

An Empirical Investigation of Resources and Dynamic Capabilities in Logistics Outsourcing Decisions

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ABSTRACT

The outsourcing of logistics has risen significantly in recent years, as firms seek to focus on core competencies and outsource noncore functions to reduce cost and gain competitive advantage. In logistics outsourcing, shippers are becoming increasingly sophisticated in outsourcing requirements and, with the proliferation of third and fourth party logistics providers, shippers can demand increasing value at lower costs. Thus, logistics service providers (LSPs) will benefit from the knowledge of the factors that drive shippers' outsourcing decisions, enabling LSPs to differentiate themselves in the market. This paper investigates the factors that induce shippers to outsource logistics functions. Based on a theoretical framework rooted in the social sciences and strategic management, we propose a model to understand the critical factors in outsourcing relationships.

Resources, and the renewal of these resources, play a significant role in determining logistics outsourcing success or failure. The strategic perspective from a resource-based view (RBV) on the achievement of sustainable competitive over time suggests that firms should focus on those resources that add value over their cost. Complementary competencies between a firm and its outsourcing partners should enhance supply chain performance and profitability. Dynamic capabilities draws upon research in several areas, and, to our knowledge, there has been very limited research done linking logistics outsourcing to dynamic capabilities.

This research empirically demonstrates that resources play a large role in determining performance in regards to logistics outsourcing. The unique resources developed within an outsourcing relationship account for a large variance of positional advantage; however, financial performance increases when these resources evolve based on market dynamics. This paper enhances the understanding of the antecedents of logistics outsourcing, and identifies the conditions for optimal performance of shippers and providers in outsourcing relationships. We offer practical insights for both shippers and providers for improving supply chain performance.

Keywords: Supply chain management, logistics, outsourcing, third party logistics (3PL), fourth party logistics (4PL), empirical research, resourced-based view (RBV), dynamic capabilities, resource-advantage theory.

1. Introduction

The third and fourth party logistics (3PL and 4PL) industry has been growing and maturing in practice in recent years; however, academic research is lagging behind industry practices. Research has indicated that both shippers and logistics providers are becoming increasingly sophisticated in their requirements (Lieb and Bentz, 2005). To best serve these industry practitioners, as well as to augment research in the logistical outsourcing field, academic researchers must respond with more advanced methodologies and analyses.

Outsourcing is the practice of utilizing external resources to perform activities that previously were performed in-house. With respect to the logistics management activities of transportation, warehousing, order processing, and related information technology support, outsourcing has become a prominent strategy. By understanding the role resources and capabilities play in logistics outsourcing relationships, shippers and logistics service providers (LSPs) may coordinate their efforts to provide an integrated logistics offering that improves supply chain efficiency.

Current State of 3PL and 4PL

One of the challenges in trying to evaluate the growing body of literature in logistics outsourcing is the lack a consistent definition of the terminology (Skjoett-Larsen, 2000). Broader definitions imply that a 3PL may include the outsourcing of any logistics activities that were previously performed in-house (Lieb, 1992; Coyle and Bardi, 1980). Narrower views define third party logistics as a distinctive, functional, inter-organizational outsourcing relationship, including transportation and warehousing, as well as the inclusion of other activities such as inventory management, information-related activities, such as tracking and tracing, value-added activities, such as secondary assembly and installation of products, or even supply chain management (Berglund *et al.*, 1999). In the middle ground between the broad and narrow definitions, Bask (2001) described third party logistics as “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.” As the logistics outsourcing industry continues to grow, a new outsourcing concept is growing as well. Shippers are outsourcing all supply chain processes to a single organization that can assess, design, build, and run comprehensive supply chain solutions. This evolution is known as 4PL. 4PLs can be defined as “supply chain integrators who assemble and manage the resources, capabilities, and technologies of an organization with those of complementary service providers to deliver a comprehensive supply chain solution” (Bade and Mueller, 1999). Supply chains have evolved from insourcing to outsourcing to 4PL arrangements.

Many early studies concentrated on the users of 3PL services; more recent work has focused on the 3PLs themselves. The booming expansion of the industry has received considerable attention as researchers provide insights into the issues on the provider side of the relationship, including

service offerings, current status, and future prospects (Gammelgaard and Larson, 2001; Lieb and Randall, 1996; Lieb, 2008; Lieb and Bentz, 2005; Lieb *et al.*, 1998), operational issues, network design, and optimization (Ko *et al.*, 2006; Zäpfel and Wasner, 2002) benchmarking (Min and Joo, 2006), and quality (Brah and Lim, 2006; Fung and Wong, 1998; Neo *et al.*, 2004).

Much of the literature focuses on the strategic behavior of 3PLs, primarily looking at the competitive strategies of both shippers and 3PLs. Traditionally, cost has been seen as a primary driver of outsourcing decisions; however, more recent literature has researched the differentiating strategic factors that drive outsourcing decisions (Sum and Teo, 1999; Hertz and Alfredsson, 2003), including value-added services (Berglund *et al.*, 1999) and goal achievement (Brewer *et al.*, 2013). Recent studies have begun to examine how the drivers that have led shippers to outsource logistics functions are the same factors that result in insourcing and reshoring decisions (Foersti *et al.*, 2016; Hartman *et al.*, 2017).

There is also a stream of research on the alliances themselves. The characteristics of these relationships have been based on the conceptual typologies (Pappu and Mundy, 2002; Zinn and Parasuraman, 1997). Empirical research has focused on scope, duration, and frequency (Paché, 1998; Rabinovich *et al.*, 1999), or the behavioral or relational attributes of relationships, such as trust, commitment, dependence, conflict, and equity (Gardner *et al.*, 1994; Knemeyer *et al.*, 2003; Knemeyer and Murphy, 2005; Moore and Cunningham, 1999). More recently, the dependencies within these relationships have been studied (Huo *et al.*, 2015; Sallnas, 2016) as well as the study of dynamic capabilities within the alliance design (Brekelo *et al.*, 2013). Brekelo *et al.* (2013) introduced the framework of logistics alliance management capabilities, based on the dynamic capabilities approach of strategic management.

There has been extensive research in the area of 3PL processes, stemming from the issues experienced by companies in the establishment of logistical outsourcing relationships. While the end result of the outsourcing relationship is typically positive, the path to establish these relationships is not without hardships (House and Stank, 2001). Various models and decision frameworks have been developed to aid companies in identifying the resources and practices needed to successfully establish relationships (Bagchi and Virum, 1996; Sink and Langley, 1997; Lambert *et al.*, 1999; Andersson and Norman, 2002; de Boer *et al.*, 2006).

Management support has resulted in several studies in logistical outsourcing. Issues addressed include partner selection, contract design, coordination, communication and information integration, with an emphasis on partner selection and contract design (McGinnis *et al.*, 1995; Menon *et al.*, 1998; Meade and Sarkis, 2002; Vaidyanathan, 2005).

Contribution

As the 3PL industry has matured, 3PLs have continually enhanced their ability to drive innovation and create value for their shipper customers, while refining their effectiveness as buyers of outsourced logistics services. While industry research indicates that shippers feel that 3PLs provide new and innovative ways to improve logistics effectiveness, and that they are sufficiently agile and flexible to accommodate future business needs and future business challenges, growth in strategic shipper/3PL relationships has been dampened by economic uncertainties in the global

marketplace. Even so, in general, 3PL users are increasing their use of outsourced logistics services.

Extant literature has proven that involvement in logistical outsourcing relationships, especially cooperative, collaborative alliances, can have a positive economic, organizational, and financial impact for shippers. Benefits include reduced logistics cost, improved service levels, improved technology, reduced fixed costs, increased flexibility and productivity, improved employee morale, increased access to markets, and new competencies (Bowersox, 1990). The purpose of this research is to develop a comprehensive analysis of logistics capabilities while examining the adaptation of these capabilities in response to market dynamism. To our knowledge, Brekelo *et al.* (2013) has been the only attempt to discuss dynamic capabilities in regards to logistics outsourcing. This paper addresses this gap in the research, providing the first empirical attempt at applying this framework and offering an important first step in identifying prospective opportunities for shippers and logistics service providers to enhance their competitive advantages.

2. Literature Review

Resource-Based Perspective

The resource-based view (RBV), based on the work of Penrose (1959), is developed in the seminal work of Barney (1991), Connor (1991), and Wernerfelt (1984), and is the dominant framework in the strategy literature (Newbert, 2007). Penrose (1959) proposed that firm growth depends on internal firm characteristics such as management capability and technological expertise. Wernerfelt (1984) introduced the concept of “resource positional barrier” allowing for the differentiation of resources as sources of competitive advantage. Barney (1991) stated that RBV is critical in developing corporate strategy. Core competencies and competence-based competitive strategy are also based on RBV and are critical in business strategy (Heene and Sanchez, 1997; Prahalad and Hamel, 1990).

Resource-based theory focuses on firm resources, or “any tangible or intangible entity available to the firm that enables it to produce efficiently and/or effectively a market offering that has value for some market segment(s)” (Hunt and Morgan, 1995). Each firm has a unique set of resources, ones that are not easily bought, sold, or traded and that may explain diversity in performance (Das and Teng, 2000; Dierickx and Cool, 1989).

The RBV is an inside out perspective, based on the concept of economic rents. An organization is considered as a set of resources that need to be managed to deliver competitive advantage, thus, within this framework managers act to optimize the utilization of these capabilities, focusing their attention on those resources that derive the most value for the organization. Strategic intent for managers from a RBV is to maximize economic rents, or the return on resources over and above the real costs of the resources, over time (Grant, 1991). The fundamental objective of the firm from this perspective is to increase economic rent rather than its profit. The value of these rents will degrade and disappear over time due to a process of increased competition or become obsolescent as other technologies replace their advantage. This view of the firm is preferred over other strategic decision making models and reflects a growing dissatisfaction with more contextual models such

as the Five Forces Model (Hax and Majluf, 1996). Traditional strategy models in a classical sense have as their focus the external competitive environment rather than looking inside the firm at capabilities. While the linkage between capabilities and strategy are weakly formulated, some aspects of the classical approach, such as barriers to entry in the Porter Model, do imply capabilities that are difficult to replicate. In contrast to this classical perspective, the resource-based view is grounded in the idea that a firm's internal environment, in terms of its resources, capabilities, and competences, are more critical to the determination of strategic action than the external environment (Hax and Majluf, 1996). Intra-industry profit differences are greater than inter-industry profit differences, indicating that resources and internal firm structure are more important than industry effects on firm performance (Rumelt, 1984). When firms possess critical resources, they can achieve sustainable competitive advantage by implementing strategies that are difficult for competitors to duplicate. A firm's unique resources and capabilities provide the basis for a strategy, and a strategy should be chosen that allows the organization to exploit these resources and competences. The RBV also assumes that the environment is not a given, but can be manipulated by action and by use of the resources the firm has at its disposal to create new opportunities.

Resources themselves do not lead to competitive advantage, but rather, the efficient coordination and configuration of resources within the organization, and the transformation into capabilities may lead to competitive advantage (Lamb, 1984). Resources are the inputs to the transformation process in an organization; operations require coordination and use of resources. Capabilities are “the capacity of a team to perform some task” (Grant, 1991). Resources are the source of capabilities, and capabilities are the source of competitive edge. Competences are those activities (or capabilities) that enable an organization to achieve sustainable competitive performance over time, whereas a core competence is a strategic capability that gives an organization a competitive edge over its rivals over time.

During the 1980's, the dominant strategic approach was the competitive forces approach developed by Porter (1980), which stated that a firm's performance was a variable of the industry in which it operated. The five industry-level forces – barriers to entry, threat of substitution, bargaining powers of buyers, bargaining power of suppliers, and competition – determined the positional strategy of a firm in the industry and that firm's profitability. Porter assumed that the acquisition of resources could be accomplished at will; however, RBV is not in support of this assumption. RBV assumes that resources are individualistic to a firm and, in the short run, cannot be readily changed. Business process development is complex, and new competencies cannot be readily developed. Furthermore, not all resources can be readily exchanged, and not all firms desire to do so.

Firms can obtain resources by developing them, acquiring them, or gaining access to them via alliances, partnerships, or acquisitions. When it comes to alliances or partnerships, success is influenced by the resources that each partner contributes to the relationship and the extent to which the alliance creates new resources, combining individual resources to maximize value (Das and Teng, 2000; Jap, 1999). Although resources are unique to a firm, it is certain that there will be resources in common to both firms in a partnership. These can be supplementary or surplus. Non-shared resources may also be complementary or surplus. Although supplementary resources may benefit alliances, research indicates that complementary resources are especially important for success.

Alliances and partnerships may also develop new resources, known as idiosyncratic resources. These resources may develop during the partnership, created by combining the resources of the partners, and are unique to the alliance (Jap, 1999). When partners develop idiosyncratic resources, a synergistic effect may occur, which means the whole is worth more than the sum of its parts (Das and Teng, 2000). Empirical research indicates that idiosyncratic resources are prominent in alliance success (Lambe *et al.*, 2002).

The strategic perspective from a RBV on the achievement of sustainable competitive over time suggests that firms should focus on those resources that add value over their cost, implying that those activities that do not return sufficient value should be de-emphasized. In practice, firms should look to reduce the cost, thereby improving return, on these resources, or look for ways to provide such internal services from the market, for example outsourcing. It is in a firm's best interest to pay attention to those resources, activities, or processes that are core to the nature of the competitive position of an organization by directing investment, resources, and attention to those activities that earn value.

When deciding to outsource, complementary competencies between a firm and its outsourcing partners should enhance supply chain performance and profitability. It is important for both firms to contribute unique resources and processes to the relationship, and, furthermore, to develop resources that are unique to the relationship.

Dynamic Capabilities Perspective

Most empirical studies involving RBV are consistent with the findings of the theory. This may be due to the lack of application within volatile industries. Ray *et al.* (2004) identified a positive correlation between intangible, complex resources and customer service in the insurance industry; however, the insurance industry is less volatile than other industries. Studies are needed that introduce RBV theory in dynamic environment. While RBV does not imply a static approach, researchers suggest that employing a dynamic view of resources is necessary (Eisenhardt and Martin, 2000; Helfat and Peteraf, 2003; Teece *et al.*, 1997). Dynamic environments can be characterized by changing customer needs, uncertain technological developments, and competition. The logistics industry falls within this context, based in a Schumpeterian world of innovation-based competition, price and performance rivalry, increasing and decreasing return, and the destruction of existing competencies. In such volatile environments, the mere existence of resources is not sufficient to sustain competitive advantage (Eisenhardt and Martin, 2000; Teece *et al.*, 1997).

Teece (2007) proposed that firms require dynamic capabilities to adapt effectively to changing environments. A dynamic capability is “a learned and stable pattern of collective activity through which organizations systematically generate and modify their operating routines to enhance their effectiveness” (Zollo and Winter, 2002). Through dynamic capabilities, firms can renew their competencies to meet changing requirements. They also include the ability to learn, and to integrate and reconfigure a firm's internal and external resources (Teece *et al.*, 1997). Dynamic capabilities are antecedent routines used to transform resources and develop new competitive strategies, and they are essential in identifying competitive advantage in changing environments,

regardless of the degree of volatility. The basic assumption of the dynamic capabilities framework is that core competencies should be used to create short-term competitive positions that can be used to build longer-term competitive advantage (Teece *et al.*, 1997).

The dynamic capabilities view goes beyond the financial picture of a firm to orchestrate resources inside and outside of the firm, including external linkages. The importance of these external linkages is positively correlated with globalization and increased competition, which have led to greater specialization. To support these needs, firms need to develop and maintain asset alignment capabilities that enable firms and their outsourcing partners to develop and deliver a joint solution to business issues that offer the best value to the customer.

Dynamic capabilities can be defined as having three clusters of activities: sensing, seizing, and transforming. Sensing, or the identification and assessment of an opportunity, is a set of activities that involve exploring technological opportunities, assessing markets and customer needs, and environmental scanning. Sensing requires managerial insight, vision, and leadership, or an analytical process that can act as a proxy for it. Seizing is mobilization of resources to address an opportunity and capture value from it. This may include such activities as design of business models, securing access to capital and resources, and motivation of resources. Strong relationships enhance the process. Transforming allows for continual renewal within the organization, softening the rigidities that develop over time from asset accumulation and standardization of processes. A firm's assets must be kept in alignment to achieve the best strategic fit. Complementarities need to be managed, and new information must be assimilated into the firm.

Dynamic capabilities draws upon research in several areas outside of strategic boundaries, thus there is an opportunity for research in the strategy literature, as well as other areas of research. To our knowledge, there has been extremely limited research linking logistics outsourcing to dynamic capabilities. Dynamic capabilities are an emerging and integrative approach to understanding changing sources of competitive advantage (Teece *et al.*, 1997).

When assessing whether or not to outsource logistics functions, and when determining who to outsource to, several factors need to be addressed. First, the structure of the firms must be flexible enough to accommodate changes in the market. Secondly, the firms both need to have a culture that promotes knowledge sharing and integration of that knowledge. That knowledge should include competition. Finally, as a result of the above factors, capabilities should be transformed to gain competitive advantage.

3. Operationalization of the Model Structure

The following section discusses the constructs employed in the logistics outsourcing theoretical model. Most of these constructs have been identified previously in literature. Where necessary, construct definitions and measures have been adapted for the specific requirements of this research. The intent is to remain as close to the original author's understanding of the construct as practical, while applying the construct for the specific domain of this research. This approach grounds the theoretical development in the prior research findings, which is important in

establishing necessary validity in the measurement process. In addition, by grounding definition and measurement in the literature, this research contributes to building the scientific literature.

3.1 Dynamic Capabilities View

As shown in figure 1 dynamic capabilities impact the resources and practices a firm employs, the implementation or embedding of these resources, and the development of a bundle of new capabilities. These are driven by the firm's strategy.



Figure 1: Dynamic Capabilities

Organizational Process Alignment

Organizations need to design their structures and systems to align the contingencies of environment, strategy, and technology for survival and success. Organizational structure needs to be cross-functional to allow for linkage among areas and to promote informational flow. Alignment requires continual refocusing on customers and their changing requirements.

Information technology (IT) is one of the fundamental dimensions of knowledge management, and it is a primary driver of strategic change and structural reform. It facilitates the integration of business functions throughout the organization by making information available and by enhancing communication. It is critical that firms consider IT alignment in changes to core structure.

Organizational Process Alignment is defined as the arrangement of various parts of a company so they work together harmoniously to pursue common organizational goals, to enhance performance, and to sustain competitive advantage (Weiser, 2000).

Organizational Learning Culture

Organizational learning culture is a concept borrowed from organizational learning and learning organization. Learning and innovation are important factors in sustaining competitive advantage, providing a foundation for organizations to improve core competencies. Organizational learning and learning organization are often used interchangeably in literature; however, they are distinct concepts. While learning organization focuses on systems, principles, and characteristics of an organization that learns as a collective whole, organizational learning concentrates on the actual process of how an organization learns. Thus, a learning organization is the ideal. Organizational learning focuses more on the processes or activities related to organizational change. Organizational learning culture is one in which learning has become a habit and is ingrained in all organizational functions.

Organizational Learning Culture is defined as when an organization recognizes that learning is absolutely critical for business success.

Dynamic Capabilities

Teece *et al.* (1997) stated that dynamic capabilities reflect how organizations develop firm-specific capabilities and competencies in a changing environment. These capabilities and competencies are highly related to a firm's business processes, market position, and growth potential. Business processes are the managerial and organizational processes and methods a firm uses to make decisions. Market position is the relative position of the firm in terms of technology, intellectual property, complementary assets, and resources. Growth potential is the path, or strategic alternative, available to a firm, as well as presence of or absence of increasing returns when taking one of these paths. The dependencies of these paths must also be taken into consideration.

Dynamic Capability is defined as routines that drive the creation, evolution, and recombination of other resources, and that can assist in renewing organizational resources and improving competitive strength (Teece *et al.*, 1997).

Capability Development

Measures of capability development involve the comparison of a firm's capabilities at different points in time. Firms tend to develop capabilities based on their corporate strategy, thus different firms develop different capabilities. The key to a firm's survival over time is to develop a distinctive set of capabilities that provide competitive advantage over time. Thus, the more a firm is equipped with relevant resources, and the stronger its capabilities are to effectively use these resources, the more likely it is to develop an effective strategy.

Capability Development is defined as the outcome of a firm's dynamic capabilities over time.

3.2 Resource-Based View

Resource-based view impacts and is impacted by the logistics strategic objectives. It also impacts the logistics performance, or the alignment between logistics capabilities and logistics strategy.

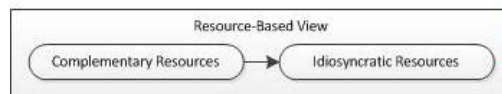


Figure 2: Resource-Based View

Complementary Resources and Idiosyncratic Resources

Complementary resources are those that enable a firm to complete their competency skill set by supplying distinct capabilities, knowledge, and resources (Jap, 1999). These are important because they allow each partner in the outsourcing relationship to concentrate on the areas that provide the greatest contribution to the relationship and to performance. Firms may combine resources in a manner that facilitates greater benefits, one of the main goals of outsourcing.

Firms may also go beyond simply pooling resources. The partnership may result in the creation of new resources that may have little to no value outside of the partnership; these are known as

idiosyncratic resources. Idiosyncratic resources may be tangible, such as equipment, or intangible, such as processes. The process of developing idiosyncratic resources is sometimes referred to as joint adaptation. Idiosyncratic resources add great value and represent organizational learning, which is often a source of competitive advantage.

Complementary Resources are defined as resources that enable a firm to fill out or complete each other's performance by supplying distinct capabilities, knowledge, and resources.

Idiosyncratic Resources are defined as resources that are a result of the partnership and that may have little to no value outside of the outsourcing relationship.

3.3 Performance

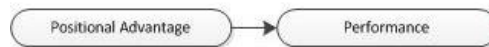


Figure 3: Positional Advantage

Firms have positional advantage when they have an efficiency or effectiveness advantage over their rivals. An efficiency advantage occurs when a firm can provide customers the same or similar value as competitors at a lower cost. An effectiveness advantage occurs when firms provide customers with more relative value than competitors at the same cost. The optimal condition would be to provide more value for lower cost compared to the competition. When firms have a comparative advantage in resources, they should occupy positions of competitive advantage.

Some resources are more critical in developing and sustaining competitive advantage. Resources will tend to lead to competitive advantage when: they are not easily replicated, are difficult to substitute, are not easily traded, and are difficult for competitors to surpass via innovation (Hunt and Morgan, 1995).

Positional Advantage is defined as a position of efficiency or effectiveness advantage over competitors.

Performance is defined as the financial performance of a firm relative to its competition.

3.4 Research Hypotheses

Scholars suggest that process alignment and organizational performance are positively related. Dynamic capabilities mediate this relationship. Organizational process alignment, namely structure alignment, strategic alignment, and IT alignment, are required to provide dynamic capabilities. Dynamic capabilities increase with the degree of horizontalness of the organizational structure.

Organizational learning depends on clear organizational goals, a sharing culture, and a connection between organizational sub-systems, structure, and culture. Organizational learning also has a positive effect on performance, as it improves learning at the individual, team, and organizational levels. Organizational learning culture is both a resource and a dynamic capability for the firm.

Organizational learning and alignment enhance each other, and their impact on performance is mediated by dynamic capability.

H1a: Organizational process alignment is positively related to organizational learning culture.

H1b: Organizational process alignment is positively related to dynamic capabilities.

H1c: Organizational learning culture is positively related to organizational process alignment.

H1d: Organizational learning culture is positively related to dynamic capabilities.

A firm possessing higher levels of dynamic capabilities focuses on developing capabilities that are in alignment with its strategic objectives; therefore, capability development is an outcome of dynamic capabilities, steered by strategy. The impact of strategy also means that firms will have to balance tradeoffs in capability development, choosing between evolutionary and revolutionary regimes (small steps versus big leaps) (Wang and Ahmed, 2007).

H1e: The higher the dynamic capabilities of a firm, the more likely it is to build capabilities in a changing environment, mediated by firm strategy.

Dynamic capabilities are created and enhanced by the organizational learning culture and process alignment with accumulated knowledge and innovation. Many empirical studies prove the positive relationship between dynamic capabilities and performance. We propose that dynamic capabilities of a firm may affect different firm performances within an industry, and thus create a positional advantage for the firm.

H1f: Dynamic capabilities are positively related to positional advantage.

H1g: Capability development is positively related to positional advantage, mediated by firm strategy.

Complementary resources enhance the process of developing idiosyncratic resources because they enable a firm to concentrate on strategic outcomes that may increase the likelihood of positive outcomes for both partners (Jap, 1999). Complementary resources enhance the creation of resource bundles that are unique and difficult to replicate. Jap (1999) found that partners are more likely to make idiosyncratic investments when complementary capabilities exist.

H2a: Complementary resources are positively related to idiosyncratic resources.

Replication of idiosyncratic resources is difficult because the bundling of heterogeneous resources create combinations that exhibit causal ambiguity and complexity. Idiosyncratic resources create potential competitive advantage because they are unique, difficult to replicate, and are constantly evolving.

H2b: Idiosyncratic resources are positively related to positional advantage.

Different kinds of competitive advantage result in firms being more profitable than others. Positional advantage takes the generic concept of competitive advantage and distinguishes the positional advantages of firms in the market from the comparative advantage of firm resources that lead to such positional advantages (Hunt and Morgan, 1995).

H3: Positional advantage is positively related to performance outcome.

4. Methods Used

Instrument Development

The survey instrument was sent electronically to most respondents and mailed to others. The overall methodology can be viewed in figure 1.

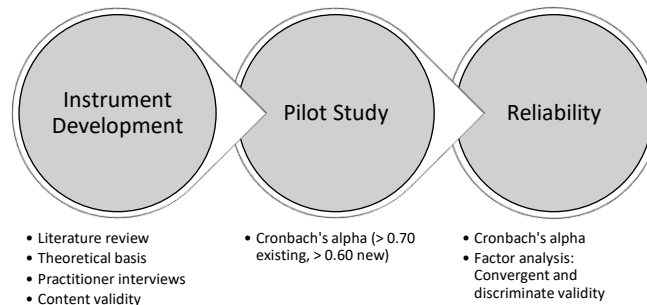


Figure 4: Methodology

Pilot Study

A pilot study was conducted to test the survey instrument with the intended target population, under controlled circumstances. The pilot test ensured that the full-scale study effectively measured the constructs of interest and minimized threats to validity. The survey was reviewed by a group of experts in the field of supply chain and logistics management who identified how well the survey items measured the constructs of interest among the target population. This review was followed by individual interviews with these participants, who were asked to comment on the appropriateness of the research questions, as well as the validity of the survey instrument in measuring constructs of interest. The survey instrument was modified based on this pre-pilot step.

Following this pre-pilot work, a small-scale pilot survey was conducted. A sample of shippers in the local community was identified. New scales were assessed for reliability using coefficient alpha, with a value of 0.60 or greater as an accepted standard for new scales (Nunnally,1978). Upon reviewing the Cronbach alphas for the new constructs from the pilot study, it was noted three new scales had an alpha of less than 0.60. Two of the scales were retained, while one item was deleted from the data set. Existing scales received a Cronbach alpha of 0.70 or higher.

Main Study

A full-scale study was conducted to assess the research questions. The full-scale study procedure consisted of identifying the target population, selecting an appropriate sample, executing the survey, and analyzing the data.

Population and Sample

The unit of analysis for this survey is the firm and supply chain. The target population for this survey is defined as shippers in the U.S. and Canada. This population was chosen for its likelihood of participating in logistics outsourcing initiatives, and the convenience of accessing the target population for study.

Sample Size

Recommendations for the design of web-based surveys were closely followed as recommended by Dillman (2000). The sample consisted of 509 members of the local chapter of CSCMP, 226 members of the Buffalo Niagara Partnership, 76 professional or personal contacts, 556 LinkedIn requests to members of related groups, 360 members of CSCMP, 317 members of ISM, and an estimated 325 members of NAPM and 250 members of APICS. This makes a known sample size of 2,044 possible respondents. It must also be noted, several requests were asked to forward the survey to additional colleagues at various companies for completion. This was encouraged; however, it does pose issues in calculating response rate, since the effective sample size is not known with accuracy. Therefore, the original sample is used for measurement, while taking into consideration that response rates are actually slightly lower than indicated due to this effect. In total, 208 responses were received. The response from the highest-ranking respondent from individual organizations was retained for analysis provided that the survey information was complete. After deleting multiple response surveys, a total of 197 responses were used in the analysis. This represents a 9.6% response rate, a sufficient sample size to perform the required data analysis.

5. Data Analysis and Findings

The overall analysis follows the two-step approach of Anderson and Gerbing (1992), which first considers the measurement model, and then the structural relationships. Upon completion of the data collection, the survey results were analyzed. The first phase of this analysis was to verify the validity of the measurement instrument, to improve the likelihood that acceptable measurement results would be achieved. In addition, ample verification was also done in accordance with established statistical procedures. Hence the procedure adopted was to first establish measurement reliability, validity analysis, followed by common factor analysis (CFA).

Profile of Respondents

Tests for response bias were conducted. Response bias is at times a significant problem in empirical research, yet, in practice, response rates tend to be generally low due to a number of factors. The method followed for assessing response bias was to compare early from late

respondents on demographic criteria. Statistically-significant differences are interpreted as evidence for response bias. A chi-squared test was performed to determine if there were significant differences between the early and the late responders on the demographic variables. For each of the variables there were no significant differences found (Firm Size: $\chi^2 = 2.344$, $p = 0.886$, Firm Age: $\chi^2 = 1.978$, $p = 0.992$, Market Dynamism: $\chi^2 = 6.165$, $p = 0.104$, Nature of Product: $\chi^2 = 1.346$, $p = 0.718$).

A chi-squared test was performed to determine if there were significant differences between respondents and non-respondents. No allowances were made for those who opted out of the survey for any reason (e.g. who were out of the office). These potential respondents were simply coded as being non-responders. There were no significant differences found between responders and non-responders; therefore, it is believed that no bias exists between respondents and non-responders ($\chi^2 = 13.47$, $p = 0.19$).

Missing Data

To control for missing data, the e-mailed version of the survey included prompts. By design respondents are allowed to opt out of answering any question; therefore, it is assumed that there will be some missing data in this research. To deal with this missing data, for each variable of interest, the responses were organized into two groups, missing and completed responses. These two groups were compared on other variables of interest. If there were significant differences between the groups, this implied that missing data might be NMAR. There may be some differences by chance, but a pattern of differences implied that there were differences between responders and non-responders. Maximum likelihood methods were employed for this research.

Evaluation of the Measurement Model

Factor analysis was conducted to establish that items load together appropriately, indicating that the measures are explained by an underlying construct. This analysis tends to strengthen claims of measurement validity. Evidence for convergent validity is that the several items measured for each construct load to a single factor, while evidence suggesting discriminant validity is that the appropriate separate factors are identified in the factor analysis. SAS® statistical software was used for this analysis.

According to the Kaiser-Guttman rule (Kaiser ,1991), a factor should be retained if the factor has an eigenvalue greater than one; however, this criterion may be applicable only to principal component analysis, not CFA. In CFA, all factors with positive eigenvalues should be retained. Factors with negative eigenvalues are not intuitively appealing, just as a negative variance is not. This oddity occurs only in common factor analysis due to the restriction that the sum of eigenvalues be set equal to the estimated common variance, not the total variance. Based on this rule, all scales contained positive eigenvalues and were retained.

For variables employed in existing research, measures with acceptable measurement quality were adopted and slightly modified to increase their applicability. For variables unique to the conceptual framework of this study, operational measures were developed and were assessed to determine

their content validity. All factors had an alpha value of greater than 0.70 for existing scales and greater than 0.60 for new scales.

Evaluation of the Structural Model

The assessment and estimation of the structural model was conducted via Structural Equation Modeling (SEM) using Partial Least Squares (PLS), a components-based approach to structural modeling. One of the primary advantages of the components-based approach to SEM is its ability to provide satisfactory results when sample sizes are small (Chin, 1995; Gefen *et al.*, 2000). For an analysis utilizing PLS, the minimum allowable sample size for this research is estimated to be 50, based on recommendations of Chin (1998). Thus our sample size is sufficient.

PLS is better suited for explaining complex relationships (Fornell and Bookstein, 1982) and for application and prediction (Anderson and Gerbing, 1988). The structural and measurement models under PLS consist of three sets of relations: (a) the inner (structural) model which specifies the relationships between latent variables, (b) the outer (measurement) model which specifies the relationships between the latent variables and their associated observed variables, and (c) the weight relations upon which the case values for the latent variables can be estimated (Chin, 1998).

To validate the PLS results, Ordinary Least Squares (OLS) and SEM were conducted using SAS® statistical software. Before this methodology could be employed, the data was tested to ensure it was not in violation of any of the major assumptions. Nonlinearity is the most serious violation of the regression model assumptions. When linearity does not hold true, the OLS estimates of the regression coefficients and the estimated variances and covariances of the regression coefficients are biased.

Dynamic Capabilities

The cross-functional and dynamic alignment of an organization should enhance the learning culture of a firm, making learning a habit and ingrained in all organizational functions; however, the results do not support the assertion. The path coefficient was significant and negative at the 5% percent level. Based on this information, the claim of a positive impact of organizational process alignment on organizational learning culture, or vice versa, cannot be supported (H1a and H1c).

The dynamic capabilities view emphasizes a company's ability to adapt, integrate, and reconfigure internal and external resources, capabilities, and competencies to match requirements of a changing environment. Dynamic capabilities consist of the processes, positions, and evolutionary paths. They are a set of specific and identifiable processes such as product development, strategic decision making, and alliancing (Eisenhardt and Martin, 2000). If a firm focuses on the evolutionary and path-dependent nature of organizational competencies or dynamic capabilities, then the theory is also related to the organizational learning perspective. The results indicate that both organizational process alignment (1.224) and organizational learning culture (0.954) are strongly, positively related to dynamic capabilities. The R^2 is moderate, with 28.3% of the variance explained by these two factors. So, although there are other factors that may need to be considered in determining dynamic capabilities, the results do support hypotheses 1b and 1d.

Firms should develop capabilities in response to a changing environment, but also, based on the corporate and logistical strategies. The key to a firm's survival is the development of a set of distinct capabilities that provide competitive advantage over time. Capability development is the consistent development of a firm's capabilities within a dynamic or changing environment over time. This implies that long term firm and logistical strategies drive the structural and organizational changes within the firm and with the alliances. Longer-term solutions are implemented. The path from dynamic capabilities to capability development is strong 0.597 and significant, with 35.6% of the variance of capability development being explained by dynamic capabilities. This makes intuitive sense since measures of capability development involve the comparison of the firm's (dynamic) capabilities at different points in time. The path for dynamic capabilities impact on positional advantage is negative (-0.015) and insignificant, thus no claim can be made in regards to the impact of dynamic capabilities on a firm's position relative to its competitors. While this may seem counterintuitive, it makes sense when analyzing the path from capability development to positional advantage, which is positive and significant (0.433). Furthermore, these factors account for 35.6% of a firm's total positional advantage, and positional advantage accounts for 25.4% of the variance in firm performance. This all suggests that dynamic capabilities alone are not sufficient to provide a firm with an advantage over competition; however, the effective implementation of these capabilities over time, has a substantial impact on a firm's bottom line.

Validation of the PLS results via OLS and SEM confirm that all variables are significant. For the first model, all of the measures for organizational process alignment and organizational learning culture, as well as interaction effects, were entered into the model as independent variables, with dynamic capabilities as the dependent variable. For the second model, the measures for dynamic capabilities were entered as independent variables, with capability development as the dependent variable. For the third model, the measures for capability development and for dynamic capabilities were entered as the independent variables, with positional advantage as the dependent variable. For dynamic capabilities, the F value for OLS ranged from 2.14 to 7.69 and all were significant at the 1% or 5% significance level, with an R^2 range of 0.1870 to 0.5750. The F value for the SEM model was 4.60 at the 1% significance level, with an R^2 of 0.30815, very close to the PLS results. For capability development, the F value for OLS ranged from 4.94 to 11.52 at the 1% significance level, with an R^2 range of 0.2365 to 0.4528. For the SEM model, the F value was 11.52 at the 1% significance level, with an R^2 of 0.45281, slightly higher than the PLS model. For positional advantage, the F value for OLS ranged from 4.05 to 12.25 at the 1% significance level, with an R^2 range of 0.1463 to 0.3873. The F value for the SEM model was 12.25 at the 1% significance level, with an R^2 of 0.38730, close to the PLS model results. Both these methods validate the PLS results; however, they do suggest that slightly more variance is explained than suggested by PLS. The results indicate a support of hypotheses 1b, 1d, 1e, and 1g.

Resource-Based View

The resource-based view focuses on discrete resources, resource endowment, and strategic factor market. When two firms work together, supplying each partner's unique set of resources should enhance the pool of resources. The pooling of these complementary resources within the relationship can lead to the creation of value-added resources. Idiosyncratic resources add much

value to a firm and represent organizational learning, a source of competitive, or positional, advantage. The results indicate that complementary resources between partners do, in fact, lead to the creation of these idiosyncratic resources. The path coefficient is strong at 0.562 and significant, and complementary resources alone account for 31.5% of the explained variance. In addition, idiosyncratic resources do positively impact (0.633) positional advantage, and the R^2 is strong (0.527). Thus, results indicate that the mere existence of resources is typically not enough for a firm to recognize high performance; instead, a firm must both have these resources, as well as be able to deploy and coordinate them, in response to a changing environment, effectively.

Validation of the PLS results via OLS and SEM confirm the PLS findings that all paths are significant. For the first model, all of the measures for complementary resources were entered into the model as independent variables, with idiosyncratic resources as the dependent variable. For the second model, the measures for idiosyncratic resources were entered as the independent variables, with positional advantage as the dependent variable. For idiosyncratic resources, the F value for OLS ranged from 3.12 to 19.56 at the 1% or 5% significance level, with an R^2 range of 0.1066 to 0.5105. For the SEM model, the F value was 14.99 at the 1% significance level, with an R^2 of 0.43115, slightly higher than the PLS results. For positional advantage, the F value for OLS ranged from 9.90 to 27.80 at the 1% significance level, with an R^2 range of 0.3334 to 0.6009. The F value for the SEM model was 27.80 at the 1% significance level, with an R^2 of 0.60094, again slightly higher than the PLS results. Both these methods validate the PLS results that hypotheses 2a and 2b cannot be rejected.

Positional Advantage

In every individual model, as well as in the integrative model, positional advantage is shown to be positively related to firm performance. Thus, in support of hypothesis 3, it can be seen that the positional advantages of firms in the market relative to competitors leads to higher firm performance.

Validation of the PLS results via OLS and SEM confirm the PLS results in terms of impact on positional advantage and performance. For the first model, all of the measures for dynamic capabilities, capability development, and idiosyncratic resources were entered into the model as independent variables, with positional advantage as the dependent variable. For the second model, the measures for positional advantage were entered as the independent variable, with performance as the dependent variable. The first model could not be estimated by OLS because it was not of full rank. For positional advantage, for the SEM model, the F value was 7.62 at the 1% significance level, with an R^2 of 0.55149. While this is a moderate amount of variance explained, it is only slightly lower than the PLS model. For performance, the F value for OLS was significant at the 1% significance level, with an R^2 range of 0.0941 to 0.3946. The F value for the SEM model was 63.02 at the 1% significance level, with an R^2 of 0.77993, much higher than PLS results, but also validating hypothesis 3.

Evaluation of the Control Variables

Annual dollar sales were used as a proxy for firm size. Four dummy variables were created and the control variable was added to the models impacting performance. Respondents were asked to

report annual sales in the following categories: > \$1 billion, \$500 million to \$1 billion, \$100 million to \$499.99 million, \$20 million to \$99.99 million, and <\$20 million. While the categories were uneven with a heavy emphasis on larger companies, there were no significant differences noted in the paths, indicating that larger companies do exhibit tighter centralization of their logistics functions.

When evaluating firm age, the first measure was life cycle stage for the product or service. The respondent categories were: Introduction, Growth, Maturity, and Decline. The responses to this question were also compared to the responses to “Number of years of logistics experience.” While this was not a direct measure of firm age, it did validate the answers to the life cycle, thus ensuring it is a valid proxy for firm age. In addition, validation of this measure was confirmed through the responses to the types of processes and information systems used by the firms. Those that utilized sophisticated systems (e.g. TMS, WMS, RFID, etc.) were assumed to be more mature firms. If reissued, this survey should contain a question directly on firm age. No significant differences were observed with or without this control factor.

Market dynamism was used to effectively measure dynamic capabilities. Respondents were asked if the products and markets in which they compete were turbulent and competitive. Answers to these two questions were intentioned to indicate dynamism. No significant differences were observed with or without this control factor.

Nature of the product was determined based on responses to question on product seasonality, perishability, and customizability. Three dummy variables were created to control for the nature of the product. There were no significant differences noted with this control variable present.

Table 1: Summary of Hypotheses and Results

Theory	Hypothesis	Result
Dynamic Capabilities	H1a: Organizational process alignment is positively related to organizational learning culture.	Not supported
	H1b: Organizational process alignment is positively related to dynamic capabilities.	Supported
	H1c: Organizational learning culture is positively related to organizational process alignment.	Not supported
	H1d: Organizational learning culture is positively related to dynamic capabilities.	Supported
	H1e: The higher the dynamic capabilities of a firm, the more likely it is to build capabilities in a changing environment, mediated by firm strategy.	Supported
	H1f: Dynamic capabilities are positively related to positional advantage.	Not supported
	H1g: Capability development is positively related to positional advantage, mediated by firm strategy.	Supported
Resource-Base	H2a: Complementary resources are positively related to idiosyncratic resources.	Supported
	H2b: Idiosyncratic resources are positively related to positional advantage.	Supported

Positional Advantage	H3: Positional advantage is positively related to performance outcome.	Supported
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6. Discussion of Results

The purpose of this research was to develop a multidisciplinary, theory-based approach to measure the factors that induce shippers to outsource logistical functions, as well as the impact of outsourcing on positional advantage and performance. There is limited research linking theoretical structures to logistics outsourcing, and there has been very little research that models the correlation of outsourcing success to the proposed theoretical constructs of the proposed theories in this study.

There is a clear delineation between resources, capabilities or competences, and dynamic capabilities. Resources, as studied in RBV theory, are discrete. RBV focuses on these resources, their endowment, and strategic factor market. The focus is on identifying the particular resources that are important on a context, with focus on complementary and idiosyncratic resources. The premise is that firms must have these resources at any given point in time to be successful. In contrast, capabilities or competences are the ability to deploy and coordinate resources to achieve organizational goals. Unlike discrete resources, capabilities and competences are activity-based. Core competencies are those that bring competitive advantage to the organization. Dynamic capabilities emphasize a company's ability to adapt, integrate, and reconfigure internal and external resources, capabilities, and competences to match the requirements of a changing environment. Dynamic capabilities consist of processes, positions, and evolutionary paths.

This research shows that although a firm may be able to successfully determine what its resources, practices, capabilities, and competences may be, this alone does not guarantee firm success. This explains only a relatively small part of what makes a firm competitive in the market. Rather, it is critical that a firm be able to assess the market and market changes, and adapt their resources and capabilities accordingly. In terms of logistics, which itself can be a volatile market, the findings conclude that firms, in response to environmental dynamism, do not need to restructure the logistics organization, but they do need focus on the processes or activities related to this change. Learning within the logistics function should be ingrained across all functions.

Furthermore, it was found that defining the routines that drive creation, evolution, and recombination of the resources, in search of renewing the organizational resources and improving competitive strength was also not sufficient in driving a favorable competitive position. The key to a firm's survival over time is to develop a distinctive set of capabilities that provide competitive advantage over time. The more a firm is equipped with relevant resources, and the stronger its capabilities are to effectively use these resources, the more likely it is to develop an effective strategy. Thus, dynamic capabilities alone do not drive positive competitive performance, it the continual renewal and deployment of these capabilities that drives long-term performance.

Finally, it was found that positional advantage does have a positive impact on firm and supply chain performance. Firms have a positional advantage when they have an efficiency or effectiveness advantage over their competitors, with the optimal condition being to provide more

value for lower cost. A firm may also have a comparative advantage in terms of resources. When firms have a comparative advantage in terms of resources, they should occupy positions of competitive advantage.

Lastly, this research contributed to the literature a set of new measures for measuring different constructs related to logistics outsourcing. These constructs include: dynamic capabilities, capability development, and complementary resources.

Limitations

There are several limitations associated with this research. As such, the conclusions drawn from this study must be interpreted within the context of the following limitations. First, the study examined logistics outsourcing from the perspective of the shipper. The perception of the logistics outsourcing provider was not captured in the data. Second, all constructs were measured using perceptual scales. Ideally, objective measures should be used to match the perceptual measure, especially those that are related to financial performance. Another concern is the comparability of the findings from this study conducted in the US across other countries, especially Canada. Although Canadian shippers were approached, the respondent pool was primarily US-based. Some researchers have claimed that inter-organizational interactions may be affected by cultural differences; however, others have found that cultural differences have not affected their results. Despite this controversy, given that most logistics outsourcing studies have been conducted with US firms, there may be cultural-specific issues that could affect the results.

Future Research

The limitations associated with this research present several viable opportunities for future research. Future research will begin by obtaining a larger sample size, so the results can again be verified using other methodologies. This sample should extend into Canada, if possible. Second, studies from the perspective of the logistics provider can provide a more complete picture of the impact of logistics outsourcing on supply chain performance.

Managerial Implications and Conclusions

This research enhances the understanding of the antecedents of logistics outsourcing and identifies the conditions for optimal performance of shipper and provider in outsourcing relationships. Thus, it also offers practical insights for both shippers and logistics providers for improving firm and supply chain performance. This research is aimed at empirically validating or refuting the theoretical models of relevance identified, specifically in the logistics outsourcing context.

Theory development can also often assist the practitioner. Supply chain management (SCM) stresses the importance of building relationships and business processes that deliver optimal value to customers by ensuring that value is created at each stage of the supply chain. Maintaining a supply chain that is capable of doing this becomes the organization's primary focus, with logistics

identified as one of the activities that can be employed in the creation of such value. The ability to outsource logistics capability can thus be a driver to creating and sustaining competitive advantage.

The findings conclude that firms should ensure that a variety of factors are in place to obtain logistics outsourcing success. First, firms must identify the critical resources, then successfully deploy and coordinate these resources. Finally, they must ensure that their resources and capabilities are continually assessed and reinvented as the environment changes. The processes must be integrated into the logistics function. Given that logistics often entails a large spend, these results can have a significant impact on the bottom line.

Resources

- Anderson, J.C. and Gerbing, D.W. 1988. "Structural Equation Modeling in Practice: A Review and Recommended Two-Step Approach." *Psychological Bulletin* 103 (3):411-23.
- Anderson, J.C. and Gerbing, D.W. 1992. "Assumptions and Comparative Strengths of the Two-Step Approach." *Sociological Methods & Research*, 20 (3):321-33.
- Andersson, D., and Norman, A., 2002. "Procurement of logistics services—a minutes work or a multi-year project?" *European Journal of Purchasing and Supply Management* 8 (1):3-14.
- Bade, D.J., and Mueller, J.K. 1999. "New for the Millennium: 4PL." *Transportation & Distribution* 40 (2):78.
- Bagchi, P.K., and Virum, H. 1996. "European Logistics Alliances: A Management Model." *The International Journal of Logistics Management* 7 (1):93-108.
- Barney, J.B. 1991, "Firm resources and sustained competitive advantage." *Journal of Management*, 17 (1):99-120.
- Bask, A.H. 2001. "Relationships among TPL providers and members of supply chains - a strategic perspective." *Journal of Business & Industrial Marketing* 16 (6):470-486.
- Berglund, M., van Laarhoven, P., Sharman, G., and Wandel, S. 1999. "Third-Party Logistics: Is There a Future?" *The International Journal of Logistics Management* 10 (1):59-70.
- Bowersox, D. J. 1990. *The Strategic Benefits of Logistics Alliances*. BOULDER: HARVARD BUSINESS REVIEW.
- Brah, S.A., and Lim, H.Y. 2006. "The effects of technology and TQM on the performance of logistics companies." *International Journal of Physical Distribution & Logistics Management* 36 (3):192-209.
- Brekalo, L., Albers, S., and Delfmann, W. 2013. "Logistics alliance management capabilities: Where are they now?" *International Journal of Physical Distribution & Logistics Management* 43 (7):529-543.

- Brewer, B., Ashenbaum, B., Ogden, J.A. 2013. "Connecting Strategy-linked outsourcing approaches and expected performance." *International Journal of Physical Distribution & Logistics Management* 43 (3):176-204.
- Chin, W.W. 1995. "Partial Least Squares is to LISERAL as Principal Components Analysis is to Common Factor Analysis." *Technology Studies*, 2:315-19.
- 1998. "Issues and Opinion on Structural Equation Modeling." *MIS Quarterly*, 22 (1).
- Connor, K.R. 1991, "A historical comparison of resource-based theory and five schools of thought within industrial-organization economics: Do we have a new theory of the firm?" *Journal of Management*, 17 (1):121-54.
- Coyle, J.J., and Bardi, E.J. 1980. *The management of business logistics: John J. Coyle, Edward J. Bardi.* St. Paul: St. Paul : West Pub. Co., c1980.
- Das, T.K. and Teng, B. 2000. "A resource-based theory of strategic alliances." *Journal of Management*, 26 (1): 31-61.
- de Boer, L., Gaytan, J., and Arroyo, P. 2006. "A satisficing model of outsourcing." *Supply Chain Management: An International Journal* 11 (5):444-455.
- Dierickx, I. and Cool, K. 1989. "Asset stock accumulation and sustainability for competitive advantage." *Management Science*, 35 (12):1504-11.
- Dillman, D.A. 2000. *Mail and Internet surveys: the tailored design method.* Chichester; New York: Wiley.
- Eisenhardt, K.M. and Martin, J.A. 2000. "Dynamic capabilities: What are they?" *Strategic Management Journal*, 21:1105-21.
- Foersti, K., Kirchoff, J.F., and Bals, L. 2016. "Resoring and insourcing: Drivers and future research directions." *International Journal of Physical Distribution & Logistics Management* 46 (5):492-515.
- Fornell, C. and Bookstein, F.L. 1982. "Two Structural Equation Models: LISERAL and PLS Applied to Consumer Exit-Voice Theory." *Journal of Marketing Research*, 19 (4):440-52.
- Fung, P., and Wong, A.. 1998. "Case study: managing for total quality of logistics services in the supply chain." *Logistics Information Management* 11 (5):324-329.
- Gammelgaard, B., and Larson, P. 2001. "Logistics in Denmark: A Survey of the Industry." *International Journal of Logistics Research and Applications* 4 (2):191-206.
- Gardner, J.T., Cooper, M.C., and Noordewier, T.G. 1994. "Understanding shipper-carrier and shipper-warehouse relationships: Partnerships revisited." *Journal of Business Logistics* 15 (2):121.
- Gefen, D., Straub, D.W., and Boudreau, M. 2000. "Structural Equation Modeling and Regression: Guidelines for Research Practice." *Communications of the Association for Information Systems*, 4 (7).

- Grant, P. 1991. "The Resource-Based Theory of Competitive Advantage: Implications for Strategy Formulation." *California Management Review*, Spring 1991.
- Hartman, P.L., Ogden, J.A., And Hazen, B.T. 2017. "Bring it back? An examination of the insourcing decision." *International Journal of Physical Distribution & Logistics Management* 47 (2/3):1-44.
- Hax, A.C. and Majluf, N S. 1996. *The Strategy Concept and Process: A Pragmatic Approach* (Prentice Hall).
- Heene, A. and Sanchez, R. 1997. *Competence-based strategic management* (NY: John Wiley & Sons).
- Helfat, C.E. and Peteraf, M.A. 2003. "The dynamic resource-based view: Capability lifecycles." *Strategic Management Journal*, 24:997-1010.
- Hertz, S., and Alfredsson, M. 2003. "Strategic development of third party logistics providers." *Industrial Marketing Management* 32 (2):139-149.
- House, R.G., and Stank, T.P. 2001. "Insights from a logistics partnership." *Supply Chain Management: An International Journal* 6 (1):16-20.
- Hunt, S.D. and Morgan, R.M. 1995. "The comparative advantage theory of competition." *Journal of Marketing*, 59 (2):1-15.
- Huo, B., Liu, C., Kang, M., and Zhao, X. 2015. "The impact of dependence and relationship commitment on logistics outsourcing: Empirical evidence from Great China." *International Journal of Physical Distribution & Logistics Management* 34 (9/10):887-912.
- Jap, S.D. 1999. "Pie-expansion efforts: Collaboration processes in buyer-seller relationship." *Journal of Marketing Research*, 36 (3), 461-75.
- Kaiser, H.F. 1991. "Coefficient alpha for a principle component and the Kaiser-Guttman Rule." *Psychological Reports* 68:855-858.
- Knemeyer, A.M., Corsi, T.M., and Murphy, P.R. 2003. "Logistics outsourcing relationships: Customer perspectives." *Journal of Business Logistics* 24 (1):77.
- Knemeyer, A.M., and Murphy, P.R. 2005. "Exploring the Potential Impact of Relationship Characteristics and Customer Attributes on the Outcomes of Third-party Logistics Arrangements." *Transportation Journal* 44 (1):5-19.
- Ko, H.J., Ko, C.S., and Kim, T. 2006. "A hybrid optimization/simulation approach for a distribution network design of 3PLS." *Computers & Industrial Engineering* 50 (4):440-449.
- Lamb, R.B. 1984. *Competitive Strategic Management* (Englewood Cliffs, NJ: Prentice Hall, Inc.).
- Lambert, D.M., Emmelhainz, M.A., and Gardner, J.T. 1999. "Building successful logistics partnerships." *Journal of Business Logistics* 20 (1):165.
- Lambe, C.J., Spekman, R.E., and Hunt, S.D. 2002. "Alliance competence, resources, and alliance success: Conceptualization, measurement, and initial test." *Journal of the Academy of Marketing Science*, 30 (2):141-58.

- Lieb, R.C. 2008. "The year 2007 survey: Provider CEO perspectives on the current status and future prospects of the third party logistics industry in the Asia-Pacific region." *International Journal of Physical Distribution and Logistics Management* 38 (6):495-512.
- Lieb, R.C. 1992. "The Use of Third-Party Logistics Services by Large American." *Journal of Business Logistics* 13 (2):29.
- Lieb, R. and Bentz, B.A. (2005). "The use of third-party logistics services by large American Manufacturers: the 2004 survey." *Transportation Journal*, 44 (2):5-15.
- Lieb, R.C., and Randall, H.L. 1996. "CEO perspectives on the current status and future prospects of the third-party logistics industry in the United States." *Transport Logistics* 1 (1):51-66.
- Lieb, R.C., Peters, M., Cooper, J., and Randall, H.. 1998. "The Third-Party Logistics Industry in Europe: Provider Perspectives on the Industry's Current Status and Future Prospects." *International Journal of Logistics Research and Applications* 1 (1):9-25.
- McGinnis, M.A., Kochunny, C. M., and Ackerman, K.B. 1995. "Third Party Logistics Choice." *The International Journal of Logistics Management* 6 (2):93-102.
- Meade, L., and Sarkis, J.. 2002. "A conceptual model for selecting and evaluating third-party reverse logistics providers." *Supply Chain Management: An International Journal* 7 (5):283-295.
- Menon, M.K., McGinnis, M.A., and Ackerman, K.B.. 1998. "Selection criteria for providers of third-party logistics services: An exploratory study." *Journal of Business Logistics* 19 (1):121.
- Min, H., and Joo, S.J.. 2006. "Benchmarking the operational efficiency of third party logistics providers using data envelopment analysis." *Supply Chain Management: An International Journal* 11 (3):259-265.
- Moore, K.R., and Cunningham, W.A. 1999. "Social exchange behavior in logistics relationships: a shipper perspective." *International Journal of Physical Distribution & Logistics Management* 29 (2):103-121.
- Neo, H., Xie, M., and Tsui, K. 2004. "Service quality analysis: case study of a 3PL company." *International Journal of Logistics Systems and Management* 1 (1):64-80.
- Newbert, S.I. 2007. "Empirical research on the resource-based view of the firm: An assessment and suggestions for future research." *Strategic Management Journal*, 28 (1):121-46.
- Nunnally, J.C. 1978. *Psychometric theory*: Jum C. Nunnally. New York: New York : McGraw-Hill, c1978.
- Paché, G. 1998. "Logistics outsourcing in grocery distribution: a European perspective." *Logistics Information Management* 11 (5):301-308.
- Pappu, M., and Mundy, R.A. 2002. "Understanding Strategic Transportation Buyer-Seller Relationships from an Organizational Learning Perspective: A Grounded Theory Approach." *Transportation Journal* 41 (4):36-50.
- Penrose, E. T. (1959), *The theory of the growth of the firm* (London, UK: Basil, Blackwell, and Mott).

- Porter, M.E. 1980. *Competitive strategy* (New York: Free Press).
- Prahalad, C.K. and Hamel, G. 1990. "The Core Competence of the Corporation." *Harvard Business Review*, 79-91.
- Rabinovich, E., Windle, R., Dresner, M., and Corsi, T. 1999. "Outsourcing of integrated logistics functions." *International Journal of Physical Distribution & Logistics Management* 29 (6):353-374.
- Ray, G., Barney, J.B., and Muhanna, W.A. 2004. "Capabilities, business processes, and competitive advantage: Choosing the dependent variable in empirical tests of the resource-based view." *Strategic Management Journal*, 25, 23-37.
- Rumelt, R.P. 1984. "Toward a strategic theory of the firm" in R. B. Lamb (ed.), *Competitive strategic management* (NJ: Prentice Hall).
- Sallnas, U. 2016. "Coordination to manage dependencies between logistics service providers and shippers: An environmental perspective." *International Journal of Physical Distribution & Logistics Management*, 46 (3):316-340.
- Sink, H.L., and Langley, Jr., J. 1997. "A managerial framework for the acquisition of third-party logistics services." *Journal of Business Logistics* 18 (2):163.
- Skjoett-Larsen, T. 2000. *Third party logistics - from an interorganizational point of view*. Vol. 30: Emerald Group Publishing, Ltd.
- Sum, C., and Teo, C. 1999. "Strategic posture of logistics service providers in Singapore." *International Journal of Physical Distribution & Logistics Management* 29 (9):588-605.
- Teece, D.J. 2007. "Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance." *Strategic Management Journal*, 28:1319-50.
- Teece, D. J., Pisano, G., and Shuen, A. 1997. "Dynamic capabilities and strategic management." *Strategic Management Journal*, 18 (7), 509-33.
- Vaidyanathan, G. 2005. *A framework for evaluating third-party logistics*. Vol. 48: Association for Computing Machinery, Inc.
- Wang, C.L. and Ahmed, P.K. 2007. "Dynamic capabilities: A review and research agenda." *International Journal of Management Reviews*, 9 (1):31-51.
- Weiser, J.R. 2000. "Organizational alignment: Are we heading in the same direction?" *The Kansas Banker*, 90 (1):11-15.
- Wernerfelt, B. 1984. "A resource-based view of the firm." *Strategic Management Journal*, 5 (2):171-80.
- Zäpfel, G., and Wasner, M. 2002. "Planning and optimization of hub-and-spoke transportation networks of cooperative third-party logistics providers." *International Journal of Production Economics* 78 (2):207-220.

Zinn, W., and Parasuraman, A. 1997. "Scope and intensity of logistics-based strategic alliances: A conceptual classification and managerial implications." *Industrial Marketing Management* 26 (2):137-147.

Zollo, M. and Winter, S.G. 2002. "Deliberate learning and the evolution of dynamic capabilities." *Organizational Science*, 13 (3):339-51.

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