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# **Logistics outsourcing and the market value of the firm: An empirical investigation**

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## **Abstract**

In this paper we investigate the shareholder value effects of logistics outsourcing decisions. To this end, we use the event study methodology to examine the reaction of equity investors to 165 logistics outsourcing announcements for the case of 119 manufacturers for the period from 2000 to 2015. Using both parametric and nonparametric tests we find a significant positive reaction to logistics outsourcing announcements of planning activities. Further than academics, these findings are of importance to practitioners as they provide them with key insights on their decision to outsource logistics activities.

**Keywords:** Logistics outsourcing, Shareholder value, Event study

## **Introduction**

Manufacturers increasingly outsource their logistics activities to specialised third-party logistics (3PL) providers in an attempt to focus on their core capabilities and in turn, enhance their competitiveness in the current globalised economies (Lieb and Bentz, 2004). This topic has thus justifiably attracted considerable attention in the operations management literature, with researchers discussing the advantages and risks of logistics outsourcing, pointing out issues for choosing the right 3PL provider, or developing a general framework for logistics outsourcing decisions (e.g., Anderson et al., 2011; Bolunole et al., 2007). To the best of our knowledge however, no study has focused on the financial implications of logistics outsourcing and, therefore, it is unclear whether the decision to outsource the logistics activities has a positive impact on the financial performance of manufacturers. We address this gap in the literature by investigating for the first time the effect of logistics outsourcing on the natural financial performance indicator for every firm, its stock market value. Our objective in particular, is to understand whether equity investors consider the logistics outsourcing decision as value

constructive, or value destructive for the firm and, in turn, gain insights with respect to the short-term financial implications of such decisions.

### **Theoretical background**

In response to a business environment characterised by intense competition, constantly changing customer demands and pressure for cost reduction among others, firms increasingly outsource a wide range of activities as they re-examine their business models and organizational structures (e.g., Merino and Rodríguez, 2007). While in the past, outsourcing was simply a method for meeting the financial objectives of the company by cutting expenses and turning fixed costs into variable through the use of an external supplier for the purchasing of goods and services (Venkatesan, 1992), nowadays deciding which operations should be carried out internally and which should be performed by an external supplier represents a strategic rather than a purchasing decision (Hilmer and Quinn, 1994). Relevant research has demonstrated that the practice of outsourcing improves financial performance, flexibility, customer service and productivity (see, for example, Gilley and Rasheed 2000; Arroyo et al., 2006; Sanchís-Pedregosa et al., 2014).

The focus of this paper is on logistics outsourcing. This is a key and common decision taken by manufacturers since the 1980s' in their attempt to enhance the effectiveness of their supply chain (Maloni and Carter 2006). A number of different definitions for logistics outsourcing exist (e.g., Halldórsson and Skjøtt-Larsen, 2004; Marasco, 2008). For our purposes, we adopt the one put forward by Bask (2001) as it consolidates the different definitions presented in the literature and also includes what the logistics outsourcing practice wants to achieve. According to this, logistics outsourcing encompasses the *'relationships between interfaces in the supply chains and third-party logistics providers, where logistics services are offered, from basic to customized ones, in a shorter- or longer-term relationship, with the aim of effectiveness and efficiency'*.

The literature on logistics outsourcing is voluminous (see, e.g., Marasco, 2008 for a review). There are three broad strands of research on the topic. The first, involves descriptive works that seek to explain the phenomenon of logistics outsourcing by studying the reasons behind the outsourcing decision, the type of logistics activity outsourced and the risks and benefits associated with logistics outsourcing (e.g., Sink et al., 1996). The second strand, aims to refine key constructs, introduce theories to explain antecedents, build frameworks to guide practitioners and test various hypotheses on the subject of logistics outsourcing. The main goal of these studies is to identify the characteristics of successful logistics outsourcing decisions and the effect on business performance (e.g., Knemeyer and Murphy, 2004). The third strand, is mainly focused on the internationalization of the logistics outsourcing practice, with the studies in this category trying to generalize the results from the previous two strands from a US to a global perspective (e.g., Laarhoven et al., 2000). Interestingly however, none of these studies has investigated the financial implications of logistics outsourcing. This is the topic we address here. Along this direction and in order to develop our hypothesis, we need to understand the drivers behind a firm's decision of whether a logistics activity should be outsourced and the factors that affect this decision. Both issues can be understood on the basis of the Resource-Based View (RBV) theory of the firm (Holcomb and Hitt, 2007).

The RBV, one of the most influential theories in strategic management, focuses on the resource as a central element in achieving sustainable competitive advantage. Its development dates back to the research of Penrose (1959), who initially recognized the significance of the resource as an indicator for better performance and a tool for achieving a better competitive position. In particular, Penrose argued that each firm represents a

unique set of productive resources. Therefore, firms are fundamentally heterogeneous in nature and their competitive positioning primarily depends on how effectively they utilize the use of their resources. However, he also pointed out that firms can enhance their value chain performance if they collaborate effectively with exchange partners in order to gain access to complementary resources.

Wernerfelt (1984) concentrated on the concept of resource by arguing that firms must focus on strategically deploying their valuable resources and capabilities, rather than concentrate on positioning their products and markets, as initially suggested by Porter (1980). According to this analysis, the resource, defined as *'tangible and intangible such as brand names, in-house-knowledge of technology, employment of skilled personnel, trade contracts, machinery, efficient producers, capital, etc.'*, can be perceived as both a strength and a weakness of the firm, and is the key to achieving competitive advantage. Barney (1991) contributed significantly to the development of the RBV by concentrating on how firms can achieve sustainable competitive advantage by exploiting internal strengths (resources) and avoiding internal weaknesses. Barney developed a model that does not focus on the resources and capabilities themselves, but on their distinctive characteristics, and argued that the main traits of a resource are to be valuable, rare, inimitable and non-substitutable (VRIN). If firms attain such resources, he argued, then they would enjoy competitive positioning and enhanced performance. Moreover, he put forward two fundamental assumptions for the RBV theory: resources and capabilities are heterogeneously distributed among companies, and resources are imperfectly mobile. Put simply, firms have access to limited number of resources, which are unique for every distinct organization, and they are very difficult to transfer to another firm. Therefore, in order to gain access to various resources (capabilities) firms can outsource some of their non-core functions. Hilmer and Quinn (1994) were amongst the first to address the question of which activities can be outsourced based on the RBV. They recommended that organizations outsource activities that do not bring any critical strategic benefit, or specific skill-set to the firm. According to these authors, firms must focus their resources on a set of core competencies and capabilities, which will bring them competitive advantage over their rivals and offer unique value to their customers.

As recognized by the RBV theory, the resources by themselves do not bring much value to the organization. In order to efficiently utilize their resources, firms need capabilities and competencies, which are central elements of the RBV theory. Prahalad and Hamel (1990) were amongst the first to view the critical resources of the firm as core competencies, defined as *'the collective learning in the organization, especially how to coordinate diverse production skills and integrate multiple streams of technologies'*. Their article makes a significant contribution to the theory of RBV by placing the concept of core competencies at the heart of the theory and pointing out that the core competencies offer opportunities rather than limitations to the firm because they are difficult to be imitated by competitors. The other central element of the RBV is the concept of capabilities. The main difference between competencies and capabilities is outlined by Stalk et al. (1992) who explain that *'core competences emphasize technological and production expertise at specific point along the value chain, whereas capabilities are more broadly based, encompassing the entire value chain'*. Thus, capabilities represent the firms' ability to deploy and coordinate the available resources in order to achieve the desired outcome.

The RBV theory has provided the theoretical foundation for many logistics outsourcing studies with the focus being on the difference in the performance levels (capability) of 3PL providers (e.g., Yew Wong and Karia, 2010) and the effect on the performance of the outsourcing firm (e.g., Zhao et al., 2001; Lai, 2004; Liu and Lyons,

2011). The key conclusion in these studies is that logistics capability is directly related to firm performance. Overall, the RBV and the relevant literature employing it suggest that the 3PL providers' logistics capability tends to be the fundamental factor that leads to exceptional firm performance.

The relationship between various logistics specific resources (capabilities) and the performance of the 3PL provider is also a major topic in the logistics literature. In the context of 3PL, as outlined in Yang et al. (2009), the resources can be tangible such as fleet, warehouse and hardware, or intangible such as organizational processes, skills and know-how. Physical resources, such as transportation means and warehouses are necessary to achieve the movement of raw materials, work in progress or finished goods from one point to another. Therefore, ensuring access to such resources is of vital importance for the effective functioning of the 3PL provider. By gaining hold of physical resources and exploiting their use appropriately they become valuable, which helps the 3PL provider to achieve reliability and speed of delivery (Yew Wong and Karia, 2010). Moreover, physical resources can also be rare if there is a shortage of them, such as a dust free warehouse. Furthermore, tangible resources can be costly to imitate because of the high cost associated with them. Thus, Barney's VRIN framework applies to physical logistics resources. Another type of logistics resource that is of strategic importance for the 3PL provider is the level of technology employed. Numerous studies have examined the importance of well-integrated information technology (IT) in the context of contract logistics (e.g., Prajogo and Olhager, 2012). By employing IT infrastructure, 3PL providers can ensure transparency and real-time visibility of the movement of goods. This allows 3PL providers to monitor and control the utilization of all logistics activities such as inventory, fleet and warehouse, and eliminate inefficiencies and duplicating tasks thus, leading to better demand forecasting, improved control of inventory levels and more efficient production scheduling. Therefore, it results to an overall increase of the performance of the exporting firm by reducing its costs and improving its customer service. In terms of intangible resources, it has been suggested in the logistics literature that one of the most fundamental factors for performance is the relationship between the outsourcing firm and the 3PL provider (Panayides and So, 2005). Collaboration between the parties involved in the outsourcing relation allows both parties to work closely together in order to improve delivery quality, reliability, speed, and flexibility and also reduce the overall costs (Mentzer et al., 2000). Therefore, the capability of the 3PL provider to collaborate and to develop long-term relationships built on mutual trust and commitment will ultimately result in a better performance level for all parties involved.

#### *Hypothesis development*

In accordance to the RBV theory, it can be inferred that logistics outsourcing allows firms to focus on their own core competencies by redeploying their key resources in order to strengthen their core business. By its very nature, the logistics function in most firms is not considered to be a core activity. Outsourcing the non-core business has been demonstrated to lead to improved innovativeness, cost efficiency, profitability and logistics flexibility (Jiang et al., 2007). Moreover, firms that outsource their logistics can exploit the 3PL provider's external resources and obtain competitive advantage as a result (Lavie, 2006). Furthermore, 3PL providers are often highly specialized which allows them to benefit from economies of scale by utilizing their available resources and spreading the cost between their users. As a result, the outsourcing firm can greatly benefit from the more cost effective 3PL provider's resources and capabilities (Quinn 1999). Based on the above arguments our first hypothesis is:

H1: Logistics outsourcing adds value to the firm. Consequently, logistics outsourcing announcements will be associated on average with positive abnormal returns for the outsourcing firms.

A factor that may impact on the logistics outsourcing decision is the firm's choice of which activities to outsource. Going back to the adopted definition of logistics outsourcing, 3PL providers offer services that range from basic to customized ones. These services can be classified into two broad categories (Razzaque and Sheng, 1998). The first one encompasses execution activities such as, transportation and warehousing, while the second one includes planning activities, like, demand forecasting and inventory/capacity planning. In the case of execution activities outsourcing, the contractual relationship between the 3PL provider and the firm is short-term and does not involve high-degree of collaboration. In contrast, when planning activities are outsourced the 3PL provider offers a tailored logistics solution. Thus, this type of logistics outsourcing involves a long-term contractual relationship that due to its strategic nature requires a high degree of collaboration and integration between the outsourcing firm and the 3PL provider.

From an RBV point of view, in the case of execution activities outsourcing, the firm can benefit from the tangible resources of the 3PL provider, which can lead to the reduction of lead-time, better transport network, more reliable deliveries and reduced inventories (Hsiao et al., 2010). However, outsourcing only the execution logistics activities implies that the outsourcing firm will not take full advantage of the 3PL provider's competencies and capabilities. Moreover, the two parties will not be committed to one another, which signifies low levels of trust and collaboration that can lead, in turn, to lower levels of performance (Sandberg, 2007). In addition, such decision implies that the contractual relationship is not of strategic nature and consequently, that there will be low levels of integration between the various logistics activities. As a result, the overall positive effect of such a decision can be diminished to a certain extent. In contrast, deciding to outsource the planning activities will result in the firm focusing fully on its core competencies, fully exploiting the 3PL provider's resources and capabilities and thus, delivering unique value to its customers. These arguments lead us to the second hypothesis:

H2: Compared to execution activities, outsourcing planning activities adds more value to the firm. Consequently, logistics outsourcing announcements for planning activities will be associated on average with higher positive abnormal returns for the outsourcing firms relative to announcements for execution activities.

### **Methodology and data**

We use the well-established event study methodology (see Brown and Warner, 1985) to investigate the shareholder value effects of logistics outsourcing. In the operations management literature, event studies have been used for examining the stock market reaction to a wide variety of announcements, including, among others, capacity expansion (Hendricks et al., 1995), supply chain disruptions (Hendricks and Singhal, 2003), delays in the launch of a new product (Hendricks and Singhal, 1997) and product development restructuring (Jacobs and Singhal, 2014).

Assuming informationally efficient markets (Fama, 1991), the rationale of this methodology is that immediately after an event is publicly announced, the stock price of the affected firm will adjust in order to reflect the shareholders' assessment of the impact of the event on the firm's value. The difference between the actual stock return observed

following the event, to an expected (theoretical) return calculated through a financial model of stock returns, the so-called “abnormal return”, represents an estimate of the effect of the event on the stock price. Naturally, abnormal returns can be positive, negative, or zero, depending on whether shareholders believe that the event will increase, decrease, or have no effect whatsoever, on the value of the firm, respectively.

For the implementation of the event study, we follow the standard practise in the literature (e.g., Jacobs and Singhal, 2014) and use an event window of 3 days, an estimation window of 200 days and calculate both abnormal and cumulative abnormal returns. These are computed relative to the market model used as benchmark. We estimate the statistical significance of the results using both parametric and non-parametric tests: the t-statistic proposed by Brown and Warner (1985) and the Wilcoxon sign-rank test, respectively.

For obtaining our data, we used the Factiva database and collected logistics outsourcing announcements released at credible business wires for the period from 2000 to 2015. Our focus was on manufacturing and engineering companies. Examples of sectors are automotive, aerospace, telecommunications and petrochemicals. After following the standard processing methodology of the initial sample of more than 3,000 logistics outsourcing announcements (e.g., Hendricks and Singhal, 2003), we were left with a final sample of 165 announcements from 119 different manufacturers; 111 of these announcements involve execution activities and the remaining 54 planning activities.

### **Event study results and discussion**

The obtained results do not seem to provide support for H1. To be more specific, the mean abnormal returns for the day preceding the announcement (Day -1), the day of the announcement (Day 0) and the day following the announcement (Day +1) are 0.08%, 0.17% and 0.14%, respectively. In all cases however, these are statistically insignificant at standard levels according to both tests employed. Similar conclusions are drawn by the cumulative abnormal returns over the 3-day event window. Turning our focus on H2, we split our sample into two, based on whether the announcements involve execution or planning activities, and repeat the analysis. We now find a weakly (at the 10% level) statistically significant positive abnormal return for planning logistics outsourcing announcements of about 0.5% and a negative one of 0.3%, although statistically insignificant, for execution activities outsourcing. Thus we find a weak support for H2. For robustness, we also analyse all abnormal returns in a regression framework, with the results however being similar to those obtained through the event study analysis. In summary, it seems that equity investors only consider the outsourcing of planning logistics activities as a decision that adds value to the firm. How can these results be explained?

The positive stock market reaction to outsourcing announcements for planning activities was anticipated and supported on the basis of the RBV theory. At first glance however, the lack of investors reaction to announcements of execution activities seems counterintuitive. After all, the outsourcing of execution activities such as, transportation and warehousing, is a widely spread practise among manufacturers since, for example, the use of a specialized 3PL’s transportation and warehousing system brings numerous advantages including improved customer service and satisfaction, reduced-lead time, higher quality and more reliable deliveries, reduced inventories, reduced costs and in general enhanced logistics efficiency (e.g., Hsiao et al., 2010). An explanation can be reached by considering the fact that the event study methodology captures unanticipated market reaction (see, among others, Brown and Warner, 1985). Therefore, it can be argued that outsourcing of execution activities is something that equity investors expect

and, consequently, shareholders have already discounted the benefits of this practise in their assessment of the outsourcing firm's stock price. Finally, with respect to the lack of support for our first hypothesis, this is a finding that can be explained on the basis that the announcements for planning activities outsourcing in our sample are less than half those for execution activities. As a result, performing the analysis on both would naturally result to insignificant abnormal returns given the insignificance of the abnormal returns for the execution activities announcements and the comparable magnitude of the abnormal returns for the two type of announcements. Overall, our findings seem to indicate that logistics outsourcing does indeed have a positive impact on the financial performance of the outsourcing firm in terms of market value, especially when the outsourcing involves planning activities.

## Conclusion

We analyse 165 logistics outsourcing announcements from 119 manufacturing firms that over the period from 2000 to 2015. Using both parametric and nonparametric tests we fail to observe a significant market reaction to the announcements sample under consideration. An exception seems to be with respect to the level of logistics activities the firm decides to outsource (i.e., execution vs. planning activities). To be more specific, we find on average a statistically significant positive stock market reaction to logistics outsourcing announcements that involve planning activities. Our findings provide key insights for managers as they suggest that the value generation potential of logistics outsourcing for manufacturers depends on the choice of the logistics activities to be outsourced. These insights allow manufacturers to structure the logistics outsourcing decision in a manner that is consistent with the firm's financial objective according to standard corporate finance theory, that is, maximizing the firm's market value and, in turn, increasing the wealth of the shareholders.

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