal, the following tasks are planned to be fulfilled:

- characterizing the role of reverse logistics in contemporary circulation of resources;
- identifying interaction points between reverse logistics and supply chain management;
- revealing peculiarities of introducing reverse logistics of goods into a supply chain of a company.

### The role of reverse logistics in contemporary circulation of resources

Reverse logistics plays an important role in today's world. According to the reports of the Reverse Logistics Association, the volume of returns in the USA varies from \$150 to 200 billion annually, which represents approximately 0.7% of GNP. At this, experts argue that supply chain costs associated with reverse logistics average about 7–10% of cost of goods [9]. There are no similar statistics for Russia; hence, it is not possible to assess the impact of returns in the country.

However, it is worth noting that every crisis motivates sellers to search for efficient ways to optimize sales and business generally. Many online and offline sellers currently have to reconsider their logistic processes and introduce new ones, including the processes of reverse logistics. The issue is especially relevant for the e-commerce market.

Let us point to that Russia's e-commerce market is actively developing. Nowadays more than 38,000 online stores operate in the market. Year by year e-commerce market turnover has increased by 25–30%. The obvious market trend in tough economic conditions is opening an additional channel of sales – online stores – by offline sellers [4]. Nevertheless, they encounter the problem of organizing the processes of reverse logistics, which is responsible for the return of goods from end consumers. In turn, the introduction of the reverse logistics program into logistic system of a company has a number of positive aspects.

First of all, the level of customer satisfaction improves. However, customers can be satisfied only if goods and services offered by a company either meet their expectations or go beyond them. The level of customer satisfaction with the process of return may be considered both from the viewpoint of satisfaction with a particular component of the process of return (the speed of accepting goods, the speed of processing them etc.) and as a whole.

Secondly, company overall total costs go down. Reverse logistics of goods is a priority direction for some sectors of industry, particularly the ones that can redirect returned goods to recycling or use them during remanufacturing [9]. Let alone secondary resources that can be obtained from recyclables. For instance, the use of such type of secondary resource as glass waste brings the next advantages:

- saves energy. The use of glass cullet allows glass container manufacturers to cut their energy costs. This way, energy costs drop about 2–3% for every 10% cullet used in the manufacturing process;
- leaves no by-products. Being 100% recyclable glass does not generate any additional waste or by-products during the process of its recycling;
- reduces noxious emissions. In the production of glass containers, every 10% of glass cullet in the mixture lower the content of microparticles – by 8%, nitrogen oxide – by 4%, sulfur dioxide – by 10%;
- reduces the inflow of waste to landfills. Recycling of glass prevents it from going to landfills, what enables Russia and Ukraine alone to save more than 16,000 ha of land from pollution annually;
- extends the life of plant equipment, such as furnaces [3];
- cuts waste at mining companies. Every ton of recycled glass allows reducing mining waste by 230 kg [2. P. 53].

Thirdly, the reverse logistics program offers an opportunity to maximize return on assets. Rational management of returned goods helps decrease the share of potentially lost profit of a company [9]. Fig. 1 presents a classification and management scheme of reverse flows from

the sphere of distribution and consumption (including the flows of waste and recyclables) that allows determining the process of decision-making during the organization of goods return.

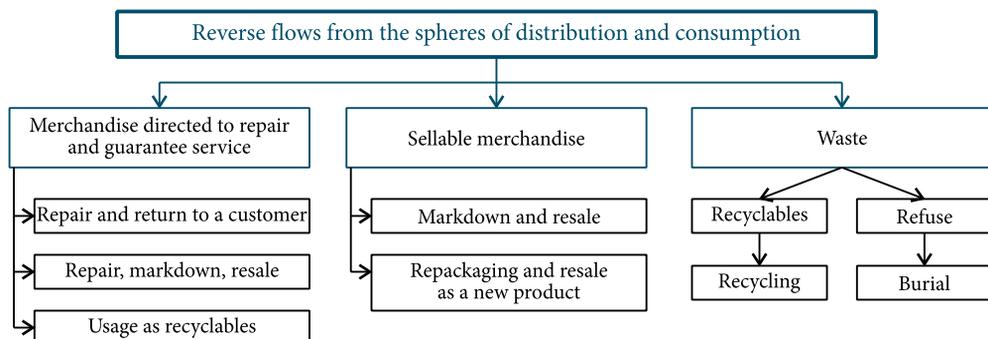


Fig. 1. Classification and management scheme of movement of reverse flows from the spheres of distribution and consumption taking into account waste and recyclables

Reverse flows shown in the scheme characterize reverse logistics more comprehensively, because they include not only merchandise sent to repair, but waste as well. Focusing on the specifics of the study carried out within the paper we need to note that further we will only consider the flows of merchandise that is sellable and merchandise directed to guarantee service and repair. At this, one of the most important problems in the issue under consideration is the search of the points of interaction between supply chain management and reverse logistics. This problem will be handled further as well.

### Identification of interaction points between reverse logistics and supply chain management

In turn, identification of interaction points with supply chain management is one of the problems of contemporary theory and practice of reverse logistics. Specifying such points will allow arranging processes more efficiently. Currently, foreign researchers who study this problem determine the following eight interaction points:

- market research. Reverse logistics is a market process, which should dynamically evolve through continuous improvements. It should be aimed at involving new technologies and systems to satisfy increasing demands of a market;
- strategic planning. Strategic plan of the reverse logistics processes implies specifications and guidelines for organization and coordination of these processes. Understanding of critical problems and factors behind success enables companies to develop tactical initiatives and models for decisions, based on which it is possible to attain reverse logistics goals on a regular basis;
- innovations. Logistic strategy cannot be successful for a long time without processes targeted at spurring innovations. Thanks to the innovations, reverse logistics can interact with supply chain management more closely;
- activities and process design. Return, recycling, recall and repackaging of goods are program-oriented processes, which should be connected with processes and services taking place in the course of movement of goods from producers to consumers in supply chains. At this, the interaction of the above-mentioned processes should be provided in the simplest form possible;
- costs and benefits. This interaction point deals with the issues of building reverse logistics of goods allowing not only for direct, but also indirect costs and aims at their reduction;
- information. Organization of reverse logistics targets customer service. Internal information should be aligned with external. Besides, it is necessary to establish a link between a particular customer and information related to him/her;

- leadership. Efficient leadership is among the fundamentals of management of the reverse logistic processes. The findings of the research show that transformation leadership is efficient at the stage of changes, hence, the management system should be oriented exactly towards this type of leadership;

- research findings. Management of the data obtained as a result of various research is essential, because it is important to monitor reverse logistics processes during their organization and functioning.

Therefore, at the moment foreign authors specify eight basic interaction points between supply chain management and reverse logistics. Clear understanding of them is the first step on the way to introduce efficient mechanisms of reverse logistics into existing supply chains. The peculiarities of introduction are examined below.

### **Peculiarities of introducing reverse logistics of goods into supply chains**

Experienced specialists argue that cultural notion of reverse logistics plays an important role during the introduction of reverse logistics processes into supply chains. At this, the discussions around the significance of culture, i. e. correct understanding of the issue, are mainly focused on creation of such understanding of the role of reverse logistics that admits the importance of a holistic (integral) approach to it. Although this disputable issue is the key one, there is another question, which is equally essential: the significance of cultural perception when it comes to organizing reverse logistics operations internationally [7].

Specifics of cultural perception occupy a considerable role in reverse logistics processes. The majority of buyers believe that the word combination “reverse logistics” implies just return of goods, but such understanding is quite far from the truth. To prove this statement let us consider some practical peculiarities of reverse logistics processes.

Firstly, company return policy exerts a significant impact on the volume of sales. Buyers have a great freedom of choice of a seller and there are many factors behind this choice, one of which could be company return policy. The results of an opinion poll among online buyers in the USA in 2014 demonstrated that:

- 82% of the respondents would prefer if a product was supplemented with a possibility of a free return to a seller and, equally, with the possibility to return goods using the pick-up point;

- 68% of the respondents would prefer if a product was supplemented only with a possibility of a free return to a seller;

- just 20% of the interviewed believe that when goods are bought via the Internet it is enough for a seller to offer a free delivery to a pick-up point or directly to a customer, whereas for the return of goods the buyers are ready to pay;

- 66% of buyers pay careful attention to company return policy before they make a purchase.

On the basis of the aforementioned it is possible to make the only one conclusion: the more attractive company return policy looks in the eyes of potential buyers, the likelier the possibility of their making a purchase is.

Secondly, poor management of reverse logistics processes may increase company overall costs.

Management of returns influences company costs, and, logically, its profits. This means it is necessary to take steps to decrease costs arising in the course of company reverse logistics processes. If processes of goods return in a company are not run smoothly, the costs go up automatically.

Cerasis, a logistic company, has developed an efficient formula to assess the contribution of specific elements of reverse logistics to the total result. The formula called “The Reverse Logistics Cost Equation” is presented in Fig. 2.

$$\begin{array}{c}
 \boxed{\text{Processing Costs}} \\
 + \\
 \boxed{\text{Logistics Costs}} \\
 + \\
 \boxed{\text{Credits/Replacements Cost}} \\
 + \\
 \boxed{\text{Asset Depreciation}} \\
 = \\
 \boxed{\text{Total Reverse Logistics Costs}}
 \end{array}$$

Fig. 2. The Reverse Logistics Cost Equation

This formula shows what impact particular types of logistics-related costs create on company performance overall. In addition, it is a tool that helps justify expenses on improvement of reverse logistics processes.

Thirdly, the resale of returned products is not the only way to make reverse logistics profitable.

The return of jeans is one of the textbook examples of return<sup>1</sup>. A seller accepting the product, first of all, ensures that the jeans are not damaged and were not worn. If everything is all right, the returned jeans are re-labeled and put up for sale. There is a strong probability they will be sold without a reduction in price.

However, such scenario has some difficulties: movement of goods between stores, shipment of online orders, etc., but at the same time there are a number of opportunities to reduce losses incurred by returns. If a company business model differs from the one described above, the following options are possible:

- goods accepted to return can be dismantled and sold in parts (this option is possible, for example, in case of cars);
- returned goods can be updated and resold (this option is possible, for example, in the case of computers and mobile phones);
- simple sale of cut-price goods. If this is the case, the profit will be undoubtedly smaller than from the sale of new products, but nonetheless some profit will be generated.

Fourthly, a company may outsource reverse logistics services. Currently, in the market (in the USA and Europe) there are already more than 1,000 companies outsourcing reverse logistics services.

Involvement of outsourcing companies may positively influence company profits. The cost of transferring reverse logistics processes to outsourcing companies may be just a little higher compared to when company does everything itself, yet a company will surely notice the increased efficiency of these processes, because outsourcing companies have extensive expertise in management of reverse logistics. Due to outsourcing it is easier to avoid most typical mistakes while introducing reverse logistics [8]. The problems related to outsourcing of reverse logistics services are exhaustively examined by Curtis Greve in his work [6].

Fifthly, management of reverse logistics differs substantially from managing forward logistics [8]. The table presents the results of comparison of the main characteristics of reverse and forward logistics.

As mentioned above, a buyer with higher probability will buy a product, which s/he could return to a seller without any problems. If a seller does not have a comprehensive program for returns and refunds, this may become a conclusive argument for not choosing this particular seller.

<sup>1</sup> The example is taken from the American practice.

### Comparison of reverse and forward logistics

Criterion	Forward logistics	Reverse logistics
Product quality and packaging	Standard. Products are chosen for quality and packaging checking on the basis of the established techniques	Heterogeneous and hardly standardized. As a rule, every item should be checked
Price	Standard and approved price	The price depends on the product condition
Shipment frequency	Predictable	Unpredictable
Supply logistics	Clearly defined	Depends on the product condition and demand
Key processes	Shipment of goods from a producer to a customer	Reverse movement of goods
Time limits for providing a service	Contracts regulate	Legislation regulates

Compiled by the author on the basis of [1].

From a seller's viewpoint, the process of returning goods, how reverse logistics is commonly understood, nonetheless, is even a greater problem, than the necessity to verify the fact whether it is attractive from a buyer's viewpoint or not. One of the most serious logistic problem a seller can encounter is shipment and processing of merchandise. For the reason of growing costs and increasing difficulty of the process of return, some sellers started to create black lists of buyers that return too many orders (for example, 10–15 orders within six months) and either refuse to take orders from them, or set less attractive delivery dates for products they buy.

In any case, returned goods cause difficulties in supply chains. The reason behind this is the fact supply chains are designed in a way to maintain the movement of material flows from the central warehouse to a final point. The goods are usually shipped over from one or two large warehouses, each processing hundreds of thousands of orders. At these warehouses, an order goes through various stages, starting from order consolidation and ending with shipment to a pick-up point. Such scenario of shipment commonly ensures high efficiency of utilization of warehousing resources.

In case of goods return, the processes of reverse logistics typically use the processes of inventory management. The principal distinction here is that there is no "central warehouse", from which a product is shipped out, but there are thousands of potential points of a "product departure", i.e. consumers, who bought the products. For a seller who accepts goods (if they were not damaged) back to the warehouse this situation is similar to if goods were simply rejected or erroneously sent.

The returns can be shipped over from any final consumer. This does not mean that the process of return will be easy, because anyway it will be composed of numerous processes: a product will be redirected until it reaches the final destination, or, there may arise a need to send a lorry for small amount of returned merchandise, what will ultimately affect company expenses. While some companies try to coordinate the processes of goods return by using the space in lorries as efficiently as possible, they, in essence, take advantage of only part of their opportunities in the issue of coordinating reverse logistics processes, obviously not giving enough attention to it. Such companies are at the initial stage of developing reverse logistics in their supply chains, because after accepting goods they will have to handle a lot of other tasks.

Identification and tracking of returns is the first of these tasks, and marking of goods can be one of the methods to perform it. Marking can be done in different ways:

- a company may supplement a product with a self-adhesive label, which a buyer can put on a box in case of return. This label is used for product identification during return of goods.

Yet the method has one drawback: the process of automated movement of returns could be disrupted if a buyer did not put the label fully or correctly, for instance, partially hiding the bar code;

- a company may include into an order a pre-paid package for returns if it suspects that a buyer is going to send back some products, for example, if the same models in different colours are bought. On the pre-package there is a return address and identification data so that a company can control the process of return easily;
- a company may organize the collection of returned goods at the pick-up points or using the services of a transport company, which takes returns directly from consumers. The main difficulty here is to arrange a suitable time for both a customer and a transport company, what may take extra efforts and involve additional expenses, because buyers may not be interested in doing the return in a way, which is convenient for a transport company.

The second task is accurate classification of returns, because product condition and reason for return influence further trajectory of a product.

The returned merchandise is accumulated at pick-up points until there will be enough of it for transportation. After that, the goods are loaded into a container or on to a pallet and transported back to a seller, thus forming a reverse flow in supply chains. The accumulated returns may be shipped to one or several sellers, so it is essential that addressees are correctly identified, otherwise this will cause problems in supply chains.

Self-evidently, successful management of reverse logistics requires high degree of coordination of numerous processes. To improve the coordination of these processes the following approaches can be implemented:

- creating common information space between stakeholders in supply chains, which will allow them to exchange information about the movement of returns;
- assigning a single identification number to every product at the moment of picking it up, with a photograph and description of product condition tied to this number;
- involving local intermediaries (for instance, to collect goods) as well as leveraging resources already available in the area where returns need to be made to optimize the shipping and distribution routes and thus keep the transport costs low;
- scanning bar codes on return items when they are being processed at the depot to ensure that they are put on the right pallet and correct truck. This also assists with validation and contributes to coherence throughout the return process;
- increasing the number and use of collection points and making them more convenient for buyers. For instance, setting up locations in high traffic areas near major towns or cities may lower company reverse logistics costs [10].

The peculiarities described above are quite relevant nowadays for the reason they allow running the process of reverse logistics integration into already existing supply chains the most efficiently. The rapidly developing logistics market in Russia along with other opportunities provides domestic companies with an opportunity to create and design supply chains taking into account reverse flows, which is generally an important step for normalizing supply chains sustainability.

### Conclusion

In the course of the study, we determined the role of reverse logistics and peculiarities of its integration into existing structure of a company logistic system. In addition, a range of other issues have been explored to attain the goal:

- the role of reverse logistics in contemporary circulation of resources was characterized and a classification and management scheme of movement of reverse flows from the spheres of distribution and consumption taking into account waste and recyclables was developed. The scheme provides a comprehensive idea of the place of reverse logistics in company logistic processes;

- the interaction points between supply chain management and reverse logistics were identified, which have a principal role to play in the process of reverse logistics integration into a supply chain;
- the peculiarities of reverse logistics introduction into supply chains that allow accelerating this processes were scrutinized.

The findings of the study will facilitate the process of goods return for companies who have to deal with this problem. They would be able to build the reverse logistics processes within their supply chains more efficiently. Along with this, such companies could benefit from the opportunity to reduce expenditure on reverse logistics already at initial stage of its introduction and development, and not through trial and error, which in case of reverse logistics could turn out to be rather costly. Besides, the experience of foreign companies will allow Russian business to integrate similar processes of reverse logistics quite fast.

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### Особенности внедрения реверсивной логистики товаров в цепи поставок

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Одной из основных проблем развития реверсивной логистики в цепях поставок в нашей стране является отсутствие теоретической базы. Вместе с тем можно наблюдать широкое распространение применения и использования процессов данного направления логистики среди зарубежных организаций. Статья посвящена рассмотрению проблематики внедрения и развития реверсивной логистики в цепях поставок интернет-магазинов, деятельность которых является одной из наиболее динамично развивающихся. Дается характеристика текущего состояния интернет-торговли в России и в США, описывается роль политики возвратов организации с точки

зрения предпочтения покупателей, определяются «точки» взаимодействия между реверсивной логистикой и логистикой цепей поставок, приводится классификационно-управленческая схема движения реверсивных потоков из сфер обращения и потребления с учетом отходов и вторичных ресурсов, а также возможные варианты внедрения и совершенствования реверсивной политики организаций в современных рыночных условиях.

**Ключевые слова:** реверсивная логистика; обратная логистика; возвратная логистика; возврат товаров; стоимость возврата; цепь поставок; интернет-торговля.

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