Logistics Outsourcing from a Power and Dependence Perspective

A case study in the Dutch pharmaceutical industry

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School of Management
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Van Doorn, F.M.
Student number: 850305165
Master Supply Chain Management
Co-reader: prof. dr. J. (Janjaap) Semeijn
Summary

Many outsourcing decision models have been developed over the years. These models are generally developed from either a transaction cost perspective or a resource based perspective. The Transaction Cost Theory (TCT) proposes that outsourcing decisions are influenced by the degree of asset specificity, frequency and uncertainty. The resource-based view proposes that organizations should define their core competences and core activities and keep those activities in-house. All non-core activities could be outsourced. Caniëls and Roeleveld (2009) introduce an alternative view on outsourcing: the power and dependence perspective. Their empirical findings show that power and dependence play an important role in make-or-buy decisions and that it should be considered complementary to cost and core competence considerations.

The purpose of this thesis is to explore the influence of power and dependence in logistics outsourcing decisions and identify the importance of power and dependence compared to other factors that influence logistics outsourcing decisions. Therefore the following problem statement is formulated:

What is the influence of power and dependence on logistics outsourcing decisions, and what is the importance of power and dependence compared to other factors that influence logistics outsourcing decisions, at organizations in the pharmaceutical industry based in the Netherlands?

Existing literature on the influence of power and dependence in outsourcing decisions as introduced by Caniëls and Roeleveld (2009) is expanded by studying this influence in logistics outsourcing decisions. In addition, the importance of power and dependence compared to other factors that influence the logistics outsourcing decision will be studied.

In practice, the findings of this research support managers of pharmaceutical companies in their logistics outsourcing decisions by identifying both power and dependence and other factors that influence the decision. By conducting supplier market research in an earlier stage of the outsourcing process, managers can reduce the risk of supplier dependence after outsourcing logistics activities. In short, this research supports managers to become more aware of the factors that influence the logistics outsourcing decision.
Based on existing literature on outsourcing and logistics outsourcing, a conceptual model was built. Also, three propositions were formulated:

- Proposition 1: Transaction Cost Theory factors have an influence on logistics make-or-buy decisions in the Dutch pharmaceutical industry.
- Proposition 2: Resource-based view factors have an influence on logistics make-or-buy decisions in the Dutch pharmaceutical industry.
- Proposition 3: Power and dependence factors have an influence on logistics make-or-buy decisions in the Dutch pharmaceutical industry.

This research is carried out by means of a multiple-case study in the Dutch pharmaceutical industry. A total of 6 interviews of approximately 60 minutes in Dutch was conducted and tape-recorded. The interviews covered the following topics: introduction, initiation / strategy, make-or-buy decision, supplier selection (in the case of buy decision). Emphasis is placed on the make-or-buy decision part of the interview.

The analysis of this research is based on semi-structured interviews with open-ended questions on the logistics outsourcing process. A list of open-ended questions was used for every interview to assure a consistent approach of every interview. Based on the propositions, a list of questions regarding logistics make-or-buy decisions in the company was conducted. To understand why and how these decisions are made, general information about the companies and their strategy was asked first.

The cases are pharmaceutical organizations based in the Netherlands that produce drugs. They were selected based on the following criteria:

- The outsourcing decision concerned processes that require specialized assets and/or knowledge.
- Supplier markets have imperfections such as high entry/exit barriers, heterogeneous products and/or lack of transparency.

This research shows that in the pharmaceutical industry, Transaction Cost Theory influence factor frequency is a factor that is considered during logistics outsourcing decision-making and that previously published articles on this topic are intensified by confirming this relation for the pharmaceutical industry. It also shows that asset specificity does not have an important influence on logistics outsourcing unlike the findings of other studies on outsourcing that label asset specificity as a very important factor. This suggests that logistics
outsourcing decisions are different from other outsourcing decisions and that other influence factors apply.

The second finding of this research is that it can be concluded that there is a strong influence of Resource-Based View factors on logistics outsourcing decisions in the Dutch pharmaceutical industry. Therefore, proposition 2 is supported.

The third conclusion of this research is that Power and Dependence factors do not have an influence on the logistics outsourcing decision in the Dutch pharmaceutical industry. However, it does have an influence on the supplier selection process.

The conclusion of this research is that logistics outsourcing decisions in the pharmaceutical industry are a combination of Transaction Cost Theory factors and Resource-based factors. There was no influence of any of the power and dependence factors found on logistics outsourcing decisions at organizations in the pharmaceutical industry based in the Netherlands. The main influence on logistics outsourcing was found to be resource-based. All informants claimed that Research and Development is their company’s core business, and that based on that all other activities are candidate for outsourcing.

This research contributes to the understanding of logistics outsourcing decisions in the pharmaceutical industry. The findings of this research and the theory of power and dependence in logistics outsourcing supports managers to become more aware of factors that influence logistics outsourcing decisions. From the interviews it appeared that this is not an informed decision preceded by an extensive make-or-buy decision process. There is still deep-seated core/non-core thinking. The pharmaceutical industry is facing decreasing profit margins. Other industries have dealt with this challenge some years ago by recognizing the importance of logistics and supply chain management.

This research has four important limitations that might have consequences for the reliability of the results. First, the exploratory nature of this research does not provide evidence to draw indisputable conclusions. Second, there have been several acquisitions in the pharmaceutical industry while conducting this research. Third, this research was conducted in the Netherlands only. Finally, to ensure privacy of organizational data and the anonymization that was desired by all participants, some information could not be put in this research document.
Preface

This study completed my Master Supply Chain Management at the Open Universiteit Nederland.

I would like to thank all people who have supported me during this year of writing my thesis. In particular, I would like to thank my thesis attendant drs. Dianne Hofenk who has always given me useful feedback within only a few days, and could motivate me at moments of setbacks. Also I would like to thank my co-reader prof. dr. Janjaap Semeijn.

My special thanks go out to all people at Distriicon BV for their support, knowledge sharing and great atmosphere at the office. In particular I would like to thank Ronald Schoo, Hans van Waveren and Trientsje Glastra van Loon for their feedback and efforts to complete this thesis successfully. I hope my findings will be a useful complement to their current outsourcing model.

Finally, I would like to thank all six participants of the pharmaceutical industry for their time and cooperation in this research.

Femke van Doorn

Utrecht, March 2010
Table of contents

Summary.............................................................................................................. 2
Preface................................................................................................................. 5
Table of contents................................................................................................. 6
1. Introduction ........................................................................................................ 8
   1.1. Introduction ................................................................................................ 8
   1.2. Problem statement and research questions ............................................... 9
   1.3. Relevance .................................................................................................. 10
   1.4. Structure ................................................................................................... 10
2. Literature review ................................................................................................. 11
   2.1. Outsourcing ............................................................................................... 11
       2.1.1. Logistics outsourcing ....................................................................... 11
       2.1.2. The outsourcing process .................................................................. 13
       2.1.3. Outsourcing risks ............................................................................ 15
   2.2. Views on outsourcing .................................................................................. 16
       2.2.1. Transaction Cost Theory .................................................................. 16
       2.2.2. Resource-based view ....................................................................... 18
       2.2.3. Power and Dependence Perspective ............................................... 20
   2.3. Conceptual Model ....................................................................................... 22
3. Methodology ......................................................................................................... 24
   3.1. Research design ......................................................................................... 24
   3.2. Context ........................................................................................................ 25
   3.3. Source of data ............................................................................................ 25
   3.4. Company selection ..................................................................................... 25
       3.4.1. Cases .................................................................................................. 26
       3.4.2. Key informants .................................................................................. 29
   3.5. Data analysis ............................................................................................... 30
4. Results .................................................................................................................. 31
   4.1. Pharmaceutical industry ............................................................................. 31
   4.2. Proposition 1: Transaction Cost Theory influence ..................................... 32
   4.3. Proposition 2: Resource-based influence factors ....................................... 33
   4.4. Proposition 3: Power and dependence influence factors .......................... 35
5. Conclusion and discussion ................................................................................... 37
   5.1. Conclusions and theoretical implications ................................................... 37
5.2. Managerial Implications.................................................................39
5.3. Limitations and future research .................................................40
Appendix 1 Semi-structured interview .............................................42
References.........................................................................................45
1. Introduction

1.1. Introduction

In recent years outsourcing has been a popular research topic for many authors due to a growing interest from managers to consider whether it is in their best interest to perform activities in-house or externally. Outsourcing is the practice of charging external service providers with the task of performing in-house activities (Bolumole et al., 2007, Maltz and Ellram, 1997).

From 1996 to the present, John Langley has published the Third-Party Logistics (3PL) study. This study tracks global trends, opinions and experiences of users of third party logistics. The 2008 3PL study shows that companies continue their general tendency to outsource relatively commoditized services and keep more strategic logistics services in-house. In addition, it was found that larger organizations prefer not to integrate too much with logistics suppliers to stay independent. Losing internal competences and visibility into their own supply chains was a big issue for some companies. They considered this to be a loss of control. Consequently, for organizations that do decide to outsource more strategic logistics activities, extracting the best value while avoiding excessive dependency on the 3PL is the most sensitive area of integrating services. “3PL users should take steps to avoid excessive dependency and structure contracts that balance the costs and risks” (Langley, 2008).

Many outsourcing decision models have been developed over the years. These models are generally developed from either a transaction cost perspective or a resource based perspective. The Transaction Cost Theory (TCT) proposes that outsourcing decisions are influenced by the degree of asset specificity, frequency and uncertainty (Holcomb and Hitt, 2007, Caniëls and Roeleveld, 2009, Williamson, 1981). The outsourcing decision from a resource based view is driven by the focus on core competences. It recognizes that, in addition to costs, resources and competences should be considered in outsourcing decisions to achieve sustained competitive advantage (Bolumole et al., 2007). The resource-based view proposes that organizations should define their core competences and core activities and keep those activities in-house. All non-core activities could be outsourced. Identifying the core activities of the business, however, is not straightforward.

Caniëls and Roeleveld (2009) introduce an alternative view on outsourcing: the power and dependence perspective. Their empirical findings show that power and dependence play an
important role in make-or-buy decisions and that it should be considered complementary to cost and core competence considerations. However, their findings are based on four cases in different industries and further research is required. Caniëls and Roeleveld (2009) argue that power and dependence may be key factors that influence the outsourcing decision process and that this is especially true for the outsourcing activities close to the core of the organization.

The purpose of this thesis is to explore the influence of power and dependence in logistics outsourcing decisions and identify the importance of power and dependence compared to other factors that influence logistics outsourcing decisions.

1.2. Problem statement and research questions

Problem statement

What is the influence of power and dependence on logistics outsourcing decisions, and what is the importance of power and dependence compared to other factors that influence logistics outsourcing decisions, at organizations in the pharmaceutical industry based in the Netherlands?

The pharmaceutical industry was chosen for the reason that logistics processes of medication require specialized assets and/or knowledge. Moreover, not all 3PLs have the resources and/or capability to provide logistics services to pharmaceutical organizations, which means that there could be high entry/exit barriers in the market. These requirements are important for this research to increase the possibility to find power and dependence influence factors in logistics outsourcing decisions. Caniëls and Roeleveld (2009) found power and dependence influence on outsourcing decisions in their cases that met these requirements. For this reason these requirements are adopted for this research. In addition, developments in healthcare and pharmacy require innovation in both the healthcare and pharmaceutical industry.

To answer the central question, a number of research questions have been formulated:

- Why do pharmaceutical organizations consider outsourcing logistics activities?
- How do pharmaceutical organizations decide which logistics activities to outsource and which ones to keep in-house? Is there a dominant view?
• Which factors are considered by pharmaceutical organizations during logistics outsourcing decision-making?
• Do pharmaceutical organizations outsource logistics activities that they consider to be core activities? Why (not)?

1.3. Relevance

Existing literature on the influence of power and dependence in outsourcing decisions as introduced by Caniëls and Roeleveld (2009) is expanded by studying this influence in logistics outsourcing decisions. In addition, the importance of power and dependence compared to other factors that influence the logistics outsourcing decision will be studied.

In practice, the findings of this research support managers of pharmaceutical companies in their logistics outsourcing decisions by identifying both power and dependence and other factors that influence the decision. By conducting supplier market research in an earlier stage of the outsourcing process, managers can reduce the risk of supplier dependence after outsourcing logistics activities. In short, this research supports managers to become more aware of the factors that influence the logistics outsourcing decision.

1.4. Structure

In the next chapter, the literature on outsourcing and the main views on this topic that have been researched in the past will be examined and a conceptual model will be presented. After that, the methodology of this research is described followed by the results and conclusions drawn from research findings. This thesis will be completed with limitations and implications, and recommendations for future research.
2. Literature review

2.1. Outsourcing

Outsourcing is the practice of charging external service providers with the task of performing in-house activities (Bolumole et al., 2007, Maltz and Ellram, 1997). There have been done many studies to identify the reasons of organizations to outsource. The main motives for outsourcing highlighted in literature are (Quélin and Duhamel, 2003):

- To reduce operational costs
- To focus on core competencies,
- To reduce capital invested
- To improve measurability of costs
- To gain access to external competencies and to improve quality
- To transform fixed costs into variable costs
- To regain control over internal departments

Despite the many supporting tools for outsourcing decisions, in practice they are often not taken from a strategic perspective with consideration for the long run competitiveness of the organization, but for short-term cost reductions (McIvor, 2000). Striving for cost savings is seldom the optimal choice. Challenges in outsourcing are managing short-term cost savings while keeping in mind long-term perspectives for competencies and trustworthy suppliers to maintain a certain level of service quality (Quélin and Duhamel, 2003). Outsourcing related issues play a role on the strategic, tactical and operational level (Van de Water and Van Peet, 2006).

2.1.1. Logistics outsourcing

Logistics outsourcing is also described as third-party logistics or logistics alliances (Van Laarhoven et al., 2000). In this thesis logistics outsourcing is defined 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. In addition, other activities can be included, for example inventory management, information related services, such as tracking and tracing, value added activities, such as secondary assembly and installation of products, or even supply chain management.” (Van Laarhoven et al., 2000).
Although logistical support is critical to many firms (Sink and Langley, 1997), logistics activities are often considered to be non-critical by organizations and are therefore partly or completely outsourced. The most cited reasons for outsourcing logistics activities are cost reduction and service improvement (Sink and Langley, 1997, Maltz and Ellram, 1997, Mello et al., 2008).

The most frequently outsourced logistics activities are outbound transportation, freight bill auditing/payment, warehousing, inbound transportation and freight consolidation/distribution (Cho et al., 2008). Other outsourced logistics activities are cross-docking, minor manufacturing activities, product marketing/labeling/packaging, product returns, traffic management/fleet operations and information technology (Cho et al., 2008).

Logistics outsourcing decisions are considerably different from other outsourcing decisions, such as component outsourcing. Logistics outsourcing involves acquiring a service rather than a tangible product (Maltz and Ellram, 1997). Maltz and Ellram (1997) state that logistics outsourcing analysis should include qualitative factors that are not part of the traditional make-or-buy decision, such as customer satisfaction. They demonstrate the difference between purchasing logistics services and purchasing components (Figure 1).

As one can see in Figure 1, purchasing logistics services involves services and relationships (interfaces) with external customers, and purchasing components involves products and relationships with internal customers. Therefore, monitoring suppliers and supplier
relationship management is more important in purchasing logistics services than it is for component purchasing. In addition, it is more difficult to manage these relationships since most of these relationships have to be managed indirectly through logistics service suppliers and the buying organization always has to manage at least two external parties. Despite the differences between component outsourcing and logistics outsourcing, most frameworks described in literature are based on outsourcing processes of, for example, components or IT.

2.1.2. The outsourcing process

Over the years many outsourcing frameworks have been developed. In table 1 a brief overview of some frameworks and their stages is presented.

Marshall et al. (2005) argue that the outsourcing model of Zhu et al. (2001) lacks complexity and dynamism, such as influence of environment, history, position, strategy, position of groups and individuals within the company. This point of criticism can be recognized in frameworks that were developed until the year 2005. As mentioned above, Van de Water and Van Peet (2006) argued that outsourcing models do not recognise the company’s strategic position. Kumar et al. (2008) and Mello et al. (2008) recognize the importance of a strategic approach to outsourcing as well. In addition, Mello et al. (2008) define 4 Logistics Outsourcing Strategy Inputs: cognitive, experiential, personal and cultural.

Summarized from the frameworks mentioned in table 1, the stages of outsourcing that are commonly distinguished in outsourcing literature are presented in figure 2.

It is striking that during the first two stages the markets of potential suppliers are scarcely researched. Kumar et al. (2007), however, include Porter’s Five Forces Model for an industry competitive analysis which also pays attention to the supplier market. In other frameworks suppliers play an important role only from the third stage on, thus after it has been decided which activities to outsource and which activities to keep in-house. This seems odd since the main outsourcing risks and factors for success are related to suppliers. This research will focus on the first two stages as presented in figure 2.
<table>
<thead>
<tr>
<th>Source</th>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
<th>Stage 4</th>
<th>Stage 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sink and Langley (1997)</td>
<td>Identify needs to outsource logistics</td>
<td>Develop feasible alternatives</td>
<td>Evaluate and select supplier</td>
<td>Implement service</td>
<td>Ongoing service assessment</td>
</tr>
<tr>
<td>McIvor (2000)</td>
<td>Define core activities of the business</td>
<td>Evaluate the relevant value chain activities</td>
<td>Total cost analysis of core activities</td>
<td>Relationship analysis</td>
<td></td>
</tr>
<tr>
<td>Zhu (2001)</td>
<td>Planning</td>
<td>Developing</td>
<td>Implementation</td>
<td>Surviving</td>
<td></td>
</tr>
<tr>
<td>Van de Water and Van Peet (2006)</td>
<td>Determine the value discipline of the customer and the performance objectives</td>
<td>Determine the relevant value chain activities</td>
<td>Determine the type of relationship with the suppliers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kumar et al. (2007)</td>
<td>Strategy and initiation</td>
<td>Business analysis</td>
<td>RFP and vendor selection</td>
<td>Execution and implementation</td>
<td>Completion or termination</td>
</tr>
<tr>
<td>Mello et al. (2008)</td>
<td>Recognition</td>
<td>Motivation</td>
<td>Outsourcing</td>
<td>Confidence-building</td>
<td>Expansion/contraction</td>
</tr>
</tbody>
</table>

Table 1: Overview outsourcing frameworks in literature
2.1.3. Outsourcing risks

Several studies have been conducted to identify the main risks of outsourcing. Supplier dependence (Quélin and Duhamel, 2003), supplier lock-in (Lonsdale, 2001) and losing control (Barthélemy, 2003) are risks that refer to a situation that can arise in which a supplier can exploit power over buyers.

Supplier lock-in can lead to a situation of supplier dominance. This risk, rather than outsourcing core activities, causes the majority of problems that organizations have experienced in outsourcing (Lonsdale, 2001). Asset specificity is important for outsourcing, because if activities that require transaction-specific investments are outsourced, the organization could be locked-in to its supplier who can exploit this situation to attain supplier dominance (Lonsdale, 2001).

In addition, hidden costs (Barthélemy, 2003, Quélin and Duhamel, 2003), and selecting the wrong vendor (Barthélemy, 2003) with a lack of necessary capabilities (Quélin and Duhamel, 2003) could lead to an unsatisfactory result of outsourcing or even a complete failure.
Although it can be concluded from outsourcing literature that supplier selection and relationship management are considered to be very important in outsourcing, supplier related issues are usually not a significant part of the make-or-buy decision according to literature. In fact, it is usually the third or fourth stage of outsourcing after the decision to outsource has already been made.

Moreover, supplier dependence is a frequently mentioned outsourcing risk. For this reason it could be useful (or even required!) to already evaluate the logistics supplier market during the make-or-buy decision. Particularly in logistics outsourcing, the relationship between buyers and suppliers plays an important role since there are more relationships to monitor.

2.2. Views on outsourcing

2.2.1. Transaction Cost Theory

Transaction Cost Theory (TCT) is the most widespread perspective on outsourcing in literature. A transaction can be defined as “the transfer of goods or a service between technologically separate units “(Walker and Weber, 1984). The basis of this perspective was provided by Coase (1937). He showed that in situations of uncertainty it is more efficient for organizations to perform an activity in-house instead of incurring high costs by buying it on the market. Later his findings were expanded by Williamson who identified three attributes that differ among transactions: asset specificity, frequency and uncertainty (Williamson, 1981).

Asset specificity

Asset specificity can be defined as “durable investments that are made in support of particular exchange transactions” (Holcomb and Hitt, 2007). When activities that require assets specific to the transaction are outsourced, a situation may be created where the organization is locked-in to its supplier. This situation can lead to opportunistic behavior by the supplier (Lonsdale, 2001, Walker and Weber, 1984, Caniëls and Roeleveld, 2009). If an organization finds itself in a situation of opportunistic behavior by the supplier, it will have difficulties in negotiations about costs and terms.

In sum, according to the TCT, organizations should not outsource activities that require assets specific to the transaction to prevent a situation of supplier dominance.
**Frequency**

The influence of frequency on transaction costs is obvious; organizations would not consider performing activities if they had to perform the activity only a few times per year. Thus, in situations of low frequency, activities are outsourced.

**Uncertainty**

Volume uncertainty refers to fluctuations in demand for an activity and the ability of organizations to assess these uncertainties. High volume uncertainty leads to high transaction costs. In a situation of high volume uncertainty, the organization is more likely to keep the activity in-house (Walker and Weber, 1984). Technological uncertainty refers to unexpected changes in knowledge, skills, production and supply chain systems (Holcomb and Hitt, 2007). A situation of high technological uncertainty requires greater resource commitment of an organization and is therefore usually outsourced (Holcomb and Hitt, 2007).

In literature, the degree of asset specificity is often considered to be the most important element of the TCT. A graphical overview of the Transaction Cost Theory is provided in Figure 2.

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**Proposition 1:** Transaction Cost Theory factors have an influence on logistics make-or-buy decisions in the Dutch pharmaceutical industry.
2.2.2. Resource-based view

In the 1990s the resource-based view (RBV) gained popularity in literature and in practice. The RBV helps organizations to distinguish their core competences and provides knowledge about which activities should be performed in-house and which should be outsourced. This is defined by the possession of resources and capabilities (Espino-Rodriguez and Padron-Robaina, 2006). The RBV suggests that organizations keep in-house the activities that provide them with a competitive advantage and outsource all other activities (Prahalad and Hamel, 1990, Quinn and Hilmer, 1994, Espino-Rodriguez and Rodriguez-Díaz, 2008). This view is also known as the core competence approach.

Core competences

Core activities and core competences are concepts that are frequently mentioned in outsourcing literature, especially in literature from a resource-based view. Prahalad and Hamel (1990) are the founders of the relationship between core competence and outsourcing. According to them, a core competence should provide potential access to a wide variety of markets, make a significant contribution to perceived customer benefits of the end product, and be difficult for competitors to imitate. They argue that core competences are not physical assets, but the “collective learning in the organization, especially how to coordinate diverse production skills and integrate multiple streams of technology”. Core activities are central to the organization in favor of successfully serving the needs of potential customers in each market (McIvor, 2000).

Many outsourcing frameworks recognize the importance of defining the organization’s core competences and core activities. However, this is a complex task. Insinga and Werle (2000) distinguish four different types of activities based on the two dimensions ‘contribution to competitive advantage’ and ‘level of organizational strength’. This results in key activities, emerging activities, basic activities and commodity activities. Key activities (core activities) are always kept in-house. Key activities can bring the organization a competitive advantage in comparison to competitors. Even if the organization has not enough internal capability to perform the activity, it should be kept in-house. In this case, the organization has to get capability and build strength, as said by Insinga and Werle (2000).

In this thesis the above-mentioned definition of core competences by Prahalad and Hamel (1990) is adopted.
Resources and capabilities

Grant (1991) gives a useful definition for resources and capabilities: “resources are inputs into the production process—they are the basic unit of analysis. A capability is the capacity for a team of resources to perform some task or activity. While resources are the source of a firm’s capabilities, capabilities are the main source of its competitive advantage.”

Grant (1991) suggests six major categories of resources: financial, physical, human, technological, organizational and reputation. The firm’s resources can be classified into three sub-categories: physical assets, intellectual assets and cultural assets (Hafeez et al., 2007, Barney, 1991). Intellectual assets are intangible assets and often considered to be an important element of core competences (Hafeez et al., 2007).

The resource-based approach of competitive advantage distinguishes four characteristics of resources and capabilities that are important determinants of the sustainability of competitive advantage: durability, transparency, transferability and replicability (Grant, 1991). The essence of a resource-based approach is to understand the relationships between resources, capabilities, competitive advantage, and profitability. For strategy formulation, the understanding of the mechanisms through which competitive advantage can be sustained over time is of particular importance (Grant, 1991).

Cho et al. (2008) identify eleven logistics capability items: pre-sale customer service, post-sale customer service, delivery speed, delivery reliability, responsiveness to target markets, delivery information communication, web-based order handling, widespread distribution coverage, global distribution coverage, selective distribution coverage, low total cost distribution. A graphical overview of the resource-based view is presented in Figure 2.

![Figure 4: Outsourcing framework based on the RBV](Source: Espino-Rodríguez and Padrón-Robaina (2006))
Proposition 2: Resource-based view factors have an influence on logistics make-or-buy decisions in the Dutch pharmaceutical industry.

2.2.3. Power and Dependence Perspective

The problem of asset specificity and its influence on post-contractual buyer and supplier power should be carefully considered (Lonsdale, 2001), otherwise (long term) financial benefits could be disappointing. For that reason organizations should get beyond a core versus non-core perspective of outsourcing.

Power

Resource dependency theory provides the major organizational view regarding power formation and management in interorganizational relations (Ireland and Webb, 2007). Organizational survival hinges on the ability to procure critical resources from the external environment. To reduce uncertainty in the flow of needed resources, organizations will try to restructure their dependencies (Casciaro and Piskorski, 2005).

Power within supply chains comes from several sources: number of key customers of a supplier's component, supplier's market share of the component, number of suppliers from which a buyer purchases the component, number of potential suppliers for the component, and the amount of revenue a supplier generates from a single buyer (Ireland and Webb, 2007).

Trust and power in a buyer-supplier relationship are very important to achieve performance goals. Ireland and Webb (2007) state that alleviating uncertainty surrounding actions based upon power by organizations helps to achieve an optimal level of trust and power in interorganizational relationships.

Dependence

Interdependence is defined as a phenomenon that “exists whenever one actor does not entirely control all of the conditions necessary for the achievement of an action or for obtaining the outcome desired from the action”. It should be viewed as including two distinct dimensions; joint dependence and dependence asymmetry (Gulati and Sytch, 2007).

Joint dependence enhances a manufacturer’s performance. While a manufacturer’s dependence advantage has a negative effect on its performance in a procurement relationship, a supplier’s dependence advantage has no effect the performance of the manufacturer. (Gulati and Sytch, 2007).
Casciaro and Piskorski (2005) argue that joint dependence provides weaker firms with a greater ability to deal effectively with the resistance of a more powerful partner and to successfully absorb the constraints through a merger.

It has been argued by researchers that to have a full view of the power dynamics in a dyadic relationship, it should include total interdependence and not only power asymmetry (Caniëls and Roeleveld, 2009, Casciaro and Piskorski, 2005, Gulati and Sytch, 2007). Total interdependence in a relationship can be measured by “the sum of the parties’ dependence on one another”. A buyer’s dependence on a supplier is a source of power for the supplier (Caniëls and Roeleveld, 2009).

A graphical overview of the power and dependence perspective is presented in Figure 3.

![Figure 5: Power map of potential buyer-supplier exchange relationships.](Source: Caniëls and Roeleveld (2009))

Proposition 3: **Power and dependence factors have an influence on logistics make-or-buy decisions in the Dutch pharmaceutical industry.**
2.3. Conceptual Model

Bolumole et al.’s (2007) theoretical framework for logistics outsourcing distinguishes internal resource-based, external cost-based and external control-related factors influencing logistics outsourcing decisions. They state that combining the Transaction Cost Theory, Resource-Based Theory and Network Theory provides a more complete perspective and a realistic explanatory capacity for analyzing organizations’ outsourcing strategies.

From a transaction cost approach make-or-buy decisions are influenced by asset specificity, frequency and uncertainty (Walker and Weber, 1984, Williamson, 1981).

From a resource-based view the outsourcing decision is influenced by the ability of an organization to invest in developing, core competences, resources and capabilities, and sustaining a superior performance position relative to competitors (McIvor, 2008).

From a power and dependence perspective, outsourcing decisions are influenced by relative financial magnitude of the exchanged resources, criticality of the activities, need for specific technological expertise, availability of alternatives and switching costs (Caniëls and Roeleveld, 2009).

In outsourcing decisions, organizations also have to deal with issues that influence costs over time such as learning effects, possible loss of quality in the beginning, demotivation, or the opposite, strong motivation (Van de Water and Van Peet, 2006).


In this study all influences on logistics outsourcing decisions that result from TCT, RBV and the power and dependence perspective will be integrated in a model. The importance of power and dependence factors in comparison to factors of TCT and RBV will be researched in the Dutch pharmaceutical industry.
Logistics Outsourcing from a Power and Dependence Perspective

Femke van Doorn

23

Figure 6: Conceptual Model

Power and dependence
- Relative financial magnitude of the exchanged resources.
- Criticality of the activities.
- Need for specific technological expertise.
- Availability of alternatives.
- Switching costs.

Resource-based view
- Core competence
  - Valuable and specific
  - Non-substitutable and inimitable
- Appropriability of profits
- Resources
- Capabilities

Transaction Cost Theory
- Asset specificity
- Volume uncertainty
- Frequency

Logistics Outsourcing
3. Methodology

3.1. Research design

This research is carried out by means of a multiple-case study. ‘A case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident’ (Yin, 2003). Three types of case studies are distinguished: exploratory, descriptive and explanatory case studies (Yin, 2003). For this thesis an exploratory case study is carried out in the Dutch pharmaceutical industry.

The purpose of this research is to explore the influence of power and dependence on logistics outsourcing decisions and identify the importance of power and dependence compared to other factors that influence logistics outsourcing decisions. Mainly ‘how’ and ‘why’ research questions are defined which qualifies experiment and case study as suitable research strategies. Furthermore, the investigator has no control over the event ‘logistics outsourcing decision’. The lack of control over the event favors case studies over experiments for this research.

Additionally, there are not many pharmaceutical organizations based in the Netherlands. Recently, there have been mergers between some major organizations in this industry, which reduces the population even more. The small population excludes surveys as a research strategy (Yin, 2003).

The units of analysis in this research are three selected pharmaceutical companies based in the Netherlands. To improve internal validity, two key informants were interviewed for each case. The population pharmaceutical companies is relatively small and consists of large global organizations. No crucial differences between the participating companies and the total population are expected because of the many regulations that all pharmaceutical companies have to meet.

A list of open-ended questions was used for every interview to assure a consistent approach of every interview. Based on the propositions, a list of questions regarding logistics make-or-buy decisions in the company was conducted. To understand why and how these decisions are made, general information about the companies and their strategy was asked first. The
results of the interviews were sent to the key informants for approval before publishing to assure anonymization of company information.

3.2. Context

The pharmaceutical industry was selected for the reason that pharmaceutical companies deal with products that require specific assets and knowledge in its logistics processes. 3PL providers must meet strict requirements to be allowed to handle certain drugs. For example, a sterile area and a cooled area in warehouses. Therefore entry/exit barriers for 3PL providers are high in this industry. Consequently it is very likely to find cases in this industry that meet the selection criteria that are presented in section 3.4.

3.3. Source of data

The analysis of this research is based on semi-structured interviews with open-ended questions on the logistics outsourcing process. In exploratory research it is important to ask ‘why’ and ‘how’ questions in order to clarify a situation that has no clear, single set of outcomes (Yin, 2003). These types of questions lead to two-way communication and allow respondents to talk about their opinions on specific subjects and allow the investigator to focus on topics relevant to the case study.

A total of 6 interviews of approximately 60 minutes in Dutch was conducted and tape-recorded. The interviews covered the following topics:

- Introduction
- Initiation / Strategy
- Make-or-buy decision
- Supplier selection (in the case of buy decision)

Emphasis is placed on the make-or-buy decision part of the interview.

3.4. Company selection

The cases are pharmaceutical organizations based in the Netherlands that produce drugs. Pharmaceutical organizations with only marketing and sales offices in the Netherlands were excluded from this research due to the fact that logistics activities, in most cases, are coordinated from abroad.
The cases meet the following criteria:

- The outsourcing decision concerned processes that require specialized assets and/or knowledge.
- Supplier markets have imperfections such as high entry/exit barriers, heterogeneous products and/or lack of transparency.

These criteria were adopted from Caniëls and Roeleveld’s (2009) research in which these criteria had demonstrated to lead to cases that illustrate outsourcing motives that are not just cost related. In order to find an answer to the problem statement of this research, cases should be selected that do not only have cost related motives in logistics outsourcing decisions.

Approximately 10 pharmaceutical companies in the Netherlands meet the selection criteria. Not all of these companies were willing to participate in this research for different reasons. The selected three companies were willing to participate in this research.

3.4.1. Cases

In this section the three companies are presented that contributed to this research. For privacy reasons, organizational information is described anonymously. Therefore some valuable detailed information about the companies and their reasons for outsourcing could not be given here.

Company 1

Company 1 is an international research-based pharmaceutical company. It produces for the most part drugs and vaccines.

For the majority of their drugs there are no specific knowledge and resources needed during logistics processes. The production site provides finished products in boxes that can be handled as a commodity. Vaccines, however, have to be transported under certain climate conditions. A transporter has to be able to prove that a certain temperature has been maintained in the truck. In its special packing the vaccines can be handled as a regular box, but is has to be delivered within 5 days. A development that can be seen in the pharmaceutical industry is that drugs that do not need special handling according to regulations are being managed under climatized circumstances too. A reason for this is that the temperature in a truck in summer could rise to 50 °C.
There are many regulations in the field of quality that have to be met. A 3PL provider has to be able to meet these standards as well. Also Good Distributions Practices (GDP) guidelines have to be met by all parties involved during the logistics processes.

One of the reasons that triggered a logistics outsourcing project was an analysis of the current logistics network in the EMEA region which was initiated one and a half years ago. This analysis showed that there were too many warehouses in the network. Based on the results the network was rearranged by determining the optimal number and locations of distribution centers. Solutions included outsourcing in some countries and reselecting suppliers in other countries. Also, the profit margins that are under pressure worldwide in the pharmaceutical industry triggered an exploration for changes in the logistics network. The main goal of outsourcing logistics is to have a more flexible supply chain to be able to adapt to changes more easily. Furthermore, reducing costs is one of the goals.

Both the design of the new network as well as the execution of outsourcing of the logistics work is performed by multi-functional teams with representation from Logistics, Quality, IT, Customer Service and Finance. Logistics is a Global Support function in company 1, which means that one person is responsible for a certain region in the world. A region contains a number of countries. Every country within the region reports to the responsible person for that region. In the past this was organized by country.

The processes that lead to outsourcing decisions in general are: New logistics network design (definition of nodes in the supply chain and service area for each node), Map current network to new network, Gap analysis, Transition plan which consists of a number of projects to create new, delete old or change current warehouses and distribution practices. Each project from the transition plan is an independent project.

Company 1 has outsourced most of its logistics processes. Transport, including transport planning, has been outsourced for many years. Optimizing transport planning is secondary to product availability. When a product is finished it is transported. Warehousing is partly outsourced. Local warehouses serve for deliveries of drugs that have to be available on short term. These local warehouses are all outsourced. In addition Company 1 still owns 8 central warehouses in Europe. The reason for having these warehouses are that in the past there was a fervent ‘keep everything in-house’ thought in the company and the pharmaceutical industry as a whole.
Company 2
Company 2 is an international research-based pharmaceutical company. It produces, amongst others, opiates, vaccines and antineoplastic agents.

There are specific knowledge and resources needed for logistics processes concerning opiates, vaccines and antineoplastic agents. To import or export opiates one has to apply for a permit for every batch separately. This is a process that takes approximately 3 months. Antineoplastic agents can make healthy people sick when handling them wrong. Therefore a 3PL provider needs the knowledge how to handle these products to prevent accidents from happening.

Besides producing these special pharmaceutical products, Company 2 also produces drugs that do not require special handling. Just as Company 1, Company 2 is also starting to transport these drugs in cooled trucks even though this is not yet obligatory.

The logistics activities that are distinguished by Company 2 are:
- Warehousing comprises receipt of goods, put away, localization of goods, pick process, replenishment, outbound. In the warehouse a distinction is made between ambient drugs (15-25 °C), cold chain, and opiates.
- Transport and transport planning

At Company 2 the following departments are involved in logistics outsourcing decisions: Finance, IT, Procurement headquarters, Operations and Procurement Manager Northern-Europe.

The process that leads to logistics outsourcing decisions is a consideration of costs and the company’s area of expertise that define the core activities. In principle all activities that are performed until the product is ready to be transported are considered core activities. Examples of core activities are research, production and packing. However, non-core activities could still be kept in-house if necessary. For logistics outsourcing decisions business requirements are specified. Then the opportunities are identified. This comprises the decision if there are 3PL providers that can perform the activity adequately.

In the Netherlands Company 2 has outsourced warehousing and transport completely. But warehousing activities have been outsourced to a foreign location of the company. Four plants of the company in different countries share this warehouse. In the Netherlands there is also a local warehouse for small volumes to meet service level requirements of buyers. This
warehouse is outsourced and contains in general lifesaving, life-critical drugs and opiates. Transport has been completely outsourced by Company 2.

Company 3

Company 3 is an international research-based pharmaceutical company. It produces, amongst others, cardiometabolics, neuroscience products and vaccines.

Flu vaccines need careful handling and have a tight logistic schedule that 3PL providers have to take into account. It needs cooled transport and is mostly transported by air. The vaccines have to be delivered within a certain time or stored under the correct conditions. If 3PL providers do not anticipate in the right way on any delay or other setback, the batches have to be rejected. This costs a lot of money.

Company 3 has a Global Supply Chain organization and distinguishes the following logistics activities: planning (production and transport), warehousing and transport. Warehousing has been outsourced for the most part. There might be still a warehouse somewhere that is held by Company 3, but this is legacy from the time when all logistics activities were kept in-house. Usually these warehouses are on one of the plants of the company. Goal is to outsource warehousing and transport 100%. The logistics department is relatively small and serves to control 3PL providers and keep logistics knowledge and outsourcing knowledge in the company.

Company 3 does not consider itself as a leader in logistics outsourcing, but rather a follower. When certain trends have been proven successful in other branches and/or other pharmaceutical companies, they will follow. The logistics network is evaluated every 3 to 4 years.

3.4.2. Key informants

Of each organization two persons were interviewed independently. These two persons are co-responsible for logistics outsourcing decisions in the organization and can therefore be considered as key informants.
### Table 2: Key informants by company.

<table>
<thead>
<tr>
<th>Company 1</th>
<th>Key informants</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>EMEA Sourcing Manager</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Director Global Logistics</td>
</tr>
<tr>
<td>Company 2</td>
<td>3</td>
<td>Supply Chain Development Manager Northern Europe</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Head Supply Chain Pharmaceuticals</td>
</tr>
<tr>
<td>Company 3</td>
<td>5</td>
<td>VP Influenza Vaccine Manufacturing</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Logistics Manager</td>
</tr>
</tbody>
</table>

#### 3.5. Data analysis

Data analysis is based on the theoretical propositions that were specified in chapter 2. The technique that will be used for analysis is 'pattern matching' (Yin, 2003). All recorded interviews will be structured in one format to have a clear-cut overview of the answers given to the questions and identify similarities. For every organization an outline of the logistics outsourcing process will be given in order to understand their considerations and most important criteria in logistics outsourcing. The results of the interviews will be compared to the propositions and conclusions will be drawn from this analysis.
4. Results

In this chapter the results of the interviews are presented. Some quotes of the contact persons are used to emphasize transparency of this research. These quotes are translated from Dutch into English by the author. The results are based on 6 interviews in 3 pharmaceutical companies.

4.1. Pharmaceutical industry

To understand the results of this research it is important to understand the general market factors, developments and changes that pharmaceutical companies are facing today. These general market factors and developments were mentioned during the interviews.

Historically, the pharmaceutical industry is known for its profitability. Payback of investments for new drugs was much longer than it is today. In recent years there has been an increase in regulations for the pharmaceutical industry that causes a longer development time of new drugs. Since patents on new drugs are valid only for a certain number of years, a longer development time means a shorter payback period and therefore decreasing profits. As a result there has been an increased focus on costs by pharmaceutical companies.

Guidelines that pharmaceutical companies have to consider regarding logistics are amongst others:

- GDP (Good Distribution Practice), a quality warranty system.
- FDA (Food and Drug Administration) for business in the USA.
- Numerous local regulations for every country the pharmaceutical company wants to do business.

The companies interviewed in this research all have their own quality and auditing system that comprises these guidelines and regulations.

A second important development in the pharmaceutical industry is a large range of mergers and acquisitions. During the period of this research, two major acquisitions and a few smaller ones have taken place.

The third development in the pharmaceutical industry is the risk of counterfeit drugs. This causes an increasing focus on security. Investments are done in, for example, equipment to
trace drugs more accurate and faster than they can be traced now. Security is an important
topic given that (fatal) accidents caused by counterfeit drugs could seriously damage a
pharmaceutical company’s reputation and could cause claims by customers.

Furthermore, the 3PL provider market for pharmaceuticals is changing. The pharmaceutical
industry has become of greater interest for 3PL providers because of its stability in times of
recession. In contrast to other products, the demand for drugs is not sensitive to economic
changes. Therefore, demand for logistics services is rather stable as well. 3PL providers that
do business in industries that require similar resources and knowledge for logistics as in the
pharmaceutical industry can offer these services without doing major investments in
resources. Examples of industries with similar resources are the (fresh) food and flower
industry. These products require amongst others cooled storage and transport. However, a
high entry barrier remains for these parties. Warehousing and transport of drugs can not be
combined with any other product. Investments will have to be done to build up a network in
the pharmaceutical industry to increase volume and to gain knowledge.

The last development pointed out during the interviews is the increasing importance of
logistics in pharmaceutical companies. All key informants answered that in the past logistics
was considered to be of minor importance by management. “Logistics was only to get
products from A to B”. As the importance of logistics was changing in other industries, the
pharmaceutical industry followed years later. They still have this backlog on other industries.
Logistics today has managers on the highest level in the company who are involved in
strategic decisions. Even though there is growing awareness of the importance of logistics, it
is not (yet) of the highest strategic importance according to all key informants.

4.2. Proposition 1: Transaction Cost Theory influence

Transaction Cost Theory (TCT) is the most widespread perspective on outsourcing in
literature. As explained in chapter two, the factors that are of influence on (logistics)
outsourcing decisions according to this theory are: asset specificity, frequency and

The TCT factor that is mentioned by all key informants is ‘frequency’. 3PL providers have
higher volumes and can therefore achieve lower costs. In the pharmaceutical industry there
are some drugs that are produced and sold in very small volumes. The value of the product
is very high. Executing warehousing and transport activities inhouse would result in higher costs than if a 3PL provider did this. Also, it decreases flexibility of the logistics network, which is the second important factor that was mentioned by the key informants. Therefore, it can be concluded that frequency influences the logistics outsourcing decision. The relatively low frequency of logistics activities favors outsourcing instead of keeping logistics in-house.

The key informants have mentioned uncertainty, but not as an influence factor on the logistics outsourcing decision. It was mentioned as a development in the pharmaceutical industry. The fact that there is only little fluctuation in demand for drugs makes it for 3PL providers interesting to enter this market, given that many 3PL providers in other industries are now experiencing low demand due to the economic crisis. In the future this low uncertainty factor of the pharmaceutical industry could increase outsourcing opportunities. However, this relation was not proven in this research.

According to the TCT, organizations should not outsource activities that require assets specific to the transaction to prevent a situation of supplier dominance. For some pharmaceutical products specific know-how is needed for logistics activities. None of the key informants thought this should be a reason to keep logistics activities in-house. Rather, they share the knowledge with their 3PL provider.

Even though the degree of asset specificity is considered to be the most important element of TCT in literature, there is no evidence based on the interviews that this factor has an important influence on the logistics outsourcing decision.

It can be concluded that only one of the three TCT factors (frequency) has an influence on logistics outsourcing in the Dutch pharmaceutical industry. Proposition 1 is partly supported.

4.3. Proposition 2: Resource-based influence factors

According to the resource-based view (RBV), organizations keep the activities that provide them with a competitive advantage in-house and outsource all other activities (Espino-Rodríguez and Rodriguez-Díaz, 2008; Prahalad and Hamel, 1990; Quinn and Hilmer, 1994). This view is also known as the core competence approach. The main influence factors on outsourcing are core competences, resources and capabilities. In chapter 2 a definition for core competence by Prahalad and Hamel (1990) was given: a core competence should
provide potential access to a wide variety of markets, make a significant contribution to perceived customer benefits of the end product, and be difficult for competitors to imitate.

Resource-based influence factors play an important role in logistics outsourcing decisions at all three companies. “Logistics is not our specialty. The core business of Company 1 is research and development and all other resources could therefore be outsourced”. Company 2 and 3 gave similar remarks. All three interviewed companies are research driven and consider research and development to be their core business.

Company 2 indicates that all activities that are performed until the product is ready to be transported are considered to be core activities. This involves the invention of new drugs, producing the drugs and packing them. As a result of this definition of core activities, logistics activities are non-core activities and can therefore be outsourced. The other two companies have similar business structures.

In conclusion it can be said that core competences influence the logistics outsourcing decision. Since logistics is not seen as a core competence, it is outsourced.

In recent years it has become more difficult to sustain competitive advantage in the pharmaceutical industry. This is caused by the developments that are discussed in section 4.1. Grant (1991) stated that capabilities are the main source of competitive advantage and that resources are the source of a firm’s capabilities.

All key informants mentioned knowledge as an important resource, but this seems more related to their core business Research and Development and not logistics. Only one key informant mentioned a specific capability in this context: the capability to change. However, other key informants mentioned a need for ‘flexibility’ during the interviews, which agrees with the capability to change. Change and flexibility in the logistics network is increasingly important in the pharmaceutical industry today. Knowledge of the pharmaceutical industry and innovative logistics concepts are resources for this capability and could possibly lead to a competitive advantage in the future. 3PL providers that specialize in the pharmaceutical industry offer these valuable resources and flexibility and are therefore, according to the key informants, better in performing the logistics activities.

In conclusion it can be stated that resource-based factors have a strong influence on logistics make-or-buy decisions in the Dutch pharmaceutical industry. Proposition 2 is supported.
4.4. Proposition 3: Power and dependence influence factors

Power and dependence influence factors on logistics outsourcing include relative financial magnitude of the exchanged resources, criticality of the activities, need for specific technological expertise, availability of alternatives, and switching costs.

From the answers of the key informants it is very clear that they do take into account power and dependence factors, but these factors are especially important during supplier selection. Hence, after the make-or-buy decision has been taken. Situations of supplier dominance and low interdependence exist in the pharmaceutical industry. For example, transport by air in general (few alternative suppliers) and, an example given by company 1, road transport in Germany where one transport company has a monopolistic position. Even if a producer wanted to use a different supplier, the customer would probably not accept this. It is generally accepted that this supplier is the best and because all producers are using this provider the customers only have one delivery with products of all producers at once. However, this example in Germany is an exception. In most countries in the EMEA region and in North America there are many 3PL parties that can perform logistics activities for pharmaceutical companies. It does prove that every country needs a separate approach and has its own regulations.

All key informants stated that even though they prefer not to be in a situation of supplier dominance, they have never experienced serious problems with these suppliers in performance and/or negotiating costs. It can therefore be concluded that the availability of alternatives does not have an influence on logistics outsourcing decisions. Despite the number of alternatives, logistics activities will be outsourced.

The power and dependence influence factor ‘criticality of the activities’ is present in the pharmaceutical industry, however it has an influence on supplier selection after the logistics outsourcing decision has been taken. The value of the pharmaceutical products that are distributed is very high and losses are enormous if mistakes are made that cause the products to be damaged. All key informants said that availability of the product, quality, compliance with regulations and guidelines and costs are the most important supplier selection criteria. They also said that they do not select suppliers that are too small. A small company could become too financially dependent on this one big client. This agrees with the power and dependence influence factor ‘relative financial magnitude of the exchanged resources’. This situation of buyer dominance is just as undesirable as a situation of supplier dominance. Just as ‘criticality of the activities’, the ‘relative financial magnitude of the
exchanged resources’ and ‘need for technological expertise’ influence factors come up during the supplier selection phase. Thus, after the logistics outsourcing decision has been taken. Switching costs as an influence factor has not been mentioned by any of the key informants to be a consideration in any phase of the logistics outsourcing process. The reason for not considering these power and dependence influence factors during the logistics outsourcing decision-making could be related to the strong core/non-core thinking that is present in the pharmaceutical industry. The key-informants indicated that these influence factors would not lead to keeping a logistics activity in-house, however it does influence the choice of supplier.

It can be concluded that power and dependence factors do not have an influence on logistics outsourcing decisions in the Dutch pharmaceutical industry. They do have an influence on supplier selection though. Proposition 3 is not supported.

<table>
<thead>
<tr>
<th>Overview results</th>
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<tbody>
<tr>
<td>Proposition 1</td>
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<tr>
<td>Transaction Cost Theory factors</td>
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<tr>
<td>Proposition 2</td>
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<tr>
<td>Resource-based factors</td>
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<tr>
<td>Proposition 3</td>
</tr>
<tr>
<td>Power and dependence factors</td>
</tr>
</tbody>
</table>

*Table 3: Overview of research results.*
5. Conclusion and discussion

5.1. Conclusions and theoretical implications

The purpose of this thesis was to explore the influence of power and dependence in logistics outsourcing decisions and identify the importance of power and dependence compared to other factors that influence logistics outsourcing decisions. Therefore the following problem statement was formulated:

*What is the influence of power and dependence on logistics outsourcing decisions, and what is the importance of power and dependence compared to other factors that influence logistics outsourcing decisions, at organizations in the pharmaceutical industry based in the Netherlands?*

In order to answer the problem statement, a literature study was done that resulted in a conceptual model containing four propositions. After conducting a case study with six interviews in three pharmaceutical companies two propositions were supported and one was not supported.

This section will feature the conclusions based on the results of each proposition, and their corresponding theoretical implications.

**Propositions**

From the results it can be concluded that Transaction Cost Theory factors have an influence on logistics outsourcing decisions at pharmaceutical companies based in the Netherlands and that proposition 1 is partly supported. This relation can be found in several articles in literature on general outsourcing decision-making, including Walker and Weber (1984), Holcomb and Hitt (2007), Bolumole et al. (2007). Not much research has been done specifically on logistics outsourcing and its influence factors. Therefore this research contributes to existing logistics outsourcing literature. This research shows that in the pharmaceutical industry, Transaction Cost Theory influence factor frequency is a factor that is considered during logistics outsourcing decision-making and that previously published articles on this topic are intensified by confirming this relation for the pharmaceutical industry. It also shows that asset specificity does not have an important influence on logistics outsourcing unlike the findings of other studies on outsourcing that label asset specificity as a
very important factor. This suggests that logistics outsourcing decisions are different from other outsourcing decisions and that other influence factors apply.

The second finding of this research is that it can be concluded that there is an influence of Resource-Based View factors on logistics outsourcing decisions in the Dutch pharmaceutical industry. Therefore, proposition 2 is supported. In literature this influence on outsourcing is also found by Rodriguez and Rodriguez-Diaz (2008), Prahalad and Hamel (1990), and Quinn and Hilmer (1994). In this research the influence of the resource-based approach was high. In fact, it was the basis of the outsourcing decisions according to all six informants. "Research and development is core business and all other activities could be outsourced". A development in this context is the increasing importance of the logistics function in the pharmaceutical industry. Despite this growth of awareness of the importance of logistics compared to 10 years ago, it is not yet of the highest strategic importance according to the informants. In other industries, however, the importance of logistics was acknowledged earlier than in the pharmaceutical industry. Logistics now has a higher strategic importance in those industries according to the key informants. Since most key informants confirmed that the pharmaceutical industry is somewhat conservative and therefore lags behind on changes in that field, the importance of logistics could increase even more compared to other industries.

The third conclusion of this research is that Power and Dependence factors do not have an influence on the logistics outsourcing decision in the Dutch pharmaceutical industry. However, it does have an influence on the supplier selection process. In the context of supplier relationships, power and dependence have been researched by several authors including Lonsdale (2001), Casciaro and Piskorski (2005) and Gulati and Sytch (2007). Caniëls and Roeleveld (2007) have introduced the power and dependence perspective in logistics outsourcing decisions before make-or-buy decisions are taken and not only during supplier selection after the make-or-buy decision has been taken. Their cases concerned processes that require specialized assets and/or knowledge, and supplier market imperfections like high entry/exit barriers. These criteria led to cases that illustrate outsourcing motives that are not just cost related. Even though the pharmaceutical industry meets these two criteria, based on six interviews proposition 3 was not supported. Subsequently it appeared that for logistics outsourcing in the pharmaceutical industry the requirement of specialized assets and knowledge, and the high entry/exit barriers were not as high as expected.
The conclusion of this research is that logistics outsourcing decisions in the pharmaceutical industry are a combination of Transaction Cost Theory factors and Resource-based factors. In literature theoretical frameworks for outsourcing can be found that combine several theories that have been scientifically proved individually. Bolumole et al. (2007) found that in practice a combination of TCT, RBV and Network Theory could be found in logistics outsourcing. The combination of Transaction Cost Theory and the Resource-based View was also found in this research and is therefore a confirmation of their findings.

**Problem statement**

Based on the findings of the individual propositions an answer to the problem statement can be given. *What is the influence of power and dependence on logistics outsourcing decisions, and what is the importance of power and dependence compared to other factors that influence logistics outsourcing decisions, at organizations in the pharmaceutical industry based in the Netherlands?*

There was no influence of any of the power and dependence factors found on logistics outsourcing decisions at organizations in the pharmaceutical industry based in the Netherlands. The main influence on logistics outsourcing was found to be resource-based. All informants claimed that Research and Development is their company’s core business, and that based on that all other activities are candidate for outsourcing.

**5.2. Managerial Implications**

This research contributes to the understanding of logistics outsourcing decisions in the pharmaceutical industry. It is interesting that all informants indicate that logistics is considered to be not of high strategic importance to the organization since Research and Development is their most important process and outsourcing decisions are taken based on this core business. At the same time they claim that availability of their products and the wellbeing of their clients are of great importance and considered an important influence factor in supplier selection. The latter would make logistics of strategic importance to the organization, but yet it is not.

The findings of this research and the theory of power and dependence in logistics outsourcing supports managers to become more aware of factors that influence logistics outsourcing decisions. From the interviews it appeared that this is not an informed decision preceded by an extensive make-or-buy decision process. There is still deep-seated
core/non-core thinking. The pharmaceutical industry is facing decreasing profit margins. Other industries have dealt with this challenge some years ago by recognizing the importance of logistics and supply chain management. However, the informants expect that the logistics function will develop during the next years and will probably pursue the direction of other industries where new logistics concepts have proven to be successful. Big acquisitions have taken place in 2009, which could change the pharmaceutical market and power and dependence influence on logistics outsourcing decisions. It also changes the logistics network of those companies and their position with respect to 3PL providers in the pharmaceutical industry.

5.3. Limitations and future research

This research has four important limitations that might have consequences for the reliability of the results. Exploring the influence of power and dependence in logistics outsourcing decisions in the Dutch pharmaceutical industry is the main purpose of this research. Because of the exploratory nature, these findings based on six interviews do not provide evidence to draw indisputable conclusions. As mentioned before, there have been several acquisitions in the pharmaceutical industry while conducting this research. These acquisitions could lead to changes in the worldwide pharmaceutical industry as a whole and, as a result, the findings of this thesis. The third limitation of this research is the fact that it was conducted in the Netherlands only. Even though the three participating companies had a main office in the Netherlands and a highly structured logistics network, it became clear that there still was great influence from foreign headquarters related to outsourcing decisions and that some decisions were taken by a management board abroad. Finally, to ensure privacy of organizational data and the anonymization that was desired by all participants, some information could not be put in this research document.

Based on the results and conclusions, some directions for future research can be given. The informants indicated that the pharmaceutical industry is always some years behind other industries when it comes to logistics innovation. Given the latter and the recent acquisitions it would be interesting to perform research on Power and Dependence influence factors on logistics outsourcing decisions in the future. The scope of this research could be limited to pharmaceutical companies that consider logistics / supply chain management to be of great strategic importance. This would be interesting for two reasons. First, one could research if
power and dependence influence factors on logistics outsourcing decisions are present when the logistics function is of high strategic importance in a company. Second, it would be interesting to research if the importance of all influence factors from Transaction Cost Theory, the Resource-based View and Power and Dependence changes when the logistics function becomes more strategic in a company. Also, future research on logistics in the pharmaceutical industry should be conducted worldwide or in for example the entire EMEA region. This would provide a more representative view of logistics outsourcing in the pharmaceutical industry. Logistics is centralizing more and more in the pharmaceutical industry. Despite the differences in regulations in every country, it would be interesting to expand the scope of research.

A last recommendation for future research is to study power and dependence influence factors on outsourcing of research and development in the pharmaceutical industry. During this research it became clear that R&D is considered to be core business and is therefore kept in-house. However, there were signs that part of the production of drugs was outsourced. A study on why a core activity is outsourced could detect other influence factors on outsourcing.
Appendix 1 Semi-structured interview

1. Introduction
   a. Could you describe your products
      i. Specific knowledge needed
      ii. Specific resources and capabilities needed
      iii. Legislation / Certification
   b. Please describe the type of relationship with suppliers your organization pursues in general.
   c. How does your organization define logistics?
   d. Could you describe the logistics activities that you have distinguished?
      i. Type of activities (transport, storage, etc.)
      ii. Product features and complexity
      iii. Criticality of the activity
   e. What was the situation of your logistics department before the project?
      i. Number of employees
      ii. Number of orders/month
      iii. Amount of m² warehouse (public or dedicated?)
      iv. Outsourced activities
   f. Were you satisfied about the logistics performance in the situation before the project?
      i. What needed improvement and what was successful? (if necessary to ask)
   g. What is your history with outsourcing? Experience. When did it start?
   h. How long did the outsourcing project take? Or is it a continuous process?
      i. In what year (and month) did it start?
   i. What was your responsibility in this project?
   j. Was a third party involved for advice during any phase of the project? For which activities?

2. Initiation / Strategy
   a. What was the motivation for starting a logistics outsourcing project? (Recognition of opportunity or threat?)
      i. How does this relate to the company strategy, mission and vision?
   b. What goals/targets were determined for this project?
c Who were involved during the initiation phase? Initiation phase means strategy formulation and recognition of an opportunity or threat, in other words, the first phase of outsourcing.

3. Make-or-buy decision
   a Can you describe the processes that led you to the decision whether to outsource logistics or not.
      i How are the activities to be outsourced defined? (Wait to see if respondent uses words 'core' and 'non core')
      ii Would you say logistics is of strategic importance to your company? If you had to score this on a scale from 1 (totally unimportant) to 5 (very important), what would the score for your company be? Core / non-core identification? How are core activities defined?
      i Cost considerations? Cheapest option always chosen?
      ii During which stage are the first supplier (market) considerations?
      iii How many go/no-go moments are there and when are they?
   b What were the most important criteria in the decision whether to outsource or not.
      i How are these criteria selected en why did you choose these criteria?
      ii Where the criteria equally important or was it a weighted average?
      iii TCT: asset specificity, volume uncertainty, frequency
      iv RBV
      v Power en dependence factors
   c What was the result of the make-or-buy decision?
   d Who were involved in the make-or-buy decision?
   e Could you describe the 3PL provider market for pharmaceuticals?
      i Number of shippers and number of 3PL providers.
      ii Are 3PL providers specialized in pharma or general providers?
      iii How many clients do those 3PL providers have and how important is your company for the 3PL?
      iv Are these market aspects of influence on the make-or-buy decision? How important is it? If it is not of influence on the make-or-buy decision, why not?
      v Can you tell me something about power and dependence between shippers and 3PL providers in the pharmaceutical industry?
      vi Have you ever experienced a situation of supplier power and high interdependence? What kind of effect did this situation have on the performance
and decision-making of the logistics department? If you have never been in the situation, what would you do if you would ever get in that situation?

vii Have you ever been in a situation of buyer power and high interdependence? What kind of effect had this situation on your relationship with the supplier? If you have never been in that situation, what would you do to avoid a situation of distrust by the supplier?

4. **Supplier selection (if logistics is outsourced)**
   a Who were involved in the supplier selection phase?
   b What selection criteria were most important?
      i Do you still think that these criteria were the most important or do you think there were important criteria neglected? Why
   c What type of relationship did you choose to have with the 3PL provider? Why
   d What is the duration of the contract?
      i Is there a test period?
   e What risks, with reference to suppliers, that could lead to outsourcing failure, did you foresee in the supplier selection phase?
References


