

REVERSE LOGISTICS AND COMPETITIVENESS: A BRIEF REVIEW OF THIS RELATIONSHIP

Regiane P. Andrade, Wagner C. Lucato, Rosangela M. Vanalle, Milton Vieira Junior
mvieirajr@uninove.br
UNINOVE, Av. Francisco Matarazzo, 612, Prédio C, 1º andar, São Paulo, Brazil

Abstract

The aim of this paper is to show, by means of a theoretical review, the influence of reversal logistics upon the enterprise competitiveness. Relationship between competitive variables and reversal logistics are also studied and analyzed.

Keywords: Reverse Logistics; Competitiveness; Competitive variables.

Introduction

Presently logistics is seen by companies as a way to increase their competitiveness. However in the past companies recognized the need for the existence of logistics processes which were treated just as cost drivers. Currently, logistics is expanding and has full condition to obtain advantageous results for businesses. The increasing competition has made firms to understand that the commitment of the entire supply chain is critical to obtain satisfactory performance (POZO, 2001).

Given the recognized importance of materials management processes to the physical distribution of products, there is an area unknown and unexplored to some extent: the Reverse Logistics. According to Leite (2010) it is the return of products into the production process, either for recycling or for reintegration, considering both products consumed (post-consumer logistics) and not consumed (aftermarket logistics).

The growing concerns about the environment, coupled with the volume and variety of products manufactured by companies, gradually has made the Reverse Logistics earn increasing interest in business and literature.

In this sense, the understanding and application of reverse logistics can make organizations more competitive, because competitiveness also translates into the ability to create and sustain superior competitive performance (Porter, 1986).

The central aim of this work is to identify, based on literature review, the influence of reverse logistics upon the competitiveness of organizations.

Logistics

Grouping logistics functions in relation to selling products and services is a sign of the evolution of companies and their management thinking. Activities such as demand planning, inventory management and transportation have proved to be essential to the achievement of organizational goals (BALLOU, 2008).

over the years logistics has suffered a series of transformations, divided into four phases, according to Novaes (2001). The first phase was named integration, in which the main element in every link of the supply chain was the maintenance of inventories. The second phase is known as tight integration, characterized by inflexibility in the processes, which caused delays in the delivery of end products. The third phase, called flexible integration, is characterized by the implementation of systems that allow the integration of information between the members of the chain through EDI (Electronic Data Interchange). Here begun the zero inventory policies. But it is in the final stage, called the strategic integration, that logistics is no longer treated as the only responsible for managing functions of inventory control and warehousing. At this stage companies now face the logistical functions and the integration of supply chain links as essential to the achievement of their goals and competitiveness increase. This includes the emerging outsourcing, use of technology, reverse logistics and treatment of suppliers and customers as partners.

The constant changes in the real sense of logistics meant that it became vital to the success of organizations, by enhancing the decrease in the lead time between ordering and receiving products by the consumer, being it individual or corporation. Thus, a major goal of logistics is to provide the right product, at the right place, in the right quantity and at affordable prices, according to Pozo (2001). Therefore, understanding what business logistics is and what are its functions become critical for organizations.

According to Ballou (2008) corporate logistics takes care of all the activities of storage and handling, involving the flow of raw materials and finished products from its point of acquisition to its final destination. Information flows that move products, generating adequate service levels to consumers at a reasonable cost are part of the corporate logistics.

Still according to Ballou (2008), corporate logistics has activities that are classified as primary and support. The primary activities include:

- Transportation - refers to the handling of products, routings and capacity;
- Maintenance of stocks - that relates to the need to stock items to maintain the availability of products, thus making this activity driven by efficiency in demand planning. The biggest challenge of this activity is to maintain the products available at the lowest possible inventory level ;
- Application Process - this represents the beginning of the process.

The support activities include:

- Storage - is the administration of the physical space needed to accommodate inventories. Decisions such as physical location and arrangement are important for the optimal performance of this activity;
- Material Handling - which is related to the movement of materials in inventory and their availability for download on the modal;
- Protection Package - whose goal is to protect the items to be handled properly so they are not damaged, and the optimization of physical space;
- Procurement - activity that makes the products available for the various links in the chain;
- Production Schedule - that refers to determine how much and where the products are made, and finally,
- Information Maintenance - since any organizational function (connected corporate

logistics or not) should keep its database updated, in face of the recognized importance of the processes of distribution and reverse logistics.

Reverse Logistics

The growing concern in relation to the environment in addition to the variety of products available in the market made companies and consumers seek mechanisms for the treatment of wastes. According to Martel; Vieira (2010), laws which aim at protecting the environment have become more stringent. The recognition of the need to meet the legislation being also sustainable, have made companies consider initiatives that deal with reverse logistics, i.e., what is the final destination of the products, and how they can be reintroduced in the chain. The reverse logistics process is illustrated in Figure 1.

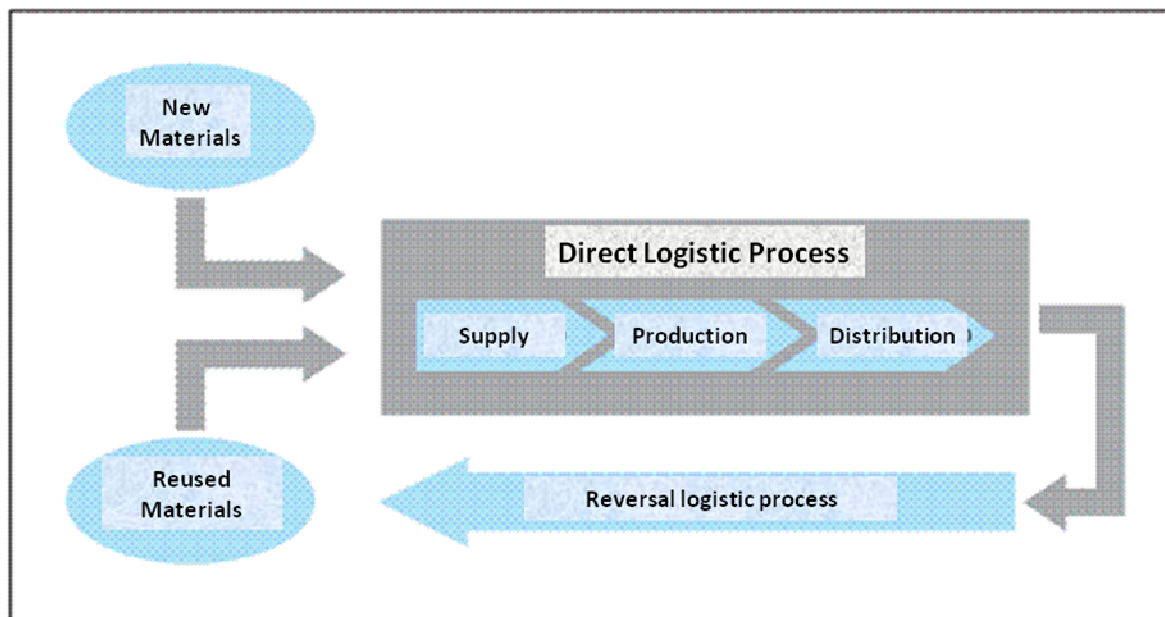


Figure 1. Schematic representation of the direct and reverse logistics processes. Source: Lacerda (2002)

According to Dornier; Ernst (2000), reverse logistics involves the return flow, considering either defective parts / packages or products returned / consumed that should go to a recycling processes. Importantly, the life-cycle of a product does not end when it reaches its useful life. Hence it is necessary that organizations and customers understand what reverse logistics is: while traditional logistics deals with the availability of the final products to consumers, the reverse has the function to manage the return of these products from the consumer back to the original manufacturer.

According to Benjamin et al. (2012), reverse logistics focuses on four main activities: reuse, product update, material recovery and waste management.

According to Leite (2010), reverse logistics aims to plan, operate and control the return of goods after-sales and post-consumer. The products after sales are characterized by little use or even the lack of sales, i.e., products which eventually return to the organization for various causes, such as defects, errors or damages in transportation. Since the post-consumer products are characterized by the end of their useful life, after their utilization they will be sent to landfills, recycling or reuse. The author also states that regardless of being post-sales or post-

consumer products, reverse logistics should ensure their return to productive cycle, adding economic, ecological and legal values. The areas and the steps involved in reverse logistics are illustrated in Figure 2.

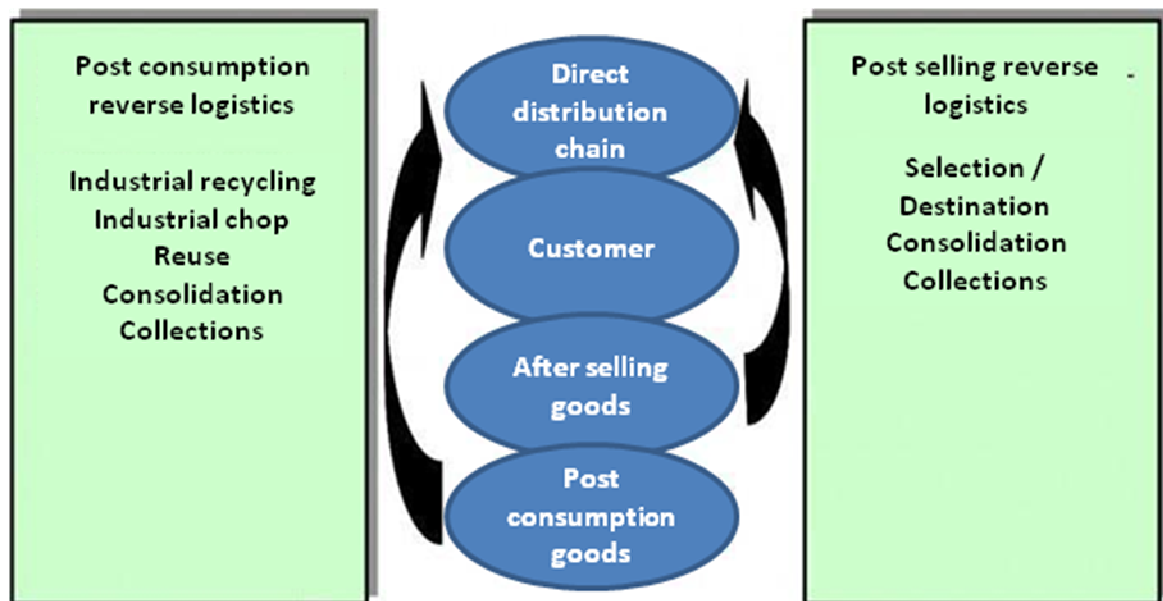


Figure 2. Reverse logistics - areas of activity and reverse steps. Source: Leite (2010).

Comprehension and implementation of reverse logistics are also connected to the understanding of the life cycle of a product, which is related to the environmental impact assessment referring to a product or service, from the acquisition of raw material to its final disposal. A major problem is how to precisely identify the point in time when the end of life of a product occurs (LEITE, 2010).

Reverse Logistics - the driving forces

Despite the little knowledge of some organizations about reverse logistics, some companies view it as gains in terms of market competitiveness. Therefore, it is natural that they know the driving forces for its adoption.

According to Leite (2003), many companies use reverse logistics in-house or through outsourced specialized companies in order to recapture economic value, to increase competitiveness, to demonstrate corporate responsibility to clean distribution channels through inventory management and to demonstrate compliance with legislation.

For Lopes; Calvo (2006), the reasons why organizations act in reverse logistics range from environmental laws that demand companies to give the necessary treatment for returned products, to the economic benefits of reuse of products returned to the company, in addition to increasing environmental awareness of consumers.

According to Souza; Fonseca (2009), reverse logistics can be seen in two major areas: economic and social. The first, due to financial gains the company can reduce its costs reusing materials that would otherwise be discarded. The social aspect considers the gains obtained by the Company to dispose less waste in landfills through the practice of recycling, thus reducing the chances of soil and groundwater contamination.

According to Leite (2010), ecological sensitivity and environmental sustainability are boosters

to reverse logistics. Society has been concerned about the appearance of ecological balance, thus making consumers aware and demanding. Many companies and the Government itself also rely on the environmental concerns as a form of ecological differentiation for their products and political interests, positioning themselves in the market with competitive advantages linked to environmental preservation.

For Leite (2010), environmental laws have also been developed with the objective of adjusting economic growth to variables related to the environment and preservation. They include different times of the product lifecycle, from manufacturing and use of raw materials to the final disposal of products.

Also according to Leite (2010), the corporate image is increasingly allied and committed to the issues of preserving the environment, thus companies that adopt policies to preserve the environment will be recognized and valued for their distinctive image.

For Rodrigues et al. (2002), reducing the life cycle of products due to obsolescence caused by accelerated technological development creates a need for alternatives to the disposal of assets post-consumer.

Reverse Logistics – the restrictive forces

Despite the growing concern about the environment and volume of production, not much is known about reverse logistics. Organizations understand reverse logistics activities as recycling and waste treatment. The lack of knowledge about this relatively new area, affects its deployment in the organizations, aggravated by the lack of synchronization between the processes of distribution and reverse logistics. Therefore, the implementation of reverse logistics in organizations has been delayed by a series of barriers, which are presented below.

According to Pires; Dantas (2010), the life cycle of a product does not end when it is discarded. The lack of involvement and commitment of the entire supply chain caused by the mismatch of objectives, in addition to the lack of complete studies to ensure and prove the efficiency of reverse logistics processes along with the absence of clear legislation, induce the companies to not worry about the final destination of their products.

Aita; Ruppenthal (2008) inform that reverse logistics is still seen by some companies as an area of little relevance, in view of the few companies that have specific managers dedicated to the subject.

Shibao et al. (2010) state that even with the recent concerns in reducing pollution and wastes, the difficulty of implementing reverse logistics is a result of the absence of indicators that measure the cost-benefit of implementing and operating it. The lack of these indexes is related to the nonexistence of knowledge of the costs of the operation.

For Lacerda (2009), critical factors are considered to assure the efficiency of the logistics process: the input control products - the correct identification of the status of returned materials; and process mapping, as companies view the return of the products as something not part of their normal routine. The companies have no standard process and there are few information systems capable of controlling the reverse flow of materials. This is also reinforced by the lack of a logistics network planning. Companies should develop infrastructure for the reverse flow of materials, which includes centralized operations for receiving and separating materials. Likewise, the collaborative relationship between customers and their suppliers constitutes one of the barriers to the implementation of reverse logistics, as there are conflicts related to the responsibility of each member of the chain in the reverse logistics processes.

Beyond the barriers of implementation related to lack of dedicated information systems, it could also be cited the absence of internal policies due to little familiarization of employees, reduced knowledge that has no respect for its importance, and the unknown turnaround time of the products (MARTINS; SILVA, 2006).

For the successful implementation of reverse logistics, it is necessary that all members of the chain be involved and work together: distributors, manufacturers and retailers. It is also a fact that the lack of information, segregation of responsibilities and nonexistence of confidence at the time of information exchange between members of the chain, hinder the evolution of the reverse process. While the logistics and distribution functions have well defined information systems, reverse logistics, due to its peculiarities as quantity and frequency of return, is treated as atypical. There is a clear need for specialized systems that integrate the distribution and reverse logistics processes, since there are few information systems capable of mapping processes that include reverse logistics (GARCIA, 2006; YANG et al, 2008).

The lack of clear management of the organizations in relation to the reverse logistics processes poses several problems. One is the absence of skilled professionals in the area, in addition to the lack of internal policies and knowledge of employees about the organization's process of reverse logistics (AITA; RUPPENTHAL, 2008).

Cultural factors also constitute barriers to the implementation, because concepts such as sustainability, environmental conservation, reducing pollution and waste disposal, are well known but little practiced, and still produce slight attention from organizations and consumers (LEITE, 2009).

Research in the field of reverse logistics should focus enterprises on segregation of costs, i.e., what are the real costs of reverse logistics and what are the factors that stimulate certain businesses to choose it and others not to. These unanswered questions may cause a delay in its implementation (Dowlatshahi, 2010).

The inexistence of mapped and well established processes enabling organizations to figure out how to return products and materials represent a major obstacle in implementing reverse logistics. Many organizations deal with the return of materials as an isolated incident. Therefore, they do not have adequate control, coupled with the absence of a logistics network planned to receive these products and materials (LEITE, 2009).

According to Wahab et al. (2010), some organizations do not reuse the materials and parts returned due to lack of knowledge on the reverse logistics processes. Moreover, it is necessary that the company has some kind of motivation either to reduce costs or to minimize the environmental impact, in order to implant the reverse logistics.

Daugherty et al. (2001) state that the reluctance to deploy resources and financial management it is also a barrier to the development of effective reverse logistics within organizations. This hesitancy is linked to factors like sticking to strict government legislation on the disposal of products, the lack of awareness of people about the social costs of excess waste and the absence of knowledge about the potential benefits of reverse logistics.

In addition, Brito; Seara (2010) affirm that some economic factors contribute to the non-use of reverse logistics as the high costs of the technologies involved in the recycling process as compared to the low prices of recycled products, thus generating very low profitability. Another important factor focuses on the difficulty and lack of control in the product returns, as these returns do not occur constantly due to the fact that companies do not realize the importance of establishing adequate reverse channels. The shortage of information systems dedicated to reverse logistics is also mentioned by Guarnieri et al. (2006):

Most companies do not have clearly defined the reverse logistics in their operational procedures; it represents a very small percentage of the values for the logistics handled directly. That's why there are specific information systems for their control. This represents a handicap for the company, because if there are no information systems that operationalize the management of waste that are often in the company occupying an inadequate space. This could generate legal penalties and prejudice the productive sector of the firm

Competitiveness

The constant changes in consumer behavior and the arrival of new competitors constitute a major threat to organizations. Firms that are outdated technologically and managerially could have a short life cycle, reason why they try to remain competitive. The global competition forces companies to develop strategies to maintain their competitive advantages. (Porter, 1986).

In order to enable organizations to compete in the market, they should know and analyze the environment where they operate, and also establish and adopt strategies that create competitive advantages and improve business performance (TEMPLE; SWANN, 1995).

For organizations to remain competitive it is necessary to embrace tools and activities that distinguish them from their competitors. Reverse logistics could be one of such cases.

Competitiveness and Reverse Logistics

Understanding the concept and importance of competitiveness is a major challenge for organizations that should also be alert to how reverse logistics can contribute to their competitiveness.

According to Souza (2009), reverse logistics has a strategic importance for the competitive cost savings in organizations, reason why it has been occupying a prominent position within companies.

The adoption of reverse logistics is an element of the of product differentiation strategy, because activities such as disposing environmentally friendly, provide an organizational image ecologically correct (BRAGA; ZILBER, 2011).

The strategy of overall cost leadership aims to offer products and services, at lower costs than competitors, which requires organizations' competence in employing their resources efficiently (Porter, 1990).

Thus, reverse logistics for post-consumer products is of great importance in economics, because it can reduce operational costs arising from the use of recycled and remanufactured materials / products, as well as reducing losses and waste during the manufacturing process (LACERDA, 2000) .

The constant changes in market demand that organizations struggle to pursue to enhance their competitiveness, could be reinforced by reverse logistics which could provide opportunities for additional competitiveness gains. Chaves; Martins (2005) inform that:

- Compliance with environmental demands: The growing concern and awareness on sustainability trigger new volumes of production and consumption for sustainable growth. Therefore, reverse logistics has aims to reduce the environmental impact by treating the waste from production activities or throughout the product lifecycle;

- **Reduced costs:** The reuse of materials returned and the economy generated by returnable packaging provide economic gains that encourage the development and improvement of reverse logistics processes, generating competitive prices compared to competition;
- **Customer Loyalty:** The product returning procedures help in building customer loyalty because organizations that have well-structured reverse logistics processes create a differentiation in relation to competitors because they are better suited to serve the customer.,
- **Positive Corporate image:** Businesses are relying on reverse logistics to convey to customers the image of a corporate citizenship, respecting the principles of environmental sustainability, which is a good marketing incentive, in such way that organizations can increase brand value of their products and services.
- **Improvement in the level of service offered to the customer:** The reverse logistics can add value to products, either as a tool to support customer relationship, or by offering services aimed at preserving the environment. This increased service level can be generate sustainable competitive advantages because changes in product, price and promotion are easily copied by competitors, unlike improvements and solutions related to customer service.

Conclusion

For an organization to remain competitive, it is necessary to investigate the environment where it operates considering its strengths and weaknesses and the opportunities and threats that arise in the external environment. It is noteworthy that some factors such as price and quality are prerequisites for organizations to remain in the market. Thus, organizations should adopt tools and activities that generate competitive advantage, because the increase in the number of competitors and consumers demands is constant. Therefore reverse logistics is an important tool for organizations to differentiate themselves from their competitors.

The activities in reverse logistics, as the return and reuse of materials, enable reduction of costs. Organizations that are geared toward reducing costs can offer their customers products and services at competitive prices, differentiating themselves from competitors.

The correct disposal of products gives organizations a competitive advantage with respect to corporate image, since consumers are increasingly aware and require the same awareness of organizations. Thus, environmentally responsible organizations have their assets valued and therefore remain competitive compared to their competitors.

Organizations that adopt reverse logistics have processes well structured. For the customer this means ensuring capacity to meet their needs, generating customer loyalty and making it difficult for competitors to imitate simple services that are geared towards value creation and the environment.

By understanding the reverse logistics it is possible for companies to understand what are the opportunities to gain competitiveness.

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