

# Key Factors for the Selection of Logistics Service Provider in a Closed-Loop Supply Chain

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**Abstract**—From implementing a closed-loop supply chain, companies can generate more value and profits. However, closed-loop supply chains add complexity to overall supply chain management. It is a feasible way for companies to outsource all or part of logistics to third-party providers. The selection of a proper provider, which suits the needs of the outsourcing company, is not an easy task. The complexity of this task increases with an increase in the number of selection criteria. This paper focuses on the key factors for the selection of logistics service provider according to the different types of logistic outsourcing partnership. Based on the scope dimension analysis, the partnership is classified into three different types: transactional, strategic, and transformational. They are analyzed based on transaction cost theory, resource-based theory and resource dependence theory respectively. For different type of logistics outsourcing partnership, the key factors for the selection of third-party providers are different.

**Keywords**—closed-loop supply chain; service provider; key factors; reverse logistics

## I. INTRODUCTION

Increasing attention is being given nowadays to reverse logistics, which can be integrated with forward logistics to form closed-loop supply chain. Reverse logistics is the process of moving goods from the point of consumption to the point of origin for the purpose of recapturing value or proper disposal<sup>[1]</sup>. Closed-loop supply chain has become increasingly important as a profitable and sustainable business strategy. In the new economy, consumers are empowered. They can easily compare products and buy them from competitors. As a result, companies have to be proactive in order to satisfy the consumers. From implementing a closed-loop supply chain, companies can generate more value and profits by maintaining customer support and improving customer satisfaction. On the other hand, with the increasing consumer awareness about environment protection, closed-loop supply chain can also create a green image for a company, which can also improve both the sales and the value of the company.

However, closed-loop supply chains add complexity to overall supply chain management: key issues are product design for recovery, reengineering, product data management, installed base support, and evaluating (end-of) life scenarios, etc.<sup>[2]</sup>. Implementing a closed-loop supply chain also implies a

significant initial investment. Therefore, although many companies realize great chance of implementing closed-loop supply chain, there is great challenge for them to maintain both forward logistics and reverse logistics functions since they are often not core functions and continue to distract companies' activities from a main focus. Allowing a third party who specializes in logistics to maintain the function solves the difficulty. Hence companies are increasingly outsourcing all or part of their logistics efforts to third-party providers. Creating a partnership with a provider is essential to the success of logistics outsourcing. Although a mature and seamless partnership would most likely enhance the benefits of outsourcing, failure in the partnership can lead to negative and potentially irreparable consequences. The selection of a proper provider, which suits the needs of the outsourcing company, is not an easy task. The complexity of this task increases with an increase in the number of selection criteria. This paper focuses on the key factors for the selection of logistics service provider based on the different types of logistic outsourcing partnership.

Section 2 presents literature review of the selection of logistics service provider. Closed-loop supply chain is explained in Section 3. Based on the scope dimension analysis, the logistics outsourcing partnership is classified into three different types in Section 4, each of which is analyzed based on different theoretical perspectives. In section 5, key factors for the selection of logistics service provider are analyzed according to different types of outsourcing partnership.

## II. LITERATURE REVIEW

Many researchers have discussed the criteria for the selection of a provider. The selection criteria include compatibility with the users, cost of service, quality of service, reputation of the company, long-term relationships, performance measurement, willingness to use logistics manpower, quality of management, information sharing and mutual trust, operational performance, information technology capability, size and quality of fixed assets, experience in similar products, employee satisfaction level, financial performance, geographical spread and range of services provided, risk management, etc.<sup>[3]-[7]</sup>.

Andersson and Norrman<sup>[8]</sup> have suggested an eight-point plan for the selection and implementation of logistics outsourcing services. These points include (i) define or specify

the service, (ii) understand the volume bought, (iii) simplify and standardize, (iv) market survey, (v) request for information, (vi) request for proposal, (vii) negotiations, and (viii) contracting. Jharkharia and Shankar<sup>[9]</sup> introduce a comprehensive decision methodology for the selection of a provider which allows for evaluation of alternative providers in two steps: (i) initial screening of the providers, and (ii) ANP-based final selection. Kumar and Malegeant<sup>[10]</sup> point out the benefits of strategic alliances between manufacturers and eco-non-profit organizations for the closed-loop supply chain.

### III. CLOSED-LOOP SUPPLY CHAIN

A closed-loop supply chain consists of forward logistics and reverse logistics. The forward logistics represents the normal flow of material from raw material to finished goods to the ultimate consumer. Third-party providers can perform this transportation process. The reverse logistics is more complicated as the product being dispositioned can be handled in many different ways. The processes include collection, inspection, reprocessing or disposal, and redistribution, which can also be performed by third-party providers.

(1) Collection: all activities rendering used items (product, component, or material) available and physically moving them to some point for further treatment. This may involve product acquisition, transportation, and storage.

(2) Inspection: results in splitting the flow for various recovery and disposal options. This may involve testing, disassembly, shredding, sorting, and storage.

(3) Reprocessing: reusable flows undergo the actual transformation of a used item into a reusable item of some kind. The product recovery operations aimed at recapturing value include repair, reuse, remanufacturing, refurbishing, and recycling. Depending on the recovery option chosen, this comprehends various activities such as disassembly, shredding, repair, replacements, etc.

(4) Disposal: the non-reusable flows are disposed of to incinerators and landfills.

(5) Redistribution: directing reusable items to be marketed to new markets, and physically moving them to potential new users. This involves sales activities, transportation, and storage.

### IV. TYPES OF LOGISTICS OUTSOURCING PARTNERSHIP

The nature of logistics outsourcing partnership determines the third-party providers' roles, just cost reducers or value enhancers, opportunistic agents or helpful stewards, suppliers of services or active collaborators. Here we classify the logistics outsourcing partnership into three types based on the scope dimension: transactional, strategic, and transformational, as shown in figure 1.

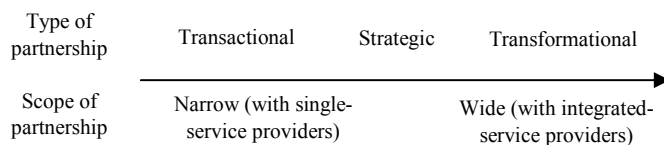


Fig. 1. Types and scope of logistics outsourcing partnership.

The scope of logistics outsourcing partnership depends on whether outsourcing companies outsource different logistics functions to different providers or to one or a couple of providers. Single-service providers usually have high level of professional expertise and experience and can offer high level of service. But outsourcing different logistics functions to different single-service providers is a challenging work to the company and will lead to the increase of the total outsourcing costs because the company has to keep good relationship with each provider. Multi-service or even integrated-service providers can share more processes, information and knowledge with the outsourcing companies, and then have more understandings of the overall processes and strategies of the companies. But keeping relationship with only one or a couple of providers will bring more risks to the company.

#### A. Transactional Partnership

In transactional partnership, outsourcing companies aim at generating cost savings, preventing future investments or reducing staffing burden. Transactional partnership does not foster any kind of strategic relationship with the providers as they are generally short term in nature and essentially task based.

The essence of this type of partnership being transaction aimed at cost reduction, transaction cost economics (TCE)<sup>[11]</sup> seems to be the dominant theoretical perspective to conceptualize its nature. According to this perspective, companies engage in transactional partnership based on the realization that the transaction costs associated with partnering is relatively lower than internalizing certain activities into their own hierarchical structures. Providers may be opportunistic in their behavior meaning they might resort to cheating, distortion of information, shirking of responsibility or other forms of dishonest behavior. Therefore, so long the companies' needs for cost reduction and higher work quality are satisfied there will be no propensity to engage into partnerships that are deeper relationship-oriented.

#### B. Strategic Partnership

Strategic partnership is primarily driven by the growing need to concentrate more on business core in order to develop sources of current and future competencies. Value creation in strategic partnership occurs through building long-term relationships with several best-in-class multi-service providers. Cumulative experience and learning scope are the two attributes of providers that outsourcing companies chiefly rely on.

Cumulative experience and learning scope constitute useful organizational resources and can be potential sources of competitive advantage. Therefore, the perspective of resource-based theory<sup>[12]</sup> may be used to conceptualize strategic partnership. According to this theory, a firm may be viewed as a collection of imperfectly imitable resources and capabilities that forms the basis of its successful competition against other firms. Through strategic partnership, companies benefit from the useful resources of their providers without having to invest in possessing them. Tapping into the wide experience of providers enables their clients to fill in the resource-voids of

their businesses. Further, organizational learning that results from this partnership renders the companies to new ways of doing business by focusing attention and resources more narrowly on the business functions they do best.

### C. Transformational Partnership

Transformational partnership implies a rapid, step-change improvement in enterprise-level performance of recipients<sup>[13]</sup>. The motivation is to use outsourcing for the purpose of redefining existing businesses. The partnership nature may be viewed as powerful force for change for the outsourcing companies, and the providers may be considered as allies in the battle for market share and competitive advantage.

Allies possess valuable resources and capabilities. Therefore a useful perspective to conceptualize this form of partnership is resource-dependence theory<sup>[14]</sup>. According to resource-dependence theory, firms are actively involved in their broader environments and are dependent on other organizations for supply of critical resources. Outsourcing companies are dependent on their providers to supply critical resources which enable them to benefit from their providers' high-end skill base, cumulative domain expertise, and industry-specific knowledge that result in integrated, innovative

solutions. Such resources help them to initiate rapid improvising changes or bring turnarounds of failing businesses. These transformations result in radical business models meant for achieving competitive edge through growth without investing for capacity enhancement.

## V. KEY FACTORS FOR THE SELECTION OF LOGISTICS SERVICE PROVIDER

### A. Logistics Outsourcing Strategy

Which kind of partnerships the outsourcing company will establish with the providers is determined by the company's logistics outsourcing strategy. The logistics outsourcing strategy, which is derived from the company's general business strategy and must be aligned with it, details which logistics functions may be outsourced and which must be taken care of by the company itself, how many providers should be contracted, whether providers should be allowed to subcontract some of the services, and some other matters. The strategy must be shared with the company's providers so as to achieve complementary and shared goals. Providers can direct their efforts towards the realization of this strategy for both their offer and their delivery of outsourced logistics functions.

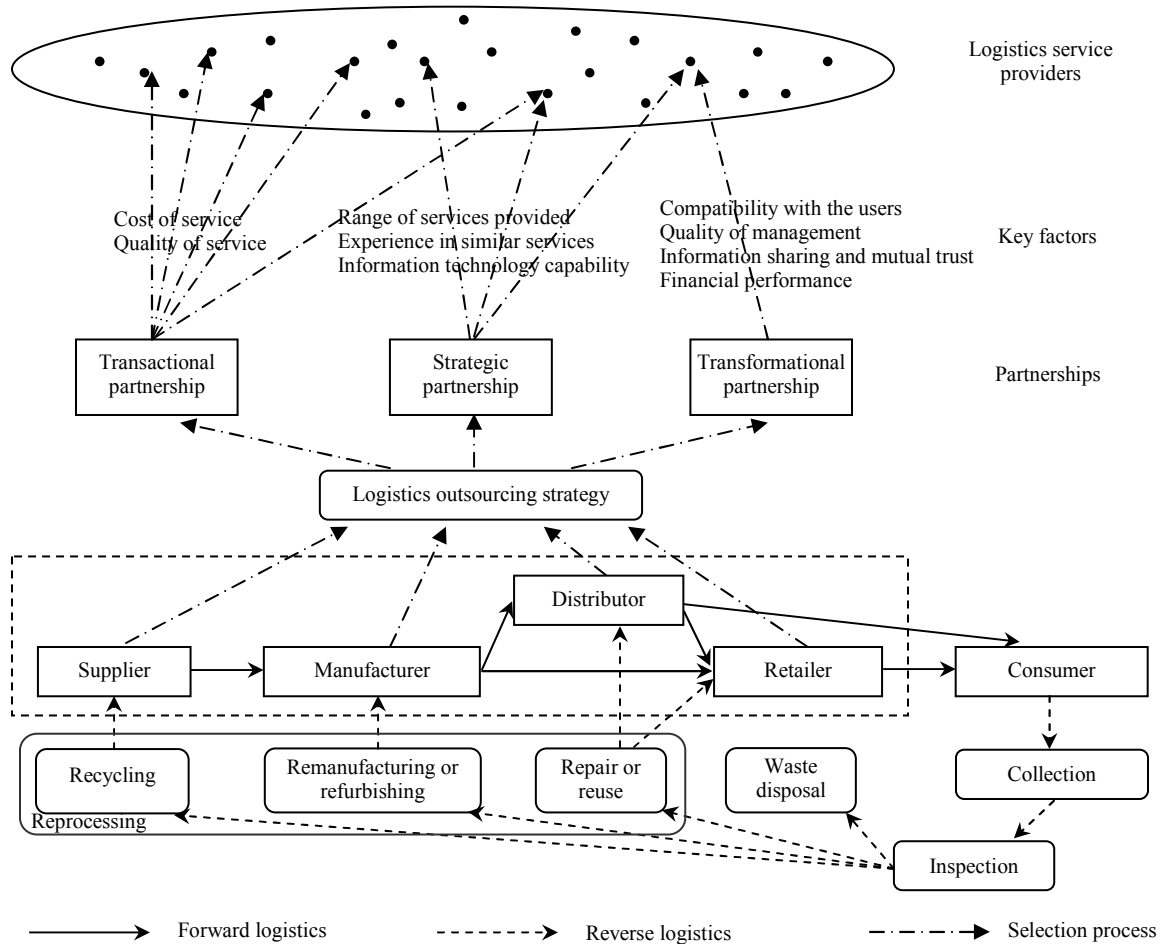


Fig. 2. Process and key factors for the selection of providers in a closed-loop supply chain

## B. Key Factors

For different type of logistics outsourcing partnership, the key factors for the selection of third-party providers are different. Figure 2 illustrates the process and key factors for the selection of logistics service providers in a closed-loop supply chain.

(1) For transactional partnership, cost of service and quality of service are of the most important because cost reduction and higher work quality are the only purposes of this kind of partnership.

(2) For strategic partnership, cumulative experience and learning scope are the two attributes of providers that outsourcing companies chiefly rely on, therefore range of services provided, experience in similar services, and information technology capability are the key factors for the selection.

(3) For transformational partnership, the outsourcing company is dependent on third-party providers to supply critical resources and redefine existing businesses, which also means high risks to the company. The key factors for the selection of a partner should include compatibility with the users, quality of management, information sharing and mutual trust, and financial performance.

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