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# Developing logistics competencies through third party logistics relationships

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**Keywords** Distribution management, Competences, Strategic management

**Abstract** This paper considers third party logistics (TPL) from a resource and competence perspective. New competencies are developed in the relationship between the shipper and the TPL provider. A typology of TPL relationships is developed going from market exchanges to joint logistics solutions. Here, the article will concentrate on the highest level – joint logistics solutions. The theoretical grounding of competence development will be outlined. Two case examples will illustrate the learning process in TPL arrangements. Finally, the article will discuss managerial implications and implications for future research in TPL.

## 1. Objective

The objective of this paper is to develop an alternative typology of third party logistics (TPL) relationships to allow us to use TPL not only to exploit competencies, but also to encourage competence development in the dyadic relationship between logistics providers and their customers. The theoretical approach is the resource and competence-based view of the firm.

First, we will give a short presentation of the method and approach applied in the paper, followed by a review of various research streams on third party logistics. In the fourth section, we will develop a new typology of TPL relationships based on competencies and asset specificity. Next, we will present the theoretical groundings of competence dynamics. The sixth section will illustrate different types of learning in TPL arrangements through work case examples. The paper concludes with a discussion of implications for managers and researchers.

## 2. Methodology

A conceptual framework has been developed based on a literature review within TPL and the recently emerged competence theory within strategic management. Although the primary emphasis is the theoretical development of the framework, we will provide some empirical evidence to explain the opportunities and constraints that the companies face in moving from a non-strategic towards a strategic use of TPL. The typology of TPL relationships and the discussion of implications are based on empirical materials collected over several years from contacts with shippers and TPL professionals in research projects and at conferences. Managers from both the



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buying company and the provider of logistics services were interviewed using a semi-structured interview guide. The focus was on the respondents' own view of anticipated and unpredicted incidents resulting in actions aimed to improve logistics performance. As a consequence of the dynamic processes that emerged after signing the contract, these actions reveal an intentional effort from one or both parties. This corrective follow-up on current practices provides evidence of "intentional actions" by the actors, i.e. a kind of "planned development".

Our data analysis, guided by the theoretical orientation of the paper, revealed how a variety of management actions, processes, etc. in each case contribute to the various stages of the theoretical framework. This view corresponds to the logic in "pattern-matching" as a mode of analysis, the idea of which is to relate several pieces of information from the same case to some theoretical propositions (Yin, 1994). According to Yin (1994), this mode of analysis strengthens the internal validity of the case study.

### 3. Literature review of TPL

TPL has many definitions and interpretations. For an overview see Berglund (1997). The Scandinavian definitions are normally broader than the US definitions, as Scandinavian managers have an old tradition for close and long-term co-operation with external partners.

Berglund *et al.* (1999) define TPL as:

Activities carried out by a logistics service provider on behalf of a shipper and consisting of at least management and execution of transportation and warehousing (if warehousing is part of the process).

Other activities include information services, value-added activities, call centres, including invoicing and payment services.

In this definition, management support is required in addition to the operational activities. Management support can range from simple inventory management to advanced consultancy about re-alignment of supply chain management.

Bagchi and Virum (1996, p. 193) distinguish between simple outsourcing of logistics activities and logistics alliances. According to their definition, a logistics alliance means:

A long-term formal or informal relationship between a shipper and a logistics provider to render all or a considerable number of logistics activities for the shipper. The shipper and the logistics provider see themselves as long-term partners in these arrangements. Although these alliances may start with a narrow range of activities, there is a potential for a much broader set of value-added services, including simple fabrication, assemblies, repackaging, and supply chain integration.

In contrast to the first definition, which emphasizes the performance of functional activities, the last definition stresses the duration of the relationship

between the shipper and the logistics service provider, including the potentially wide range of logistics services in the arrangement.

The present research of third party logistics can be classified into different streams. One stream primarily aims towards an understanding of the reasons for entering TPL, the number and types of outsourced activities, and the results of TPL (e.g. Lieb *et al.*, 1993; Peters *et al.*, 1998; Murphy and Poist, 2000; Laarhoven *et al.*, 2000). Another stream is concerned with various stages in the process of buying TPL (e.g. Sink and Langley, 1997; Bagchi and Virum, 1998). A third stream analyzes TPL from a transaction costs approach (Aertsen, 1993; Andersson, 1997; Skjoett-Larsen, 2000). This is coherent with the prevalent assumption of efficiency in the logistics literature, in which customer service must be maximized at the lowest logistics costs (e.g. Stock and Lambert, 2001), and with arguments from transaction cost economics (e.g. Williamson, 1985, 1999).

Researchers from other disciplines have suggested another venue for inter-organizational relationships, in which the ideal of efficiency is challenged by the notion that firms may advance their existing knowledge and competencies within specific areas of business through interactions with their suppliers (e.g. Hamel, 1991; Haakansson *et al.*, 1999). Furthermore, a network perspective has been applied to TPL by Dreyer (1998) and Skjoett-Larsen (2000).

#### 4. A typology of TPL arrangements

Bowersox (1990) places the relationship between buyer and seller of logistics functions on a continuous scale going from single transactions to integrated service agreements. The lowest level of co-operation encompasses single transactions and corresponds to the traditional relationship between buyer and seller on the transport market. The agreements are normally short term and informal and carry no commitments except the specific transaction. Price is the main leverage. Moving towards the right, the agreements become more formalized and the mutual obligations increase. Andersson and Norrman (2002) distinguish between advanced logistics services, comprising the most complex procurement of logistics services, and basic logistics services, covering services on the other end of the scale.

Cox (1996) suggests a typology of external contractual relationships spanning internal contracts and incentives (hierarchy) to adversarial leverage (market exchanges). According to Cox (p. 62), core skills should always be controlled through internal contracts. Complementary skills of medium asset specificity will be outsourced through close external contracts based on various forms of alliance. Low asset specificity skills will be outsourced through arm's length contracts.

Cox uses his typology to classify various types of buyer-supplier relationships. In the following, we have adapted Cox's typology to propose different types of TPL relationships, as illustrated in Figure 1.

At the lowest level of collaboration, we find shippers who buy transport and logistics services on the "spot market". The relations between the logistics service providers and their clients are short-term and adversarial. The focus is on prices. Asset specificity is low and the services offered by the logistics service providers are standard skills.

At the next level, customized logistics solutions (e.g. Van Hoek, 2000), the logistics service provider offers a broad range of standard services from which the customer can select a "package" of modules. Asset specificity is low/medium, because the services can easily be adjusted to other clients. The skills can be seen as complementary to the customers. The duration of the relationship is typically limited to one year or less. Information sharing and joint problem solutions are limited. The shipper's focus is on cost-efficiency and service improvement. There are only minor adjustments to the customer's specific requirements. The advantage for the TPL provider is primarily economies of scale and scope.

At the third level, joint logistics solutions, the shipper and the logistics service provider jointly develop a logistics solution that is unique for the particular TPL relationship. The shipper and the TPL provider look at the collaboration as a win-win relationship. They have long-term expectations and are willing to share information and solve problems jointly. The asset specificity is medium/high – often involving human assets (e.g. knowledge and experience transformation, exchange of personnel) and physical assets (e.g. information technology and warehouse facilities). The TPL provider's competencies are complementary to the shipper's core competencies. Innovation capabilities and development of new competencies in the

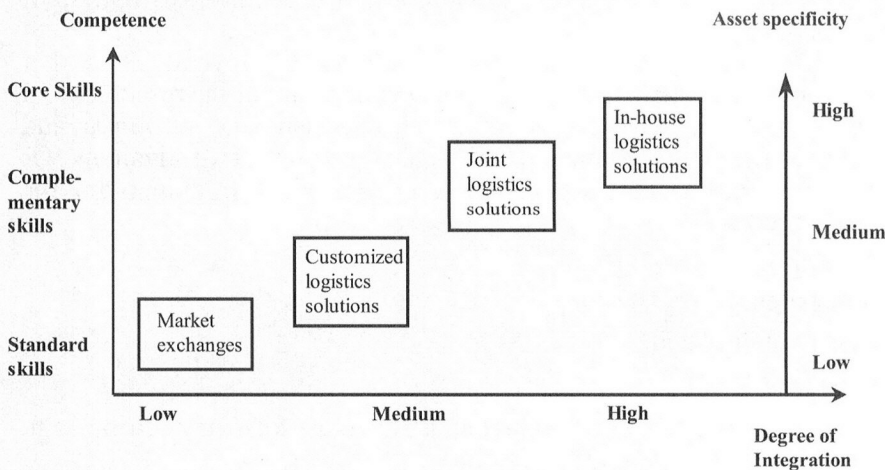


Figure 1.  
TPL in a competence  
perspective

relationship are considered essential. We will explain this level in more detail in the following section, both with respect to theoretical grounding and empirical examples.

The fourth stage is in-house logistics solutions. Here, logistics is seen as a core skill in the company and the asset specificity is normally high, e.g. in terms of dedicated assets or specialized know-how among the staff. This is in accordance with the transaction costs theory, which recommends hierarchy as the most efficient governance structure in situations with high asset specificity. But it also applies to the competence theory, which recommends keeping core competencies in-house and outsourcing non-core competencies. An example of such an arrangement is Wal-Mart's vendor managed inventory (VMI) system and cross-docking distribution system, which differentiate Wal-Mart from its major competitors (Stalk, 1988; Olavarrieta and Ellinger, 1997). It is important to note that the framework in Figure 1 does not depict a successive progress from one stage to another. It illustrates that the various forms of logistics solutions are contingent on the nature of competence and degree of asset specificity. For example, in-house solutions should not be treated as the final stage.

## 5. Theoretical groundings of competence dynamics[1]

### 5.1 Resource-based perspective (RBP)

According to the resource-based perspective, the entity of the firm is seen as a "collection of productive resources". The basic units of analysis are not end products or strategic business units, but rather "resources" (Penrose, 1959; Grant, 1991; Peteraf, 1993), capabilities (Grant, 1991; Amit and Schoemaker, 1993), the firm's "competencies" (Prahalad and Hamel, 1990; Heene and Sanchez, 1997), or "strategic assets" (Amit and Schoemaker, 1993). According to this view, competitive advantage is created endogenously, starting with the firm's possession of heterogeneous resources and capabilities (Grant, 1991; Peteraf, 1993).

Grant (1991), Barney (1991), and Peteraf (1993) identify several factors that contribute to the rent-earning potential and sustainability of the resources and capabilities. Grant (1991) proposes four characteristics of resources and capabilities as the main determinants of sustainable competitive advantage. Or more precisely, four barriers that may prevent competitors from imitating the firm's resources:

- durability;
- transparency;
- transferability; and
- replicability.

According to Barney (1991), a resource must have the following attributes to hold the potential of competitive advantage:



- valuable;
- rare;
- imperfectly imitable; and
- not substitutable.

Similarly, Peteraf (1993) suggests the following criteria:

- heterogeneity;
- *ex-ante* limits to competition;
- *ex-post* limits to competition; and
- imperfect mobility.

From this view, the RBP is much more competitive oriented than the growth theory suggested by Penrose. Moreover, Jap (2001) argues that dyadic relationships between buyers and suppliers may enhance the barriers of resource imitation. Yet, this view lacks a reflection upon the building and development of resources and capabilities and hence on how the underlying, dynamic, mechanisms of competitive advantage are mobilized.

### 5.2 Competence dynamics

The competence-based approach (CBA) derived from the resource-based perspective (RBP) implies that focus on competition is no longer the short-term aim of the company's price and performance policy for current products. Long-term competitiveness is rather associated with building core competencies at a lower cost and faster pace than competitors (Prahalad and Hamel, 1990, p. 81).

All firms face a competitive decline. Collis (1994) states that a firm's capabilities are vulnerable to the following three dimensions: first, a capability may erode when the firm adapts to external or competitive conditioned changes. Second, a capability may be replaced by a different capability. And third, the current capability may be surpassed by a better capability. A central area of RBP application is how to target, develop, and deploy strategic assets (Peteraf, 1993). The competence-based approach proceeds to reflect upon competence dynamics. Several researchers have considered these issues, and the field is far from unified or consistent (Hodgson, 1998, p. 36).

Hamel and Prahalad (1994, p. 245) suggest that setting up a core competence acquisition agenda and building and deploying core competencies are key factors in competence management. Heene and Sanchez (1997) take the perspective one step further and explain in detail how companies can get an understanding of how competence building and leveraging drive industry evolution. First, competence leverage involves the use of existing competencies on current or new market opportunities. This may require quantitative changes in the firm's current capabilities. Competence development, however, requires qualitative changes in the firm's portfolio of capabilities.

Probably the most pervasive view on competence dynamics is the paradigm of dynamic capabilities, which assumes a Schumpeterian world of innovation-based competition and creative destruction of existing competencies (e.g. Leonard-Barton, 1992). Eisenhardt and Martin (2000) define dynamic capabilities as:

The firm's processes that use resources – specifically the processes to integrate, reconfigure, gain and release resources – to match and even create market change. Dynamic capabilities thus are the organizational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve, and die.

Markets are viewed as dynamic[2], and the challenge is to achieve competitive advantage in the context of rapid and unpredictable changes (Eisenhardt and Martin, 2000). Therefore, the sources of competitive advantage are two-fold. First, dynamics, referring to the capacity to renew competences. Second, the capability to adapt, integrate, and reconfigure “internal and external organizational skills, resources, and functional competences to match the requirements of a changing environment” (Teece *et al.*, 1997). Eisenhardt and Martin (2000) reject the assumption suggested by the RBP that the resources are heterogeneous by proposing that the functionality of dynamic capabilities can be duplicated across the boundaries of the firm. But their value is rooted in “the resource configurations that they create, not in the capabilities themselves”. Hence, managerial efforts should not be directed towards the unique characteristics of the individual resources as suggested by the RBP. Rather, dynamic capabilities try to enhance existing resource configurations (“logic of leverage”), and to build new resource configurations (“logic of opportunity”) (Eisenhardt and Martin, 2000). Here, the value of capabilities is defined irrespective of a firm's performance. If we look at the methodology, we are not trying to produce evidence in favour of the causal relationship between the possession of certain functional (logistics) capabilities and the firm performance defined in terms of “world class” (e.g. The Global Research Team at Michigan State University, 1995). We are rather aiming to understand the generative mechanisms of strategic attributes that are necessary, but not sufficient to gain competitive advantage.

The pattern of effective dynamic capabilities is conditioned by the nature of market dynamics in the sense that the capabilities rely upon existing knowledge to various degrees (Eisenhardt and Martin, 2000). Moderately dynamic markets, where the overall industry structure is clear, rely primarily on existing knowledge. But in high-velocity markets, where the industry structure is unclear and changes are non-linear and less predictable, the dynamic capabilities focus more on generating new situation-specific knowledge than relying on existing knowledge (Eisenhardt and Martin, 2000).

Table I summarizes briefly the forces that stimulate dynamics, i.e. generate the demand for dynamic capabilities and the means by which dynamics may be serviced.

In general, learning plays a central role in advancing a firm's capabilities (Lane and Lubatkin, 1998). Especially, the evolution of dynamic capabilities is guided by learning mechanisms (Eisenhardt and Martin, 2000).

The next section addresses a reconceptualization of TPL as it may service dynamics from a competence perspective. The discussion focuses on the ability of TPL to generate venues that may support the building of core competences and ultimately contribute to the competitiveness of the firm. This is similar to what has been termed viewing TPL as a means to configure logistics competencies (Halldorsson, 1998). Building on TPL as "joint logistics solutions" (cf. the typology in Figure 1), the examples in the following section refer to features in the TPL dyadic that can be associated with indicators of inter-firm dynamics and competence development such as:

- learning from the other party; and
- joint learning.

## 6. Developing competencies in TPL relationships

It is a basic assumption in the resource-based perspective that a company is dependent on resources controlled by others (see Penrose, 1959). Another assumption is the existence of heterogeneous resources (Alchian and Demsetz, 1972). To Hamel (1991, p. 84), an alliance is not just a way of acquiring skills by accessing these (quasi-internalization), corresponding to the two lower levels in Figure 1. An alliance may also represent the idea of and the mechanism to actually acquire a partner's skills and internalize them into one's own organization (de facto internalization). In this way, a dyadic relationship becomes more learning oriented than output oriented (Westney, 1988).

According to Haakansson (1993), such an alliance enables the parties to learn from each other in a TPL relationship. Haakansson (p. 215) distinguishes between three different ways of learning. First, through the company's own experimentation, i.e. learning by doing. Second, by using the knowledge and experience of the counterparty. Third, through joint learning based on several actors' knowledge and experimentation. In the following, we will illustrate the

| Stimulating dynamics     | Servicing dynamics  |
|--------------------------|---|
| Erosion <sup>a</sup>     | Competence leverage (quantitative changes) <sup>b</sup>   |
| Replacement <sup>a</sup> | Competence development (qualitative changes) <sup>b</sup> |
| Surpassing <sup>a</sup>  | Logic of leverage <sup>c</sup>                            |
|                          | Logic of opportunity <sup>c</sup>                         |

Source: <sup>a</sup> Collis (1994); <sup>b</sup> Heene and Sanchez (1997); <sup>c</sup> Eisenhardt and Martin (2000)

**Table I.**  
Factors stimulating or  
servicing dynamics



### *6.1 Learning through the counterparty's knowledge and experience*

The first empirical example demonstrates the development and leverage of a performance measurement system. A leading world-wide supplier of hospital articles, office supplies, automotive products, etc., known for its excellence in logistics and SCM, outsourced all warehousing and transport activities for a limited period in the process of moving from an internal organization on a national level to a centralization of activities in a European distribution center. Seen from an overall perspective, this situation might correspond to the quasi-internalization referred to above, where the buyer accesses and utilizes some of the TPL provider's facilities and services. However, to help the provider to manage the relationship and comply with the buyer's expectations, the buyer played a leading role in developing a performance measurement system to be used by the provider. A dedicated employee from the logistics buyer with prior experience in quality management was assigned to design and operate a procedure for performance measures. The aim was to assign corrective actions to a particular person with a pre-defined deadline to ensure that deviations from expected performance were systematically followed up through regular meetings. Simultaneously, the TPL provider was closely involved in the buyer's preparation to react on unforeseen consequences of the Y2K fever, which gave the companies an additional opportunity to discuss the current abilities of the logistics systems.

The sharing of knowledge between the two companies did not only result in leverage of the buyer's competencies within performance management. Based on the experience, the provider was able to develop the measurement systems further together with customers from other industries. Hence, the provider's ability to both measure performance and manage relationships with other customers was enhanced. Elsewhere, this ability is referred to as a “network competence” (e.g. Haakansson *et al.*, 1999). Eventually, the provider was able to take on a leading role in helping another customer design a “realistic” bidding material that enabled the various providers to react upon the request for detailed yet comparative information. As odd as it may sound, as the TPL provider now had acquired a competence in completing a bidding process, it became natural to help this particular customer in the process, although of course the selection itself was done by the customer.

### *6.2 Competence development through joint learning*

A Danish pump manufacturer, which identified logistics competence as one of its core competencies, and a leading logistics provider established a joint project to measure lead-time performance in the supply chain between the manufacturer's plant and its sales subsidiary in Australia. The total lead-time was measured to about four months. The long lead-time was a problem to the

customers and required large inventories in transit and at the sales subsidiary in Australia. The pump manufacturer did not possess the knowledge and systems to conduct a detailed analysis on a supply chain level. After a preliminary analysis by the TPL provider, they set a target to reduce the lead-time from four months to two months. The TPL provider measured in detail how all activities and processes were actually performed. The various actors were asked to report delivery time for their part of the logistics link to the TPL provider's database. An essential part of the process was to define a lead-time from a total perspective, recognizing the difference between lead-time and transit time. After the lead-time analysis, the TPL provider made a plan outlining how the flow of materials and information should be monitored from the production plant to the final destination. Figure 2 depicts the components of the total lead-time before and after the project, which can be seen as the tangible results.

Seen from a joint learning perspective, the partnership has been beneficial to both parties in terms of "competence development". The pump manufacturer was the first export customer to use the TPL provider's new information technology systems and the first supply chain management customer in Denmark. Therefore, the TPL provider went through a valuable learning process during the project, gaining an experience that the company could use in future projects. In addition to delivering logistics services, the TPL provider also served as a supplier of systems, experience and knowledge on supply chain management. The provider also contributed to the change process and the operation of other corridors such as Singapore, India and Taiwan by several in-house adjustments and initiatives.

The pump manufacturer primarily aimed to bridge the gap between current and desired logistics competencies. Through the partnership with the TPL provider, the company acquired competence in collecting information from its

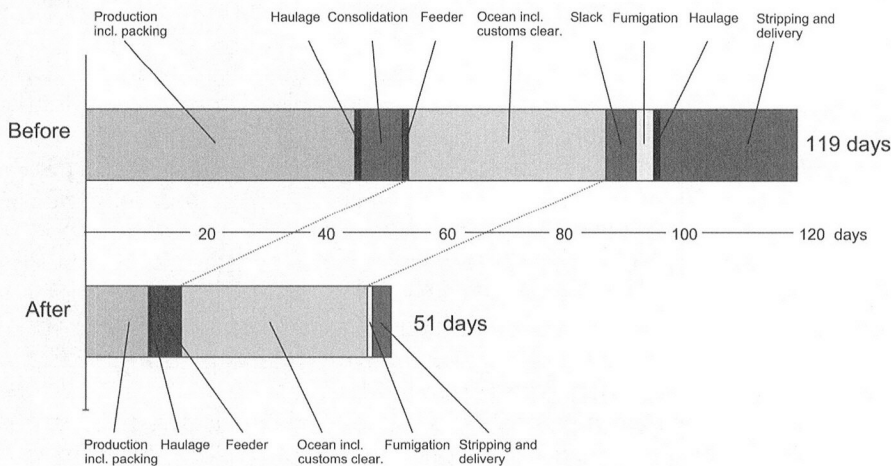


Figure 2.  
Total lead-time analysis

sales subsidiaries, its SAP platform, its suppliers and their transport partners. On this basis, the company has made total lead-time analyses on other destinations.

Contrary to traditional TPL agreements, this partnership was not asset-based but skill-based. Although limited to a certain period of time, the objective of the partnership was to develop competencies in logistics management on a supply chain level and gain an insight into other actors in the supply chain and how they affect the lead-time.

## 7. Conclusions and implications

In this paper, we have stressed that outsourcing of logistics activities to a TPL provider can be seen from a resource and competence-based perspective. We have focused on the importance of developing competencies in the relationship between the outsourcing company and the TPL provider. The concept of learning emphasizes the development aspects of the relationship.

### 7.1 Managerial implications

In the following, we will outline the managerial implications of our discussion. First, it is important that logistics management carefully considers what the objective of outsourcing logistics activities to a TPL provider is. Does management mainly aim to obtain higher cost efficiency and/or immediate service improvements, or does the objective involve a strategic decision to focus on the company's own core competencies and acquire or develop complementary competencies?

Second, logistics management should choose the type of TPL arrangement that is most appropriate for the objective of the outsourcing. If the outsourcing company primarily is looking for cost savings and/or service improvements, a customised logistics solution will probably satisfy the objective. However, if the company wants to develop a new competence configuration in the TPL relationship, a joint logistics solution might be preferable.

Third, it is important that the outsourcing company maintains internal logistics competence in relation to the outsourced activities. Otherwise, it might face the risk of a lock-in situation, where the outsourcing company is tied to the TPL provider regardless of the provider's innovative strength. It is also important to maintain internal logistics competence in order to develop new competencies in the relationship. Apart from monitoring the costs and services of the TPL provider, the outsourcing company should constantly be able to challenge the partner in terms of what he/she is doing and participate in joint teams to improve and innovate the relationship. The collaboration will only be able to develop dynamic capabilities if the company performs as a qualified and competent partner and opponent (Teece *et al.*, 1997).

Fourth, the outsourcing company should look at the TPL arrangement in a long-term perspective. In practice, the time horizon for TPL contracts is

normally two to three years. Then, a new tender is arranged to test the market potentials. Quite often, the tender results in a new partner. However, it takes time, often more than three years, to build up trust relationships and adapt and integrate information systems and organizations between the parties. As such, it might be preferable to refrain from testing the relationship in the market place, but rather test it against the visions and expectations of future innovations in the relationship. If the innovative power and ability to develop joint competencies are not successful, a tender might be a suitable alternative. The problem is that by shifting partners too often the “learning curve” has to be restored and all knowledge and competencies developed in the existing relationship might disappear.

### *7.2 Research implications*

In our paper, we have adopted a new theoretical approach to TPL relationships, namely the resource and competence-based approach. We believe that this approach is a good supplement to the transaction costs theory, which focuses more on the cost efficiency of the outsourcing decision and the appropriate governance structures. By shifting the focus to development of competencies in the relationship between the partners, it is possible to analyze the TPL arrangement in a broader perspective, including the dynamic aspects of the relationship.

Thus, we challenge the analytical occupation of TPL as a search for equilibrium between the optimal governance structure and the trade-off between customer service/logistics costs. We also defy the general assumption in traditional economics and logistics, which assumes that the necessary resources and competencies to implement the normative strategies already exist. It is not sufficient to view the manager’s role as a mere allocation of these entities. Furthermore, the evolution of new dynamic capabilities is important (Teece *et al.*, 1997; Eisenhardt and Martin, 2000).

However, the resource and competence-based perspective needs to be operationalized (Williamson, 1999) and empirically tested in on-going TPL arrangements. More in-depth case studies of existing TPL arrangements are needed to provide more evidence of how competencies are developed, what barriers and obstacles are involved, and how these barriers are overcome.

Most case studies of TPL relationships illustrate successful implementation of the outsourcing process. The same applies to the two case examples in our article. However, not all TPL projects fulfil the expectations of the parties. Sometimes, outsourcing is followed by in-sourcing. An example is Reebok’s pick-and-pack operations in their European distribution center in Holland, which was outsourced to a TPL provider, but now is in-sourced again. Another example is the global shoe manufacturer, Ecco, which after a period of outsourcing decided to build and operate its own global distribution center. Therefore, it is also important to investigate “failures” to determine why TPL

agreements may fail. Was the trigger a mismatch between the TPL provider's promises and its actual capabilities and performance? Or was it because the shipper's capabilities and competencies were embedded as "tacit knowledge" in the organization and consequently difficult to transfer to the TPL provider? There is clearly a need for additional empirical research in this area.

#### Notes

1. The Appendix gives a brief overview of the authors' view of the concepts of resources and competencies.
2. Although the logistics industry may not evolve at the same pace as the computer industry, many studies on TPL indicate the existence of a reasonable competitive market of logistics services. The most recent development of the logistics industry in the Nordic countries indicates substantial changes in the industry, e.g. an extensive consolidation of companies. Moreover, we may see the predominant user's industries of TPL, such as customer electronics and the automotive industry, as highly dynamic in terms of innovation, product life cycles, and emphasis on short lead times.

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### Appendix

Resources and competencies are difficult to determine owing to their tacit nature and causal ambiguity. The literature on strategic management includes a broad range of definitions of these topics. It is a fundamental assumption in our paper that a core competence is a hierarchical constitution of sub-units such as resources and capabilities/competencies. In our paper, the concepts of resources and competencies are based on the following views:

Resources are viewed as the physical and human entities that generate services, which can be used as input into the production process (e.g. Penrose, 1959; Grant, 1991).

Capability/competence is a combination of a team of resources in a unique way (Grant, 1991).

Core competence refers to the "...collective learning in the organization, especially how to coordinate diverse production skills and integrate multiple streams of technologies" (Prahalad and Hamel, 1990).

Dynamic capabilities – The novelty of this approach compared to previous strategy perspectives is according to Teece *et al.* (1997, p. 515) based on the following two key aspects:

- (1) Dynamics, which refer to the capacity to renew competences.
- (2) A capability to adapt, integrate, and reconfigure "internal and external organizational skills, resources, and functional competences to match the requirements of a changing environment".