



# A model for reverse logistics entry by third-party providers

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Received 20 June 2001; accepted 31 August 2002

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## Abstract

Reverse logistics has become an important entity in the US economy. Nonetheless, many companies are not capable of or are unwilling to enter the reverse logistics market. Such reluctance appears to be attributed to lack of knowledge of reverse logistics. This paper reviews current industry practices in reverse logistics. Specifically, we examine the issues and processes that an organization has to address to engage in the reverse logistics business. A reverse logistics decision-making model is developed to guide the process of examining the feasibility of implementing reverse logistics in third-party providers such as transportation companies. The purpose of this model is to help those companies who would like to pursue reverse logistics as a new market. A field study was conducted with a larger US transportation company to validate the proposed model.

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*Keywords:* Supply chain management; Logistics; Reverse logistics; Disposition; Retrieval; Transportation

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## 1. Introduction

The goal of manufacturing companies is to ship goods through their plants to their customers. This movement of goods most often means a profit to all involved. These same companies, however, do not want products to be returned for any reason. They do not plan for the backward movement or return of goods, known as reverse logistics, as these returns represent a substantial cost rather than a profit. Some CEO's even perceive returned goods as a failure of their system [1,2]. Sometimes reverse logistics is regarded as a recycling process involving aluminum cans, papers, plastic and glass.

Reverse logistics is actually very involved and can be extremely complex. Many companies with limited resources outsource their reverse logistics operation needs to third-party providers [3]. As an example, many companies use NetReturn, an Internet system that Federal Express has developed for reverse logistics management. NetReturn facilitates returns for merchants once a customer has requested

a return and been provided authorization to return a product. These third-party companies such as FedEx, ASTRA and GENCO, not only aid the return process of goods by scheduling the pickup and transportation, they also collect customer information and track the status of returned items.

Over the last decade, reverse logistics has had a significant economic impact on industry as well as society. This impact can be seen either as detrimental to a company, and thus avoided, or as a competitive advantage with potential for capturing market share. Companies that receive items back from the customer who try to hide from the significance of reverse logistics miss profit-making opportunities [4,5]. On the other hand, companies that use reverse logistics as an opportunity for enhanced business will prosper by maintaining customer support, the ultimate issue for profitability.

While recognizing the importance of reverse logistics, companies and especially e-businesses are increasingly outsourcing their reverse logistics efforts to third-party providers [3]. Even some major discount stores such as K-Mart are choosing to outsource their reverse logistics operations to third-party providers like GENCO Distribution System [6]. Gooley [7] has developed a process for companies considering the creation of their own reverse logistics

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operations. What has not been defined in the literature, however, is a process or model for third-party providers who wish to enter the reverse logistics market. Third-party providers are recognizing the opportunities associated with reverse logistics, but do not understand the processes necessary to embark upon this business in a logical manner. The intent of this paper is to provide a set of steps or a decision-making model for potential implementation of reverse logistics by these third-party providers.

The process of model development is multi-faceted. We begin by defining logistics and reverse logistics and discussing the significance of reverse logistics in supply chain management. Next we conduct a comprehensive review of current industry practices in reverse logistics. Finally, we present and discuss the reverse logistics decision-making model followed by a field study to validate the model.

## 2. Reverse logistics: definition and significance

Logistics involves the movement of physical goods from one location to another and third-party transportation companies (such as JB. Hunt) provide a substantial portion of this service. Some of the earliest documentation of the use of logistics can be traced to the military. Simpson and Weiner [8] referenced an article written in 1898 describing logistics as a strategy for handling troops during war, including the moving and quartering of troops. The military has since defined logistics as encompassing all activities and methods connected with supplying the military, including storage requirements, transport and distribution [9].

Several business groups have recently defined logistics for the private sector. American Production and Inventory Control Society (APICS) defines logistics: “In an industrial context, the art and science of obtaining, producing, and distributing material and product in the proper place and in proper quantities” [10]. The Council of Logistics Management (CLM) defines logistics as “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 origin to the point of consumption for the purpose of conforming to customer requirements” [11]. All of these definitions involve the movement of goods from one point to another. The business of goods movement or logistics has created the need for substantial infrastructures such as railroads, highways, river ports, seaports and airports. Cities and towns have emerged and grown along active logistics routes, demonstrating the importance and power of logistics.

Reverse logistics can be defined as the reverse process of logistics [9]. Traditionally, reverse logistics has been viewed primarily as the process of recycling products. Today, definitions vary depending on what company or segment of industry is attempting to define it. Retailers see reverse logistics as a way to get product that has been returned by a consumer back to the vendor [12]. Manufacturers tend to

view reverse logistics as the process of receiving defective products or reusable containers back from the user. CLM defines reverse logistics as “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” [13].

Fig. 1 illustrates the concept of forward and reverse logistics within the supply chain system. Reverse logistics generally involves events necessary to retrieve, transport and dispose of goods. These goods are moved backward from the consumer and the process includes the information flows associated with tracking and credit processes.

A complete supply chain system includes both forward logistics and reverse logistics as shown in Fig. 1. Management traditionally concentrated on improving forward logistics operations to enhance a firm’s competitiveness. Forward logistics operations subsequently increase reverse logistics activities and thus its importance to an organization’s success. US companies are spending in excess of \$35 billion per year on handling, transportation, and processing of returned goods [2]. These estimated costs do not include the management of these processes as well as the transformation process of converting unusable goods into usable goods. On average reverse logistics activities make up approximately 4% of total logistics costs to a company [15]. Companies who purchase reverse logistics assistance from third-party providers could reduce up to 10% of their company’s annual logistics costs [15]. High-tech companies have reduced inventories along with improving field engineer productivity by as much as 40% through appropriate handling of reverse logistics [15]. Reverse logistics is obviously emerging as very important entity in the supply chain.

Internet is credited for increasing the demand of reverse logistics services due to returns generated by the marketing strategies of Internet connected companies. Amazon.com has a marketing strategy that includes a liberal return policy, which allows its customers to return items for numerous reasons. Reverse logistics can be particularly crucial for e-commerce as the rate of returns from on-line purchases can be as much as 50% of goods shipped through normal logistics channels [16]. A major contributor to the growing need for efficient reverse logistics processes can be traced to liberal return policies of many retailers such as Wal-Mart, K-Mart, ShopKo, Fred Myers, etc. These companies have varied, but liberal, return policies giving customers some control of the product they purchase by allowing them to return items for a variety of reasons. Customers rightfully, and sometimes wrongfully, take advantage of this opportunity. The need for management of returned goods inventories has dramatically increased as customers take advantage of the various return policies.

Because of this growth in reverse logistics, many companies like Xerox, Home Depot, Mobil and Eastman Kodak have tailored reverse logistics to their industry in an

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