

The Place of Reverse Logistics in the Modern Society

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Logistics of modernity embodies the principles and approaches without implementation of which it is not possible to talk about competitiveness of enterprise, about its future prospects of successful development. Logistics creates the conditions under which the flow (of materials, information, finance, humans) becomes the main indicator of enterprises "life", highlights the effectiveness of management, capacity in a particular field, emphasizes the weaknesses and opportunities to eliminate them, indicating the flexibility and sustainability of the enterprise to risk situations. Logistics as an instrument, as a process, as the technology is able to build a delay-free system of enterprise functioning, to create favourable conditions for cooperation with suppliers, intermediaries, dealers and distributors, to form a coordinated flow inside the company, to provide an adequate consumer loyalty through high level of logistics services.

Keywords: reverse logistics, logistics flows, product lifecycle.

1. RELEVANCE OF MODERN LOGISTICS REVERSE FLOWS

With the development of information technology, increasing globalization, increasing awareness and demands of consumers to the product and to the process of service - the role of backflows increases, a consumer becomes a member of the logistics chain. Under these conditions, concentration of attention on reverse logistics by enterprises is becoming more and more popular, despite the fact that today it is underestimated. The main reasons for this situation are:

- Low direct impact on the amount of profits

from sales;

- The presence of time lag from the implementation of reverse logistics to obtaining real financial results;
- Low level of awareness of reverse logistics importance and its impact on the integrated processes of the enterprise and the amount of tax deductions.

In general, taking into account the results of studies carried out by the company Deloitte & Arvato in 2013, most companies (over 40%) see reverse logistics performance indicators as of the average level of importance (Fig. 1).

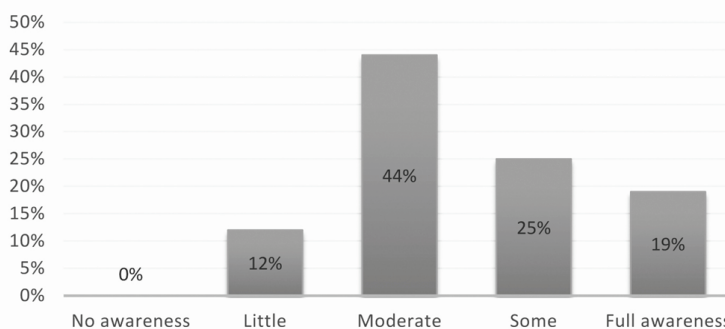


Fig. 1. Importance of reverse logistics performance indicators for enterprise.

Source:[1].

To generalize, the main reasons of backflows in any enterprise are [2, p.4]:

- poor information flow;
- multiple networks that poorly interface with one another;
- different numbering schemes for the same replacement parts;
- data entry order errors;
- incorrect shipments;
- mis-diagnosis;
- over ordering;
- warranty/defective parts.

Since the "classical" approach to logistics and reverse logistics show significant differences, it seems reasonable to implement a comparative analysis (Table 1).

Reverse logistics defined by The Council of Logistics Management is the process of planning, implementing, and controlling the efficient, cost effective flow of raw materials, in-process inventory, finished goods and related information from the point of consumption to the point of origin for the purpose of recapturing value or proper disposal.

Reverse Logistics Executive Council define reverse logistics as: the process of planning, implementing and controlling backward flows of raw materials, in process inventory, packaging and finished goods, from a manufacturing, distribution or use point, to a point of recovery or point of proper disposal.

In addition to that, reverse logistics may refer to the management of returns not only backwards but

Table 1. Comparative characteristics of "classical" and reverse logistics.

"Classical" logistics	Reverse logistics
Forecasting relatively straightforward	Difficulties in forecasting
One to many transportation	Many to one transportation
Product quality uniform	Product quality usually not uniform
Product packaging uniform	Product packaging not uniform
Destination/routing clear	Destination/routing unclear
Disposition options clear	Disposition options not clear
Pricing relatively uniform	Pricing depends on many factors
Speed of order execution is a priority factor	Speed of order execution is not always a priority factor
Financial flows are more visible	Financial flows are less visible
Product lifecycle manageable	Product lifecycle issues more complex
Negotiation between parties straightforward	Negotiation between parties complicated by additional considerations
Marketing methods well-known	Marketing activities are complicated due to the reversibility of the material, financial and information flows
The openness of information flow	Information flow is partially open

Source: own work

Considering the reasons of reverse logistics flows appearance, as shown above, reverse logistics can be substantiated as: activities that avoid returns, reduce materials in the forward system and ensure the possible reuse and recycling of materials [4].

A broader explanation of reverse logistics is provided by European Working Group: "it is the process of planning, implementing, and controlling flows of raw materials, in-process inventory, and finished goods, from a manufacturing, distribution or use point to a point of recovery or point of proper disposal".

also forwards, once returns have been transformed (repaired, remanufactured, etc.) and come back again to the markets.

Any system that is focused on the organization of logistics flows usually is formed with the aim of ensuring the functioning of direct material flows. The occurrence of backflow for such system is a significant risk of bottlenecks and errors in the performance of the entire system. Understanding the principles of reverse logistics will help to prevent this kind of situations.

Considering the definition of reverse logistics, as given above, the traditional reverse logistics flow is presented in Fig. 2.

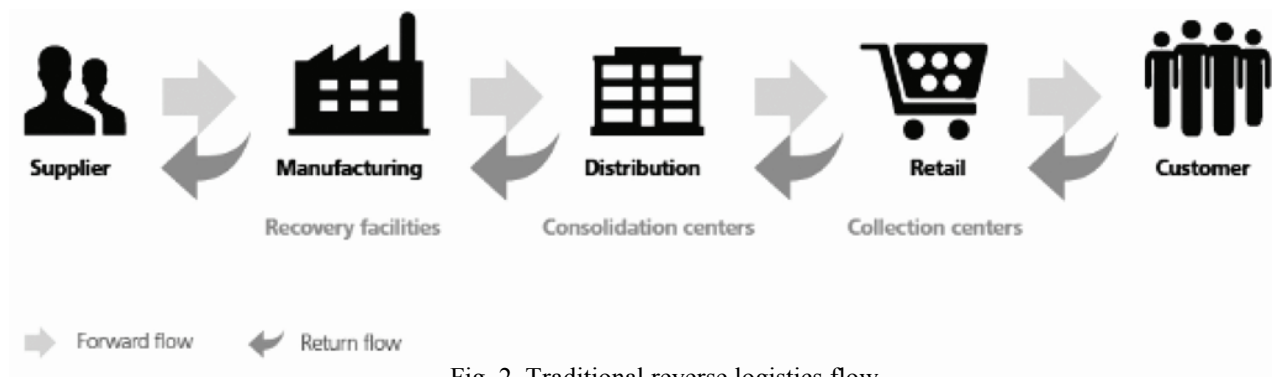


Fig. 2. Traditional reverse logistics flow.
Source: [1, p.4].

The entire reverse logistics process can be divided into 5 general stages:

- 1) Pre-receipt: providing authorization, labelling and other process elements to customers or consumers who want to return product;
- 2) Receiving: unloading and distribution of product returned to processing centres;
- 3) Processing: activities such as data entry and issuing customer credits;
- 4) Sortation: inspection and routing of returns to disposition point;
- 5) Disposition: putting the product back into inventory or temporary storage, repackaging, repair, refurbishing or remanufacturing.

Duration of selected stages, their role in formation of total cost of reverse logistics flow usually depends on the nature of goods which move in reverse direction, and areas of the enterprise activity.

The main characteristics that are inherent to reverse logistics are:

- diversified sources;
- complicated return processing;
- difficulty in forecasting the volume of return flows;
- complex cost stricter.

The process of the reverse flow requires from managers accurate algorithms for planning, organizing relationships with members of logistics chain, information systems integration, standardization of requirements for reverse flow, its structure, nature occurrence, marking, packaging, structuring, overall sizes and more. Considering the transience, difficult predictability and differentiation of sources of flows as well as the places where reverse flow is received, it is very difficult to control this flow. In general, locations for returns processing can be the following: outsourced, multiple dedicated returns processing facilities, central dedicated returns processing facilities, distribution centres and more. Considering the results of marketing research by AASA & Inmar conducted in 2009, a significant proportion of all reverse flows is taken by distribution centres (Fig. 3).

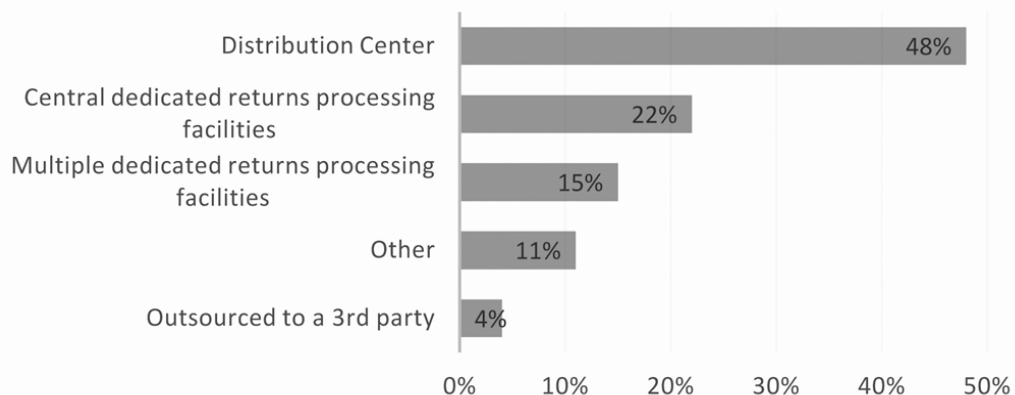


Fig. 3. Locations for returns processing.
Source: [2, p. 6].

To effectively manage the reverse flow, the typology of reverse flow should be clearly understood. Depending on the reasons of returning the goods, the following ones can be differentiated:

- commercial returns;
- repairable returns;
- end-of-use returns;
- end-of-life returns;
- recalls;
- refillable units;
- reusable carriers.

The reasons of commercial returns include: consumer dissatisfaction with goods, overstocking at retailers, promotional returns. Repairable returns are the returns of faulty products, or market withdrawal of certain production output because of possible shortages. Commercial returns occur in the sales phase or shortly after. End-of-use returns are the flows of goods which occur when the product's current owners stop using a product, but it is possible to find another customer.

Reasons for return include end-of-season, end-of-lease, trade-in and product replacements. End-of-life returns include goods that are not used and will not be used by consumers and need to be processed due to contractual or legislative take back obligations. Recalls usually occur in the case there is necessity to recall a significant number of units of production in order to detect certain faults or structural features dangerous to consumers.

Refillable units include goods that can be reused in the production of other goods. Reusable carriers are goods of recycling category; can be redirected to retailers, discount centres, shops of used goods and more.

A large number of products which are returned to the manufacturer or other institutional units logistic chain usually incompletes its journey, and can be restored both in direct or in the recovery process option. In Fig. 4. a hierarchical pyramid of recovery options is shown. In particular the following stages are distinguished: resale, reuse, re-distribution, repair, improvement by replacing old or worn parts, remanufacturing, cannibalization, recycling and disposal.

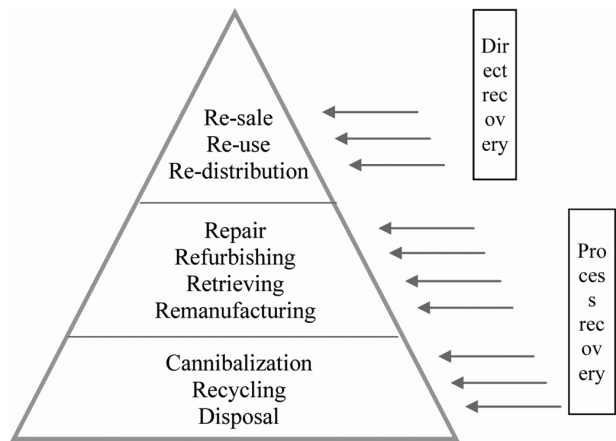


Fig. 4. Hierarchy of recovery options.
Source: own work.

Any reverse flow involves the implementation of certain processes due to the nature of the goods and the reason of return. Brito and Fleischmann distinguish the following management processes over returned unit:

- 1) product acquisition;
- 2) reverse logistics;
- 3) inspection and disposition;
- 4) recovery;
- 5) re-distribution and sales (marketing).

2. STRUCTURE OF GOODS IN REVERSE LOGISTICS FLOW

Basically, any processes over the returned unit do not generate revenue until it returns to forward supply chain, or directly to the market. In the significantly large number of cases, reverse logistics provides the appropriate level of logistics services or can be aimed at creating brand awareness and positive image of "green" company.

The mechanism of reverse logistics flow of goods rather strongly depends on the type of product, the market in which the company operates, also on existing technologies, integration of customers, suppliers, intermediaries in the logistics chain, the availability of management information systems, etc. General structure of reverse logistics flow of goods is displayed in Fig. 5.

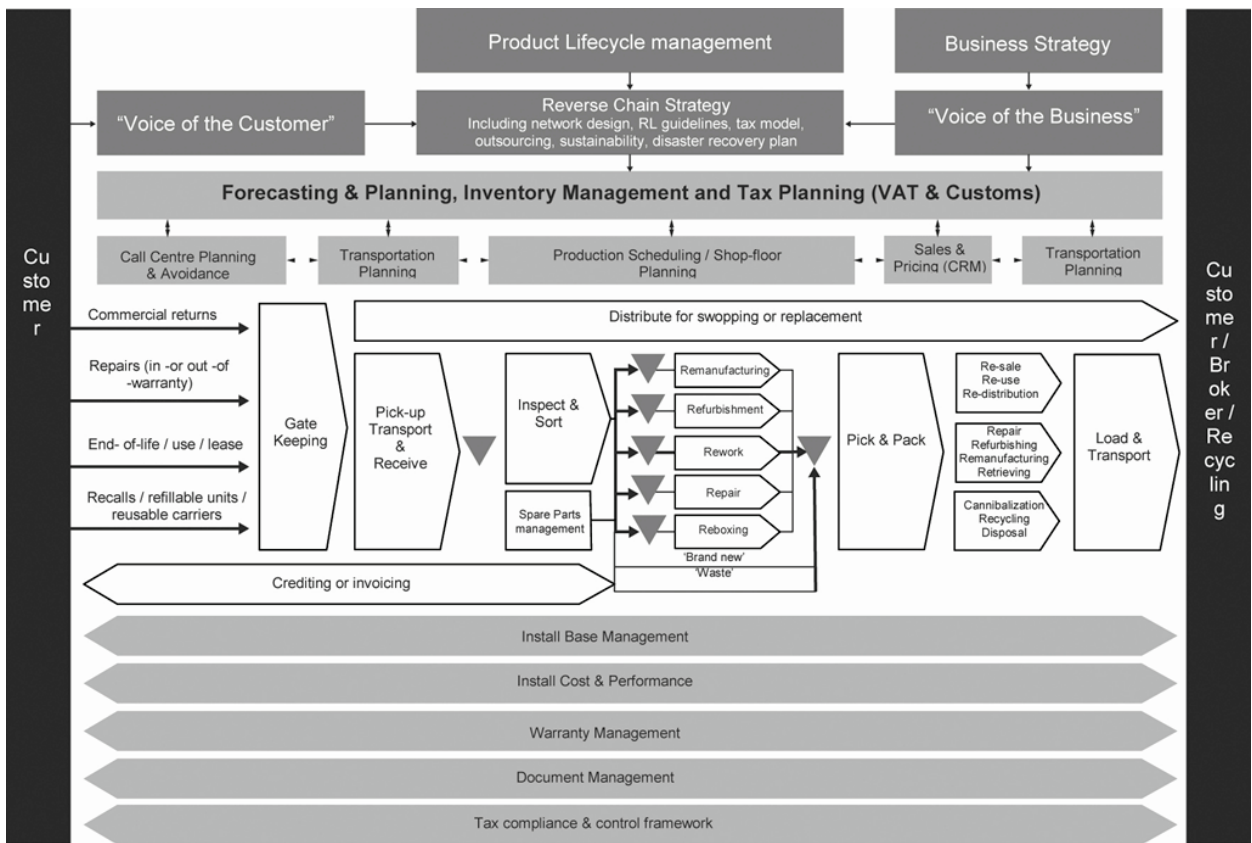


Fig. 5. Structure of reverse logistics goods flows organization.

Source: based on [3, p. 18].

The structure of reverse logistics flow of goods may be changed by manufacturer, if he may choose to physically handle returns in one or a combination of the following options:

- have a sales representative review returns at the wholesaler location
- return to the distribution centre;
- send the goods to the company that handles processing and control of reverse flows under the conditions of outsourced management;
- do not implement reverse flow.

Before the process of forming the structure of the logistics chain which would provide a reverse flow, the fact that the characteristics of supplied goods have a much more prominent role in the organization of reverse logistics than directly to the product should be taken into account. Therefore, De Brito identifies seven specific types of goods that need separate approaches in the process of reverse logistics:

- consumer goods;
- industrial goods (military and professional equipment);
- spare-parts;
- packaging and distribution items;
- civil objects (buildings, bridges, etc.);

- oils and chemicals;
- other materials (glass and scraps).

In Fig. 6. the main reasons of returns are displayed, in particular, as one can see, a significant number of returns (17%) is due to the bad coordination of work of the logistics chain subjects, and poor information systems that serve processing of order, its formation, sending off and reverse logistics. 49% of ordered, but returned products are the result of consumers being dissatisfied with properties of goods.

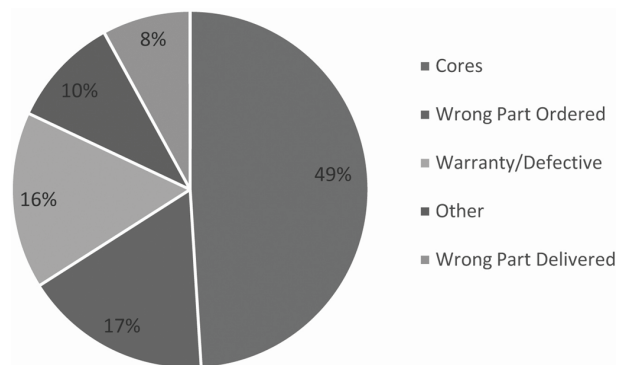


Fig. 6. The main reason of customers return goods.

Source: [2, p. 4].

However, in addition to consumer, other subjects of logistics chain may make restitution. The main reasons of returning from side of retailers include seasonality of products; outdated product packaging; product replaced by new version; product discontinued; retailer inventory too high (overstock, slow-moving); retailer going out of business. In total, depending on the branches, the volumes of returns are very different. The highest number of returns has the branch of the Internet commerce (Fig. 7), and taking into account its rapid growth in the coming years, the relevance of reverse logistics, finding the most optimal methods and mechanisms to manage it will remain of key importance in the future.

Industry	Percentage
Book publishing	10-30%
Magazine publishing - special interest	50%
Computer manufacturers	10-20%
Direct to consumer computer manufacturers	2-5%
Apparel	35%
Mass merchandisers	4-15%
Auto industry (spare parts)	4-6%
Internet retailers	20-80%

Fig. 7. Volumes of returns by branch of enterprise activity, %.
Source: [4, p. 2].

To control such number of returns and avoid crisis situations, it is important for the company to identify on time whether a company could have a problem with its reverse supply chain. The presence of potential problems with the reverse supply chain is possible when returns arrive faster than they are processed or disposed of; large amount of returns inventory held in the warehouse; unidentified or unauthorized returns; lengthy processing times; unknown total cost of the returns process; and customers lose confidence in the repair process [5, p. 45].

One of the key factors that reduce the effectiveness of the reverse flow management is the difficulty in forecasting. Restitution does not have predictable frequency (in the context of the consumer) or seasonality, it is the result of unforeseen situations, and therefore any predictive model is more or less inaccurate. A significant part of small enterprises does not predict flows of this nature, and only plan their activity on the basis of statistical data of previous periods. In general, in

the time dimension, the most significant amounts of returns happen 11-15 days after receiving of product (40%), between 5-10 days - 32% (Fig. 8). If a logistics organization deals with both forward and reverse product flows, the focus will predominantly be on forward product logistics.

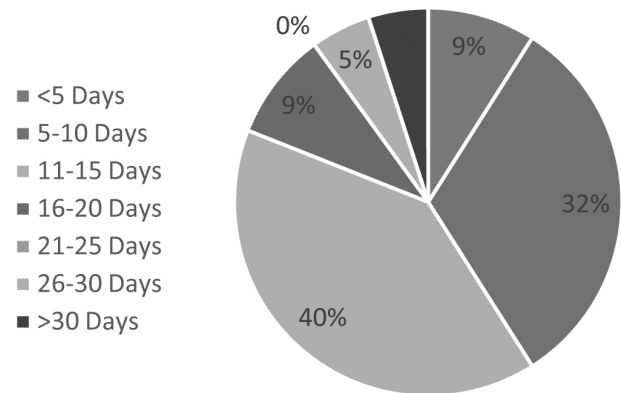


Fig. 8. Common return cycle time (in days).
Source: [3, p. 58].

Considering the fact that consumers more and more become the object of supplier, and not vice versa, it is reasonable to highlight the comparative characteristics of traditional buying process and buying process using reverse marketing (Table 2.).

Thus, reverse marketing is an active process of searching consumers by the producer, which makes it possible to satisfy the needs of the client in after-sales service. Awareness of features of this marketing type enables businesses to form the basic requirements to the process of spare parts servicing of motor vehicles and make this type of servicing in long-term relationships.

Table 2. Comparative characteristics of traditional purchasing processes and searching of goods using reverse marketing.

The traditional way of buying	Purchase using reverse marketing	Recommendations for marketers
Sensitive to offers and limitedness in the choice of suppliers	Independent search of suggestions and possible suppliers	Awareness of the active role of the buyer, taking into account the wishes of the customer, responding to initiatives
One-dimensional views	Multidimensional views	Creation of possibility to choose the most optimal combination of technical, quality, service and price properties of goods.
Opinion on suppliers' activities are focused on their own needs	The position on suppliers: cooperation	Focusing on long-term relationships; short-term income is sacrificed on behalf of long-term income (marketing relationships)
Finding solutions that can satisfy short-term needs	Searching optimal solutions that can satisfy the needs in the long-term perspective	Encouraging of consumers to satisfy the needs of the long-term nature; creating conditions for efficient after sales service
Conducting passive negotiating	Positive (active) negotiations	Detailed preparation for negotiations; comprehensive, relevant qualified advice; flexibility and sensitivity to the needs and goals of the buyer;
Returning to the entry-level relations	Highly motivated	Displaying desires in the continuation of relationships

Source: own work

3. CONCLUSIONS

The modern market demands from enterprises full provision of qualitative, fast, flexible, reliable supply chain in the direction of producer-consumer and towards the consumer - producer. There are a few reasons for the growing importance of reverse logistics. The main of them is the reduction of opportunities in the creation of competitive advantages directly via product, and the ability to create benefit for the customer through the selling of services, including reverse logistics. The value of reverse logistics is enhanced by the following factors:

- legal liability of companies-manufacturers to ensure the disposal of used goods;
- increasing the number of returned goods due to inability to pay the taken loan;
- the growth of online sales (quantity of returns made by this way is quite high due to the specific conditions of purchase);
- during the global economic crisis, the demand for repair and restoration work;
- reduction of product life cycles;
- increased number of services in the branch of after-sales service;
- manufacturers increasingly implement the process of withdrawal of possibly defective goods (for example cars), etc.

Reverse logistics is an important element to create a sustainable, competitive and balanced enterprise. Well-formed reverse logistics chain is the key to effective functioning of "traditional"

logistics flows too, and thus to a company functioning as a whole. The best way of optimizing the product returns process is not to have returns at all – referred to as returns avoidance.

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