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# Sourcing strategies

A case study in the construction industry

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# MASTERKONTRAKT
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### 3. Masteroppgave

| Oppstartsdato<br>**24. jan 2011** | Innleveringsfrist<br>**20. jun 2011** |
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| Oppgavens (foreløpige) tittel<br>**Sourcing strategies**<br>**A case study in the construction industry** | |
| Oppgavetekst/Problembeskrivelse<br>The master thesis will include a case study of Reinertsen's current purchasing practice, including descriptions of how the firm organizes and carries out their purchases, and an analysis of their current sourcing strategies in relation to the models discussed in the literature (single, multiple, parallel sourcing etc). In addition, other relevant aspects in the context of sourcing strategies such as international purchasing, organizational structures, developing supplier relationships etc. may also be considered. The master thesis will conclude with concrete recommendations for Reinertsen's strategy regarding the use of various sourcing strategies. | |
| Hovedveileder ved institutt<br>**Professor Luitzen de Boer** | Biveileder(e) ved institutt |
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Tr.heim 24.01.11
**Sted og dato**

**Student** | **Hovedveileder**

Originalen oppbevares på fakultetet. Kopi av avtalen sendes til instituttet og studenten.

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**Agreement between student** William Wong **date of birth** 17.11.84,

**academic supervisor at NTNU** Luitzen De Boer,

**company/organization** Reinertsen AS **and**

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**concerning the use and exploitation of the specifications and results from the thesis for the Master of Science degree in accordance with the supplementary regulations to the examination regulations for the Master of Science degree at NTNU, passed on 23 March 2006 by the Board for Engineering Education at NTNU.**

1. The student is to complete his/her Master's thesis at: Reinertsen AS

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The title of the thesis is: Sourcing strategies - A case study in the construction industry

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Trondheim
(place)

20/06/2011
(date)

Student

Supervisor at NTNU

REINERTSEN
for company/organization
(signed and stamped)

Approval of the agreement:

20/6-11
Dean of the Faculty, NTNU (dated, signed and stamped)

NTNU, 2007-08-28

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1. *In accordance with § 5 of the standard agreement* that has been entered into by the above parties, the said parties have agreed that the thesis is to be kept confidential for 1 years from the time this present agreement is entered into.

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Trondheim (place)

20/06/2011 (date)

William Wong
Student

Supervisor at NTNU

REINERTSEN
for company/organization
(signed and stamped)

Approval of the agreement:

20/6-11

Dean of the Faculty, NTNU (dated, signed and stamped)

NTNU, 2007-08-28

# PREFACE

This master thesis has been written as a part of my diploma at the department of Industrial Economics and Technology Management at Norwegian University of Science and Technology (NTNU), Trondheim, Norway. My specialization is within the disciplinary group of "Strategic Purchasing and Supply Management". The thesis has been carried out by me with the help from my supervisor prof. Luitzen De Boer. In addition, an external collaboration partner, the construction firm Reinertsen AS, has helped me with the empirical study by providing me information and data about the firm.

This thesis includes literature review, data collection, and analysis, and has been conducted between January and June 2011. Further, the thesis has been written in A4 paper format, thus it is advised to use this format for reprints.

**Acknowledgements**

I whish to give my thanks to professor Luitzen De Boer, in the department of Industrial Economics and Technology Management at NTNU, for his help in deciding on the direction and focus of this study, as well as his advices and help throughout in writing this paper.

In addition I also give my thanks to the people at Reinertsen for making it possible for me to do the required empirical findings; I especially thank Espen Mellbye for his help in referring me to relevant interviewees - and Nina Oxås, Thomas Kristiansen, Tarald Larsen, Ole Eggen and Trond Soligard for their time spent in helping me to get a deep understanding of their firm.

Trondheim 20.06.2011

William Wong

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# ABSTRACT

There is an ever-increasing interest towards the field of purchasing and much attention has been placed towards the importance of purchasing in relation to firms' survival in a competitive environment. In general, firms have an array of interrelated activities from operational production, to marketing and R&D. However, all firms also typically conduct purchase activities, hence the chain of activities is only as strong as its weakest link. Further, in many industries firms spend more than half of their revenue on purchasing materials and services. This can be explained through the trend of firms to exclude non-critical activities out to other actors under the banner of outsourcing. This trend on the other hand implies that higher responsibilities have been placed on the suppliers and their specific product contributions to the buying firm.

Therefore, the implication is that firms have to develop appropriate supplier strategies based on what type of commodity they are buying. In this thesis the theme is *sourcing strategy* and addresses this issue. A case study of a construction firm is carried out in this thesis to analyze their purchasing practice, and the objective is to find improvement areas for the case firm in relation to the various uses of sourcing strategies. In order to do that a literature review is conducted to explore and relate the various sourcing strategy models in an effort to compare these findings with observed practice of the case firm.

The result of the literature review shows that there are in general four main aspects to consider in relation to sourcing strategy: (1) what strategy for a given commodity, (2) how many suppliers, (3) what kind of relationships to pursue, and (4) how do we structure the supply base. With these aspects at hand, the author analyzed the case firm and in particular within an ongoing construction project to find improvement areas.

The findings of the empirical study is that the observed practice of the case firm to some extend resembles the theoretical frameworks in the sourcing literature. The firm uses distinctive strategies based on what commodities they are buying, however, due to the construction industry's specific characteristics, the firm has adapted or reconfigured it to suit their business. Further, by mapping how the supply base of the given project is structured, it resembles what the literature call *parallel sourcing*.

The thesis concludes that even though the case firm's practice resembles parallel sourcing, the practice does not fully reap the benefits depicted by the literature. In order to fully benefit, the case firm is recommended to consider the development of long-term relationships with a limited set of suppliers. By doing so, this would coincide more with the literature's description of parallel sourcing, and hence harvest the same benefits that are argued by the literature.

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# PART 1
# Introduction

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# Chapter 1 - Introduction

## 1.1 Background

For the past decades the business environment has been changed dramatically. Technological developments made communications more efficient between firms and globalization contributed to both increased opportunities and competition. Increased opportunities and competition affect how managers administrate their firms. One important field is the management of relationships across value chain – that is activities that affect buyer-seller relationships in a business-to-business context. These activities are in general divided into two: back-end concerns, such as source selection and control of vendors, sourcing mechanisms and designs, under the banner of supplier relations management (SRM); and front-end concerns, such as distribution, customer service and customer relationship management (CRM) (Seshadri, 2005).

The back-end concerns are what this thesis seeks to embed and in particular the field of purchasing. For a long time purchasing has been primarily considered as a functional/ task-focused activity without any strategic importance (Baily et al, 2005; Cavinato, 2006). However the role of purchasing has changed for the past decades. In the 1970s companies learned new ways to acquire goods; instead of relying on volume to get the best buying power in the market, new principles were used to reap price benefits such as consolidation, using

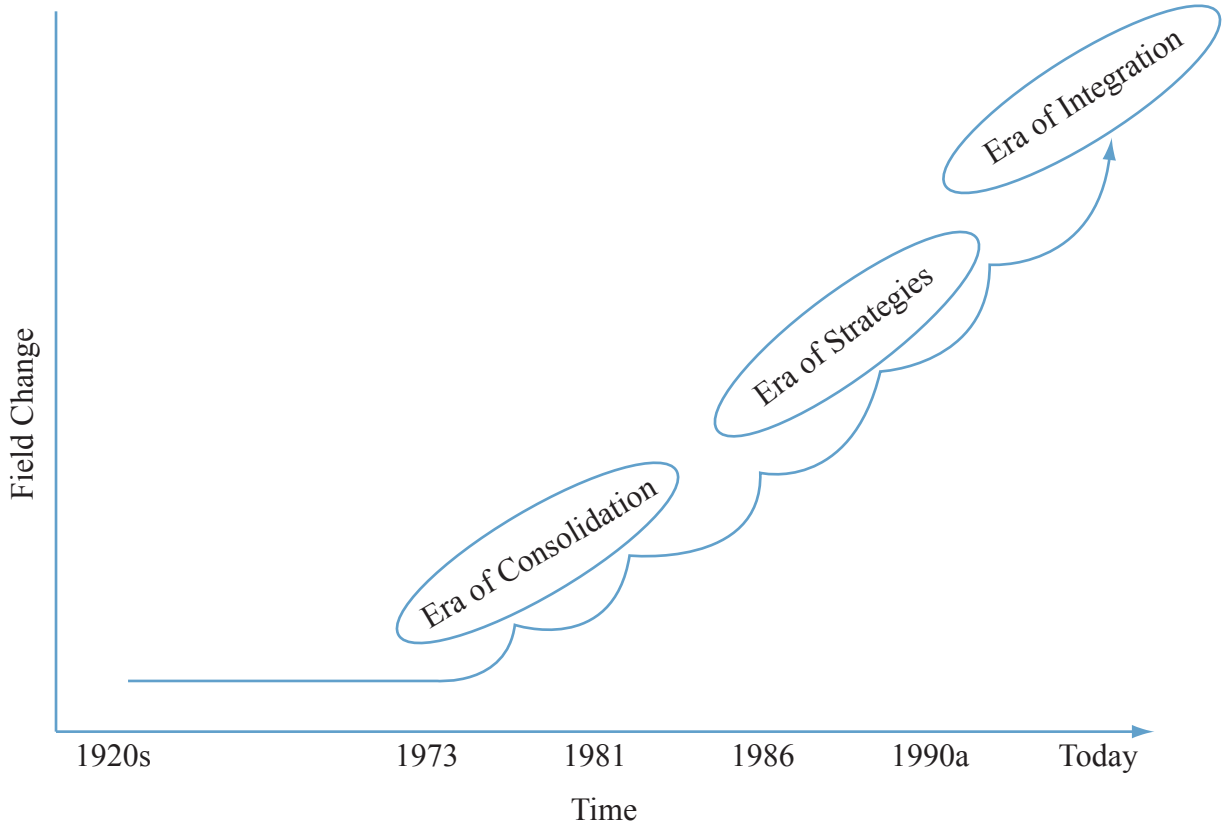


Figure 1-1. The Changing Way of How Organizations Acquire Things
Source: Cavinato (2006: 5)

fewer suppliers and standardizing specifications. The main reason for this shift is probably that the market dynamic has changed for many industries. Product life cycles were shortened and in many cases even shorter than the development cycles. The implication is that firms could no longer do everything; from concept, to design, market testing, and launch alone, they need help from external actors (Cavinato, 2006).

In the 1990s even more sophisticated forms of purchasing practice were being implemented. Firms moved towards long-term, collaborative relationships and purchasing influenced suppliers' investments, innovation and supply chain practices (Cousins, 2008). As being depicted in Figure 1-1 the development of purchasing started with an era of consolidation, then strategies, to integrations (Cavinato, 2006). Thus the importance and the scope of purchasing expanded, and highly strategic concepts such as outsourcing, supply chain management, supplier development and innovation, sourcing strategy, etc. emerged.

## 1.2 The choice of topic, motivation, and the thesis' collaboration partner

### The topic of this thesis: Sourcing

The choice of topic in this thesis, and also the term that has become increasingly popular in the field of purchasing, is *sourcing*. According to Weele (2009) sourcing is mainly referred second and third step in the purchasing process (see Figure 1-2), however, in practice the specifying step may be so interwoven that for most firms sourcing is really the three first steps in the purchasing process (Weele, 2009). In the previous section, a notion has been made that firms today cannot do everything in-house, thus the reality is that acquiring goods from external partners may be the most dominant factor of firms' total cost; as shown by the figure below, the largest savings rests on the three first steps in the purchasing process, making sourcing an interesting topic for research.

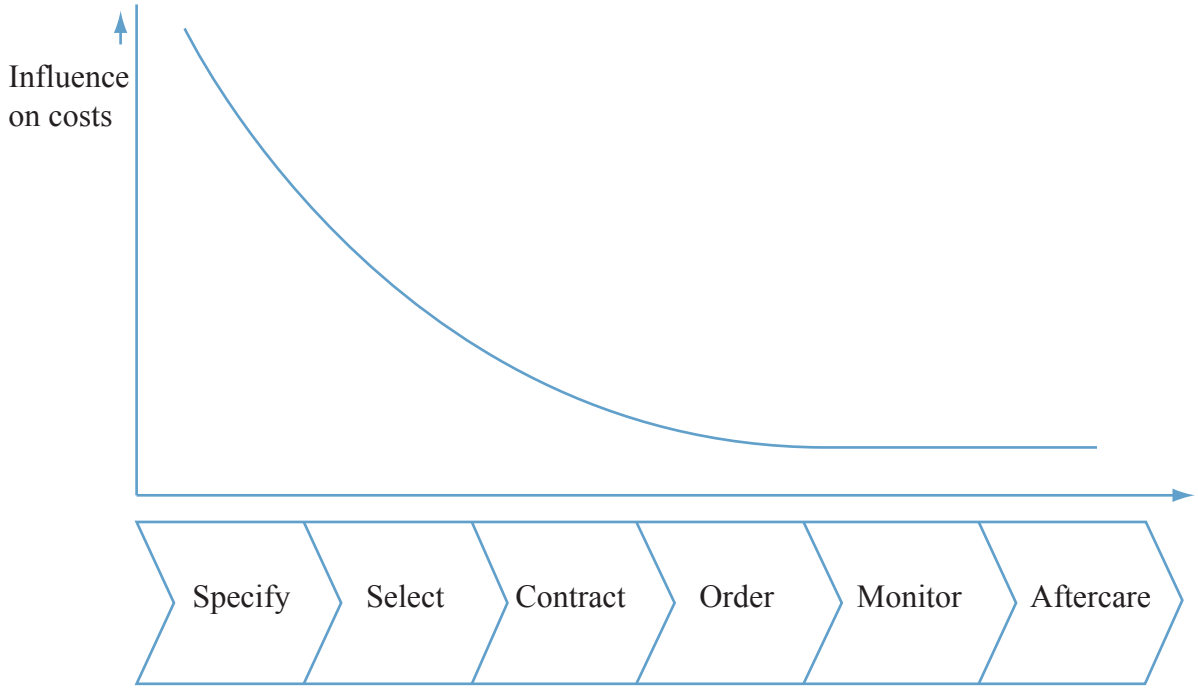


Figure 1-2. Impact of purchasing steps in total costs
Source: De Boer (1998); Harink (1999) in Heijboer (2003: 26); Weele (2009)

**Collaboration partners: From automotive industry to construction industry**

As the literature review shall show, the literature about sourcing stems mainly from the automotive industry; most of the research studies of sourcing strategy are conducted within the automotive assemblers such as Toyota, Volvo or Mazda. In the last year (in 2010), I did an in-depth project study of one Norwegian actor in the automotive industry, and thus I am quite familiar with the literature from this particular industry.

Even though my former collaboration partner of my in-depth project study is from the automotive industry, this master thesis' collaboration partner is chosen to be in the construction industry. In the early year of 2011, my supervisor at NTNU, prof. Luitzen De Boer, introduced me to Reinertsen AS with headquarter in Trondheim. This firm is a Norwegian construction company, and has activities in addition to Norway, also in Sweden and Russia. In Norway, this firm is one of the biggest actors with over 2100 employers with annual revenue of about three billion NOK. With such big revenue, purchasing is certainly an interesting topic for the firm, as well as for me to come up with improvement recommendations.

From my point of view, it is interesting to see and study the differences between the automotive and construction industry. As opposed to the automotive industry, which is characterized by static manufacturing environment (components are produced in facilities and often in predetermined manufacturing lines), the construction industry produces their products based on unique projects. Each and every project is different from each other, making this an interesting contrast to explore and study.

## 1.3 Problem description

The overarching description of the master thesis is stated in following text:

> *The master thesis will be a case study of Reinertsen's current purchasing practice, including descriptions of how the firm organizes and carries out their purchases, and an analysis of their current sourcing strategies in relation to the models discussed in the literature (single, multiple, parallel sourcing etc). In addition, other relevant aspects in the context of sourcing strategies such as international purchasing, organizational structuring, developing supplier relationships etc. might also be discussed. The master thesis will conclude with concrete recommendations for Reinertsen's strategy regarding the uses of various sourcing strategies.*

This description is somewhat vague or general, but provides a sense of direction in the initial phase of formulating this research's purpose and objective. Using the problem description above and concretize it, the foremost purpose is:

> *To describe and discuss the purchasing practice of Reinertsen in relation to the sourcing literature.*

Based on this objective, while maintaining focus on Reinertsen's incentive to improve its purchasing function, the main research question has been formulated as:

*How can Reinertsen improve in relation to the various uses of sourcing strategies?*

The research objective implies that there are three main phases in this thesis. The first one is to conduct a literature review, and then the second is to collect data from Reinertsen. Finally the third process is to match and compare the two preceding processes in order to find improvements areas for the firm.

The three main phases should have the main research question in mind. Thus to answer the main research question, some *direct sub questions* have been derived and are categorized in relation to the main phases:

**Phase 1: Literature review**

Q.1) What models of sourcing strategy exists in the literature?

**Phase 2: Empirical study of the case company**

Q.2) How is the purchasing function of the case company organized today, and how does the company carry out their purchases?

**Phase 3: Comparison and analysis**

Q.3) To what degree is there a conformity between observed practice and the theoretical models in the sourcing literature?

Q.4) Using the knowledge from the literature review and the empirical study of the case company, how can the case company improve in relation to the various use of sourcing strategies?

## 1.4 Chapter specific questions and the structure of the thesis

The chapters in this thesis are written with the objective to answer Q.1-Q.4. However, in relation to Q.1 additional *indirect sub questions* are derived in the literature review. Each indirect sub question is assigned to a chapter, and the purpose of each indirect sub question is to answer a part of Q.1. In other words, Q.1 shall be addressed subsequently by answering each of the indirect sub questions. The structure of this thesis is depicted by the following bullet points and Figure 1-3:

- Part 2 (Ch.2-Ch.8) is the first of the three main phases, i.e. the literature review, and seeks to address Q.1. The chapter specific questions for Ch.5-Ch.7 are derived through first answering the Ch.4 question.
- Part 3 (Ch.10-Ch.11) is the empirical study, hence represents the second phase that addresses Q.2.

- In Part 4 (Ch.12-Ch.13), with the literature review from Part 2 and the empirical findings in Part 3, an analysis of the case firm is conducted in order to answer Q.3 and Q.4.

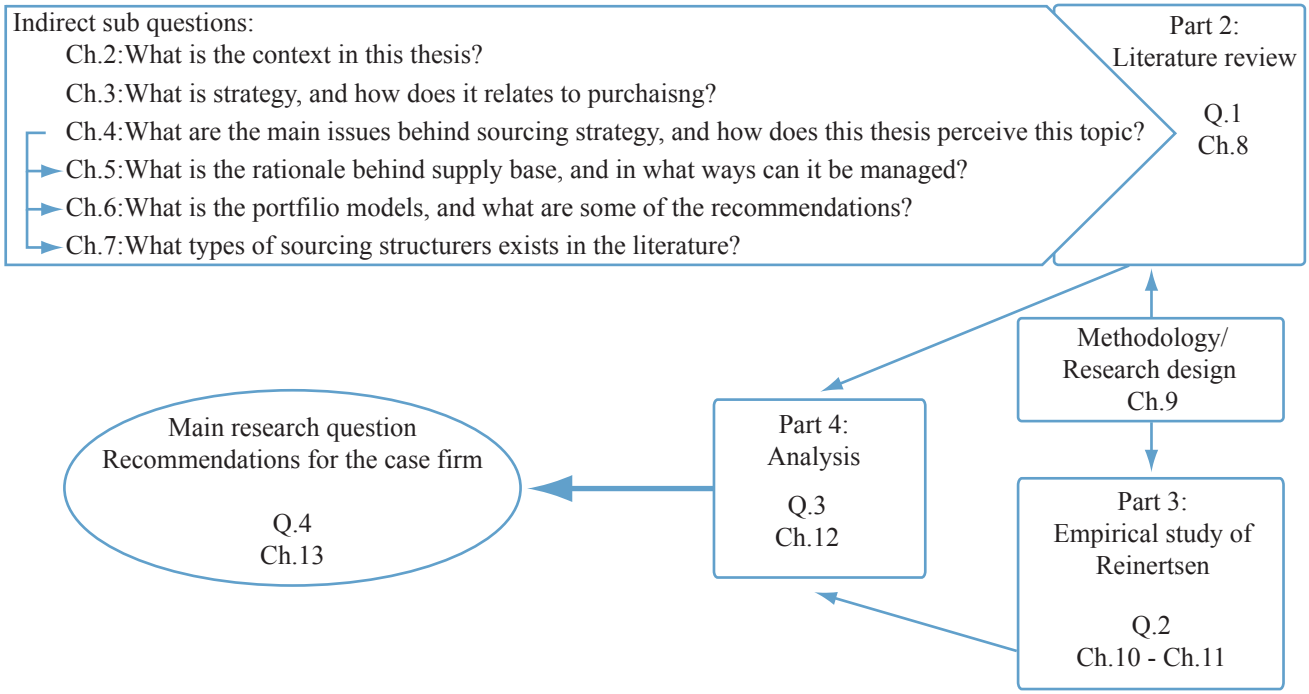


Figure 1-3. The thesis's structure
Source: Own presentation

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# PART 2
# Literature review

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# Chapter 2 – The Context Around Procurement

This chapter serves mainly as an introduction for the literature review. As the main topic of this thesis is sourcing, the main intend is to describe the context around this thesis.

## 2.1 A Firm's Value Activities and the purchasing organization

The start of this this literature review will take Porter's *value chain* (Porter, 1985) as a point of departure to show a generic firm's activities and how these are connected. The reason is that the concept of value chain management plays a central role in many business strategies. In addition it also shows that there are procurement activities in most (if not all) companies. The concept of value chain is shown in Figure 2-1. This framework separates a firm's business system into a series of value-adding activities. This framework was named value chain to emphasize that it is the sum of performances in all activities and their linkage that generates the desired performance in a business in which a firm wants to compete.

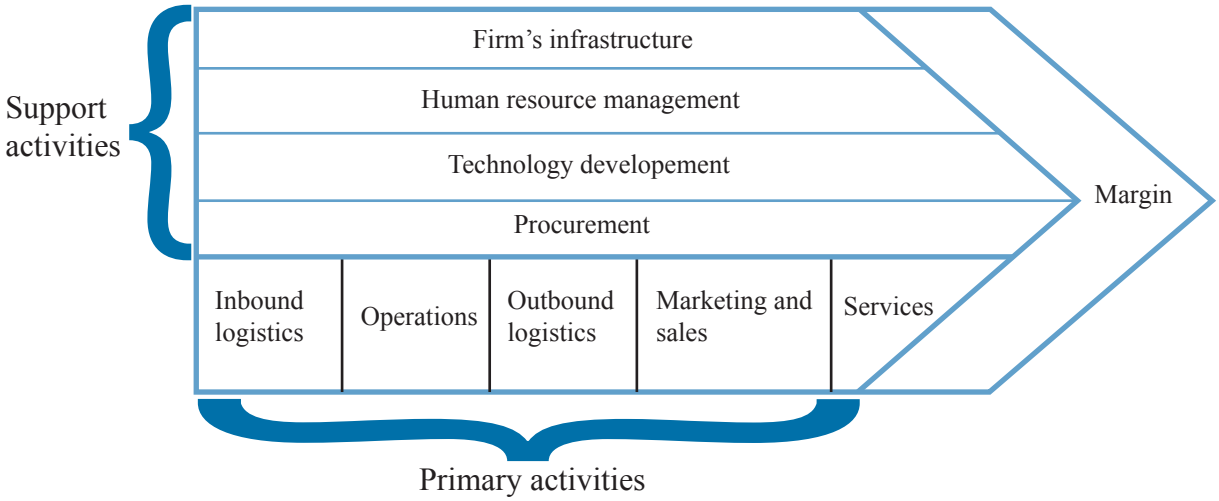



Figure 2-1. Value Chain
Source: Porter (1985: 37)

Pursuant to this framework, a business system consists of two main category activities: *Primary* and *support activities*. Each main category is further divided into some generic activities that most firms need to have in a business environment. Each generic activity also consists of a number of distinct activities that depend on the particular industry. The primary activities are directly associated with the creation and delivery of a product or service, and is divided into: Inbound logistics, operations, outbound logistics, marketing and sales, and service. All the primary activities cannot be performed without the help of the support activities, which consist of four main areas: Firm's infrastructure, human resource management, technology development and procurement.

The logic behind this framework is that all the activities within the business both incur cost and add value to the product or service. Margin is the difference between what the customers

is willing to pay for the added value and the costs associated with achieving that value. For organizations, the main task is to analyze those activities and improve the linkage between them.

Turning back to the procurement activity, which is categorized as a support activity, its main function is to purchase inputs used by the firm's value chain. Examples are raw materials, supplies, and other consumables items as well as assets, like machinery, office equipment and buildings. These purchase inputs are mainly associated with the primary activities, but also the other support activities need purchase inputs (Weele, 2009). For instance the technology development activity need laboratory equipment in addition to independent testing services from other firms. Thus procurement is linked to the other activities in the value chain and plays an important role of determining the value chain's margin.

## 2.2 The trends towards outsourcing and supply chain management

As mentioned in the introduction chapter (Ch.1) the importance of purchasing became more apparent. The market dynamics have changed; the product life cycles was shortened in addition to customers' preferences have shifted into more demanding criteria. Firms could no longer "do everything" in-house, and a very strong competition forced companies to find new ways of competing (Cavinato, 2006; Arnold, 2000). Marketing was no longer the dominating function, and purchasing has moved from being a passive role to a more proactive and strategic function (Arnold, 2000).

One driver towards this shift is probably the trend of outsourcing. The strategic logic behind outsourcing as Quinn and Hilmer (1994) express it, is that one could concentrate and focus a firm's own resources on a set of core competencies where it can deliver superior value for customers. By excluding activities for which the firm neither has a critical strategic need nor special capabilities, the firm could maximize their investments on what they do best. Additionally the firms could also leverage their external suppliers' specialized capabilities, for which would either be prohibitively expensive or even impossible to duplicate. In fast changing environment, uncertainty is a factor for which firms need to cope with. Outsourcing decreases the risks by lowering needed investments, further it can also shorten the cycle times for development of new products and creates better responsiveness to customer needs.

Since more and more activities are getting outsourced, most firms today are not self-sufficient (Christopher, 2005). They need to purchase inputs and outputs from external actors in the market. Inputs may be raw materials as well as other services, and output can be distribution and sales. What this means, is that since companies are getting narrowed roles in terms of serving value to their end customers, greater importance is placed upon the coordination and integration across different actors in order to fulfill their end customers requests (Chopra and Meindl, 2007).

Increasing trends towards outsourcing probably changed the view of how firms do their business. The changing view of business in this paper, addresses the notion that firms are changing the perspective of business from intra-firm- to inter-firm scope (Chopra and Meindl, 2007). Intra-firm scope represents the traditional way of doing business: every firm was seen as an entity, which only kept an arm´s length relationship with their first tier suppliers and customers. This means that each firm would device their strategy independently of their environment, e.g. suppliers and customers. As an example a distribution firm may device a cost effective approach by consolidating their deliveries. This approach may save transportation costs, but would be at the cost for the retailer's responsiveness to the market.

The inter-firm scope was challenged by the supply chain management (SCM) literature, stating that firms should have a more inter-firm scope when devising their strategy. Instead of seeing businesses as company vs. company, the emphasis should be on supply chain vs. supply chain. The intra-firm scope is too myopic; firms that seek to maximize their own profit independently of their partners are ignoring the competitive strength that could arise if all actors are acting as fully integrated unit (Chopra and Meindl, 2007).

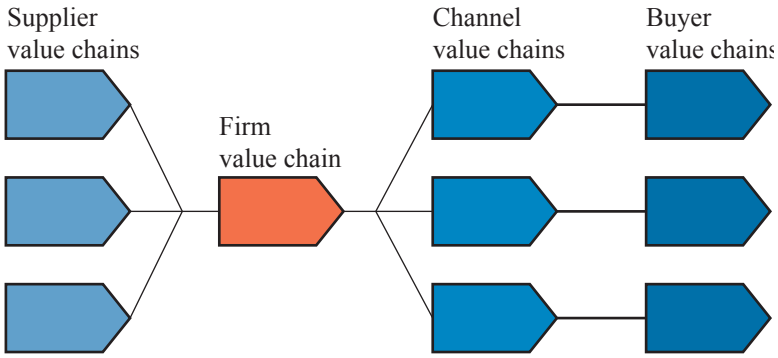



Figure 2-2. Value Chain System
Source: Porter (1985: 35)

This fact is illustrated by the value system framework depicted in Figure 2-2. Each firm can be seen as an entity, which is linked together to other entities - "*Gaining and sustaining competitive advantage depends on understanding not only a firm's value chain but how the firm fits in the overall value system*" (Porter, 1985: 34).

## 2.3 The importance of procurement

The trend towards outsourcing implied that purchasing stood for a larger part of the company's total cost and thus directly influence the profit. According to an American study in 1999, 16 industries out of 32 spent 50% or more of their total revenue on purchasing materials and services

| Industries | Average cents spent per revenue |
|---|---|
| Motor vehicles and Parts | 61% |
| Engineering, Construction | 56% |
| Utilities, gas and electric | 17% |
| Petroleum refining | 21% |

Table 2-1. Industry spends
Source: Based on Gadde et al. (2001); Weele (2009)

(Purchasing, 1999). Some of the industries are presented in Table 2-1, and as shown there is a huge variation among industries. Though the same study revealed that most of the industries have increased their spending on suppliers since 1986.

According to Gadde and Håkansson (2001: 6) "*it is not only the relative financial importance of purchasing and the monetary value of the throughput that makes the supply side of strategic importance.*". They emphasized that the character of the content of inputs from suppliers have also changed. Due to mentioned trend towards outsourcing, the buying firm needs their supplier's contribution to the technical development. The buying firm need not only material inputs, but also manufacturing, design and development to an increasing extend. For that reason, firms started to see the benefits of having a deeper and more long-term relationship with their suppliers. The competitive advantage rests no longer on just the firms themselves, but is highly reliant on their suppliers' contributions and decisions (Gadde and Håkansson, 2001; Porter, 1985).

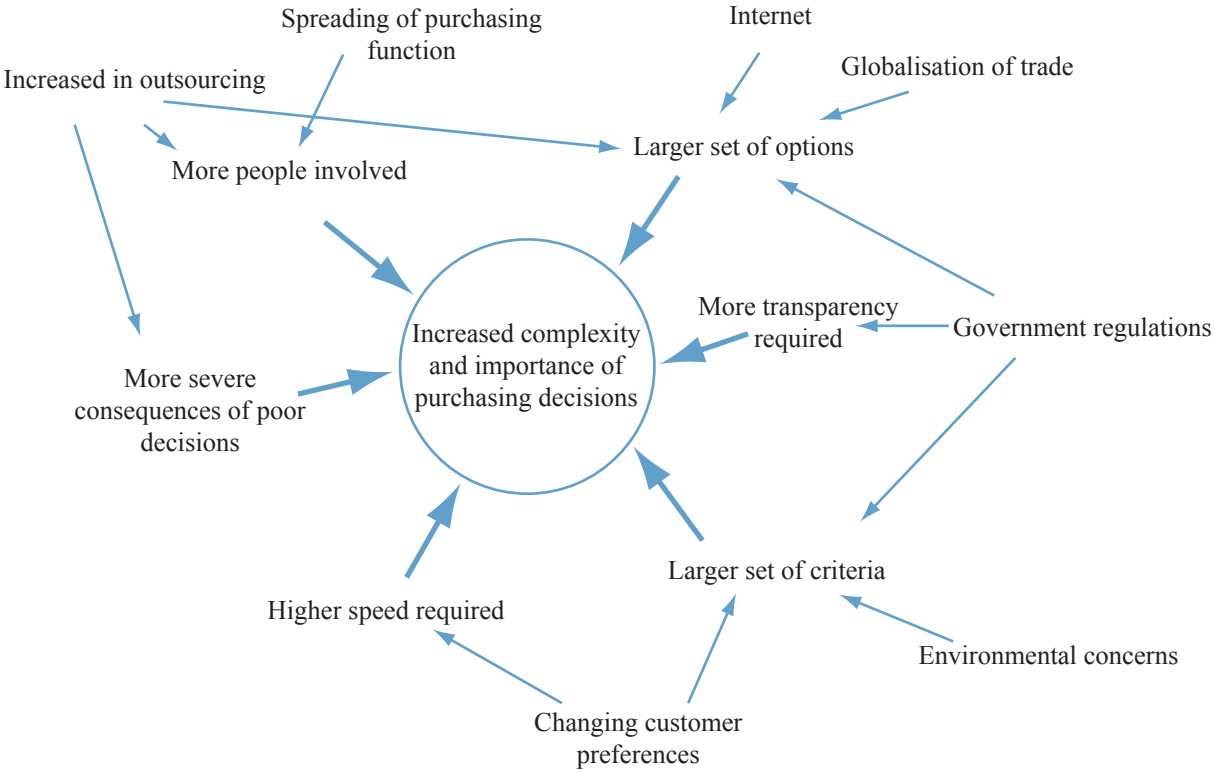



Figure 2-3. Impact of developments on the complexity of initial puchasing decisions
Source: De Boer (1998) in De Boer et al. (2001)

In conclusion, the purchasing function has developed from being a passive, re-active function to develop itself in a strategic pro-active function contributing, as much as other business functions, to the creation of competitive advantage. Thus purchasing has the ability to influence the corporate profitability favorably (Versendaal et al, 2005). With higher expenditures and the increased importance on suppliers, come increasing responsibilities for purchasing (Baily et al., 2005). Purchasing plays an important role between external suppliers

and internal organizational customers in creating and delivering value to external customers (Novack and Simco, 1991). Seeing the business as a supply chain, which firms are interwoven and independent of each other, means that purchasing has become highly complex with strategic importance.

The mentioned factors and developments as well with others not mentioned are summarized in Figure 2-3. This figure is adapted from De Boer (1998) and illustrates the impact of developments on the complexity and importance of purchasing decisions.

## 2.4 A brief tour through the inter-firm context

Increasing trends towards outsourcing; interwoven business activities with other firms; long-term strategic relationships; higher complexity of decisions; all points at the inter-firm scope. In this section a brief tour of the inter-firm scope shall be conducted. The reason is that the changing view of business (into the inter-firm scope) ultimately also influences the view of purchasing.

### *2.4.1 Supply Chain Management (SCM)*

As being mentioned, greater importance has been placed on integrating different actors within a supply chain. So what is a supply chain? Chopra and Meindl (2007: 3) are defining a supply chain that "*(...) consists of all parties involved, directly or indirectly, in fulfilling a customer request*". In addition Lambert et al. (1998: 1) point out that "*(...) the supply chain is not just a chain of businesses with one-to-one, business-to-business relationships, but a network of multiple businesses and relationships*". This means that a supply chain consists of multiple linked actors, extending from the point of origin of a product to the point where the end customers receive the product.

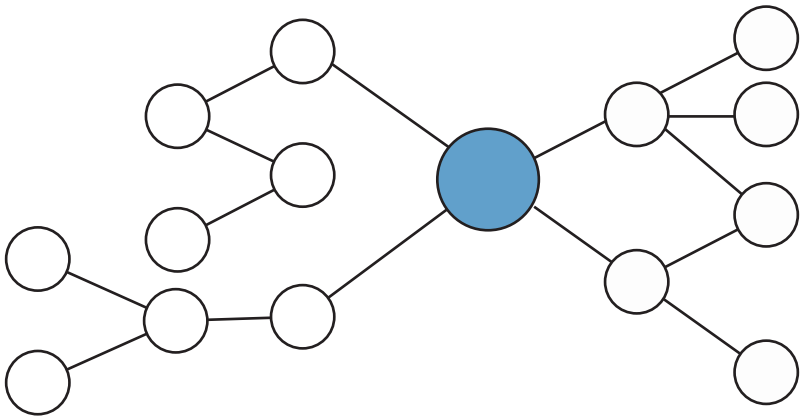


Figure 2-4. Supply network
Source: Christopher (2005: 5)

In addition Christopher (2005) points out that the term *supply chain* should be replaced by *supply network*, to emphasize that it normally would be multiple customers and suppliers interwoven in a more complex total system. According to Mills et al. (2004: 1014) the term

supply network came into use as the concept of supply chain has evolved, "*predominantly because firms were generally part of a number of supply chains – they had several customers and alternative suppliers.*". Thus the term supply network represents a more complex view in the inter-firm context. Figure 2-4 shows an example of a supply network. In this paper the distinctions between these two terms are not critical, both terms imply closer collaboration between firms with purpose of offering superior value to the end customers, thus supply chain and supply network are going to be used interchangeably.

## 2.5 The different views of buying

So how does the inter-firm scope influence purchasing? This will be probably be best explained by understanding firms as *customers*. This is the process of understanding how firms rely on a chain/network of suppliers to add value to their offerings, integrate purchasing activities with those of other functional areas and outside firms, and make purchase decisions. In Anderson and Narus (2004) a model is presented for how different organizations have different views about how they to do their purchasing. They termed it purchasing orientations and "*is the philosophy that guides managers who make purchasing-related decisions and delineates their domain and span of influence.*" (Anderson and Narus, 2004: 91). These authors argue that in practice, customer firms commonly select from three purchasing orientations: the Buying-, the Procurement- and the Supply Management orientation. Figure 2-5 presents the scope of the three purchasing orientations.

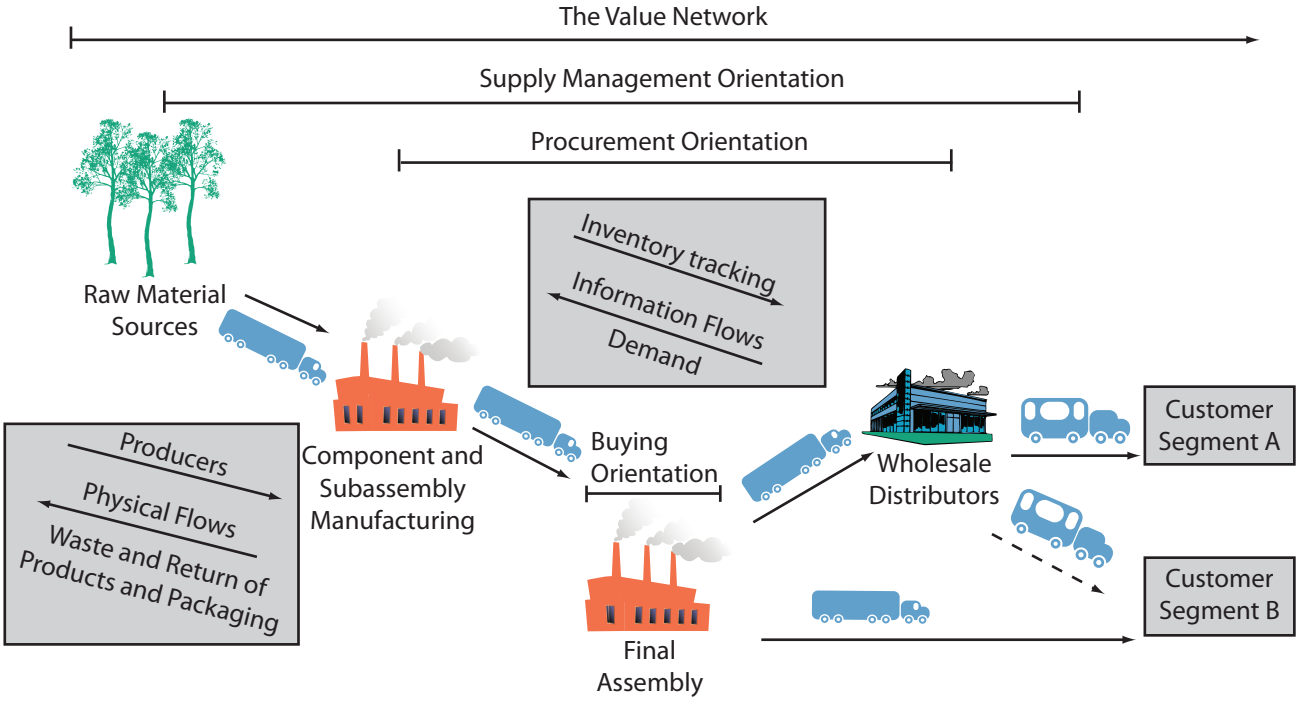



Figure 2-5. Purchasing orientation model
Source: Anderson and Narus (2004: 91)

The *buying orientation* in Figure 2-5 probably represents the traditional intra-firm scope of purchasing best. The buying oriented purchaser will solely try to minimize the price paid.

Thus the purchasing function's objective is to reduce its annual total spend. Purchasers with this orientation try to maximize power over their suppliers by maintaining arm's length and adversarial relationships. This behavior can be explained that managers view the value-pie as fixed, thus it is a win-lose situation and the goal is get the biggest slice of the pie at the expense of the suppliers. Hence this practice is highly tactical and short term in nature.

*Procurement oriented* purchasers have a different view of price. Managers realized poor quality components often incur extra cost in the form of compensation to the customers. Firms also recognized that some suppliers are easier to work with, thus indirectly help to reduce the buyer firm's internal costs, time and efforts. Hence instead they view the process of purchasing in a holistic perspective; even though price is still an important factor, the decisions of buying are based on factors beyond that. Procurement managers apply strategic cost management – that is the purchasing decisions are made on the goal of minimizing *Total Cost of Ownership* (TCO). Ellram and Siferd (1993) remarked that true costs are distorted, thus purchaser that base their decisions solely on price can in the long run be costly to the buying firm. In Figure 2-6 these authors made a framework to illustrate the TCO concept in relation to the key purchasing activities. According to the TCO concept, there are

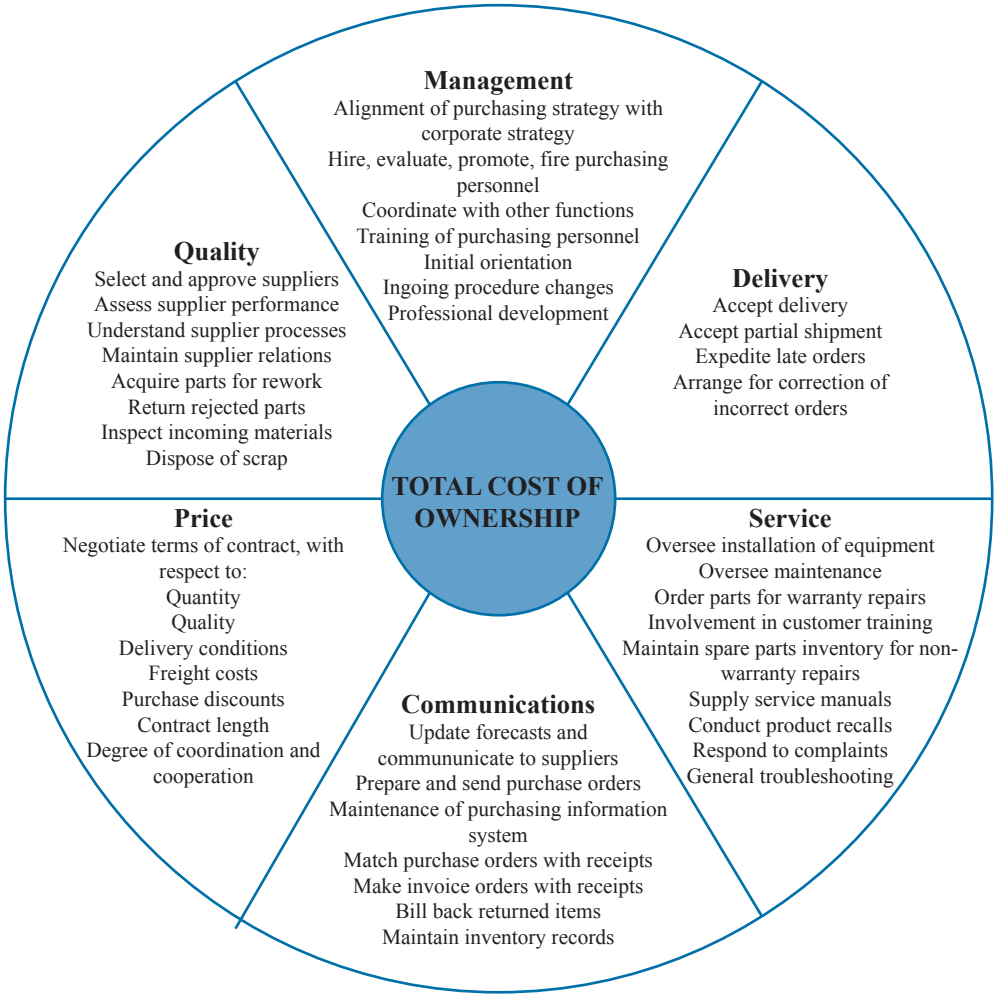



Figure 2-6. Purchasing activities contributing to the total cost of ownership
Source: Ellram and Siferd (1993: 166)

many hidden costs when acquiring goods, often associated with quality, service, delivery, communications, management and negotiation on price (Ellram and Siferd, 1993). For the purchasing managers, they are not only looking at the price, but also all expenses incurred during use and disposal in relation to the six categories in the TCO framework.

In addition to the emphasis on TCO, procurement oriented purchasers also cooperate with their suppliers to improve quality (Anderson and Narus, 2004). Using the value-pie terminology, they view it as a win-win situation where the pie can be expanded for all partners' benefit. Managers motivate their suppliers to share technical, process and cost information with the goal of working together with their suppliers to improve quality. In summary this purchasing orientation departs from the intra-firm scope to the inter-firm scope, and made purchasing much more strategic with orientation of long-term relationship to achieve mutual gains with partners.

The *supply management orientation* takes the holistic view of purchasing to a new level. The supply management oriented firm expands in greater extend their collaboration efforts beyond their first-tier partners. The focus is on delivering value to the end users. To achieve that building efficient supply networks with a sustained collaborative relationship with the firm's suppliers and sub suppliers is important. They build their purchasing strategies around the firm's core competencies and resources. Thus wherever feasible, firms outsource non-competence and non-strategic activities to other actors that can perform better. The outcome is that the firm instead tries to leverage other firms' competencies (Anderson and Narus, 2004).

## 2.6 Summary and conclusion

Using Porter's value chain framework, the purchasing activity is linked to other activities and can determine the overall corporate profitability of a firm; seeing purchasing with a higher degree of importance, it has evolved from a simple and clerical function into a more profound critical activity.

Much of this development can be addressed to the fast changing market where customers demand more and pay less. Firms adapt this trend by focusing on core competencies and outsource non-competent activities to external partners. Thus companies are moving the scope of competition from individual companies to supply chains/networks. This change in scope ultimately also influences the purchasing orientation; purchases are more long-term oriented, that seek close relationships with suppliers to achieve mutual gains. Hence purchasing as an activity does not only involve acquiring goods at lowest price; a much more holistic approach is sought when buying or acquiring goods from suppliers. Thus purchasing as a function has an increasing responsibility and plays an important role in linking internal activities with external suppliers to deliver value to end customers.

# Chapter 3 – Strategy in relation to purchasing

It has been argued that purchasing is today considered as a strategic function, and should be an important contributor to the company to meet its strategic goals.

This chapter seeks to answer how strategy relates to purchasing. Thus the first section seeks to get a fair understanding of what strategy is, then the second section view this in relation to purchasing.

## 3.1 Strategic management

First and foremost this section's goal is not to come to a definite definition of *strategy*. As De Wit and Meyer (2004: 3) reflects "*there is a widespread agreement among practitioners, researchers and theorists as to what strategy is.*". The goal is thus merely to touch upon the underlying topics in the strategy literature to come to a general understanding.

### *3.1.1 The different views of strategy*

Most of the textbooks in strategy present the definition of strategy more or less as follows: "*top management's plans to attain outcomes consistent with the organization's missions and goals*" (Wright et al., 1992 in Mintzberg, 1998). However Mintzberg et al (1998) argue that one solely definition for strategy would not cover "its all uses". Summarized they proposed five definitions/views of strategy:

| Strategy as: | |
|---|---|
| Plan | Strategy is a plan, because it represents a consciously intended course of action. |
| Pattern | Strategy is a pattern, because it offers a consistency in behavior over time. |
| Position | Strategy is a position, because it is used to locate particular products in particular markets. |
| Perspective | Strategy is a perspective, because strategy represents the fundamental way of how organizations do things. |
| Ploy | Strategy is a ploy, because it is really a specific maneuver intended to outwit competitors. |

Table 3-1. Five Ps for Strategy
Source: Based on Mintzberg et al. (1998)

These five Ps of strategy can be seen in relation to the strategy processes in Mintzberg and Waters (1985); see Figure 3-1. To the extend that strategies can be seen as *intended* - *strategy as position* and *strategy as ploy* - can be seen as a complementary part of *strategy as plan*. This is because both imply planned actions to achieve certain objectives, whether that objective is to outwit competitors or to attain a niche position in a market. *Intended strategies* can thus be seen as a form of *plan*, which can consist of *ploys* and *position* strategies.

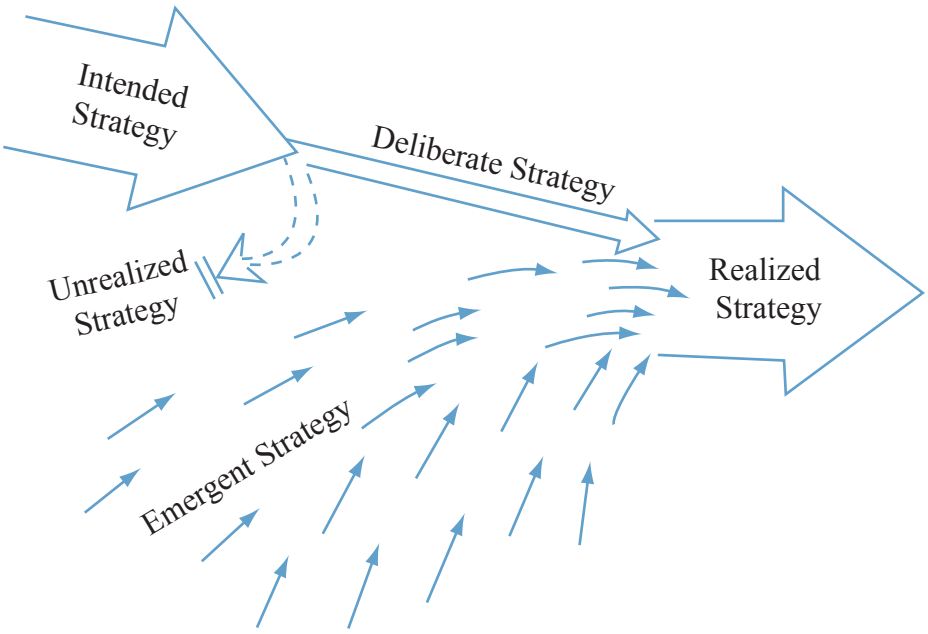



Figure 3-1. Intended, emergent and realized strategies
Source: Mintzberg and Waters (1985)

Another important term in Mintzberg and Waters (1985) is *emergent strategies*. Their main point is that certain intended strategies from the top levels of the organization are not necessarily implemented, or *realized* as they termed it, due to influences originated from elsewhere in the organization or external surroundings. They point out that "*the real world inevitably involves some thinking ahead as well as some adaptation en route*" (Mintzberg et al, 1998: 11). All factors cannot be foreseen ahead and embodied into a plan; for most firms "readjustments" are bound to emerge over time (thus called *emergent strategies*) due to factors that are beyond firms' control. The intended strategies that are not realized are termed *unrealized strategies*, and those that are realized are termed *deliberate strategies*. The *strategy as pattern* may in this context be viewed as the choices made by the firms that result into the realized strategies, and are actually a mix of both *deliberate* and *emergent* strategies. Lastly, *strategy as perspective* may arise due to strategy that has taken its form from the choices or pattern taken.

### *3.1.2 Two perspectives well known on strategic management*

Barney (1991) emphasizes that the understanding of sources of sustained competitive advantage has become the major area of research in the field of strategic management. Firms obtain sustained competitive advantage from exploiting their internal strengths through responding the environmental opportunities, and in addition, firms must also neutralizing external threats and avoiding internal weaknesses. From the existing literature, researches on sources of sustained competitive advantage has dominantly been focused on either firm's opportunities and threats or describing its strengths and weaknesses (Barney, 1991).

From Figure 3-2, we can see that there are mainly two streams of researches in strategic

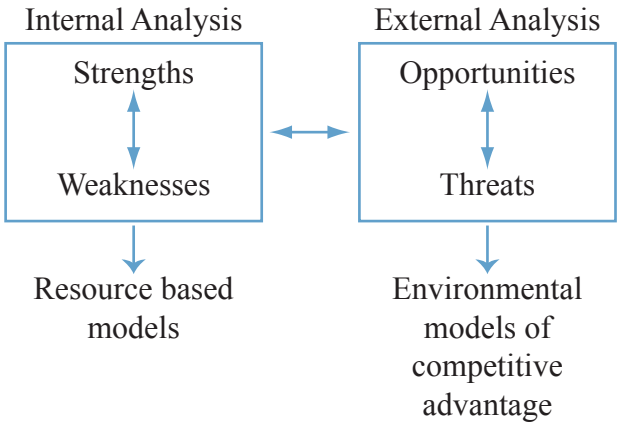



Figure 3-2. Internal- and External analysis
Source: Barney (1991: 100)

management. Thus we can divide it into two main perspectives; outside-in (external analysis) and inside-out (internal analysis). Regarding the former, this perspective highly resembles Mintzberg et al's (1998) strategy as position and as ploy. It is based on the analysis of opportunities and threats in the firm's environment, to attain competitive advantage through positioning itself relative to the environment. The second perspective on the other hand, resembles more on Mintzberg et al's (1998) description of strategy as a pattern; it is based on looking back at the firm's current resource pool, to strengthen those of strategic value, and avoid those of little value.

Hence, in the following sub-sections this paper will present briefly each of the two perspectives.

**Outside-in perspective: The fierce competition in the industry**

The most notable theory in this perspective is Porter's (1980) "five forces model". This model describes the attributes of an attractive industry. This model is based on the notion that corporate strategy should face the opportunities and threats in the firm's external environment. Porter has identified five competitive forces that altogether shape the industry of every firm's environment. These five forces are depicted on Figure 3-3.

The five identified forces will determine the intensity of competition, thus directly influence the attractiveness of a given industry. Some given examples are (Porter, 2008: 1):

- *"Savvy customers can force down prices by playing you and your rivals against one another."*
- *"Powerful suppliers may constrain your profits if they charge higher prices."*
- *"Aspiring entrants, armed with new capacity and hungry for market share, can ratchet up the investment required for you to stay in the game."*
- *"Substitute offerings can lure customers away."*

Eisenhardt and Sull (2001) commented that strategy is about being simple and different. Thus in the bigger perspective, a major role of strategy is that it resolves the big issues so that

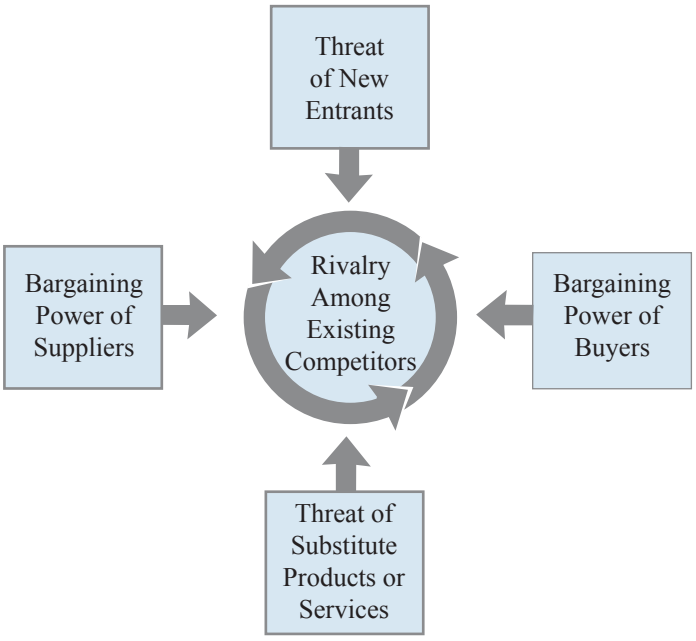



Figure 3-3. The Five Forces That Shape Industry Competition
Source: Porter (2008: 4)

people can work on the little details (Mintzberg et al, 1998). This point of view can somewhat be illustrated by the additional "generic strategies matrix" framework by Porter, that explains how firms can position themselves in a given industry.

According to Porter (1985) the big issues for most firms in a competitive environment can be summarized into three terms: cost, differentiation and focus. Thus these three terms represent the three generic types of strategies. A cost leadership strategy is to aim for being a low cost producer in the industry. The way to pursuit that may involve exploiting economies of scale, use of technology to drive costs down, access to preferential raw materials, etc. In a differentiation strategy, the firm seeks to be unique in its industry in some dimensions that is widely preferred and valued by the customers.

The last strategy, known as focus, is divided into two variants and can occur either with cost leadership or differentiation. The difference is in the y-axis dimension depicted in Figure 3-4, which is the competitive scope. A focus strategy has a narrower scope and focuses towards a specific segment in the industry.

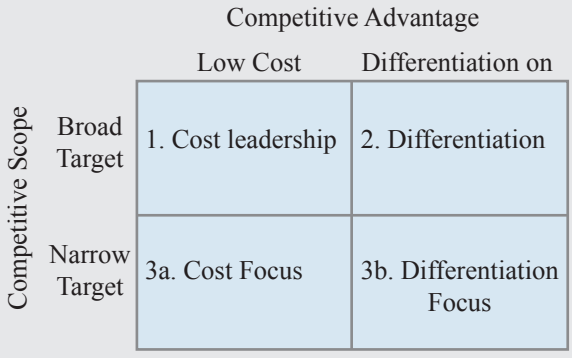



Figure 3-4. Generic competitive strategies
Source: Porter (1985)

Thus it can be argued that Porter's view of strategy can be seen as position and ploy. In order for firms to survive in a fierce competitive environment, they must position themselves to attain either bargaining power over suppliers and customer, or defending themselves by

outwitting rivals or substitutes. Summarized, the generic types of strategies can be regarded as a framework that resolves these big issues such that managers can focus on the details.

**Inside-out perspective: The resource-based view (RBV)**

The resource-based view is based on the assumption that resources are heterogeneously distributed across firms (Barney, 1991). Firms possess different resources, both tangibles and intangibles. Tangible resources, such as machineries and equipment, can be easily replicated no matter how innovative they seem to be. On the other hand, most intangible resources such as knowledge and skills are characterized by immobility, because these are harder to transfer or imitate.

The basics behind the resources-based view can be illustrated by the VRIN-framework (Barney, 1991) depicted in Figure 3-5. Based on this framework competitive advantage is a consequence of firms' possession of "scarce resources" that are of strategic Value, Rare, difficult to Imitate, and Non-substitutable (Barney, 1991).

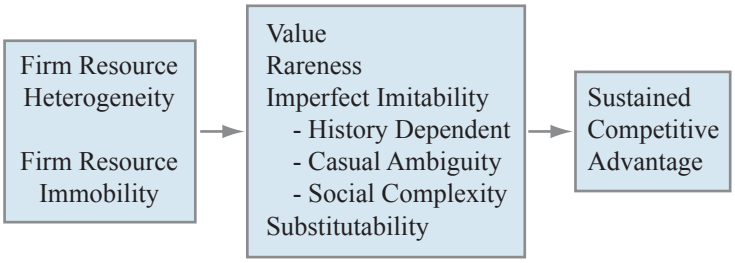



Figure 3-5. VRIN framework
Source: Barney (1991: 112)

Collis (1991) argue that resources could be fundamental to a company's strategic position. "*Instead of developing a strategy based on thinking only of dominating markets, it is more beneficial to think in terms of core competencies, which will segment the organisation in a totally different way.*" (Collis, 1991 in McIvor, 2000:23).

The aspect of *core competence* can be said to fulfill the VRIN-framework's requirements. According to Prahalad and Hamel (1990) firms can be competitive in the short run by price and performance attributes of their current products. Though in the longer run competitiveness derives from the core competencies, i.e their *ability* to build at lower cost and more speedily than their competitors. Core competencies "*(...) are the collective learning in the organization, especially how to coordinate diverse production skills and integrate multiple streams of technologies.*" (Prahalad and Hamel, 1990: 3). Thus Prahalad and Hamel (1990) argue that the success of a firm depends on its augmented skills, knowledge and technologies.

Core competence is a scarce resource that provides the ability of firms to outperform the competition in the longer run, thus McIvor (2000) argue that is must be defended and

nurtured. Firms that follow this logic will focus on a few core-competencies, such "*that in general all non-core activities will be outsourced*" (McIvor, 2000:27).

**Summary and implications of the two perspectives in relation to purchasing**

Porter (1980; 1985; 2008) argues that there are in general five forces that shape the competition in all industries, and by assessing this framework three generic strategies can be derived to address the competitive environment that embeds the firms. On the other hand, Prahalad and Hamel (1990), Collis (1991) and McIvor (2000) argue that sustained competitive advantage stems from firms' possession of scarce resources, and that it must defended and nurtured.

The two mentioned perspectives rest mainly within the field of strategic management and are in nature "top-down oriented" with emphasis on decision support regarding firms' performance to obtain sustainable competitive advantage (Mol, 2003). Therefore this stream of literature does not explicitly formulate or focus towards the topic of purchasing. Ramsay (2001) even argues that "*purchasing typically has no significant strategic role to play, and that the function's activities are operational in nature*" (Ramsay, 2001:257 in Mol, 2003: 2).

However, Mol (2003: 3) criticizes this statement, and argues on the contrary that "*purchasing is a strategically relevant activity*". His first counter argument is that the *positioning school* fronted in particular by Porter (1980; 1985) involves "*(...) the suppliers of a firm and therefore purchasing management*" (Mol, 2003: 6). Using Porter's five forces framework, bargaining power is the most obvious one related to purchasing, even so, he further notes that the threat of new- entrants and substitutes can also be related; suppliers can be potential new entrants and act as competitors by investing downstream, or suppliers can with their specialized knowledge produce substitute products by innovating substantially. Therefore in an outside-in perspective, "*(...) managing supplier relations thus is a strategically important activity (...)*" (Mol, 2003: 6).

Mol's (2003) second counter argument is in relation to the RBV; this perspective emphasize in general that firms must defend and nurture their scarce and valuable resources, however, the same perspective also directs firms towards outsourcing of non-critical activities. The RBV literature does not explictly say that firms must own the resources internally in order to exploit them (e.g. Barney, 1991), instead it is sufficient to control them. Hence, Mol (2003) concludes that even though the RBV is dominantly focused towards *internal* resources of a firm, resources can also be externally acquired. This implies that "*(...) activities that are supplied by external partners may be of a strategic nature despite not being core to a firm*" (Mol, 2003: 12). Thus the RBV perspective can be used externally in relation to suppliers, and thus also in relation to purchasing.

By Mol's (2003) counter arguments, the interpretation is that both perspectives provides implications for the buying firm to manage suppliers, though with different "core" aspects. Looking at the right side of Figure 3-2 (Barney, 1991); the outside-in perspective (positioning school) treat the suppliers as "threats", thus firms must position themselves vis-à-vis to the suppliers to exploit and not be exploited; on the other hand, the inside-out perspective (RBV) emphasize suppliers to a larger extend as source of knowledge or competence. This implies that suppliers are percieved as sources of "opportunities" for competitive advantage, and that the focus should be on "controlling" the sources by supplier developments or relationships.

## 3.2 The layers of strategies in a firm

As argued, the two perspectives in the previouse sections are highly strategic or "top-down" oriented, and may be expressed in other forms when viewed for instance in relation to purchasing. Some strategic objectives expressed in general purchasing terms can for instance be improving the time-to-market, increasing innovation cycle or cut costs. So what is the relationship between "top-down" strategies and purchasing in general?

**The three levels in strategy**

One way of explaining this is to look at strategy in different layers or levels. Cousins et al (2008) explain that strategy is usually developed at different levels within an organization. *Corporate level strategy asks what business are we in?* Thus Cousins et al (2008) comment that corporate level strategy concerns about setting the organizational boundaries or scope – that is determining the extend of integration along the supply chain and the range of activities in which it competes. This paper has previously remarked that firms tend to outsource activities and focus on core competencies, thus these kinds of decisions are usually reflected at the corporate level strategy.

At business level, the strategy should answer *how do we compete in our chosen market?* At business level, managers are strictly dealing with individual products in given markets. As companies can compete in more than one market, they probably also require different strategies. In this setting Porter's three generic strategies can for instance help the firm to determine the business level strategy for the different markets. Further it is important to follow the overall strategic direction of the organization, thus it is important that business level strategy is consistent with the corporate level strategy. (Cousins et al, 2008)

Finally, the lowest level of strategy is the functional strategy. Functional level strategy asks *how can your function support business- and corporate level strategies?* As being illustrated by the value chain framework, each firm has several activities or functions. These functions need to be aligned with business- and corporate level objectives. For instance if a firm focus on being a cost leader in the market, the procurement activity should support this by findings

ways to reduce the cost of inputs, sometimes in cooperation with their suppliers. (Cousins et al, 2008)

**Strategic alignment**

Carr and Smeltzer (1997) and Cousins et al., (2008) point out that the functional strategies in the purchasing activity have to be aligned up to the corporate level in order to meet the corporate mission. They further emphasize that the corporate mission and strategic planning are driven by the internal- (e.g. resources, core competencies) and external environment (e.g customers, competitors, suppliers).

This implies that the functional strategies are developed in the same environment as the corporate strategies. The main point according to Carr and Smeltzer (1997: 200) is that even though they are in the same environment "*(...) each level must be aware of different variables in the environment.*" The interpretation from this notion is that the purpose of purchasing is to direct the purchasing function towards the corporate's long-term goals, but purchasing has different "variables" to focus on than on corporate level.


Figure 3-6. Strategic planning in the firm
Source: Carr and Smeltzer (1997: 200)

Thus for the purchasing function to be strategic, it must be consistent with corporate strategies, but further also emphasize its main domain, for instance to "*be most familiar with suppliers' environments that may affect corporate goals.*" (Carr and Smeltzer, 1997: 200).

**The role of purchasing**

The previous sub sections gave the impression that the procurement would strictly deal with the "lowest" level of strategies in the firm, and that the procurement activity would function as a "slave" by following the directions given from the top. However, this may be a misconception. Although it is important to align procurement to the corporate mission, there are different ways of perceiving that. Cousins et al. (2008) summarized them in three distinct ways:

- Purchasing acts as an independent function that implements competitive strategy.
- Purchasing function supports strategy of other functions and those of the firms as whole.
- Purchasing function can also drive strategy of the firm, thus it is integrated within corporate strategy formulation process.

Cousins et al., (2008: 18) point out that "*when purchasing is viewed as a strategic function, it is included as a key decision maker and participant in the firm's strategic planning process*". Thus, strictly following and implementing the strategy given from the top is probably one alternative way in "being aligned" with the corporate mission, but not sufficient to be characterized as strategic function. The purchasing function must support, but in addition also be an integrated part of the corporate strategy formulation process. The fact that certain companies assign CPOs (Chief procurement officer) can in some sense be seen as an effort to integrate the purchasing function into the corporate strategy formulation process.

## 3.3 Summary and conclusion

Summarized from this section, strategy is developed to simplify the complex business processes into some easy understandable directions (e.g the three generic strategies) and preferably different from the competitors to attain or sustain competitive advantage. Strategy involves forward thinking to set a long-term plan for the direction of the firm, whether this is seen as a ploy or position. Firm's also need to adapt, thus in a retrospective view, strategy can also be seen as a pattern or perspective.

This chapter has also been through two well known perspectives in the strategic management literature, summarized both perspectives have implications when relating them to purchasing; the outside-in perspective view suppliers as "threats" thus positioning vis-à-vis suppliers is the core aspect, whereas the inside-out perspective view suppliers as "opportunities" for knowledge and innovation. See figure Figure 3-7.

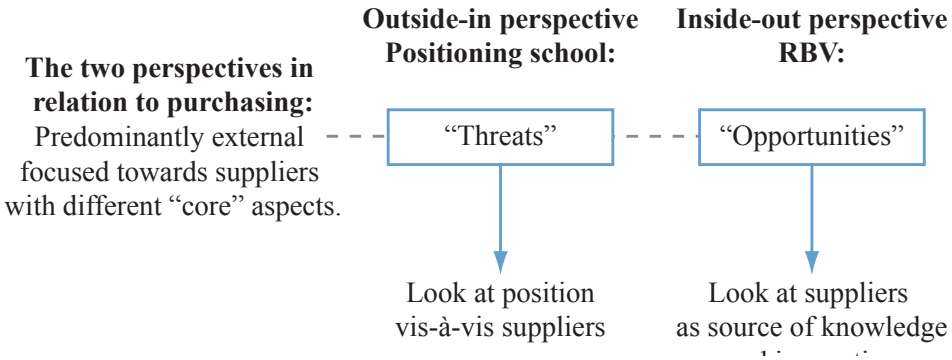



Figure 3-7. Strategic management in relation to purchasing
Source: Own presentation based on Porter (1985), Barney (1991), Prahalad and Hamel (1990) and Mol (2003)

In conclusion when the external- and internal environment becomes complex, firms develop sophisticated strategies in order to be competitive. According to Ellram and Carr (1994), when the competition increases, firms require purchasing to assume more responsibility and to support the corporate strategy. They emphasize that suppliers play a critical role to support corporate strategy; thus whether it be cost leadership, differentiation, or a mixed strategy, purchasing act as key interface and need to fully participate in corporate planning and strategy

formulation. Therefore, in accordance with Carr and Smeltzer (1997) strategic purchasing is the link between corporate strategy and the firm's suppliers. In addition, Cousins et al. (2008) further refine the term, stating that solely following or aligning purchasing with the corporate strategy is not sufficient to be termed strategic. For a purchasing function to be strategic, it involves driving the corporate strategy, thus it is really an integrated part of the corporate strategy.

# Chapter 4 – Terms and definitions in relation to sourcing strategy

So far both terms, purchasing and procurement, are used interchangeably as if there are no difference between them. According to Porter (1985: 41) the term *procurement* is deliberately used in the value chain model rather than purchasing, as he argues that latter term is too narrow in scope among managers. Besides the terms purchasing and procurement, other terms such as buying, ordering, and sourcing also appears in the literature and often used interchangeably. In a well citied purchasing book by Weele, the author argues that in practice as well in the literature "*many terms and concepts nowadays are used in the area of purchasing. However, no agreement exists about the definition of these terms.*" (Weele, 2008: 8).

In the process of conducting this literature review, the author also had difficulties in grasping the distinctions of the terms used in purchasing literature. In this chapter some important and relevant terms are reviewed and defined, especially it is important to answer how the term "sourcing strategy" is being perceived in this thesis.

## 4.1 A framework for some of the most used definitions in purchasing

Certainly, there is no "right answer" to the definition of the various terms related to purchasing. In this thesis, a framework by Weele (2009) is used as a starting point to provide the basis of the different terms. This framework is illustrated in Figure 4-1, and is a summarization of Weele's (2009) opinion regarding the different terms used in purchasing.

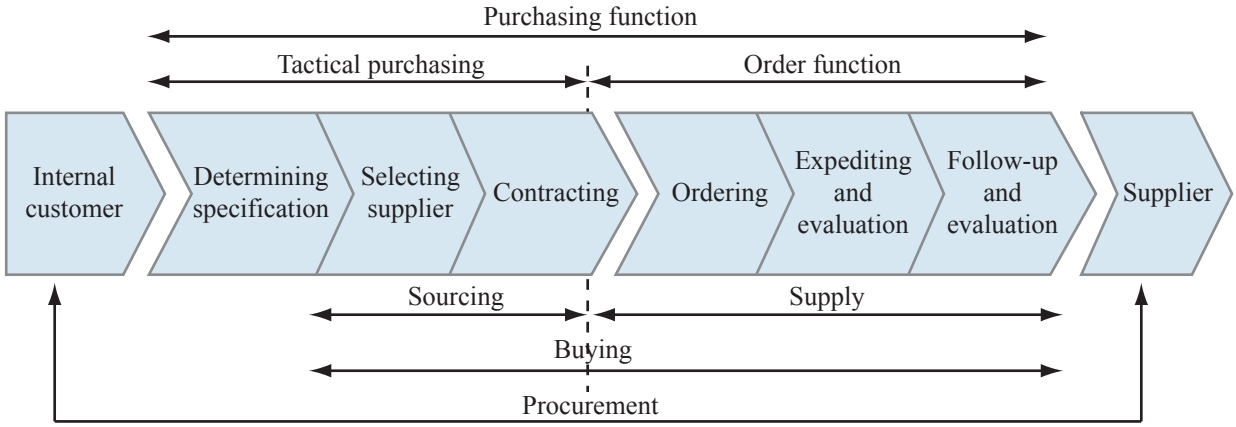



Figure 4-1. Purchasing process model
Source: Weele (2009: 9)

Weele (2009) started by explaining that the term "purchasing function" can be seen in various ways; typically in the real world "purchasing function" can be seen as the purchasing department within a firm, however, this author on the other hand view the purchasing function as a "function per se" - which means it does not envelope itself to a specific department. The author argues that the definition of purchasing may be derived by its scope that covers all activities for which the firm receives an invoice from outside parties. Hence, the playing ground of purchasing can include inter-company business, hiring temporary personal

from outside agencies etc. However, many of these activities for which the company may receive invoices from suppliers can be arranges without the interference of the purchasing department. For instance the maintenance-, repair- or technical staff can buy needed materials themselves. Thus by Weele's (2009) opinion, purchasing function is usually a much broader scope than the purchasing department in general. He defined the purchasing function as Weele (2009: 8):

> *"Purchasing function covers activities aimed at determining the purchasing specifications based upon "fitness for use", selecting the best possible supplier and developing procedures and routines to be able to do so, preparing and conducting negotiations with the supplier in order to establish an agreement and to write up legal contract, placing the order with the selected supplier or to develop efficient purchasing order and handling routines, monitoring and control of the order in order to secure supply (expediting) follow up and evaluation (settling claims, keeping product and supplier files up-to-date, supplier rating and supplier ranking)"*

Regarding the term "procurement", there seems to be some shared opinions among researchers in the literature. For instance Weele (2009) and Porter (1985) point out that procurement is somewhat a broader term than purchasing. According to Weele (2009), procurement includes all activities required in order to get the product from the supplier to its final destination. Hence, it encompasses the purchasing function, but also stores, traffic and transportation, incoming inspection, quality control and assurance, and in some cases also the environmental issues (as they are related to materials). In similar fashion, Quayle (1998: 199) also explained in his article that "*Procurement extends from the raw material extraction or raw concept origination through many processes to the ultimate sale to the customer of the final product, good or service.*".

In the big picture, Weele (2009) remarked that procurement is focused on the total cost of ownership. Thus when buying a copier, it may be more appropriate to look at the "price per copy" based upon all associated costs, rather than the acquiring cost of the copier itself. Especially this notion is resembles somewhat with the *procurement orientation* (Anderson and Narus, 2004) described in Ch. 2.5.

As shown in Figure 4-1, Weele divided the purchasing process into two main processes, which are the *order function* and the tactical purchasing. The order function refers "*to the placing of purchase orders with a supplier against previously arranged conditions*" (Weele, 2009: 10). Therefore, the order function can be interpreted as a much more clerical function in nature, that directly place orders with the suppliers, without questioning the supplier's conditions and without sufficient supplier market testing (Weele, 2009).

Tactical purchasing on the other hand refers to the three first steps in the purchasing process (Weele, 2009). The first step, which is *determining specification*, the buyer must determine the

purchasing requirements. It can be argued that prior to this step, a firm must face the make-or-buy decisions. Because depending on how the firm determines which products or activities that will be produced in-house, and which products or activities that will be contracted out, this will highly influence how the specifications are determined. For firms that contracts out commodity materials, the specifications are usually well understood within pre-determined standards. By contrast, if a firm contracts out certain full service activities, determining specifications can be complex and harder for the supplier to grasp.

The specification step will in turn determine the second step, which is *selecting suppliers*. One important issue in this step is to determine *the method of subcontracting*. There are usually several available suppliers in the market to select from, but according to the RBV, their abilities may vary. The suppliers are usually specialized, thus only capable of taking certain type of roles, for instance manufacturing commodity materials or providing critical design features of the buyer's product. Ultimately, depending on the characteristics of contracted component or system, a firm can also decide to buy it from one or multiple suppliers.

The last step in tactical purchasing is *contracting*. A contract will draw upon what has been decided by the previous steps. It depends on product specification and what roles the supplier is going to take. Some contract aspects are for instance should the buying firm negotiate price with a supplier? Or should they obtain the price through competitive bidding? What is the preferred duration of the contract?

## 4.2 What is sourcing and sourcing strategy?

The process of defining sourcing or sourcing strategy is not without problem. As being mentioned there are many terms used in purchasing and often interchangeably. Hence when reviewing the literature, one can find a wide variety of discussed topics that may be related to sourcing strategy.

Looking at the available literature with "sourcing" either in the title or as a keyword, the focus subject varies. Some authors are looking at the selection and number of suppliers per specified part or service (e.g. Richardson, 1993; Hines, 1995), and other authors are in addition also emphasizing the management of relationship and cooperation between buyer and seller, or even between competing suppliers (e.g. Dubois and Fredriksson, 2008). Further we can also find supply decisions tools that aid managers in make-or-buy decisions or to develop differentiated strategies towards their supply market (e.g. Welch and Nayak, 1992; Kraljic, 1983). Finally, there are also articles that concerns about exploiting efficiencies in the delivery of products or services across geographical boundaries, termed as global sourcing (e,g. Kotabe and Murray, 2004).

When reviewing Monczka and Trent's (1991) article with the title "*Evolving Sourcing Strategies for the 1990s*" it is reasonable to suspect that an explicit definition of sourcing strategy would be given. Though in this article, sourcing strategies were more or less referred to "purchasing strategies" that "*(...) will play a key role in the competitive success of manufactures*" (Monczka and Trent, 1991: 4). Hence, it seems that sourcing strategy is a generic term for some of the developments in strategizing the purchasing function; Monczka and Trent (1991) for instance discussed sourcing strategies in the light of the following developments in purchasing strategy; supply-base optimization; total quality management at suppliers; early supplier design involvement; total cost of ownership; longer-term supplier relationships.

Certainly looking at the available literature there is no unambiguous definition of what *sourcing strategy* is. Harwood (2009) remarked that sourcing as a strategic issue is well established (e.g. the various subjects in the purchasing literature), however, the boundaries may be debated. Though in the educational textbooks, we can find some general description and main ideas behind sourcing as a process or activity. For instance Lysons and Farrington (2006) describe sourcing as "*(...) the process of identifying, selecting and developing suppliers (...)*" (Lysons and Farrington, 2006: 367). Weele (2009) also defined *sourcing* in the same manner, according to this author sourcing are those activities that finds, selecting, contracting and managing the best possible source of supply on a world wide basis.

Hence referring to Weele's (2009) framework in Figure 4-1, sourcing (as an activity or process) mainly concerns those activities in the last two steps in tactical purchasing. But will that necessarily explain what sourcing strategy is? For instance consider the following definition of sourcing strategy by the same author:

The definition of sourcing strategy (Weele, 2009: 10):

> *"Identifies for a certain category from how many suppliers to buy, what type of relationship to pursue, contract duration, type of contract to negotiate for, and whether to source locally, regionally or globally."*

By Weele's (2009) definition, sourcing strategy mainly concerns developing the most **appropriate supplier strategy for a certain commodity or product category**; "*A sourcing strategy describes how many suppliers the company favors for that commodity or category, what type of relationship to pursue and what type of contract to negotiate for.*" (Weele, 2009: 10).

This definition of sourcing strategy is quite coherent with the way Harwood (2009) is conceptualizing sourcing strategy. "*Not only is a strategic view taken of suppliers relations, but also of the materials / services being sourced, which together allow sourcing strategies to*

*be developed which should improve security of supply*" (Harwood, 2009: 5). See the strategic sourcing triangle in Figure 4-2.

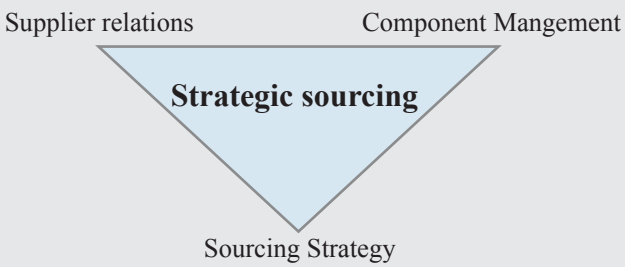



Figure 4-2. Strategic sourcing triangle
Source: Harwood (2009: 6)

Going back to Weele's (2009) framework in Figure 4-1, which illustrates the sourcing (process) as selecting and contracting; *Selection* can in this context be understood as "how many suppliers to select?, and what is the preferred relationship to pursue?" for a given component/service, and *Contracting* as "what types of materials or services are we contracting for?, and what contract form are we using?"

Essentially, it seems that sourcing strategies will set the basis for the selection- and contracting process. As what has been shown in Figure 4-1, sourcing as a process is more tactical in nature. Whereas, sourcing strategy incorporates strategic implications for the actions taken in the sourcing process, i.e. the selection and contracting process. Zeng (2000) remarked that one of the purchasing department's major responsibilities is sourcing or selection of suppliers, and that sourcing is beyond the traditional view; "*In other words, sourcing no longer simply refers to getting the materials at desired prices, rather, the decision should be incorporated into the buying firms' operating strategies to support or even to improve the firm's competitive advantages.*" (Zeng, 2000: 219).

Some strategic implications can for instance be illustrated by Baily and Farmer's (1982) *Material Management Handbook*. They summarized the main issues in sourcing strategy as follow (Baily and Farmer, 1982 in Hines, 1995:19):

> *"If a buyer gives all his business to one supplier, does he get a better and more economic service than when he splits the order between two or more? Does he lose his competitive position by, in effect, creating a monopolistic source? If, on the other hand, he uses more than one supplier is he dissipating his purchasing power, or is he protecting himself against shortage, fire, and strike?"*

From the description by Baily and Farmer, there are some issues to consider when "choosing the appropriate sourcing strategy". The description depicts some tension between the buyer and the supplier(s) in the same way as how Porter (1980; 2008) describes the "power balance" between buyer-supplier in his five forces framework.

Sourcing strategy highly resembles they way of thinking strategy in general. Using Mintzberg et al's (1998) five Ps, sourcing strategy can for instance be viewed as a plan, because "it provides a considered approach towards the selection of appropriate suppliers for a given family or type of components (Harwood, 2009:8). However, it can also be seen as a position-

or ploy strategy, because depending on how the sourcing strategy is formulated in the buyer firm, it can be used to leverage its suppliers' resources and increase its buying power over them.

## 4.3 Conclusion - How this thesis will perceive sourcing strategy

Due to time limitations of this thesis, it is difficult to cover all aspects that can be related to sourcing strategy. As shown previously, there are various aspects to consider.

The most concurrent conclusion to be drawn from the previous section is that sourcing strategy exists for a certain commodity or product category, and that it is derived through some strategic considerations such as the preferred number of suppliers, the related relationship to pursue, and the power balance between buyer and supplier. According to Hagberg-Andersson et al. (2000) firms can manage their supply base in different ways, "*one way is according to how the suppliers can be organized, and the other is according to the number of suppliers.*" (Gadde and Håkansson, 1993 in Hagberg-Anderson et al., 2000). The former is referred to the way of buyers can organize the suppliers into system of suppliers, and how the suppliers can interact with each other either as competitors or as collaborators. The latter refers to the number of suppliers that a firm should have, but also about how the sourcing function is structured (Hagberg-Anderson et al., 2000).

In essence, *managing the supply base*, more or less is coherent with the aspects in sourcing strategy, but the main difference is perhaps that sourcing strategy is more focused towards devising concrete strategies for certain purchased product categories.

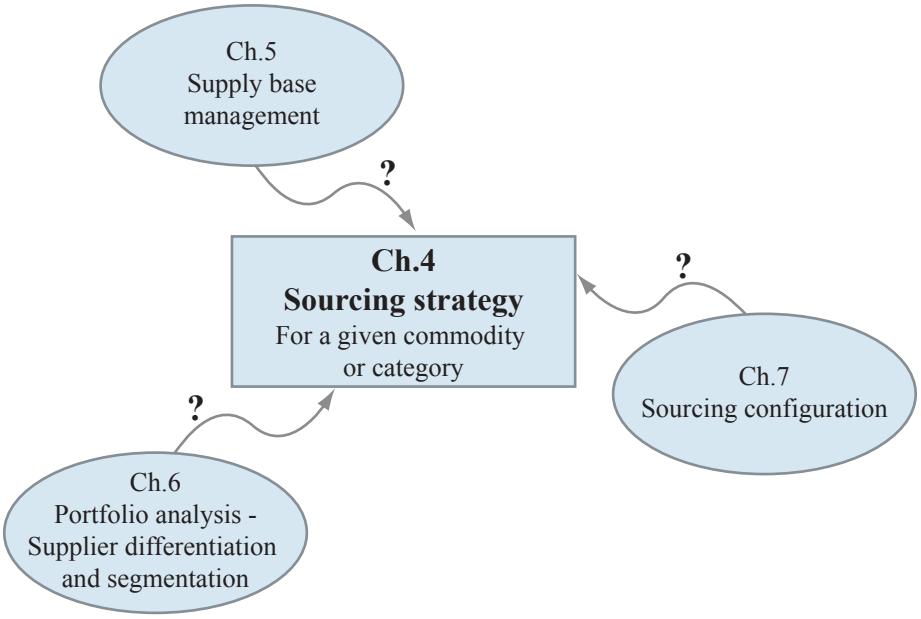
Further, there is a link between strategic purchasing and sourcing strategy. According to Cousins et al. (2008: 21) a strategic purchasing function is "*heavily involved in planning about strategic issues affecting the firm, such as make-or-buy decisions, and strategic sourcing.*". Hence, one can say that sourcing strategy is a subpart of strategic purchasing. There are certainly some overlaps between these two terms, and Monczka and Trent's (1991) article support this notion. Though, to repeat the distinct difference; sourcing strategy is more focused towards certain commodity or category.

According to Cousins et al. (2008), sourcing strategy is used to manage firms' complex activity of purchasing. By his book, there are three main themes related to sourcing strategy:

- Cousins et al. (2008) first explained the supply base and the related issues. Here is where the topic of preferred number of suppliers and relationship to pursue is explained.
- Secondly, they explained "*how firms structure their supply activity in a "strategic" sense*" (Cousins et al., 2008: 43). In essence, this refers portfolio analysis and supplier differentiation and segmentation.

- Finally, he used the term *sourcing configuration* to explain the various way of structuring the supply base.

This way of reviewing and describing sourcing strategy seems to comprehend all the main aspects in sourcing strategy, and it also presents it in a clear and readily understood way. In conclusion, the way sourcing strategy is perceived in this paper represents how the buying firm can manage their supply base (i.e. the number of suppliers and supply structure) by utilizing differentiated strategies based on what components they are buying. Schematically, this thesis' approach will be depicted as follow:




**Derived *indirect* sub-questions:**

Ch.5:What is the rationale behind supply base, and in what ways can it be managed?
Ch.6:What is the portfilio models, and what are some of the recommendations?
Ch.7:What types of sourcing structurers exists in the literature?

**Subject to address Q.1:**

Ch.8:What models of sourcing strategy exists in the literature?

Figure 4-3. Sourcing strategy topics
Source: Own presentation

Figure 4-3 illustrates that there are still aspects to address regarding the three main themes in sourcing strategy (represented by each eclipse in the figure) and are derived in terms of indirect sub-questions at the bottom of the figure. Hence, the aim for the rest of the literature review is to address these sub-questions, and by doing so subsequently deriving the conclusion of Q.1.

Thus in the forthcoming chapters, Ch.5 shall explore the supply base rationale, and Ch.6 shall shed some light behind portfolio analysis and supplier differentiation and segmentation, whereas Ch.7 introduces the most widely used sourcing configurations. Finally Ch.8 serves as a closing chapter for the literature review by connecting the findings in previous chapters and further addresses specifically Q.1.

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# Chapter 5 – The Supply Base

**What is supply base?**

The most simplistic definition of supply base is the "*portion of a supply network that is actively managed by a buying company*" (Choi and Krause, 2006). In this definition Choi and Krause (2006) carefully emphasize that there is common misperception that this is referred to the first-tier suppliers, since they would naturally being those suppliers who are supplying goods and services directly to the buying firm. In a network of suppliers, some of them may directly or indirectly supply inputs to the buying firm, with or without the buying firm's knowledge. In this context, the supply base is referred to only those suppliers who are *actively* managed by the buying firm, whether they are directly or indirectly supplying inputs. Thus both second- or third tier suppliers can be within the buying firm's supply base as long as they "*(...) are actively managed through contracts and the purchase of parts, materials and services.*" (Choi and Krause, 2006: 639).

The first part in this chapter explains the rationale of the supply base size; hence the number of suppliers is to some degree explained. The second part, some aspects in managing the supply base is reviewed, especially through specification and relationship. The last part seeks to argue that since the supply base typically consists of many different suppliers, buyer firms need to devise differentiated strategies based on what materials they are buying from the suppliers.

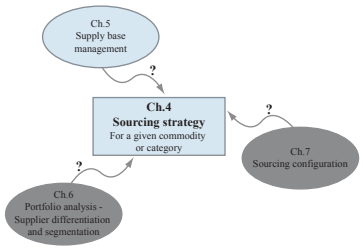


Figure 5-1. Adressing the aspects of supply base management
Source: Own presentation

## 5.1 Supply base rationalization (optimization)

Supply base rationalization or optimization is concerned with determining the approximate number of suppliers by increasing or decreasing the number of suppliers in the firm's supply base (Lysons and Farrington, 2006; Choi and Kraus, 2006). Historically, firms tended to reduce the number of suppliers in their supply base. Choi and Krause (2006) points that this is done in an effort to reduce administrative and transactional costs and costs savings from concentrating greater purchase volume with fewer suppliers. The rationale behind supply base reduction as Lysons and Farrington (2006: 391) express it, is that "*the requirement to control cost and procurement processes as large number of suppliers will entail higher administrative costs than a smaller number*".

In the following sub sections, the underlying cost theory and its implication for the supply base shall be presented.

### *5.1.1 The use of transaction costs in supply base*

The transaction cost theory can be said to have its root from the research of governance

structures and was initially developed to help managers to decide whether to make or buy (Rindfleisch and Heide 1997). Later, Williamson (1975) made further refinement of the theory, specifically in relation to exchanges that are conducted within firms' boundaries.

Williamson's framework of transaction cost rests upon two main assumptions, which explain why economic exchanges can be difficult (Williamson, 1985):

- Bounded rationality - The assumption is that decision makers have constraints on their cognitive capabilities; their rationality is limited by the ability to process information.
- Opportunism – Decision makers are prone to behave opportunistically, which means self-interest seeking with guile.

The concept of transaction costs is that every economic transaction relationship has its own set of properties that determines the associated costs. Transaction difficulties and the associated costs increase when the transaction is characterized by (Williamson, 1985):

- Asset specificity –Specific investments of a particular exchange relationship, which is of low value outside the exchange itself. The investment is said to be a sunk cost, because it cannot be recovered in any significant degree. Due to the assumption of opportunism, transactions with high degree of asset specificity can be difficult and costly.
- Uncertainty – Due to bounded rationality, there is always some degree of uncertainty associated with transactions. There are mainly two types of uncertainties, which are environmental and behavioral. The first is referred to the difficulties of adaption to the environment, i.e. difficulties in modifying agreements to changing circumstances, whereas the second is referred to difficulties in verifying the exchange partner's performance upon the pre-agreed terms.
- Infrequency - Transactions that are seldom undertaken can be associated with higher costs, because the cost of specialized governance structures will be easier to recover for large transactions of a recurring kind.

Based on Williamson's research, many researchers in other areas have shown interests in transaction costs and have adopted it to facilitate their research. For instance, based on Choi and Krause's (2006) own perception, the transaction costs theory can be used to describe the "frictional cost" of doing business with suppliers; "*The frictions are primarily from the focal* [buying] *company's interaction with suppliers as external entities to obtain the needed inflow of materials, parts, and services.*" (Choi and Krause, 2006: 644). In the same way, Rindfleisch and Heide (1997) explained that transaction costs occur when two partners are conducting economic exchanges; both ex ante (prior to the exchange) such as negotiating contracts, and ex post (after the initial exchange) such as monitoring and enforcing agreements.

Hence, there are many sources of "frictions" that can emerge between a buyer and a supplier,

especially when opportunism and uncertainty come into play; "*Costs are incurred for developing and maintaining an exchange relationship, monitoring exchange behaviors, and guarding against opportunism in an exchange situation*" (Pilling et al. 1994 in Choi and Krause, 2006: 664).

When considering "frictions" in relation to the number of suppliers a buying firm is dealing with, the interpretation is that larger the supply base is, the higher probability it is for more frictions and the associated transaction costs (Choi and Krause, 2006; Cousins et al., 2008). Therefore, the rationale seems to be to concentrate greater purchase volumes with fewer suppliers, such that the total pool of transaction costs can be reduced; "*Conversely, a less complex supply base would lead a focal company to lower transaction costs due to less negotiation, fewer communication channels, less order placing, and better tracing of problems.*" (Choi and Krause, 2006: 664).

### *5.1.2 Is supply base reduction a misnomer?*

Based on the previous sub section, the transaction cost theory seems to depict a movement towards supply base reduction. However, Cousins et al. (2008) argue that other problems and costs arise when the supply base is reduced. As the main motivation for supply base reduction is to attain cost reduction, Cousins et al. (2008) divided the costs into three different groups, from highly measurable (objective/direct) to more subtle (subjective/indirect) costs (Cousins et al., 2008:45):

- Operational costs. These are the costs of running the day-to-day relationship, e.g. costs of producing the purchase order, invoicing and so on.
- Managerial costs. These are the costs of managing the relationship, e.g. problem solving, travelling to visit the supplier, quality workshop, supplier conferences etc.
- Strategic costs. These can be thought of as strategic risk, i.e. the ability for a supplier to act opportunistically. When there are a large number of suppliers the strategic risk/costs are relatively low and when there are fewer suppliers the strategic costs are relatively high.

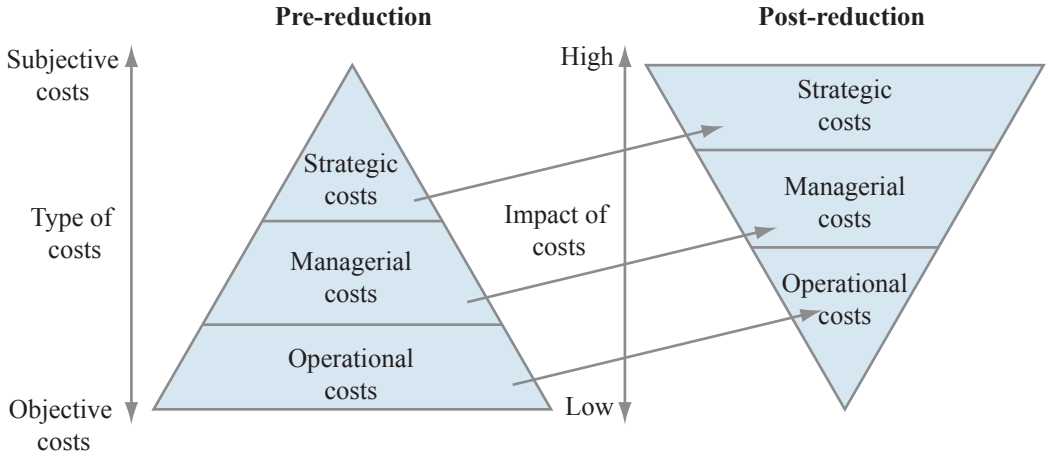


Figure 5-2. The effects of supply base reduction
Source: Cousins et al. (2008: 45)

In Figure 5-2, Cousins et al. (2008) illustrates conceptually what can happen when the supply base is reduced. The highly measurable costs may be reduced as the consequence of supply base reduction, but on the other hand, the buying firm may also have increased their dependency on the remaining suppliers. Thus, Cousins et al. (2008) argue that there are typically misleading interpretations of the supply base reduction rationale. If managers only evaluate the success of supply base reduction based on easily measurable parameters such as the operational costs, it would appear to be very successful (at least in the short run). Since all the easily measurable operational costs would imply that the cost reduction has been achieved. However, in the medium- to long term "*it has changed the nature of the buyer-seller relationship, from independent to dependent, which means that the buyer needs to consider carefully how this should be managed*" (Cousins et al., 2008: 46). As Baily and Farmer (1982) remarked, the buyer is in effect making a monopolistic source, and can thus losing his competitive (buying) position. This would imply that the strategic costs would increase as the consequence of safeguarding the opportunistically behavior of the monopolistic suppliers. Hence, managing the supply base is not about the number of suppliers per se, additional issues regarding the interface between buyer and supplier are also a topic for consideration.

| | Large supply base | Small supply base |
|---|---|---|
| Operational- and managerial costs | Higher | Lower |
| Strategic costs >> Supply risk / Opportunism | Lower | Higher |

Table 5-1. Trade-offs between large and small supply base
Source: Own presentation based on Cousins et al. (2008)

In summary (see Table 5-1) Cousins et al. (2008) depict a trade-off between larger and smaller supply base; a small supply base would increase the strategic costs that is associated with supply risk or opportunism, whereas a large supply base would decrease the costs associated with opportunism and increase the operational costs. Therefore, supply base reduction does not only come with benefits, hidden or subtle costs also come along.

For the rest of this chapter, the paper will deviate from the supply base *reduction* rationale. According to Cousins et al. (2008) supply base reduction is perhaps a misnomer. As will be show in the next sections, the actual numbers of suppliers within the overall supply network has hardly varied. This is due to the fact that in an effort to reduce the supply base, they actually make their suppliers to become indirect as opposed to direct suppliers, by tiering the suppliers in a hierarchical structure. By Choi and Krause's (2006) definition, even if the suppliers are in the second- or third tier, they still remain in the buyer's supply base as long as they are actively managed.

## 5.2 Managing the supply base: Organize the suppliers' roles

It has been mentioned that firms tend to outsource non-core activities to their suppliers to concentrate and focus their resources on a set of core competencies. Therefore in addition to outsource "parts", firms can also outsource a "set of full service activities" to suppliers, such

as product design and innovation. In general a buyer can leverage their suppliers' capabilities or capacities. Firms can for instance buy standardized commodity parts from high capacity suppliers, or they can buy complex systems/modules that require high degree of technological capability on the supplier side. One of the natural consequences is that firms become more reliant on their suppliers, thus managing the suppliers' capabilities and capacities and assessing these kinds of resources became more salient (Choi and Krause, 2006).

This section will highlight some of the aspects in managing suppliers in the supply base. Notably it will see it through the specification- and the buyer-seller interface context.

### *5.2.1 Managing suppliers' capabilities and capacities through specification*

Nellore et al. (1999) observed what they call the "specification problem"; suppliers do not always satisfy the specifications or needs set by the buyers. These authors explained that this problem can be tracked back to the fact that the suppliers obtained only approximate parameters in the specifications from the buyers. Suppliers' capabilities and capacities are different, thus they will also interpret the specifications in different ways. Hence they postulate that buyers must devise the specifications differently depending on which "type" of suppliers they are dealing with.

There are different methods to classify suppliers in a number of different ways. In the following sub sections, two methods of categorizing suppliers shall be shown. The first methods will take from the supplier's point of view, whereas the second method is emphasizing more from the buyer's view.

**First Method: The Generic Strategic Supplier Typology**

Based on a case study of a printed circuit board manufacturer and a survey of 200 manufacturers, Wood et al. (1996) made a set of generic "strategic supplier typology" by using two dimensions: (1) The level of technology, and (2) degree of collaboration. Their model is illustrated in Figure 5-3. As shown, this model offers four supplier strategies, and can explain their role and aim in relation to the buying firm. This particular model is to some degree related to what the literature call a *portfolio model,* however, the next chapter (Ch.5) seeks to address *purchasing portfolio models*, and this particular model is not directly related purchasing and is hence presented in this chapter.

A *commodity supplier* operates as a spot-market supplier, which makes goods according to specifications with little or no differentiation. Thus they compete mainly on price. A *collaborative specialist* also produces according to the buyer-firm's specification, but in addition it attempts to differentiate products by developing close relationship with the buyer (Wood et al.,1996). In a sense they seek to provide customized offerings by understanding the buyers' needs.

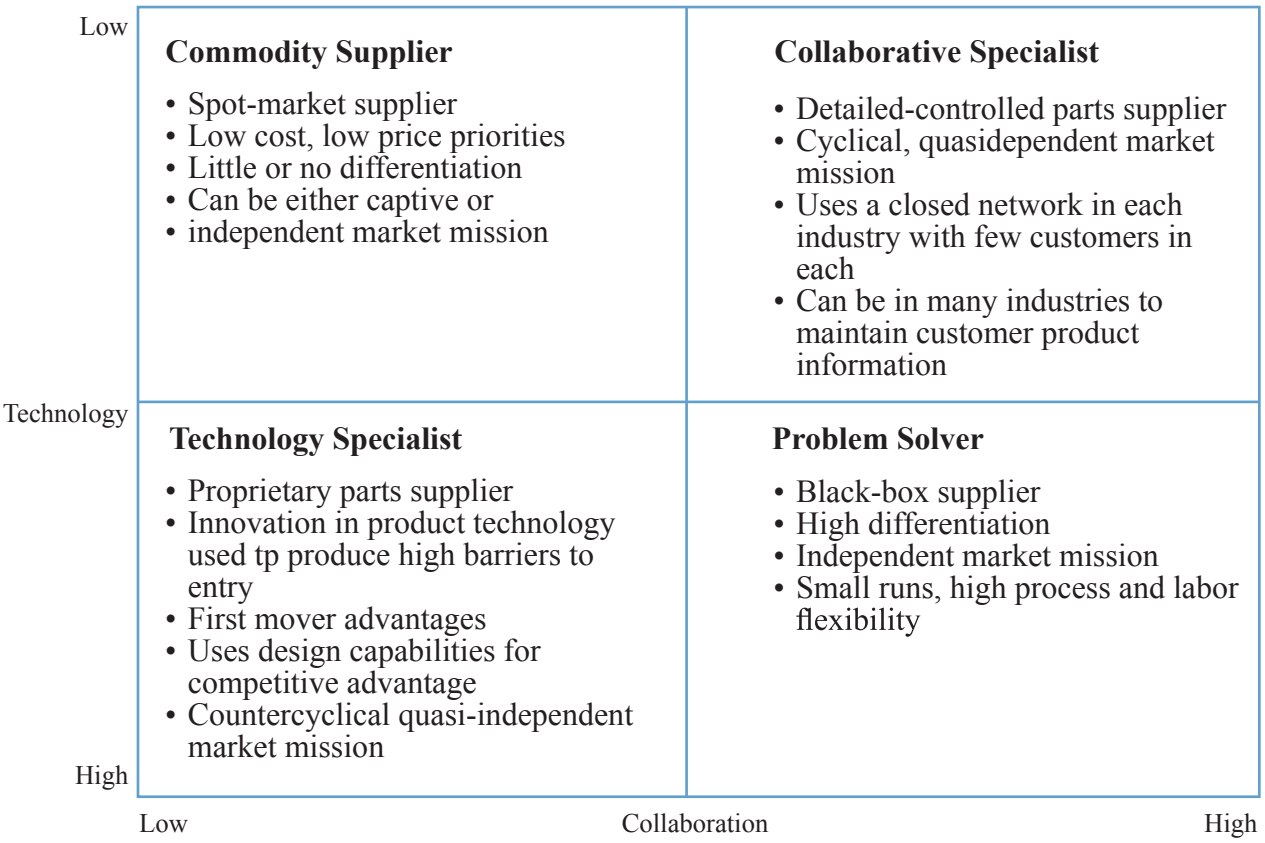


Figure 5-3. Strategic Supplier Typology
Source: Wood et al. (1996: 78)

Like the collaborative specialist, the *technology specialist* also pursues a differentiation strategy, but they do not work closely in collaboration with the buyer. They focus instead on manufacture unique components that customers want. Thus they provide differentiation by being innovative, and are capable of being first movers in their industry. Finally, a *problem solver* seeks to resolve their customers' design and production problems, hence they supply solutions to the buyer by developing strong technical and collaborative skills (Wood et al.,1996).

This model shows the different strategies suppliers can perceive, and can in a sense be seen as elaborated form of Porter's (1985) generic strategies of cost, differentiation or focus. Because a commodity supplier would necessarily be cost focused; a technology specialist is differentiated by its superior knowledge of certain technology; while problem solvers and collaborative specialists are narrowly focused on some certain traits that their customers prefer, whether it is by differentiation or costs.

**Second Method: Four Supplier Roles**

Nellore et al. (1999) are suggesting another method. They classified suppliers into four roles: Partner, Adult, Child, and Commodity. These classifications are based on Kamath and Liker's (1994) study of manufacturers in the Japanese automotive industry. They observed

that the Japanese automotive assemblers such as Toyota, would delegate different roles and responsibilities to their suppliers. The outline of the different roles and their related responsibilities are summarized in Table 5-2.

| Role | Description | Responsibilities During Product Development |
|---|---|---|
| Partner (Full-Service Provider) | Relationship between equals; Supplier has technology, size, and global reach. | Entire subsystem. Supplier acts as an arm of the customer and participates from the preconcept stage onward. |
| Mature/Adult (Full-System Supplier) | Customer has superior position; supplier takes major responsibility with close customer guidance. | Complex assembly. Customer provides specifications, then supplier develops system on its own. Supplier may suggest alternatives to customer. |
| Child | Customer calls the shots, and supplier responds to meet demands. | Simple assembly. Customer specifies design requirements, and supplier executes them. |
| Contractual/commodity | Supplier is used as an extension of customer's manufacturing capability. | Commodity or standard part. Customer gives detailed blueprints or orders from a catalog, and supplier builds. |

Table 5-2. Four Supplier Roles
Source: Kamath and Liker (1994: 158)

Kamath and Liker (1994) explains that *partners* are responsible for entire subsystems. In the context of car manufacturing, that could be heating, ventilating, air-conditioning, exhaust and seating systems. Partners are superior to those of their customers in particular technologies, therefore they often participate in planning of a project even before the concept stage. Thus they are treated more like equals, rather than suppliers.

The *mature/adult role* distincts from the partner in a very subtle way. Like partners they also deliver complex systems, though they lack the technological capabilities of the partners (Kamath and Liker,1994). The customer assumes that they are more capable of deciding the critical design of the subsystem themselves, and therefore maintaining the governance over critical design specifications. The adult suppliers can though negotiate the critical specifications, and add additional insights for improvements. Based on the agreed terms, the adult suppliers can then develop the system on their own. This role highly resembles the supplier typology of a collaborative specialist (Wood et al., 1996).

*Child* suppliers have less influence on the design specifications. Even though they may participate in meetings during the concept stage, the customer determines the explicit details. The child's role is to execute the specified details, and often their responsible part is characterized by simplistic design and reuse of known technology. Lastly, the *contractual*

role simply provides standard or commodity parts specified by the customer. Essentially, the customer is leveraging the contractual supplier's manufacturing capacity (Kamath and Liker, 1994).

There are clearly some resemblances between the four supplier roles (Kamath and Liker, 1994) and the four strategic supplier typologies (Woods et al., 1996). Especially the partner role is similar to the description of the problem solver, and contractual role to the commodity supplier.

**Solving the specification problem**

In essence Nellore et al. (1999) explains the logic that if there are different types of suppliers with varying capacities and capabilities, then it is also necessary to create a match between the given specifications and the type of supplier. Nellore et al. (1999) thus proposed eight dimensions of specifications and are shown in Figure 5-4.

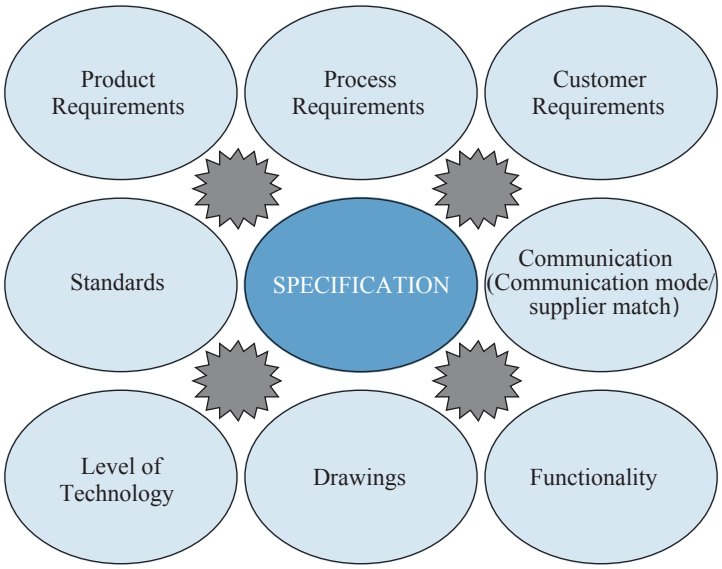


Figure 5-4. Dimensions of a Specification
Source: Nellore et al. (1999: 67)

Firms have to employ a variety of suppliers, "*in learning how to manage them effectively, they have to balance the type of specifications with the suppliers' capabilities and capacities.*" (Nellore et al., 1999: 68). For instance, partners are expected to provide "a solution", thus they have to satisfy all the eight dimensions (by themselves or in collaboration with the buyer), but they don't necessarily need all the detailed specifications. Adult suppliers on the other hand, need the functionality description and product and customer requirements to conduct their work, and then they can find ways of satisfying the remaining five dimensions. Child suppliers need detailed specifications, thus drawings, standards and rest of the dimensions need to be provided as detailed as possible. Finally, commodity/contractual suppliers only provide standardized parts, thus the customer order them from a "catalogue", which everything are specified on beforehand (Nellore et al., 1999).

### *5.2.2 Accessing suppliers' capabilities and capacities through relationships*

**Degree of involvement**

Besides managing suppliers through specification, a number of authors also emphasize the importance of relationship between buyers and suppliers (Gadde and Håkansson, 2010; Gadde and Snehota, 2000; Araujo et al., 1999; Cousins et al. 2008). According to Gadde and Håkansson (2010: 135) relationships does matter, since they "*represent important, unique resources for any buying firm*". In general, the contributions from the suppliers are dependent on the nature of the relationships. In its most simplistic form, relationship can be said to either be transactional or relational. The main differences between them are shown in Table 5-3.

| Transactional | Relational |
|---|---|
| Focus in short, discrete purchasing | Focus on supplier retention |
| Short-term orientation | Long-term orientation |
| Arm's length | Closeness |
| Simple buyer-seller relationship | Complicated, including internal relationships |
| Emphasis on price, quality and delivery in the offered product. No innovation | Emphasis on improving price, quality, delivery and other factors, such as innovative design as a collaborative exercise between purchaser and supplier |
| Moderate supplier contact | High level of supplier contact, with each contact being used to gain information and strengthen the relationship |
| Little sharing of information; opaqueness | Significant sharing of information, including cost information; transparency |
| Reverse auctions may be applicable | Reverse auctions generally not applicable |

Table 5-3. The main difference between transactional and relational
Source: Lysons and Farrington (2006)

However, this describes only two (extreme) types of interaction between buyer and seller, and does not depict any alternative interaction modes between these two types. Relationships can have different levels of "closeness", from arm's length in one extreme to be very close (partnership) on the other end. It is not easy to describe the degree of "closeness" in a relationship, or what characteristics are required to define a relationship to be a partnership. Bensaou (1999) emphasized the level of specific investments made by either partner to the relationship as an indication of their closeness, because it would depict a long-term view and mutual trust. While other authors, like Gadde and Snehota (2000) describe the degree of closeness in terms of involvement. They distinguish the degree of involvement in terms of (1) coordination, (2) adaptions of resources (same as Bensaou, 1999), and (3) interaction among individuals, and all these dimensions will affect the outcome of the relationships.

However, the main point is that all these dimensions would give both benefits and costs, and thus in order to develop an effective supply strategy, firms need to understand the economic consequences related to these dimensions. In Table 5-4, Gadde and Snehota (2000) developed a model for the economic consequences of supplier relationships.

| Relationship Costs | Relationship Benefits |
|---|---|
| Direct procurement costs | Cost benefits |
| Direct transaction costs | Revenue benefits |
| Relationship handling costs | |
| Supply handling costs | |

Table 5-4. Economic consequences of supplier relationships
Source: Gadde and Snehota (2000: 308)

Using Cousins et al.'s (2008) notion of direct and indirect costs, the costs depicted in Table 5-4 can also be categorized into direct and indirect costs. According to Gadde and Snehota (2000) the two upper left costs in the table, procurement- and transaction costs, can be easily measured because they usually show up in the invoices. Thus these authors argue that the direct costs are the prime target when relying on low-involvement relationship strategy.

On the other hand, Gadde and Snehota (2000) emphasize that low-involvement relationship is not always appropriate because the buyer can miss the benefits on high-involvement relationships. As shown in the table, there are in general two types of benefits, cost and revenue benefits. Cost benefits represents the cost savings "*in various costs of operations that be related to collaboration with suppliers.*" (Gadde and Snehota, 2000: 308). There are numerous examples that have shown that suppliers can contribute efficiency improvements through join efforts in product development and integrated logistics operations (Gadde and Snehota, 2000). Revenue benefits represent the impact of purchasing on the revenue side of the buying firm. For example, these benefits may arise because certain suppliers can come up with solutions that improve the overall process productivity or product quality.

Even so, however great the benefits would give in high-involvement relationships, there are always some hidden costs that can be hard to measure; The "*handling costs*" in the table, are not associated with the specific transaction per se, but with the way the buyer interact, administrate and maintain the relationships with their suppliers. Thus they are subtle and cannot be easily measured. In a high-involvement relationship the handling costs can be considerable (Gadde and Snehota, 2000), because it demands constant interaction to maintain, even in spite of the transaction may be infrequent.

Gadde and Snehota's (2000) main point is that both low- and high involvement relationship can be viable. In line with Cousins et al. (2008) there are trade-offs involved (see Ch. 5.1.2). The point to be made is that the benefits of closer involvement must offset the costs (Araujo et al., 1999; Gadde and Snehota, 2000), if not low-involvement relationship can be a viable option.

### Buyer-supplier interface

In evaluating the right degree of involvement, Araujo et al. (1999) proposed a highly relevant framework to depict and differentiate the type of relationships. These authors proposed four different buyer-supplier interfaces: "*The four interface categories differ in terms of (1) the costs associated with the use of the respective interface; and (2) the benefits provided by them differ in terms of (a) productivity and (b) innovativity.*". The descriptions of the four interfaces are summarized in Table 5-5.

| Interface Category | Characteristics | Customer Benefits Productivity | Customer Costs Productivity | Customer Benefits Innovativity | Customer Costs Innovativity |
|---|---|---|---|---|---|
| Standardized | No directions. No specific connection between user and producer contexts. | Cost benefits from supplier economies of scale and scope, as well as learning curve effects. | Adaptions to standardized solutions may create indirect costs elsewhere. | None | No direct costs. Allows only indirect feedback to suppliers based on sales figures. |
| Specified | Precise directions given by the customer on how to produce. | Supplier can pool together similiar orders; economic of scale and scope can be attained. | Supplier's resource base "locked in." Limited possibilities to influence specifications. | Minimal (supplier can propose changes to blueprints). | Suppliers used as capacity reservoir. Development of supplier resources may suffer. |
| Translation | Directions given by customer based on user context and functionality required. | Supplier can propose efficient solutions that improve its own and well as the customer's productivity. | Supplier may reap benefits that are not shared with customer. | Supplier has some leeway to propose innovative solutions. | Supplier may not know enough about customer context to innovate radically. |
| Interactive | Joint development based on combined knowledge of use and production. | Open-ended exchange allows full consideration of direct and indirect costs for both parties. | Investments in knowledge og how best to make use of existing resources. | Supplier learning about user context opens up the gamut of solutions offered. | Required investments in joint development and learning. |

Table 5-5. Consequences of Different Types of Supply Interfaces from Customer-Based Perspective
Source: Araujo et al. (1999: 505)

There is a strong resemblance between Kamath and Liker's (1994) supplier roles and the proposed supplier interfaces. For instance the standardized interface depicts the way commodity/contractual suppliers would interact with the buyers, whereas the interactive interface describes the way supplier-partners are working with their buying firms. Looking at the interface characteristics in Table 5-5, it seems that the degree of involvement is at the lowest in the standardized interface, and gets higher through specified-, translation and interactive interface.

In summary the various interfaces propose different productivity and innovativity benefits and costs. Therefore, buyer firms must determine the right degree of involvement depending on what benefits they seek to reap from their suppliers, and if these benefits offset the associated costs (Araujo et al., 1999; Gadde and Snehota, 2000). The conclusion is that, in a long-term perspective it is important to recognize that the different interfaces determine the outcome and the associated costs. A standardized interface foster economy of scale and scope and the relationship is relatively cheap to maintain, though it does not allow any room for innovativity. By contrast, an interactive interface involves high degree of involvement and is costly to maintain (handling costs), but does provide strong product innovation.

## 5.3 A portfolio of relationships

Gadde and Snehota (2000: 306) point out that "*no general "best" type of relationship exists*", firms tend to think that superior benefits can be gained through cooperation and partnering with suppliers (e.g. translation or interactive interface). However, according to Gadde and Snehota (2000: 306) this view "*is often based on blurry assumptions, oversimplifies the issues involved and may be bad for practice.*" Developing close relationships is resource intensive and can only be justified through careful analysis of its benefits and costs. Using Wood et al.'s (1996) framework, it does not make sense either for the suppliers to establish partnerships with all their customers. Suppliers must be selective, and scan their major customers and determine which are worthy of being partners (Wood et al., 1996). After all, partnerships require all partners involved to dedicate asset specific investments in the relationships. Therefore it makes only sense in those cases where the relationship has long-term strategic value for all the involved partners. In some cases, it may be more lucrative for the supplier to let the customer call the developments shots, thus focusing to become a very good commodity supplier where the supplier can be superior on price (Kammath and Liker,1994).

Due to limited resources to achieve high involvement with all suppliers, Gadde and Snehoota (2000) argue that firms instead need a variety of relationships, each with varying degree of involvement providing different benefits. Nellore et al.'s (1999) proposition of matching specification with suppliers' capabilities and capacities also indirectly postulates that buyer firms should perceive different types of relationships depending on what they buy.

In the automotive industry, many U.S managers believed that their Japanese rivals are gaining advantage by establishing close relationship with all their suppliers; Kamath and Liker (1994) remarked this could be a source misconception that would cause more harm than benefit. In their research, the Japanese manufacturers only regard a handful of the suppliers as partners, while assign more limited roles to the rest. A typical scenario would be that the automakers assign a few first-tier suppliers to coordinate the second tier and so on down the hierarchy, thus simplifies the communication allowing the scarce communication resources on the top tier (Kamath and Liker, 1994). Hence, this observation suggests that, at least in the Japanese automotive industry, the buying firms differentiate their suppliers by delegating various responsibilities. This type of managing suppliers also shows that these firms indeed have a portfolio of differentiated suppliers with a variety of relationships, each with different degree of involvement like the way Gadde and Snehota (2000) suggested.

## 5.4 Summary and conclusion

The first part of this chapter has explained the underlying rationale behind supply base reduction. In general, firms have seen supply base reduction as a way to reduce administrative and transactional costs. Though, supply base reduction perceived as the total number of direct

suppliers is probably a misnomer. Based on studies in the Japanese automotive manufacturing industry, the supply bases of the assembly manufacturers have hardly varied. This is because the manufacturers are assigning different types of roles to their suppliers and tiering them in a hierarchical way. By Choi and Krause's (2006) definition, even if the suppliers are in the second- or third tier, they still remain in the buyer's supply base as long as they are actively managed. However, since some suppliers are taking the role as adults, the buyer firm may managing their supply base differently. For instance the buyer firm can focus on maintaining an interactive interface with their adult suppliers, while reducing the standardized interface by moving this between the adult- and child suppliers instead.

The last part of this chapter argue that under normal circumstances, buyers would not be able to treat all their suppliers as partners, since developing these kinds of bonds require intensive efforts and investments. They have to treat their suppliers differently based on what kinds of resources they want to leverage, whether that is capacity or capability related. Thus buyer firms would have a portfolio of different suppliers for which to be treated accordingly in relation to cost and benefits.

Seeing the findings in this chapter in relation to the two strategic management perspectives mentioned in Ch.3, the supply base management literature predominantly emphasizes the inside-out perspective by considering aspects such as relationships and buyer-seller interfaces; the reviewed frameworks in this chapter are mainly considering what benefits (opportunities) the buying firm can reap from the suppliers (e.g. productivity and innovativity benefits), instead of seeing suppliers as "threats" and thus being defensive. Even so, the transaction cost theory for example depicts supplier opportunism and may add significant costs to the relationships/interfaces, thus firms cannot treat all suppliers as "partners" and must be selective in developing high-involvement relationships.

In summary, Figure 5-5 illustrates the topics that have been undertaken in this chapter.

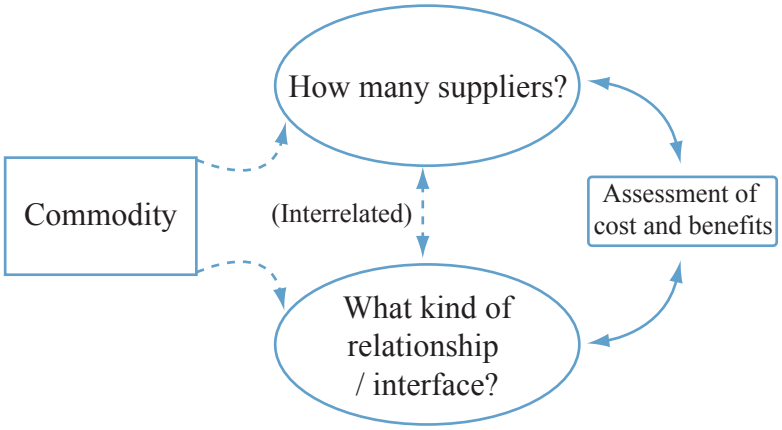


Figure 5-5. Sourcing strategy summary figure 1
Source: Own presentation based on literature

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# Chapter 6 – Purchasing portfolio models

The previous chapter has argued that firms need to adopt different approaches in their supply base depending on what they buy. In essence, since suppliers are becoming more specialized and account for a larger part of the value creation of the buyer firm's products and services, managing the firm's the supply base is becoming a strategic purchasing issue; there are a variety of needs, thus there is a need to differentiate the way of purchasing (Dubois and Pedersen, 2001). Consequently, buyer firms have to develop and execute a set of differentiated supplier strategies. On the other hand, "*The need for differentiated supplier strategies requires some sort of classification*" (Lilliecreutz and Ydreskog, 1999 in Gelderman, 2003: 20).

The portfolio concept can be argued to propose such classification (Gelderman, 2003), and some researchers have used this concept to develop tools that aid managers in various ways (e.g. Kraljic, 1983; Bensaou, 1999; Olsen and Ellram, 1997).

In this chapter, the first section seeks to briefly present the basics behind the portfolio concept, and in the second section Kraljic's (1983) portfolio matrix, which can be argue to be the most notably portfolio model in purchasing, shall be presented.

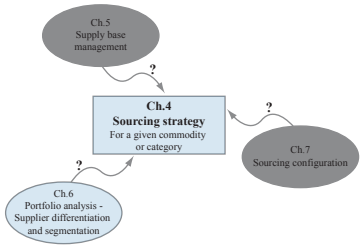



Figure 6-1. Adressing the aspects of purhcasing portfolio models
Source: Own presentation

## 6.1 What is a portfolio model?

According to Gelderman (2003) a portfolio is "*a collection of different items, objects or subjects that are connected to each other*", and allows for differentiation and diversification in our aim for balance and optimal use of resources (Gelderman, 2003: 21). Further he argued that a portfolio approach is a way of looking at and dealing with (management) problems by focusing on a small number of important factors.

Portfolio approaches create useful tools that can simplify complex problems. Indeed, according to Dubois and Pedersen (2001: 4) portfolio models as the point of departure "*are popular and widespread because they are fairly easy to use, and partly because they give practical guidelines for how to manage different purchasing situations, suppliers and/ or supplier relationships.*". In Gelderman's Ph.D thesis, he defines a portfolio model as (Gelderman, 2003: 21):

> *"a tool that combines two or more dimensions into a set of heterogeneous categories for which different (strategic) recommendations are provided"*

Hence, models that merely provide classifications are not portfolio models; ABC analysis (or Pareto-analysis), which is solely a classification tool that differentiates purchases based on cumulative value, but does not provide strategic recommendations is not a portfolio model. In summary, Gelderman point out that there are three basic elements within a portfolio model: (1) dimensions, (2) categories, and (3) strategic recommendations.

| | Elliott-Shircore and Steele (1985) | Hadeler and Evans (1994) | Lilliecreutz and Ydreskog (1999) | Olsen and Ellram (1997) | Weele (2002) |
|---|---|---|---|---|---|
| **Name of the model** | Procurement positioning overview | Supply strategy square | Classification model | Portfolio model | Purchasing portfolio |
| **Matrix dimensions** | Profit/value potential<br><br>Supply vulnerability | Product's value potential<br><br>Complexity | Economic profile<br><br>Complexity and risk profile | Strategic importance<br><br>Difficulty of managing | Profit impact<br><br>Supply risk |
| **Categories** | Strategic critical<br>Tactical profit<br>Strategic security<br>Tactical acquisition | (Not specified) | Strategic<br>Leverage<br>Bottleneck<br>Noncritical | Strategic<br>Leverage<br>Bottleneck<br>Noncritical | Strategic<br>Leverage<br>Bottleneck<br>Noncritical |
| **Recommendations for:** | | | | | |
| Strategic items | Manage suppliers | Strategic partnerships | (Not specified, depending on the desired cooperation with the supplier) | Close relationship | Partnership |
| Leverage items | Drive profit | Global trading | | Leverage volume | Exploitation of power |
| Noncritical items | Minimize attention | Close relationship | | Standardize and find substitutes | Assurance of supply |
| Non-critical items | Minimize attention | Simple contracts | | Standardized and consolidate | Systems contracting |

Table 6-1. Overview and comparison of purchasing portfolio models
Source: Gelderman and Weele (2005: 27)

The first purchasing portfolio model appeared in 1983 by Peter Kraljic in Harvard Business Review, and had soon "*inspired many practitioners and researchers to gain deeper understanding of the possibilities of a portfolio approach for purchasing purpose*" (Gelderman and Weele, 2005: 21). Therefore, with Kraljic's article as a starting point, several purchasing related portfolio models were developed; however, Gelderman and Weele (2005) remarked that many of these portfolio models are very similar, with the same dimensions, categories, and suggested recommendations. By their comprehensive work of comparing the various portfolio models, they have shown that there are more similarities than differences; as shown by Table 6-1; Elliott-Shircore and Steele (1985) changed the labels of categories, Hadeler and Evans (1994) and Olsen and Ellram (1997) adapted similar dimensions, and Weele (2002) elaborated the recommendations for the different categories.

In conclusion, even though many purchasing portfolio models have emerged over time, the Kraljic matrix still remain as the standard in the field of purchasing portfolio models (Gelderman and Weele, 2005; Cousins et al., 2008). Therefore, Kraljic's model will be focused on for the rest of this chapter.

## 6.2 The Kraljic's portfolio matrix

As mentioned, Peter Kraljic published an article in 1983. The article's title "Purchasing Must Become Supply Management" more or less recognized that purchasing must evolve itself from an operating/clerical function to a strategic one. Implicitly, Kraljic thereby argue that the purchasing arena is in need for useful models. Dubois and Pedersen (2001) remarked that Kraljic's model soon received a great deal of success both among practitioners and theorists. One of the reasons is the model's proven usefulness, "*in that it clearly distinguished between different purchasing situations and gave logical recommendations as to how to act.*" (Dubois and Pedersen, 2001: 1). In this section, a review of Kraljic's portfolio model is conducted. It is divided in line with Gelderman's (2003) three basic elements of a portfolio model, respectively dimensions, categories and strategic recommendations

### *6.2.1 Dimensions*

The article's underlying message is in short that purchasing is an important managerial area with enormous impact on every firm's profitability, thus firms must act upon its own advantage. In an uncertain and complex environment, Kraljic stress out the importance for strategic considerations in purchasing. By his view, there are two main factors (dimensions) to consider when devising purchasing strategies. The first factor, which is termed *importance of purchasing*, is the **profit impact** on a given supply item "*in terms of the value added by product line, the percentage of raw materials in total costs, or impact on product quality or business growth.*" (Kraljic, 1983: 110). The second factor, which is termed complexity of supply market, is the **supply risk** and can be "*gauged by supply scarcity, pace of technology and/or materials substitutions, entry barriers, logistics cost or complexity, and monopoly or oligopoly*" (Kraljic, 1983: 110).

The last factor highly calls for consideration on the supply-side's environment. Calling back Porter's five forces model, all the five elements have an influence on the supply risk and complexity for a given supply item. Summarized by Table 6-2, firms can comprehensively assess the supply risk by adapting the five forces in their analysis (Cousins et al., 2008).

By adopting these two main factors, Kraljic argued that this could help top management and senior purchasing executives to determine the appropriate type of supply strategy; by improving and exploiting the power balance vis-à-vis important suppliers and reducing its risks to an acceptable minimum.

| | |
|---|---|
| **Barriers to new entrants** | Mainly concerns the level of investments required to enter a market. If the costs are high, meaning the barrier is high, this will restrict suppliers to enter a market, and will therefore have an impact on the level of risk associated with trading in this supply market. |
| **Power of buyers** | Concerns the level of concentration of buyer firms relative to suppliers in a market. If there are few major buyers and a large number of suppliers in a given market, the buying power will likely to be high. The point is that buyers should consider the market structure when managing their relationships with their suppliers. |
| **Substitutes** | Refers to the replacement of existing goods or services. This will have a major effect on the competitive structure of the market, as new technologies or products can switch buyers from one to another supplier. |
| **Power of suppliers** | This is inversely related to the "power of buyers", as the opposite will occur (i.e suppliers have the dominant power position) when there are many buyers relative to a few suppliers. In either case, if one side can maintain a dominant power position, they can behave opportunistically by demanding higher or lower prices. |
| **Industrial rivalry** | Refers to the level of competition in an industry. It can be considered through exit barriers and industry growth. Low industry growth and high exit barriers would likely make the industry unattractive for new entrants, as well as containing existing suppliers. This would depict a stable market with low complexity. |

Table 6-2. The five forces shaping the supply risk
Source: Porter (1985) in Cousins (2008)

### *6.2.2 Categories: Classifying Purchasing Materials based on market analysis*

Based on the two factors/dimensions, *profit impact* and *supply risk*, Kraljic proposed that firms need to classify their purchased products/materials into categories by constructing a 2x2 matrix. See Figure 6-2. There are in total four types of commodities/categories (Kraljic, 1983):

- Non-critical (routine) items: Commodity items of low value, such as nuts and bolts.
- Bottleneck items: Mainly specified items, and can seriously affect the delivery of the buyer firm's product or service. They tend to be relatively rare, though of low value. Examples are computer chips and other electronic parts.
- Leverage items: Mix of commodities and specified items. There are many suppliers providing these items, though the values of these items tend to be relatively high, such as electric motors, heating oil etc.
- Strategic (critical) items: These items are scarce in the market and of high value. Some examples are rare metals or highly complex system components that only a few suppliers have the capability to build.

Another important aspect that Kraljic emphasized is that depending on the type of category, firms need different degree of information. For the instance strategic items require highly detailed market data, thus there is a need for highly analytic techniques such as market- and

microeconomic analysis, forecasting, computer simulation etc. On the other hand, bottleneck items require medium level of market data with specific market analysis and decision resolution. Leverage items require "good" market data, which is characterized by medium-term price forecasting and vendor and value analysis. Non-critical items requires only a good market overview, thus simple market analysis, decision policies and inventory optimization models will normally suffice. (Kraljic, 1983)

Finally, Kraljic emphasized due to the fact that supply and demand is a dynamic feature, the categorization of products/materials may shift over time. Thus he pointed out that the portfolio categorization calls for regular updating.

### *6.2.3 Strategic recommendations*

In general Kraljic's strategic recommendations is illustrated by Figure 6-2. The point is that each of the four quadrants in the matrix requires distinctive purchasing approaches, "*whose the complexity is in proportion to the strategic implications.*" (Kraljic, 1983: 112).

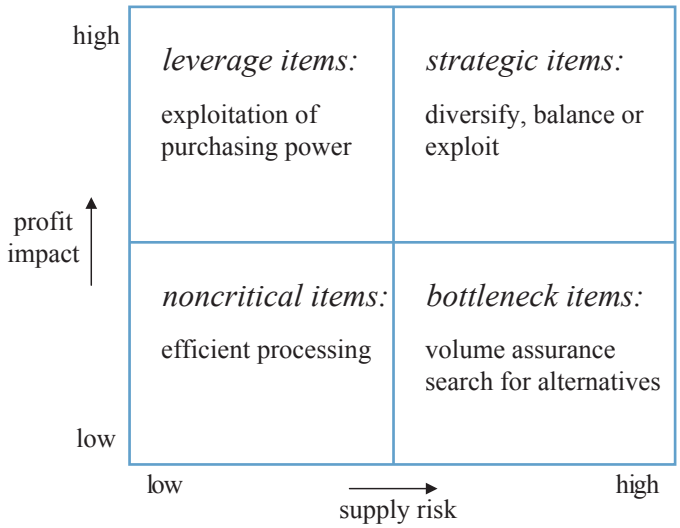



Figure 6-2. The Kraljic matrix: Categories and recommendations
Source: Kraljic (1983) in Gelderman and Weele (2005)

Kraljic argues that *non-critical items* should follow a strategy based on *efficiency*. Thus these items should be sourced from the most efficient suppliers. Cousins et al. (2008) remarked that the switching costs are low for these items; hence the objective is to pay the most competitive price while maintaining delivery and quality standards. *Bottleneck items* on the other hand can be difficult to buy while they play an important role for the buyer firm's value creation, thus Kraljic recommends strategies aiming at *supply continuity*, even at premium cost. In this context long-term contracts with liquidated clauses can assure the buyer of stable delivery of bottleneck items.

Kraljic further propose that leverage items should be purchased through *exploiting* the buyers'

purchasing power. In essence the strategy is to obtain the best deal possible. Porter (1980) explained that buyers could increase their power position by consolidating the buying volume, because as the purchasing contract size increases so does the bargaining power.

Lastly, concerning the *strategic items*, which is Kraljic's main attention in his article, there is three distinct variations of purchasing strategies and is dependent on the relative power position of the buying firm to the corresponding supply market. Kraljic argue that in items where the buying firm "*plays a dominant market role and supplier's strength is rated medium or low*" (Kraljic, 1983: 113), a reasonably aggressive "exploit" strategy can be utilized. The reason is that because the supply risk is slight, the buying firm can achieve a positive profit contribution through favorable pricing and contract agreements. Even so, Kraljic (1983: 113) also carefully explains that buying firms "*need to take care not to exploit the advantage so aggressively that it jeopardizes long-term supplier relationships or provokes counteractions by insisting on rock-bottom prices in times of market discontinuity*".

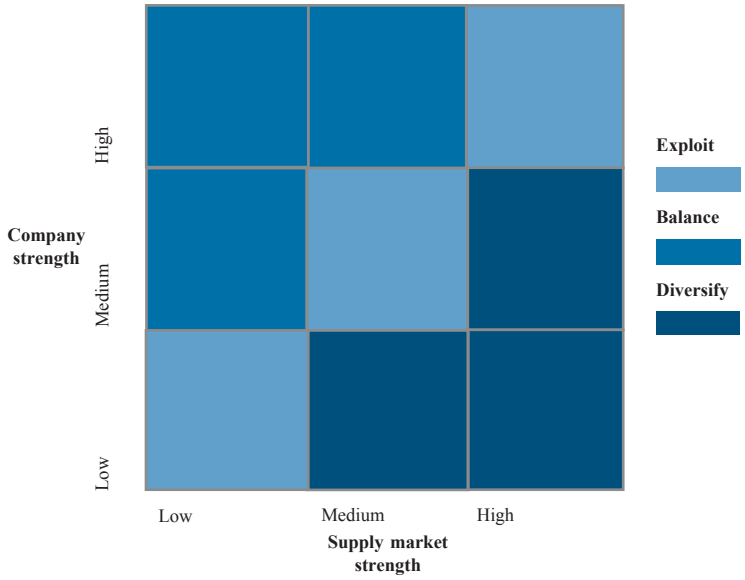



Figure 6-3. Purchasing Portfolio matrix (Strategic items)
Source: Kraljic (1983: 114)

On items where the suppliers are strong, the buying firm must go on the defensive, and start looking for substitutes or supply options. The interpretation seems that the buying firm should avoid monopolistic sources of supply, by investing on alternative suppliers.

Finally, for items with neither major visible risks nor major benefits, the buying firm should pursue a well-balanced intermediate strategy. The reason is that being too defensive may turn out to be costly, and being too aggressive could damage supplier relations and lead to retaliation.

## 6.3 Summary and conclusion

It seems that the general idea behind Kraljic's model is to minimize the supply risk and make

the most of buying power. The model illustrates that each of the four quadrants allows for differentiated supplier strategies, and is based upon the profit impact and market complexity (Gelderman and Weele, 2005).

The core of the model is the power-dependence argument (Dubois and Pedersen, 2002). For instance Kraljic (1983) recommends exploiting the suppliers' dependency whenever possible (Kraljic, 1983: 114):

> *"To reduce the long-term risk of dependence on a single source, (...) the company should also search for alternative suppliers or materials or even consider backward integration to permit in-house production. On the other hand, if the company is stronger than the suppliers, it can spread volume over several suppliers, exploit price advantages, increase spot purchases, and reduce inventory levels."*

Therefore it can be argued that Kraljic's matrix is a member within the *positioning school* (outside-in perspective) mentioned in Ch.3; the framework is reliant on Porter's (1985) five forces model in analyzing the supply risk and exploiting bargaining power.

From the review of Kraljic's article, the surprisingly finding is that the main attention is on the *strategic items*. The strategic recommendations for the other three categories are merely formulated as a number of "main tasks". Gelderman (2003: 75) expressed that it is "*remarkable that nowadays the majority of practitioners and tutors are unfamiliar with Kraljic's second matrix* [i.e Figure 6-3]. *Discussing Kraljic and purchasing models, most publications are limited to the first matrix* [i.e Figure 6-2]".

Therefore, due to the lack of comprehensive recommendation for the last three categories, there is no wonder that other authors have elaborated the original Kraljic's matrix and added some refinements (e.g. Table 6-1). In conclusion Gelderman (2003) remarked that in line with Kraljic's main task recommendations, other authors have identified four general purchasing strategies for the corresponding categories:

- Partnership for strategic products
- Assurance of supply for bottleneck products
- Exploitation of power for leverage products ("divide and rule")
- Systems contracting for non-critical products

It seems that due to the Kraljic matrix's focus on only two dimensions, the recommendations become more harsh and forthright, especially when concerning the degree of involvement with suppliers. By contrast, the authors (e.g. Gadde and Snehota, 2000; Araujo et al., 1999; Cousins et al., 2008) in the former chapter are more careful in their recommendations; taking Gadde and Snehota (2000) and Araujo et al. (1999) as an example, they emphasize that there is in general no "right recommendations", instead the buyer needs to assess the

trade-offs between closer or distant involvement in terms of costs and benefits. Gadde and Snehota (2000) even go to such extend by criticizing the Kraljic matrix for its limited guidance on supplier relationships; according to their view, the Kraljic's recommendations are oversimplified, and do not lead to the best use of supplier relationships. In their article, they argue that even when the volume of business and the supply risk is significant, high involvement is not always the right choice; especially in case where standardized solutions are concerned and the supplier lacks the motivation for high involvement relationship.

So what essence can be drawn by this chapter? First, Kraljic (1983) has gone more in-depth between Porter's (1980) emphasis on actor's power in the market, making firms to be able to devise *position* and *ploy* strategies (Mintzberg et al., 1985). Secondly, Kraljic (1983) has concretized that it may be fruitful to devise differentiated strategies (i.e. devise *plans*) based on what commodity the buyer is acquiring. The summarization of the literature review so far is illustrated in Figure 6-4. As shown, the leftmost eclipse is replaced by a new one compared to the former summary figure (Figure 5-5).

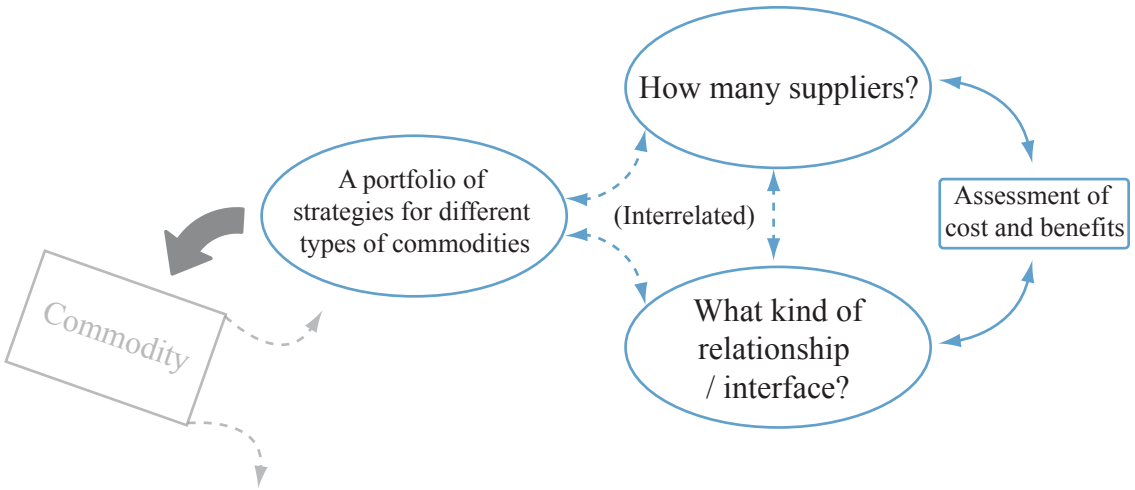



Figure 6-4. Sourcing strategy summary figure 2
Source: Own presentation based on literature

# Chapter 7 – Sourcing configurations

There are four primary sourcing structures that can be used: Single, multiple, delegated and parallel. The main difference between them relies on the structure complexity; for instance single sourcing is dyadic with only two "nodes", whereas more complex structures such as delegated- and parallel sourcing involves multiple "nodes" configured in various ways.

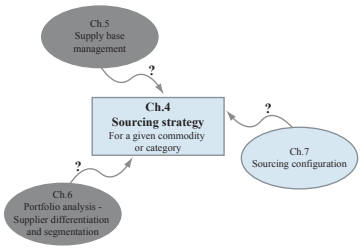



Figure 7-2. Adressing the aspects of sourcing configurations
Source: Own presentation

In this chapter the two most basic sourcing structures, multiple- and single sourcing, are presented first, followed by the hybrid structures, which are a combined form of the basic structures.

## 7.1 Basic sourcing structures

### *7.1.1 Multiple sourcing*

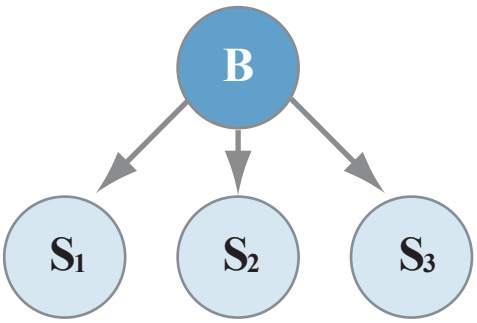



Figure 7-1. Multiple sourcing
Adapted from Cousins (2008: 53)

Multiple sourcing is a structure with several suppliers of a particular product or service. This particular sourcing structure is not new, and can in fact be argued to represent the traditional way of supply management (De Toni and Nassimbeni, 1999):

> *"Traditional' supply management is characterized by four elements (Jackson, 1985). First, the buyer interacts with many suppliers (order fragmented into several sources), in order to maintain multiple market alternatives and promote bidding competition among them. Second, the supply relationship is short-term, since the buyer wants to retain the possibility of switching the actual supply relationships quickly and opening new ones depending on favourable market opportunities. Third, price is the main vendor selection criteria, determined by competitive pressure in the supply market. Fourth, the customized effort of sources is kept low, since the buyer wants to have ready source replacement possibilities. These four elements characterize `traditional' (`adversarial' or `arm's length') supply management."*

According to Gadde and Håkansson (2010) there are two main arguments in favor of multiple sourcing. First, it reduces the dependence on individual suppliers. As Figure 7-3 shows, there are several benefits of avoiding dependency on individual suppliers; using alterative suppliers, the buying firm is assumed to improve the continuity in the flow of goods in the supply side, because the buyer firm has more than one source of supply. In addition, multiple sourcing also reduces the risk associated with being locked into certain technological solutions; Zeng (2000) also commented that buyer firms have the benefit of greater degree of flexibility in technical

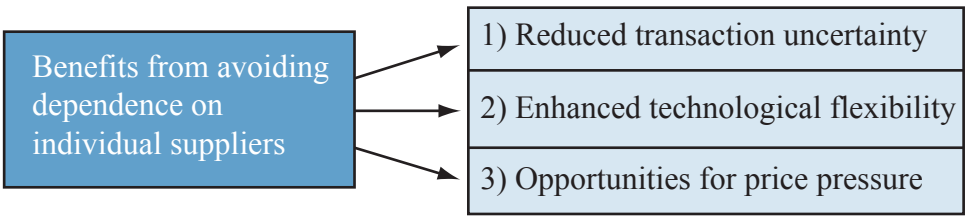



Figure 7-3. Arguments for avoiding supplier dependence
Source: Gadde and Håkansson (2010: 138)

areas, since the buying firm has in effect several sources of new ideas.
The second argument for multiple sourcing is the perceived advantage of having competing suppliers. The buyer firm is simulating competition among suppliers, thus it may help the buyer to bid lowest prices (the market price) and increase the buying firm's leverage over the suppliers (Porter, 1985). Zeng (2000: 220) remarked that "*it is easy to see that this purchasing method* [i.e. multiple sourcing] *plays one supplier against another and the competition between the suppliers is intense.*". Under such situation, it will help the buyer firm to reduce the transaction uncertainty, for instance that the supplier may behave opportunistically.

Buyer firms can deliberately choose a multiple sourcing strategy, but other circumstances may also force the buyer firm to rely on multiple sourcing. One such example is that the required volume is so large such that one solely supplier may not satisfy this demand (Bozarth and Handfield, 2008). Hence there are several reasons and advantages that may explain why buyer firms have traditionally decided such configuration.

Even so, there are also some disadvantages associated with such sourcing structure. One consequence of this structure is a large supply base. From chapter 5.2, it has been argued that larger supply base would often entail higher administrative costs than a smaller supply base. Some examples are the burden of being responsible for maintaining the necessary technology, expertise, and forecasting abilities plus cost, quality, and delivery competencies (Render and Heizer, 1997 in Zeng, 2000). Retaining an arm's length relationships with several suppliers may also require a longer time in negotiation and hence delay or disturb the buying firm's schedules (Zeng, 2000).

Many of the disadvantages in multiple sourcing can be explained by the advantages in single sourcing and vise-versa. For instance the adversarial relationship characteristic of multiple sourcing is contrasted by single sourcing's mutual long-term relationship. The use of multiple sources of supply may simply decrease the supplier's incentives and willingness to collaborate and find innovative solutions. As argued by Araujo et al. (1999), innovations are often created through an *interactive interface* between buyers and suppliers, and as this interface typically involves high involvement between buyer and supplier, it is unlikely to occur in a multiple sourcing environment with many suppliers focusing on competition.

### *7.1.2 Single sourcing*

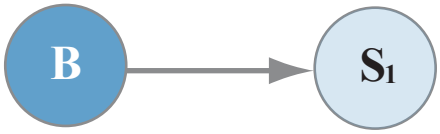



Figure 7-4. Singel sourcing
Adapted from Cousins et al. (2008: 53)

Single sourcing is a structure with only one source of supply of a particular product or service, and is the simplest sourcing structure. In conjunction with the supply base reduction rationale, single sourcing involves the idea of reducing the number of suppliers a firm does business with. One of the main ideas behind was to reduce cost, improve communication and stability (Zeng, 2000). In Table 7-1, Gadde and Snehota (2000) explained that J and M have traditionally been the recommended combinations, although K and L have also been shown as viable options.

| Posture of relationship | Sourcing policy | |
|---|---|---|
| | Single | Multiple |
| High involvement | J | K |
| Low involvement | L | M |

Table 7-1. Relationship posture and sourcing policy
Source: Gadde and Snehota, 2000: 311)

Single sourcing is commonly associated with high involvement, because this is regarded as a prerequisite for extended integration. Cousins et al. (2008) argue that the relationships in single sourcing tend be much more long-termed, allowing firms to spend time focusing on the development of the relationship, such that both parties are feeling that they are committed to each other. Both Richardson (1993) and Hines (1995) point out that in the past, notably in the western automotive industry (see Table 7-2), have typically dealt with a multiple suppliers for each item they purchased, but that trend has soon shifted towards single sourcing. One of the "quality gurus" in manufacturing management, W. Edwards Deming, offered fourteen key principles for transforming business effectiveness. In his fourth key principle he stated as follow: "*End the practice of awarding business on the basis of price tag. Instead, minimize total cost. Move towards a single supplier for any one item, on a long-term relationship of loyalty and trust.*" (Deming, 1986: 23). Perhaps, one of the reasons is that it has been postulated that the Japanese automotive manufactures have gained competitive advantage through maintaining strong collaborative relations (i.e. interactive interface) with their suppliers to find cost reduction potentials and innovative quality improvements in their products (Hines, 1995).

In addition there are also various other reasons for single sourcing. The buyer firms can deliberately use single sourcing, perhaps because of the high cost of the item or the strategic importance to the buyer firm's end product. Alternatively, the final customer can explicitly

| Region Where Assembly Plant is Located<br>Country of Ownership of Plant | Japan<br>Japan | America<br>Japan | America<br>America | Europe<br>All |
|---|---|---|---|---|
| Number of suppliers per assembly plant | 170 | 238 | 509 | 442 |
| Inventory level (days, for 8 parts) | 0.2 | 1.6 | 2.9 | 2.0 |
| Proportion of parts delivered JIT (%) | 45.0 | 35.4 | 14.8 | 7.9 |
| Proportion of parts single sources (%) | 12.1 | 98.0 | 69.3 | 32.9 |

Table 7-2. Cross-Regional Comparison of Suppliers
Source: Adapted from Womack, Jones, and Roos (1990) in Hines (1995: 20)

require the buyer firm to work with particular sub-suppliers. One example is the customers' demand of the Windows operating system, where the computer assemblers are forced to source exclusively from Microsoft (Cousins et al. 2008). Other reasons are for instance that there are only one natural source of the particular component (i.e strategic and bottleneck components), or that the volume is such small that it is not reasonable to source from multiple suppliers.

There are also some disadvantages with single sourcing. Cousins et al. (2008) commented that firstly, since there is only one source of supply, this could put the buyer in a position of weakness in that the buyer becomes overly reliant/dependent on the supplier. For instance if the supply source cease to exists, the buyer firm would be highly exposed in the marketplace. Alternatively, sunk specific investments in single sourcing create switching costs, hence reduce the buyer's ability to threaten the supplier with a loss of business (Richardson and Roumasset, 1995). Secondly, the buyer may be "locked" into a sole sourcing relationship, and can thus restrict the flexibility in acquiring new technologies and innovations that exists in the wider network; Weele (2009) remarked that the buyer might risk of losing their overview of developments in the supply market. Further, it is hard to assure that the best supplier is chosen, and single sourcing also proposes a competitive free environment, which suppliers may have no incentive to perform better both in terms of cost reduction or higher quality components. Lastly, without competition suppliers also have the opportunity demand higher prices (Bozarth and Handfield, 2008; Richardson and Roumasset, 1995).

## 7.2 Hybrid sourcing structures

In essence, hybrid sourcing structures seeks to combine the rationales of single- and multiple sourcing. The most notably hybrid structures are parallel sourcing and delegated sourcing. "*Both are based on that components are single sourced, but that the buyer maintains at least two suppliers that are capable of delivering the same component.*" (Dubois and Fredriksson, 2008). Hence in this section, both sourcing structures shall be presented. A final notation is that few, if any, authors have discussed explicitly the hybrid structures' disadvantages; Bozarth and Hanfield (2008) remarked that hybrid structures act as a compromise between single- and multiple sourcing, thus it is reasonably to assume that there are some disadvantages in relation to the use of hybrid structures; for instance the inability to attain true scale of economy in production or transportation, or work very closely with the suppliers.

### *7.2.1 Delegated sourcing (Network sourcing)*

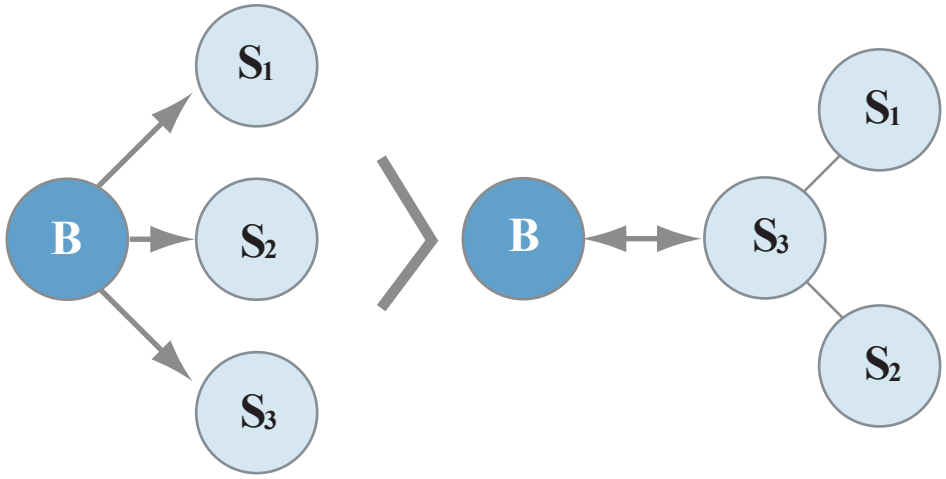



Figure 7-5. Delegated sourcing
Source: Adapted from Cousins et al. (2008: 54)

Delegated sourcing is a structure where one supplier is made responsible for the delivery of an entire sub-assembly instead of just an individual part (Cousins et al., 2008). Hines (1995) describes the same sourcing structure under the term *network sourcing*. For this paper, both terms are used interchangeably and mean the same structure.

In the former section, it has been mentioned that the western automotive manufacturers believed that the their Japanese rivals have gained competitive advantage through single sourcing. From the numerical evidence in Table 7-2, it seems that the Japanese automotive manufactures indeed have less suppliers. However, a couple of studies have revealed that single sourcing is not as widespread as believed among the Japanese manufacturers (Hines, 1995; Kamath and Liker, 1994, Richardson, 1993).

Kamath and Liker's (1994) discovery of the Japanese manufacturers' hierarchical supply base structuring (see Ch.5.3) is in fact what the literature call delegated- or network sourcing; typically the buyer firm assign a few suppliers with the role as partners or adults, and give them the responsibility of managing the remaining child- and commodity suppliers. Cousins et al. (2008) point out that delegated sourcing has a number of advantages. Focusing on a few suppliers enables the buyer to work more closely with the remaining suppliers, and in addition also reduce the day-to-day transaction costs. They become also more dependent of each other, meaning that it is easier to exchange of more detailed information (similar to the case of single sourcing). Further buyers tend to transfer capabilities and technologies that enable the suppliers to produce the required sub-assembly components. In summary, the buyer become a major player for the supplier, and thus increasing the supplier's dependence on the buyer, whilst simultaneously gives the supplier more authority and control over the delivery and production of the sub-assembly components (Cousin et al., 2008).

Reflecting on the so far description of delegated sourcing would imply that it is very much alike a single sourcing structure. Even so, the first point is that "*the key to the success of network sourcing is to develop an intercompany environment where the creative tension between cooperation and competition is used to maximize the benefits to all supply sources, the customer, and ultimately the end consumer as well.*" (Hines, 1995: 22).

Hines (1995) explained that the Japanese automotive assemblers are in essence maximizing the bought in content by relying on the skills and specialized knowledge of their subcontractors, however, "the system" typically, but no exclusively, relies on multiple sources for any one part or service purchased. "*The key point is that the purchasing expenditures is maximized within a preselected and relatively long lasting array of sources, some of which may be direct competitors*" (Hines, 1995: 20). The example case Hines (1995) used, has shown that the auto assembler, Mazda, used two different suppliers for seats. See Figure 7-6.

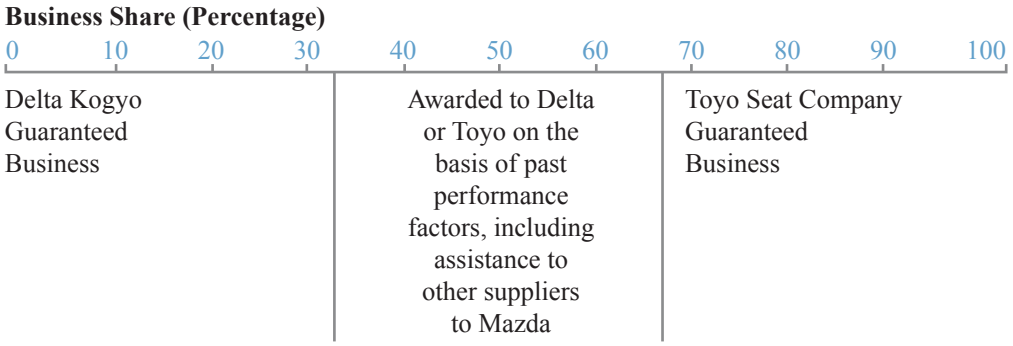



Figure 7-6. Mazda seat sourcing strategy
Source: Hines (1995: 22)

In this case, the total expenditure of seating is divided between the two suppliers, but Mazda only guarantee one third of the total expenditure to each of the suppliers. The remaining third is assigned to whichever of the suppliers that had performed best over the life cycle of previous car models. The interesting aspect is that there is certainly an intense competition between the two suppliers, but Mazda evaluate their performance not only on design abilities, management strength, cost reduction progress, or quality records alone, they also evaluate the amount of assistance the supplier has given to its direct competitor (Hines, 1995). Hence, there is both a competitive and collaborative atmosphere between the suppliers. Dubois and Fredriksson (2008) made further in-depth study of this phenomenon, by only looking at the buyer firm in relation to two competing suppliers, which they termed *triadic sourcing*. The main aspect in their article is that interdependencies can be created between two competing suppliers, and that the buyer firm can benefit from the competitive and collaborative atmosphere of the suppliers in terms of gains in efficiency and innovation development.

The second point that differs delegated sourcing from single sourcing, is that the buyer firm still retains their child- and contractual suppliers within their supplier base. In Ch.5.1 Choi and

Krause (2006) pointed out that both second- and third tier suppliers (i.e child- and commodity suppliers) can be within the buying firm's supply base as long as they are actively managed. The way the Japanese manufacturers manage their second- and third suppliers is through what they call Kyoryoku Kai (meaning cooperative circle or supplier association). This supplier development mechanism is not designed just to develop the first tier suppliers, "*through the active involvement of first tier firms, similar institutions are set up to develop their suppliers, the second tier firms*" (Hines, 1995: 20). In the same way, second tier suppliers may organize such way for the third tier suppliers. Hence there is a cascading series of supplier associations that results into a network/hierarchical structure. See Figure 7-7. In such "network" setting, each layer of suppliers is responsible for their lower layers. But the layers at the top, for instance the final assembler, have the option to move the second tier subcontractors to the first tier at any time, for example under periods of under-capacity. In similar fashion, they can also descend certain suppliers further down the hierarchy (Hines, 1995).

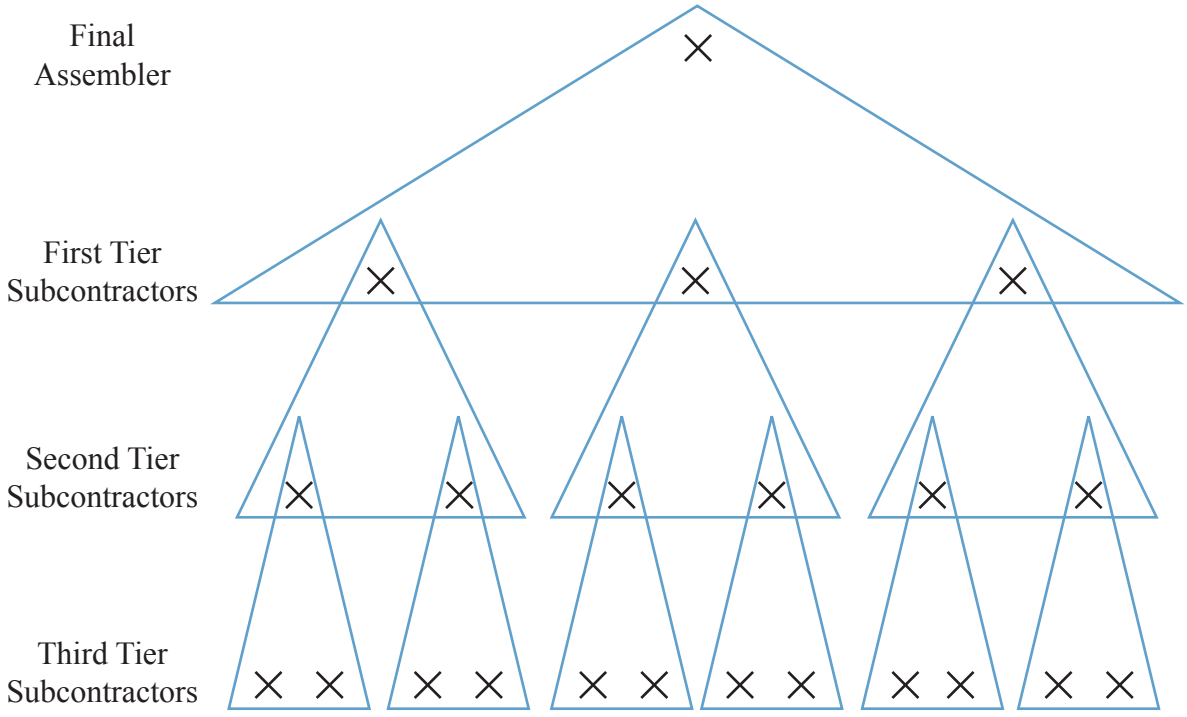



Figure 7-7. Kyoryoku Kai
Source: Hines (1995: 21)

In summary, this development paved the way for final assemblers such as Mazda or Toyota to hand over an increasing degree of responsibility of their own product to their supply sources. Therefore instead of ordering numerous components from many suppliers and assemble it themselves, Mazda or Toyota would instead ask one of its suppliers to make a complete sub system, such as dashboards or seating systems (Hines, 1995).

### *7.2.2 Parallel sourcing*

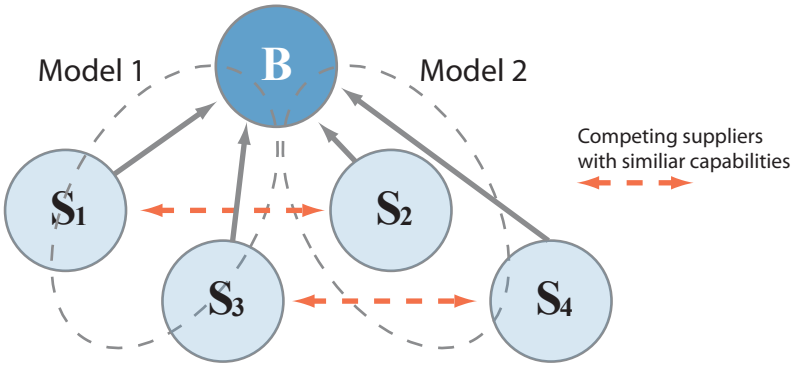



Figure 7-8. Parallel sourcing
Adapted from Cousins et al. (2008: 56)

According to Cousins et al. (2008), the concept of parallel sourcing is developed by Richardson (1993). Richardson suggests that the parallel sourcing structure provides the advantages of single and multiple sourcing, whilst excluding the disadvantages of these strategies (Richardson, 1993 in Cousins et al., 2008). The distinctive feature of parallel sourcing is (Richardson, 1993: 342):

> *"(...) that two or more suppliers with similar capabilities are concurrently sole-source suppliers for very similar components. While using a sole source for a component, the assembler established parallel sources to provide performance comparisons and competitive bidders for the next model cycle."*

In parallel sourcing the buyer has for every end product a single supplier for each component, while the suppliers of a particular component are different across the end products. Cousins et al. (2008) explained this structure in Figure 7-8. In the figure, the buying firm has two end products, model 1 and model 2. Each end product needs component A and B. For model 1, the buyer single source the two components (A and B) from S1 and S3. In the same way, the buyer firm single source components A and B for model 2 from supplier S2 and S4.

Thus even though the components are single sourced, the buyer has alterative suppliers with the same capabilities of delivering those components. In theory, the buyer is dealing with their suppliers as they were single source suppliers, reaping the same related benefits. On the other hand, across the different end products, the buyer would handle their suppliers as in the case of multiple sourcing. The buyer can promise a larger share of the business as an incentive; hence Richardson (1993) argues that parallel sourcing is superior to single sourcing, in that the suppliers would have the incentive to perform better due to the existence of competitors within the buyer firm's supply base.

Comparing parallel sourcing with delegated sourcing (network sourcing), there are certainly some similarities. Both Hines (1995) and Richardson (1993) shares the same view; that single sourcing is not as widespread as believed, since the Japanese automotive assemblers delegates/subcontract responsibilities throughout the hierarchical structure. In addition both

structures are based on that the buyer divides the purchase volume on multiple suppliers based on the suppliers' past performance.

The distinction is perhaps what the emphasis has been placed on. Hines (1995) has explicitly emphasized the suppliers' competitive and collaborative environment, whilst Richardson (1993) is solely concerned about the competitive nature between the suppliers as the point of analysis in his research (he mainly used the concept of game theory in his arguments). In a sense, since Hines' (1995) article came after Richardson's (1993) article, *network sourcing* can be argued to be an elaborated form of *parallel sourcing*, with the enhancement of the collaboration dimension between competing suppliers.

Lastly, in parallel sourcing the issue or possibility that a certain suppliers can take the leading role of coordinating second- or third suppliers is not discussed (e.g. taking the role as adult supplier). Therefore in this thesis, an assumption is made that in parallel sourcing the focal buying firm does not delegate their first tier suppliers the responsibility to coordinate second- and third tier suppliers.

## 7.3 Summary

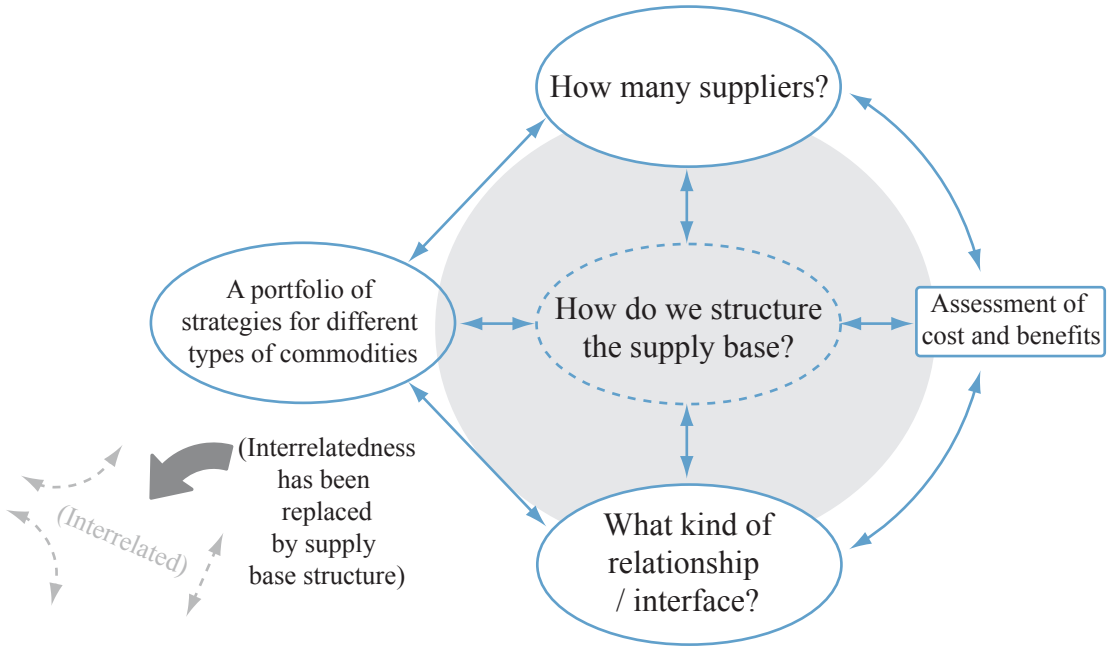



Figure 7-9. Summary Figure 3
Source: Own presentation based on literature

The different sourcing structures' advantages and disadvantages propose different ways to structure the supply base. Choosing to apply either of the sourcing structures are dependent upon the needs and wants of the buying firms, the type of relationship desired, the acceptable level of dependency between buyer and supplier, and the nature of the market-based competition (Cousins et al., 2008). Hence, sourcing configurations/structure acts as an

intermediary between all the main topics in the sourcing literature review so far. See Figure 7-9. The type of sourcing configuration influences the kind of relationships or interface between the buyer and supplier, and obviously it also depicts how many suppliers to use. Lastly, the particular connection between the Kraljic matrix and the different types of sourcing configurations shall be discussed in the next chapter.

# Chapter 8 – Rounding up and synthesizing the literature review

In this chapter, it seeks to summarize the findings on the literature review and round it up. The objective is to answer Q.1: What models exists in the literature about sourcing strategy?

The way to answer this question is by connecting some of the most important frameworks throughout the literature review. In particular, the Kraljic matrix and the different sourcing configurations seem to be the most central frameworks in sourcing strategy, and shall be addressed in the first section. The second section is to connect the findings in the first section with some of the other presented frameworks in the literature review. Finally, in the third section the evolution process of the summary figure shall be addressed.

## 8.1 The two most important models about sourcing strategy

### Kraljic matrix and the sourcing structures

According to Cousins et al. (2008) each quadrant of the Kraljic matrix suggests a *sourcing strategy*, which in turn dictates a related sourcing *structure*. The emphasis is that certain (sourcing) structures are more suitable than others for the specific categories devised in Kraljic's matrix. This is illustrated in Figure 8-1 by mapping the sourcing structures to the various supply strategies in the Kraljic matrix, and "*allows us to understand the most appropriate configurations for managing within each of the quadrant within Kraljic's matrix*" (Cousins et al., 2008: 57).

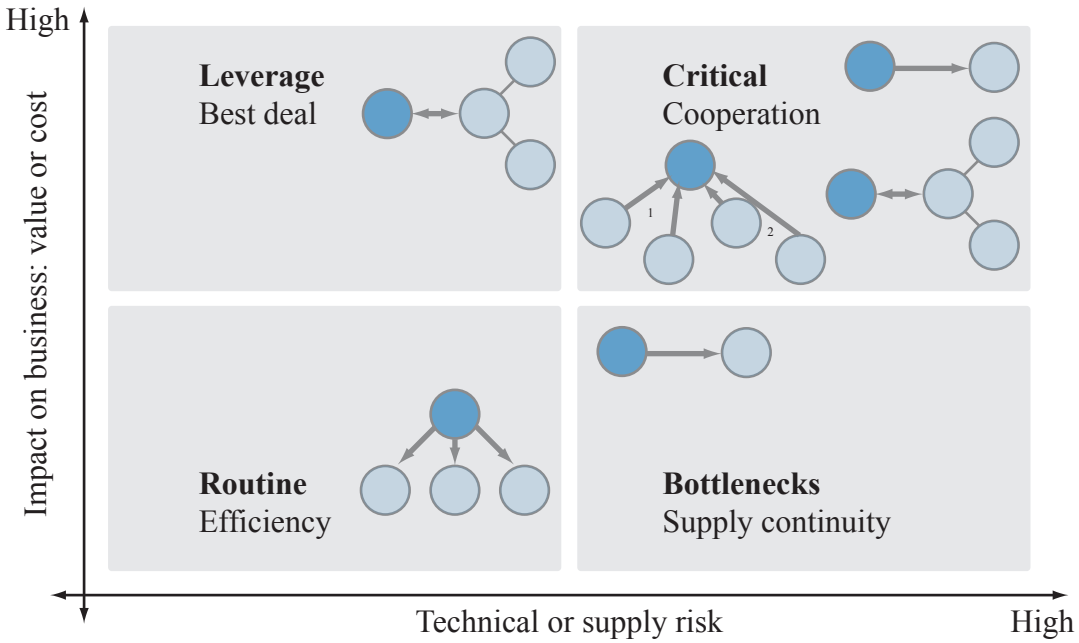



Figure 8-1. Generic mapping of strategy and sourcing structures
Adapted from Cousins et al. (2008: 56)

According to Cousins et al. (2008), single sourcing is best suited for items that are associated by high technical or supply risk, i.e. bottleneck and strategic/critical items. One of the

arguments for single sourcing is that the relationships tend to more long-termed allowing both parties to be mutual committed to each other. This is certainly important in highly complex markets, where few suppliers can provide those items. For bottleneck items, where the overall strategy is to assure volume continuity (see Ch.6.3), single sourcing seems to fit very well. For critical/strategic items, the general rule is pursue partnership or close relationship with the suppliers, and single sourcing is the best way of achieving that.

Next, multiple sourcing is argued to be most appropriate in items that involves low supply risk and low impact of profitability. In environments with many providers of the same items, it seems preferable to obtain lowest costs by induce competition among the suppliers, especially when the items are low of value. Hence, multiple sourcing is applicable for non-critical/ routine items.

Delegated sourcing is according to Cousins et al. (2008) most suitable on items that impose high impact on the buyer firm's profit. In a sense, it can be argued that highly valuable items need to be single sourced, however, in many occasions such items are in fact system components that consist of many other subparts. Hence, critical/strategic items can also be delegate sourced. In other situations, buyer firms also need some competition among the suppliers to really exploit their suppliers' innovation capability, but at the same time want to have a close relationship to their suppliers because the items' impact on profitability. This situation is especially important in supply markets with relatively low complexity. Therefore, leverage items are also suited to be delegate sourced.

Lastly, Cousins et al. (2008) depicts parallel sourcing in the critical/strategic item quadrant, but close to all the other quadrants. As partnership is important for critical/strategic items, parallel sourcing can in some degree also offer this. In addition, in high supply risk markets, it seems favorable to have more than one supplier, if the condition makes it possible (i.e. the source is not monopolistic).

Summarized, Cousins et al. (2008) offer some "rule of thumbs" between each of the category items to the various sourcing structures. However, these recommendations are not definite. For instance, the recommendation for leverage items is to "exploit" (see Ch.6.3), hence multiple sourcing seems to fit for these items. Perhaps, Cousins et al. (2008) did not recommend this due to the fact that those items are of high impact on profitability. Even so, the buyer firm should consider this option if the benefit offset the risk and costs (Gadde and Snehota, 2000).

## 8.2 Connecting some of the other frameworks in the literature review

Throughout the literature review, the thesis' author remarked that many of the frameworks coincide with each other, i.e. that some certain aspects in the frameworks are strongly connected. For instance, single sourcing seems from the literature to fit best with bottleneck- and strategic items. Partners and adults seem to be problem solvers or collaborative suppliers, and often require high involvement relationships. High involvement relationships in turn usually require high investment, thus the benefits must offset these costs. Under such circumstances a translation or interactive buyer-supplier interface seems to be beneficial. In similar fashion, the other sourcing structures are connected to the most relevant frameworks in the literature review, and are shown in Table 8-1 below.

| Sourcing structure/ Framework | Kraljic (1983) Category items | Kamath and Liker (1994) Supplier roles | Wood et al. (1996) Supplier typologies | Araujo et al. (1999) Supplier-buyer Interfaces |
|---|---|---|---|---|
| **Single sourcing** | Bottleneck<br>Strategic/critical | Partner<br>Mature/Adult | Problem solver<br>Collaborative | Translation<br>Interactive |
| **Multiple sourcing** | Routine | Child<br>Contractual | Tech. specialists<br>Commodity suppliers | Standardized<br>Specified |
| **Delegated sourcing** | Leverage<br>Strategic/critical | Partner<br>Mature/Adult | Problem solver<br>Collaborative | Translation<br>Interactive |
| **Parallel sourcing**[1] | Strategic/critical (though other categories may fit) | All possible (though preferable for Partner or Mature/Adult) | All possible (though preferable for problem solver or collaborative) | All possible (though preferable for translation- or interactive interface) |

Table 8-1. Framework connections
Source: Own presentation

However, note that these connections are not definite. For instance the logic between single sourcing and high involvement (e.g. partnership) for strategic commodities may not to be desirable for all firms. Using Table 7-1, Gadde and Snehota (2000) argue that all combinations are viable; although the literature in general recommends option J (single sourcing and high involvement), these authors emphasize that option L (single sourcing and low involvement) is desirable for some firms. Especially when the administration handling costs are high when managing a large supply base (thus forced to single source) while the direct procurement

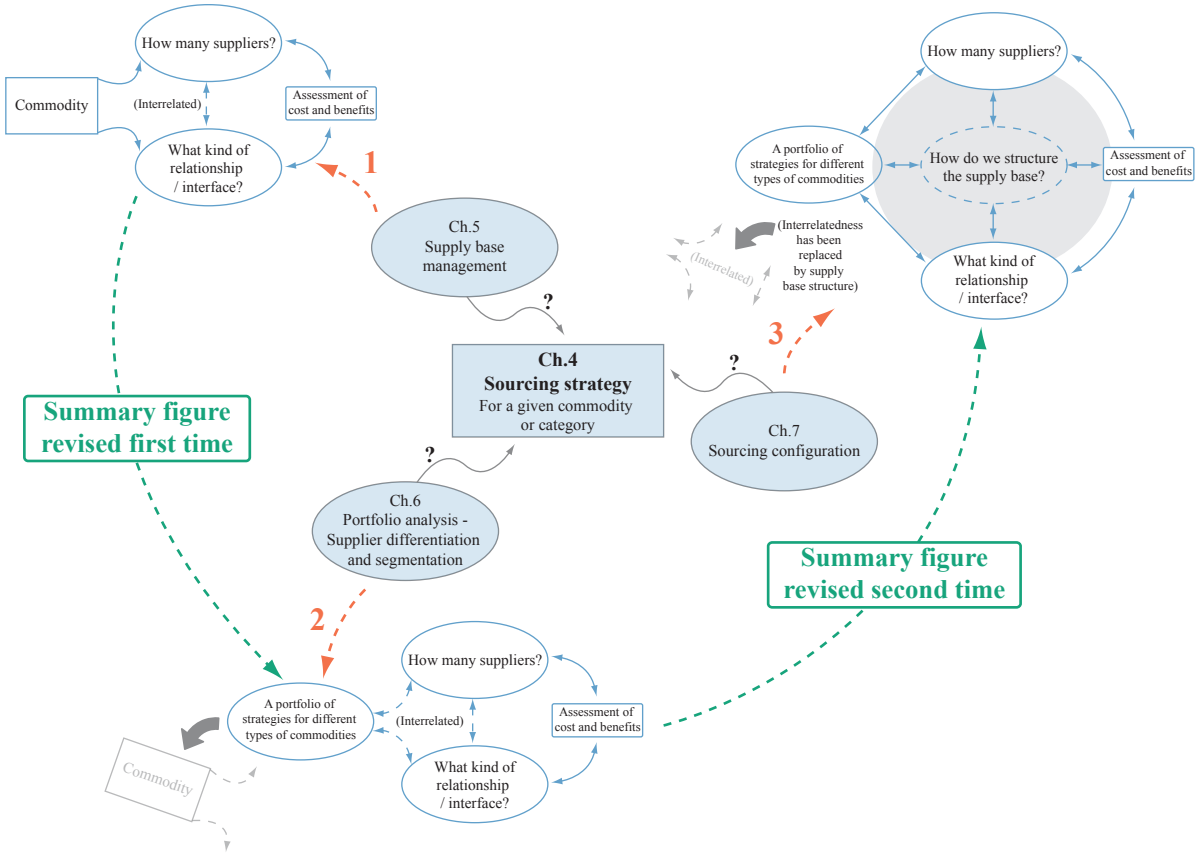
1. Assumes that focal buying firm does not delegate their first tier suppliers the responsibility to coordinate second- and third tier suppliers. In addition, parallel sourcing involves single sourcing (collaboration) features and hence translation- or interactive interface is beneficial, which further leads to suppliers with the capability and ability to collaborate; such as partner-, adult-, problem solver- and collaborative suppliers.

costs account for most the total costs. In this situation, since the direct costs are significant, the buyer may instead avoid high involvement relationship to retain the option to change to another supplier when possible.

## 8.3 The evolution process of the summary figure

The term *sourcing strategy* was initially perceived as strategies that specifically address a certain type of commodities, however, some aspects and questions still remained unanswered; the pre-review of sourcing strategy (Ch.4) depicted that there are in general three main aspects to consider in relation to sourcing strategy: The supply base, the purchasing portfolio models and the sourcing configurations. With this initial understanding, the author explored the available frameworks and models respectively to the three main aspects in an effort to see how these fits together to the author's perception of sourcing strategy.

As relevant models/frameworks were reviewed a "theoretical map" were formed subsequently expressed in terms of a summary figure. Figure 8-2 illustrates the evolution process of this figure.




1. Generation of the first summary figure of sourcing strategy based on supply base literature.
2. First revision the sourcing strategy figure based on new insights in purchasing portfolio models.
3. Second revision of the sourcing figure based on knowledge from the sourcing configuration models.

Figure 8-2. The evolution of the sourcing strategy summary figure
Source: Own presentation based on literature

As illustrated the final result is depicted by Figure 8-3 below, and represents the main aspects in sourcing strategy and their linkages.

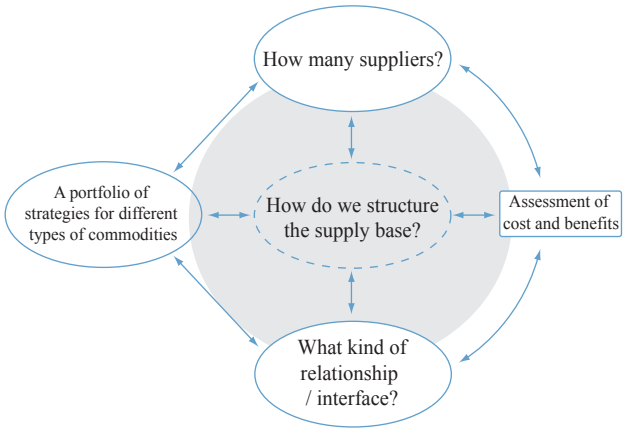



Figure 8-3. Main aspects in sourcing strategy
Source: Own presentation based on the available literature

## 8.4 The conclusion and summary addressing Q.1

The literature review has depicted that sourcing strategy can cover many aspects of purchasing. The boundaries of sourcing strategy is difficult to define, thus answering Q.1 is not an easy task.

For instance, make-or-buy decisions and global sourcing are certainly very closely related to sourcing strategy, but are omitted in the literature review due to time constraint. The literature review has in general focused on frameworks that differentiate suppliers in a firm's supply base, whether the differentiation is by supplier roles or typology, or category items.

In conclusion, Table 8-1 and Figure 8-1 depict the answer to Q.1. Regarding Figure 8-1, the main frameworks about sourcing strategy are the Kraljic matrix and the different sourcing configuration. In addition, Kamath and Liker's (1994) supplier roles, Wood et al.'s (1996) supplier typologies, and Araujo et al.'s (1999) supplier-buyer interfaces, all add additional dimensions about how a firm should devise sourcing strategies. Further, Figure 8-3 shows the main aspects in sourcing strategy; (1) what strategy for a given commodity, (2) how many suppliers, (3) what kind of relationships or interface, and (4) how do we structure the supply base.

The findings of the literature review shall be used in the empirical study and the analysis. In particular Figure 8-3 is used to decide the point of attention in the data collection process and in the analysis, while Table 8-1 (Figure 8-1 is incorporated into this table) is mainly used in the analysis process.

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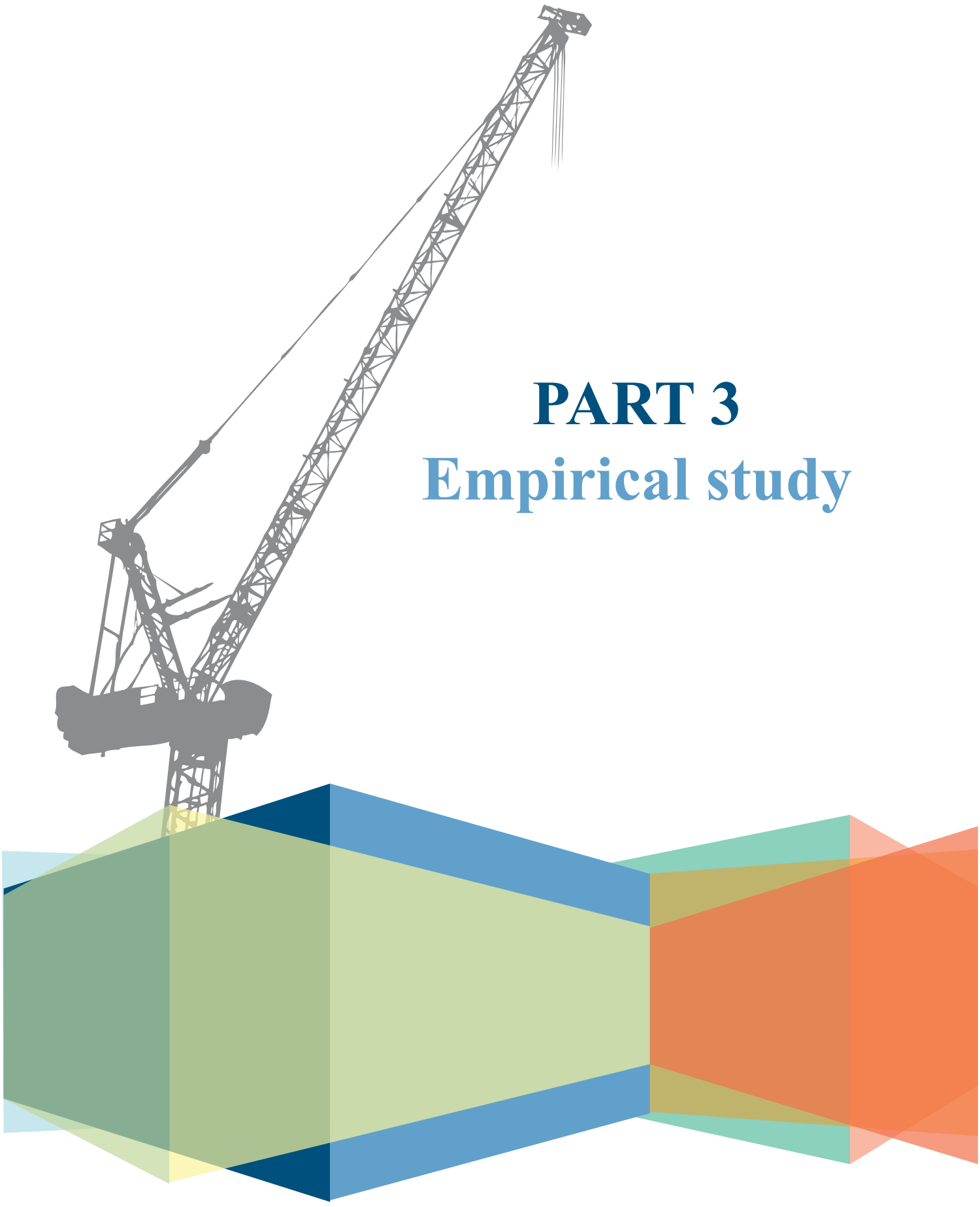

# PART 3
# Empirical study

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# Chapter 9 - Methodology

As noted this master thesis is conducted based on a case study methodology. Case studies in general consist of two parts (Yin, 2009), theory development and empirical research. Thus the following sections seek to argue the chosen theoretical and empirical methodologies, as well as describe and evaluate the empirical process.

This chapter first presents briefly the available research designs. The second part, the choice of research design in this paper will be presented. The third and last part of this paper seeks to describe and evaluate the conducted study.

## 9.1 Available research designs

Research designs are plans and procedures for research that span the decisions from broad assumptions to detailed methods of data collection and analysis (Creswell, 2009: 3). Thus a research design provides a framework for the collection and analysis of data (Bryman, 2008: 31). "*In the most elementary sense, the research design is the logical sequence that connects the empirical data to a study's initial research questions, and ultimately to its conclusions.*" (Yin, 2009: 26).

In general two main research designs exist, quantitative and qualitative. Creswell (2009) and Bryman (2008) both carefully explain that the two approaches are not as discrete as they may appear. An often used (but not sufficient) distinction between quantitative- and qualitative research design is framed in terms of using words (qualitative) instead of numbers (quantitative), or using closed-ended questions (quantitative hypotheses) rather than open-ended questions (qualitative interview questions) (Creswell, 2009: 3). Creswell (2009) pointed out that a more complete way to view the differences between them is to look at (1) the basic *philosophical assumptions* researchers bring to the study, (2) the types of research *strategies* used overall in the research and (3) the specific *methods* employed in conducting these strategies. Hence, the next three sections are dedicated to give a brief overview of the mentioned terms.

### *9.1.1 Philosophical assumptions*

Creswell (2009) termed the philosophical assumptions as *philosophical worldviews*, whereas Bryman (2008) used the terms *epistemologies* and *ontologies*. Worldviews can be seen as "*a basic set of beliefs that guide action*" and thus represents the general orientation about the world and the nature of the research that a researcher holds (Creswell, 2009: 6). Different beliefs held by the individual researcher will often lead to different research approaches, for instance emphasizing qualitative rather quantitative or vice versa. Creswell (2009) explained four different worldviews: Advocacy, pragmatism, postpositivism and constructivism. In this paper, the latter two worldviews will be explained due to theirs relevance of this research.

### Postpositivism

Postpositivists hold a deterministic view in which *causes* determine effects or outcomes. In relation to a research project, the research questions being studied reflect the need to identify and assess the causes that influence the outcomes (Crestwell, 2009). Further it is reductionistic, meaning that the intent is reduce the initial idea into smaller and discrete ideas (hypotheses) that can be tested. Knowledge is typically accumulated by careful observation and measurement, thus numeric measures are highly advocated by the postpositivists (Crestwell, 2009). In addition theories are generated by hypothesis that are being tested and verified, thus a typical research procedure starts with a theory, then collecting data to either approve or disapprove the theory (deductive approach). Lastly the research must be conducted in a way that is value free (objectivism) (Bryman, 2008).

### Constructivism

Other researchers may hold a different worldview; constructivism is such an example. A constructivist believes that meanings are constructed by human beings as they engage with the interpreting world (Creswell, 2009). Individuals develop subjective interpretations based on their experiences, thus researchers with this worldview tend to seek the different understandings of the world in which they live in. As opposed to reductionistic, by narrowing down to a few ideas to test, constructivists look for the complexity of views (Creswell, 2009). They rely much more on the participants' view in a given context as the source for their studies, thus contextual understanding in relation to their research subjects is an important aspect for the researcher with this worldview (Bryman, 2008). Lastly rather than starting with a theory (as with the deductive approach), the researcher first collects data, then based on the data collected a theory is built (inductive approach) (Creswell, 2009).

| Postpositivism | Constructivism |
|---|---|
| • Deterministic<br>• Reductionism<br>• Objective empirical observation and measurement<br>• Theory verification | • Contextual understanding<br>• Multiple participant subjective meanings<br>• Social and historical construction<br>• Theory generation |

Table 9-1. Worldviews
Source: Adapted from Creswell (2009: 6)

Table 9-1 summarizes the two worldviews that has been presented. As being explained in the introduction of this section, the different worldviews will often lead to different research approach. Creswell (2009: 5) suggests that individuals that are preparing a research need to make explicit the larger philosophical ideas they espouse. This will help the individual to explain why they chose qualitative or quantitative approaches.

### *9.1.2 Research strategies*

Research strategies or *research methodologies* refer to the specific direction for procedures in a research design. Creswell (2009) also used the term *strategies of inquiry* to emphasize that this refers to the type of study, which the researcher wants to conduct. There are many available strategies for the researcher to choose, in this paper the most relevant strategies are briefly introduced.

**Survey research**

The most common purpose of this research strategy is to generalize from a sample to a population. Thus questionnaires or structured interviews are commonly used. The data collected often provides a quantitative or numeric description about the sample subjects' opinions.

**Experimental research**

This strategy seeks to determine if a specific treatment influences a given outcome (Bryman, 2008). This approach is often being conducted in an environment which the researcher have full control. One group is given the treatment whereas another *control group* is unexposed. The researcher can thus determine whether there is a connection between the cause and the outcome by observing the two groups.

**Ethnography**

Ethnography is a strategy of inquiry in which the researcher studies a cultural group in its natural setting (Creswell, 2009). An ethnographer can take different roles for instance as observer or participant (Bryman, 2008). Often it is necessarily for the researcher to have a prolonged period of time in order to collect observational and interview data (Creswell, 2009).

**Grounded theory**

Grounded theory is a strategy in which the first step for the researcher is to collect data from multiple methods. Similar contents of gathered data are then being grouped to form concepts for which the researcher can work from. From these *concepts categories* are formed and is used to generate theory. Theories are thus grounded by the researcher's work on collected information. A characteristic of this strategy is the ongoing comparison between collected data and emerging categories. (Creswell, 2009)

**Case studies**

Yin (2009) made a twofold definition in order to explain what a case study is. The first part explains the scope of a case study (Yin, 2009: 18):

> *"A case study is an empirical inquiry that investigates a contemporary phenomenon is depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident."*

In short case studies are suitable when a researcher wants to understand a real-life phenomenon in depth, but such understanding encompasses important contextual understanding (Yin and Davis, 2007 in Yin, 2009: 18). But such definition does not encompass technical characteristics of a case study such as data analysis strategies, thus a second part of the definition is complemented (Yin, 2009: 18):

> *"The case study inquiry copes with the technically distinctive situation in which there will be many more variables of interest than data points, and as one result relies on multiple sources of evidence, with data needing to converge in a triangulating fashion, and as another result benefits from prior development of theoretical propositions to guide data collections and analysis."*

Using this twofold definition, a case study may not be limited to being a design feature alone. (Yin, 2009) In a sense, a case study can also involve the use of other research methodologies, such as survey and grounded theory.

In relation to the research designs, some research strategies are more often used with a quantitative design, whereas other to the qualitative design. Creswell (2009) made an overview and is shown in Table 9-2.

| Quantitative | Qualitative |
|---|---|
| • Non-experimental designs, such as surveys<br>• Ethnographies | • Grounded theory<br>• Case study |

Table 9-2. Research strategies
Source: Adapted from Creswell (2009: 12)

### *9.1.3 Research methods*

The last element to evaluate in a research design is the research methods. Research methods encompass the way the researchers propose their studies; what forms of data collection, the analysis and how the researchers interpret with their subjects (Creswell, 2009). Some considerations that need to be taken are to whether use closed-ended- or open-ended questioning, and the focus on numeric or non-numeric data. These considerations reflect the process and the outcome of the research. For instance using open-ended questioning reflects that the intent is to let the information emerge from the research subjects, whereas closed-ended questioning likely imply that the type of information to be collected are specified in advance. Researchers should thus decide thoroughly what kind of methods they want to use before the empirical data collection, since the decision of methods reflects how the researcher should perceive their questioning but also how the data are used afterwards.

There are several characteristics in the use of research methods in relation to quantitative and qualitative research design. Table 9-3 summarizes this.

| Quantitative Methods | Qualitative Methods |
|---|---|
| • Pre-determined<br>• Instrument based questions<br>• Performance data, attitude data, observational data, and census data<br>• Statistical analysis<br>• Statistical interpretation | • Emerging methods<br>• Open-ended questions<br>• Interview data, observation data, document data, and audio-visual data<br>• Text and image analysis<br>• Themes, patterns interpretation |

Table 9-3. Research methods
Source: Adapted from Creswell (2009: 15)

### *9.1.4 Summary*

As shown, the three presented dimensions are interconnected and in some way used interchangeably to describe whether the research design is qualitative or quantitative. Probably this is also why Creswell (2009) pointed out that all the three dimensions need to be evaluated to tell the differences between qualitative and quantitative research designs. The worldviews, the strategies, and the methods all shape the research design that tends to be quantitative or qualitative (Creswell, 2009). The table below summarizes the connections of the three dimensions in relation to quantitative and qualitative research design.

| Tend to or typically: | Quantitative approaches: | Qualitative approaches: |
|---|---|---|
| **Use these philosophical assumptions** | Post-positivist knowledge claims | Constructivist knowledge claims |
| **Employ these strategies of inquiry** | Surveys and experiments | Ethnography, grounded theory and case study |
| **Employ these methods** | Closed-ended questions, predetermined approaches, numeric data | Open-ended questions, emerging approaches, text or image data |
| **Use these practices of research as the researcher** | • Tests or verifies theories or explanations<br>• Identifies variables to study<br>• Relates variables in questions or hypotheses<br>• Used standards of validity and reliability<br>• Observes and measures information numerically<br>• Uses unbiased approaches<br>• Employ statistical procedures | • Positions him- or herself<br>• Collects participant meanings<br>• Focuses on a single concept or phenomenon<br>• Brings personal value into the study<br>• Studies the context or setting of participants<br>• Validates the accuracy of findings<br>• Makes interpretations of data<br>• Creates an agenda for change or reform<br>• Collaborates with participants |

Table 9-4. Quantitative and qualitative approaches
Source: Adapted from Creswell (2009: 17)

## 9.2 The choice of this research

Summarized from the foregoing sections, the three mentioned dimensions shape the research design, thus there are several ways of conducting a research. Every chosen path has its advantages and disadvantages; therefore there is probably no single perfect research approach to use. Yin (2009: 8) pointed out that "*the goal is to avoid gross misfits – that is, when you are planning to use one type of method but another is really more advantageous*". The choice of research design depends on the priorities of a given research (Bryman, 2008). Priorities can for instance be generalization or contextual understanding, "hard" reliable data or "soft" rich/deep data, point of view of researcher or point of view of participant, theory testing or theory emergent (Bryman, 2008). Thus the choice of research design should be based on the research topic about what the researcher wants to find out and prioritize.

In deciding the proper research approach, Yin (2009) proposed that three conditions need to be considered: (1) type of research question posed, (2) the extent of control the researcher has over behavioral events and (3) the degree of focus on contemporary as opposed to historical events. Research questions can be in different forms, for instance "who", "what", "where", "how" and "why". Researchers also have different degree of control over behavioral events, for instance experiments require that the researchers can manipulate behavior directly, precisely and in a systematic manner. Researchers also need to consider if the focus is on contemporary or historical events; for instance case studies are suitable for contemporary researches since data collections usually span over a longer time making it possible to observe and interview their subjects. In Table 9-5 three research strategies are displayed according to the three discussed conditions.

| Method | (1) Form of research questions | (2) Requires control of behavioral events | (3) Focuses in contemporary events |
|---|---|---|---|
| **Experiments** | How, why? | Yes | Yes |
| **Surveys** | Who, what, where, how many, how much? | No | Yes |
| **Case study** | How, why? | No | Yes |

Table 9-5. Relevant situations for different research methods
Source: Adapted from Yin (2009: 8)

With this paper's research questions in mind, these are mainly based on "how"-questions, and these do not require any control of behavioral events. Further, Q.2 and Q.3 focus on contemporary events (comparing or finding improvements of the current situation), thus case study as research strategy is chosen for this master thesis.

The research is designed with a constructivism worldview in mind – that is this research focus on contextual understanding of the construction industry with the objective of theory

development. Further the main research questions are also highly explorative and descriptive in nature, thus a qualitative approach is considered to be favorable. In order to collect data, the research methods that suit best are open-ended interviews, documentations, archival records and the author's own observations. Lastly a framework called *systematic combining* (Dubois and Gadde, 2002) is used. This particular framework will be presented in the next section.

### *9.2.1 Systematic combining approach*

**Theoretical background**

Systematic combining is a framework that relies on an *abductive* research approach (Dubois and Gadde, 2002). The abductive approach differs from induction and deduction (Kovács and Spens, 2005; Dubois and Gadde, 2002). Deductive approach starts with the review of prior theories for which a theoretical conclusion is created and expressed in the form of hypotheses and propositions. These are then tested in an empirical setting for verification. See Figure 9-1. The inductive logic follows a somewhat reversed path. "*Not even the knowledge of a general frame or literature is definitely necessary*" (Kovács and Spens, 2005: 137). The inductive approach relies on grounded theory, which means that observations about the world lead to emerging propositions in a theoretical frame (Kovács and Spens, 2005). See Figure 9-2.

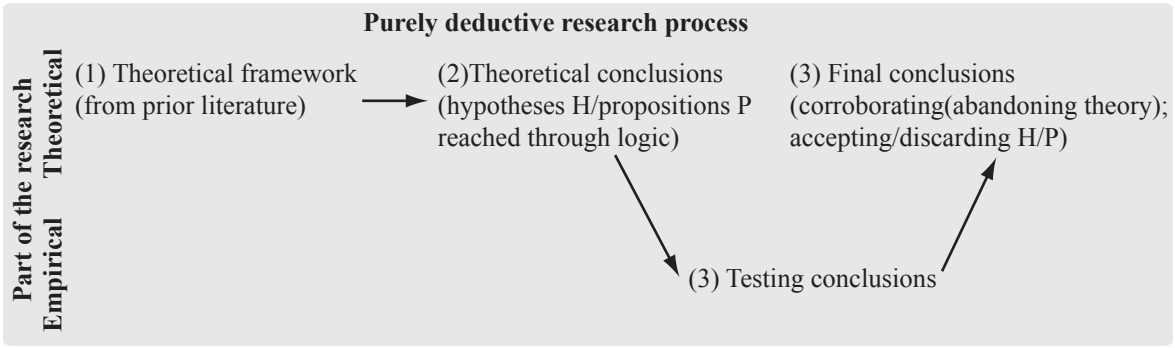


Figure 9-1. Deductive approach
Source: Adapted from Kovács and Spens (2005: 137)

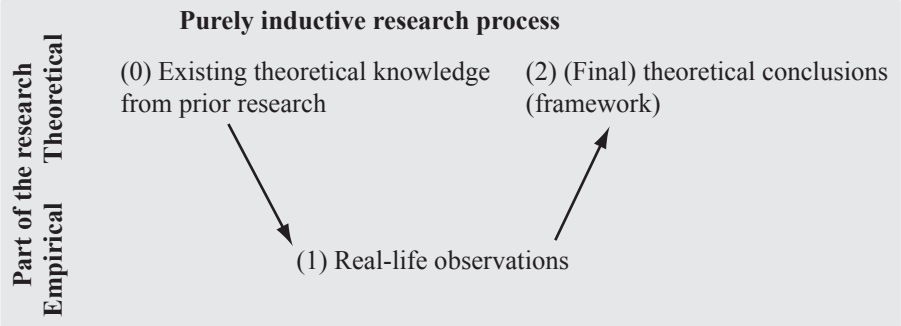


Figure 9-2. Inductive approach
Source: Adapted from Kovács and Spens (2005: 137)

An abductive approach resembles more on an inductive- rather than a deductive approach. This is probably because both abductive and inductive shares the same underlying "grounded theory" approach. Similar to an inductive approach, it does not start with hypothesis and propositions. Instead theories are generated through observations. Though the abductive approach differs from inductive in its emphasize on the search for suitable theories to the empirical observation, which Dubois and Gadde (2002) call *theory matching* (Kovács and Spens, 2005). Theory is built simultaneously to data collection; thus it is necessary to bounce back-and-forth between theories and observations. The *loop* in Figure 9-3 emphasizes this aspect as well pointing more explicitly that there is a dynamic learning process going on; knowledge gained through observations or theories are likely to influence the other part, which in turn may induce redirections (Dubois and Gadde, 2002).

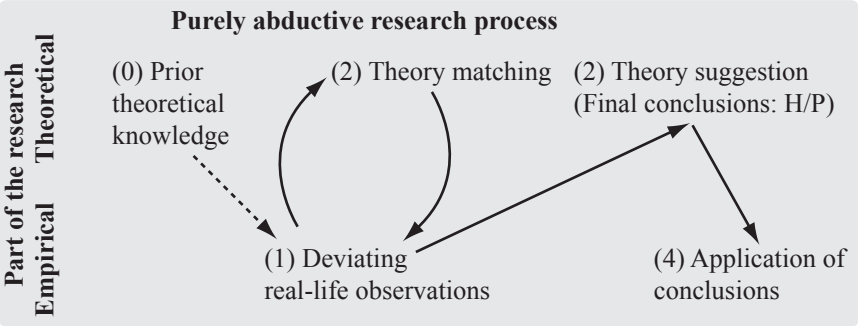


Figure 9-3. Abductive approach
Source: Adapted from Kovács and Spens (2005: 139)

**The framework**

Dubois and Gadde (2002) added the abductive approach to the single case study research strategy. The core of systematic combining is the *matching loop* mentioned in the abductive approach. According to Dubois and Gadde (2002: 554), the main characteristic is "*a continuous movement between an empirical world and a model world*". They observed that in some case studies the original study phenomenon was reconsidered, due to new discoveries in the literature or real world. Systematic combining is a process where "*(...) the research issues and the analytical framework are successively reoriented when they are confronted with the empirical world*" (Dubois and Gadde, 2002: 554). Dissecting the systematic combining approach, there are primarily two processes; (1) Matching theory and reality, and (2) direction and redirection as the consequence by the former (Dubois and Gadde, 2002). "*These processes affect, and are affected, by four factors: what is going on in reality, available theories, the case that gradually evolves, and the analytical framework*" (Dubois and Gadde, 2002: 554). See Figure 9-4.

What makes this research approach appropriate for this master thesis is the fact that systematic combining is fruitful for researchers that focus on to discover new things – other variables or other relationships than being studied by previously literature (Dubois and Gadde,

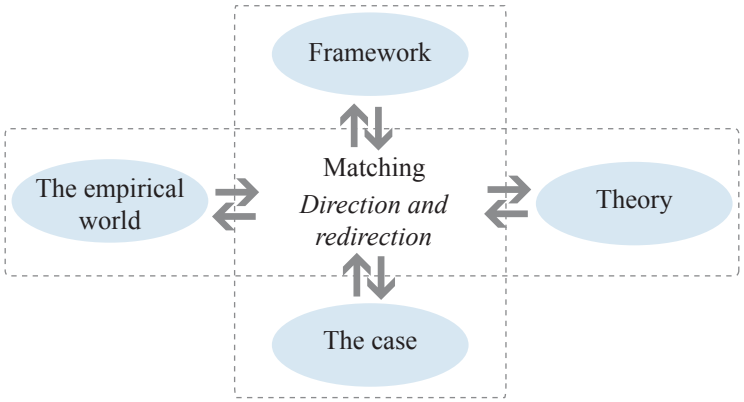


Figure 9-4. Systematic combining
Source: Dubois and Gadde (2002: 555)

2002). As the sourcing strategy literature has previously been mainly conducted from the automotive industry, seeing sourcing literature in the context of construction industry thus fits well with the feature of the systematic combining framework.

One final argument for using the systematic combining approach is that the main objective of this master thesis is on *theory development*, rather than *theory generation*. Dubois and Gadde (2002) points out that systematic combining builds more on refinement of existing theories than on inventing new ones. Precisely that point is the true intention of this research; it seeks to find new combinations or connections of established theoretical models, and new concepts may be derived from the confrontation with the empirical findings in construction industry.

## 9.3 The research process

In the following sub sections, descriptions are given for how the case study is conducted.

### *9.3.1 Master thesis proposal: choice of topic and research design*

The author started this thesis by having a meeting with the case firm, Reinertsen. The first meeting was held because there was no concrete topic or problem description for the thesis. After this meeting the topic was chosen to be **sourcing strategy**. This decision was foremost based on the author's interest, but also because the topic could help the firm to improve its purchasing practice.

A second meeting was held shortly after, but this time the author had written a master thesis **proposal** (see appendix 1). The proposal acted as a formal agreement about what the thesis is about, the time frame, and in general how the thesis should be conducted. Already in this stage, a **research design** was developed. This was important for the author, because the research design acted as an intermediate between the various "components" of the thesis; research questions, units of analysis, theory basis, and data collection method, all has to be fitted together as harmoniously as possible. Although the research design has been developed by the author, the choice of **case study design** and the choice of **case company** were partly

decided on beforehand. At the start of the school semester, the author did not have any firm to write for, thus the author's superviser, prof. Luitzen De Boer, helped the author to come into contact with a construction firm nearby the university.

### *9.3.2 Data collection: Semi structured interviews*

**Collecting data** or **evidence** is an important task for this master thesis. To accomplish more reliable data, **multiple evidence** or **triangulation** is important. The sources of information were collected primarily through **semi-structured interviews** of **key informants** in the case firm, but available archival records and documents were also used.

The interviews were held either on the case firm's head office or at their construction site at Charlottenlund. The Charlottenlund project was chosen because it represents a typical construction project for the firm, and also because it was not too far from the author's residency. In total six interviews were held and an overview is depicted in Table 9-6.

| Interviewee | Date | Duration |
|---|---|---|
| Project and purchasing administration leader: Nina Oxås | April 14th. 2011 | 1.5h |
| International purchaser: Thomas Kristiansen | April 26st. 2011 | 1.5h |
| Purchaser: Tarald Larsen | May 4th. 2011 | 1h |
| Site manager: Ole Eggen | May 5th. 2011 | 1h |
| Project Procurement Manager: Espen Mellbye | May 24th. 2011 | 1.5h |
| DSL division leader: Trond Soligard | May 30th. 2011 | 1h |

Table 9-6. Overview of the interviews
Source: Own presentation

All interviews were open-ended; thus only the topics were decided before the interviews. The actual sequence and which topics to deepen were decided during the course of the interviews. The reason is that the author did not have any prior knowledge of the firm, thus by letting the respondents decided which topic to emphasize, more "rich" descriptions and answers would be given that may be relevant for the thesis. The really downside of such open-ended interviews, were that the author had many "useless" information, however, on the other hand many relevant information also emerged.

### *9.3.3 The choice of informants*

As shown in Table 9-6, data collections were solely obtained through employees of the case firm. Off course an alternative option could be to also incorporate people from the case firm's

suppliers, however, due to the relative short time frame of this thesis, the author had to omit this option. This may be a disadvantage for the author, but since the empirical study is mainly focused on to understand the case firm's purchasing practice, their suppliers' views are less relevant.

The choice of key informants, were chosen by the help from the project procurement manager, Espen Mellbye. He helped the author to come into contact with the key informants, and they were primarily chosen by their relevancy for purchasing. As shown in Table 9-6, their job occupations varied from division leaders and down to the day-to-day operational purchasers. This is beneficial because the different occupations may have different views, and by collecting all their opinions together the author can get a much more correct picture of the firm's purchasing practice.

### *9.3.4 The topics in the interviews*

The topics to discuss in the interviews were foremost based on Figure 8-3; (1) what strategy for a given commodity, (2) how many suppliers, (3) what kind of relationships or interface, and (4) how do we structure the supply base. However, the informants where not asked to answer these questions directly; they provided instead the author the ability to map and draw out the massive information given from the informants.

For each specific interview, an **interview guide** is formed, hence there are in total six interview guides (see appendix 2). The first two interviews were very open-ended with less emphasis of any models in the literature. The reason was that the author had to know the firm at the most basic level. Thus, the conversations in the first two interviews were more based on how the firm is organized, what they do, what is their purchasing function's task and responsibilities etc. The later interviews were more focused on how the case firm actually carries out their purchases in relation to the four questions mentioned above. There are some overlaps in the interview guides regarding the themes and questions, and the reason is that by asking the same questions or using the same themes, different views can be collected from the key informants.

In conducting the interviews, the author recorded the conversations while at the same time took some notes. The recording was done to ensure that all data is available at later time when writing the empirical findings and the notes helped the author to access the content of each interview more easily.

### *9.3.5 Systematic combining and analysis process*

The sourcing literature is mainly based on the automotive industry, while the empirical study is conducted in the construction industry; hence **systematic combining** were used

to “combine” the sourcing literature in relation to the construction case firm’s purchasing practice. When collecting data from the case firm in relation to the sourcing literature, the author had some challenges because the author noticed that the construction environment is quite different from automotive environment. Some observations cannot be explained or matched by the sourcing literature alone. Hence the author sought after additional literature that could explain more in-depth of the construction industry’s characteristics, and this review is written down in Ch.10.

When reviewing the construction related literature, the author also used the opportunity to confirm these findings with the informants. As described in Ch.9.2, systematic combining involves moving back and forth between available literature and the empirical observations. The author used that loop because the observations and the sourcing literature seemed at first incompatible. However, as the analysis will show, the literature review of the construction industry indeed pointed out some factors that are useful in explaining the case firm’s purchasing practice in relation to the sourcing literature.

The actual sequence and methodology of the analysis shall be introduced in Ch.12.1, and the evaluation and the limitations of the thesis shall be addressed in Ch.14.3

# Chapter 10 – A review of the construction industry literature

As mentioned in Ch.1, this thesis' author did not have any prior in-depth experience of the construction industry, because his in-depth project study was with a different partner in the automotive industry. In addition, the literature review conducted so far is heavily based on the automotive industry, while the empirical study is based on the construction industry.

Certainly, some conditions or assumptions from the automotive industry might influence the appropriateness of the theoretical frameworks revealed in the literature review with the actual case study (of Reinertsen) in the construction industry. Hence before presenting the empirical study of Reinertsen, a review of literature in the construction industry in conducted.

## 10.1 Characteristics in the construction industry

### *10.1.1 Uniqueness: Project based vs. repetitive production lines*

In the construction literature, a fundamental difference is given between the construction- and automotive industry; the constructions industry is essentially project- or job-shop based, while the automotive manufacturing industry resembles more on mass production (Thompson, 1967 in Eccles, 1981). A job shop production is characterized by low production unit volume with many different variants (often unique to each assignment) (Andersen, Strandhagen and Haavardtun, 1998).

Under the given conditions above, each construction projects require a unique combination of labor and material inputs, performed and coordinated onsite (Eccles, 1981). By contrast, the automotive manufacturing industry is characterized by production in controlled (factory) environments where the supply of goods is merely a repetitive process off a production / assembly line (Cox and Thompson, 1997). Hence, the construction- and automotive industry is working under different conditions and requirements.

Because of these fundamental differences, Cox and Thompson (1997: 128) argued that many frameworks from the manufacturing industries might have very limited application to the construction industry, "*where the repetition is rare and works are procured typically on a one-off project-by-project basis*".

### *10.1.2 Contracts: Specialization and roles of actors*

**General contractors and special trade contractors**

Eccles (1981) explained that the most striking features of construction is the large number of firms, and is due to the fact that the term *construction firm* is used very loosely. In relation to the size of the firm, this can vary from one employee to hundreds of employees. In order to more precise *construction industry* is divided into three types of actors: *General building contractors*, *highway general contractors*, and *special trade contractors* (Eccles, 1981).

The three differ in terms of type of construction and role in the production process. General building general contractors build residential buildings, industrial buildings and other non-residential buildings such as schools and offices. Highway general contractors perform all non-building construction, for instance highways, pipelines, power lines, dams, harbors etc.. Both types of general contractors carry out and are responsible for fulfillment of the entire project. Typically the *end customer / principal* order a construction work and contract it out to the general contractors with a fixed price and deadline of completion (Eccles, 1981).

The general contractors do not, however, fulfill the construction project on their own. In addition to use their own capacity, they usually hire the special trade contractors to do the rest of the needed work; special trade contractors are contracted to perform smaller tasks such as plumbing, heating, ventilation, electrical work, painting, roofing etc.. Subcontracting refers to this kind of action. As opposed to pure purchase of materials, subcontracting often involves additional services such as engineering and installation at the construction site.

**Subcontracting**

According to Dubois and Gadde (2002) the role of the different suppliers in the construction industry are characterized by substantial variation. The reason stem from Eccles (1981: 449) observation that the construction industry is identified by two characteristics, (1) "*the organization of the production work force into a variety of trades*" and (2) "practice of subcontracting portions of a project to special trade contractors". Eccles (1981) argue that these two characteristics are related, because specialization is an important determinant of subcontracting,

Subcontracting involves more than acquiring pure materials. The general contractor may actually outsource the responsibility and co-ordination of the activities on site (Dubois and Gadde, 2002). Hence, the general contractors usually have a variety of suppliers with different roles; either the general contractor can use their own workforce on site, or they can subcontract the activities to the special trade contractors. Dubois and Gadde (2000) hence imply that the supplier roles are somewhat diffuse, especially since the activity scope of an individual supplier can be broad (design / engineering, production, installation etc.) or narrow and varies from project to project.

### *10.1.3 Competitive bidding: Standardization vs. adaption*

Dubois and Gadde (2002) argue that general contractors have to make a choice between adapted solutions and standardized ones. Adaptations may enhance efficiency performance, but doing so may lead to the kind of interdependency that some firms try to avoid. In addition, adaptions are costly.

Based on Dubois and Gadde's (2002) empirical study, they found out that the supply of building materials in construction industry is primarily characterized by exchange of standardized products. It is quite unusual that special trade contractors develop products for particular construction projects or a specific general contractor. The authors argue that the cause of this is probably the focus on the unique projects and its economy. The result is therefore on the short-term perspective emphasizing competitive bidding for the evaluation of supplier selection. This price mechanism on the other hand, refrain the special trade contractors from adapting to individual general contractors, and instead rely on standardization (Dubois and Gadde, 2002).

Further, Dubois and Gadde (2002) explain that the standardization seems confusing, since most of the construction projects are unique. The point is, in comparison to the automotive manufacturing industry, mass production is dependent on standardized *tasks*, while construction projects are characterized by utilization of standardized *parts*. Thus, every construction projects are unique not because of the parts in general, but in its tasks.

### *10.1.4 Rounding up the characteristics in construction industry*

The industry's trend towards competitive tendering, thus also transactional relationships, are explained by its characteristic of complexity (Gidado, 1996 in Dubois and Gadde, 2002). The complexity in turn stems from two main categories, *uncertainty* and *interdependence*.

Uncertainties are mainly concerned with the firms' unfamiliarity of local- resources and environment; lack of uniformity of work and teams with regard to place and time; lack of complete specification for the construction site; and thus makes the environment highly unpredictable (Dubois and Gadde, 2002).

Interdependence is referred to the complex task of planning and carrying out the construction activities; the rigidly of sequence between activities on site; overlap of stages or element in construction; and the number of technologies and interdependence between them (Gidado, 1996 in Dubois and Gadde, 2002).

In addition to these aspects, governmental regulations and the different principals' preferences add additional complexity to the projects. Therefore these factors force the construction actors to tailor each project, from design to execution. They may be unfamiliar with the local surroundings of the projects, and have to be reliant on *local decision making* and *local adjustments*.

In Table 10-1, the characteristics mentioned in the former section and in this section are summarized in relation to the complexity in the construction industry.

| Complexity in construction: Interdependence | Uncertainty | Central features of construction |
|---|---|---|
| • Number of technologies and interdependences<br>• Rigidity of sequence between the various main operations<br>• Overlap of stages or elements of construction | • Lack of complete activity specification<br>• Unfamiliarity with local resources and local environment<br>• Lack of uniformity of materials, work and teams with regard to time and place.<br>• Unpredictability of environment | • Focus on single projects<br>• Local adjustment<br>• Utilization of standardized parts<br>• Competitive tendering<br>• Market-based exchange<br>• Multiple roles |

Table 10-1. Complexity factors central features of construction and the effects of loose couplings
Source: Dubois and Gadde (2002: 624)

## 10.2 Relationships: The Construction industry as a loosely coupled system

One of Dubois and Gadde's (2002) main findings is that transactional exchange is the dominant form of business in the construction industry. The reason of this is the heavy reliance on competitive bidding procedures mentioned earlier, because supplier competition is assumed to be the most appropriate means of obtaining efficiency in operations.

Dubois and Gadde (2002) argue that due to the complexity, the construction industry is organized as a loosely coupled system. These authors explained that every single industrial activity is to some extend interdependent with a number of other activities, thus they can be coupled in various ways. Some couplings can be "tight" while others can be "loose".

*The construction industry* is loosely coupled because as mentioned before, each project is unique, thus there is no guarantee that the same team will work together again after the project has ended. Hence, outside the project environment there is no need for the organization to coordinate. Combined with the market-based competitive bidding, standardization of products and the trend of subcontracting, one can argue that the relationships beyond the projects are loosely coupled (Dubois and Gadde (2002).

However, Dubois and Gadde (2002) argue that couplings can be analyzed in different scopes; in industries, in projects or even among individuals. If we view couplings within projects, Dubois and Gadde (2002) argue that since the actors are focused on projects and its efficiency, the involved actors have to collaborate closely and thus the relationships are tight. Thus in general, the relationship dimension in construction industry is characterized by loosely- and tightly couplings, depending on the scope of analysis.

## 10.3 Summary and conclusion

This chapter mainly serves as a description of the construction industry in general. Further it also explained some of the key differences between the automotive manufacturing- and the construction industry. Some of the key distinctions are that in construction the "products" are unique, thus the involved tasks differ from one project to another. One implication is that the supplier roles are characterized by substantial variation and can change depending on the project and the delegated responsibilities. Further, the required tasks by the suppliers' are complex because of sequence and overlaps. In summary, Gidado (1996) and Dubois and Gadde (2002) remarked that the construction industry is characterized by (environmental) uncertainties and (task) interdependencies.

The two main characteristics imply that due to uncertainties, the actors in the construction industry is in general loosely coupled. On the other hand, by the required task interdependencies from the different actors that are involved in the same project, they are tightly coupled. Figure 10-1 illustrates the main finding in this chapter.

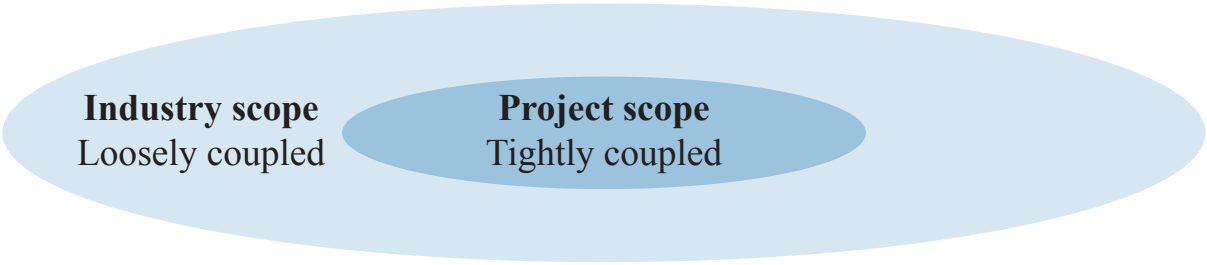


Figure 10-1. Loosely and tight couplings in construction industry
Source: Own illustration based on Dubois and Gadde (2002)

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# Chapter 11 – The case company Reinertsen

This chapter seeks to present the company in which the case study is conducted. The first sections give some description about the company in general. In the last sections, some more specific aspects related to how Reinertsen carry out their purchases is described.

## 11.1 The brief history of Reinertsen

Reinertsen AS is one of the leading construction actors in Norway. The company is located in Norway, Sweden and Russia, with the head office in Norway, Trondheim.


Figure 11-1. Reinertsen's office locations
Source: Reinertsen (2011)

The company was founded in 1946, and has been initially started as a consultant/engineering firm for the mainland construction industry. In the 1980s the company started to expand their business and entered the oil and gas industry in Norway, as a pure engineering company with subsea pipes as specialization.

As the main focus of the company was engineering services for the construction-, and oil & gas industry, the company sought to deliver more services and to cover more of their customers' value chain activities. In order to continue to expand, Engineering, Procurement, and Construction (EPC) was sought by the company as the most important areas for growth. Hence, throughout the 1990s the firm started their restructuring of the company, and added divisions such as fabrication, civil contractor, installation and large projects to cover these areas.

## 11.2 The corporate structure

The corporate structure of Reinertsen is given by Figure 11-2. As depicted by the figure, the company is divided into five divisions, engineering, fabrication, civil contractor, installation and large projects.

**Engineering division**

The engineering division was founded in 1946, and is today one of the biggest engineering firms in Norway with a revenue of about one billion NOK. The division has about 1100 employees. In addition to locations such as Trondheim, Oslo, Bergen in Norway; Reinertsen also have people working at the engineering division in Stockholm, Göteborg, Stensungsund, Malmö in Sweden, and Murmansk in Russia. This division works both in the mainland- and oil & gas industries (a brief presentation is given of the market industries in the next section) in collaboration with the other divisions. (Reinertsen, 2011b)

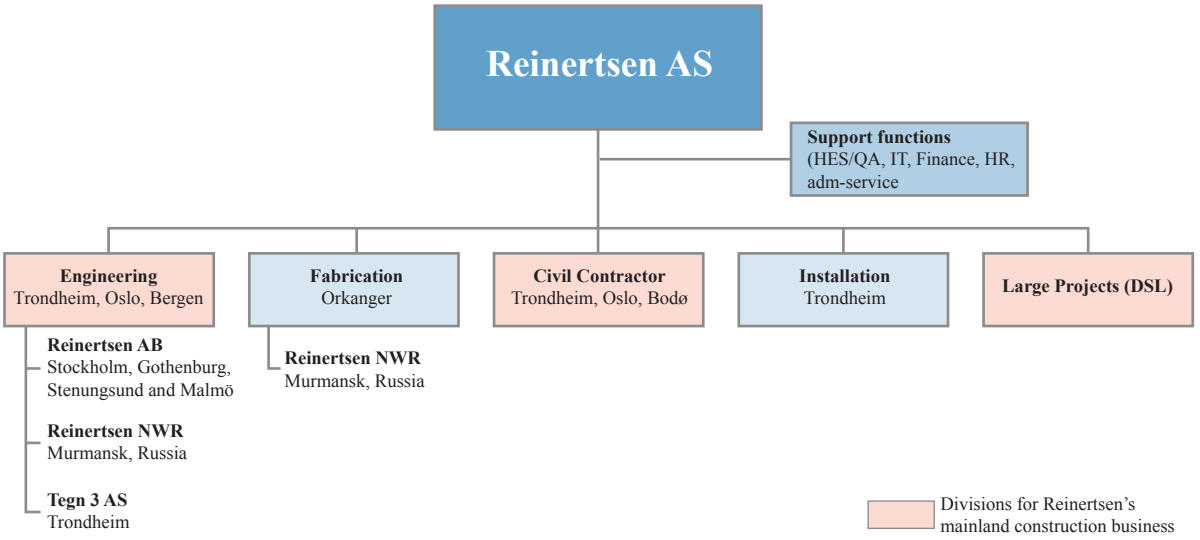


Figure 11-2. Reinertsen's corporate structure
Source: Reinertsen (2011a)

The engineering division also has an architect firm called Tegn3 AS. This architect firm works for Reinertsen's own projects, but may as well work for other independent construction projects.

### Fabrication

Reinertsen have two fabrication facilities, one in Orkanger, Norway and one in Murmansk, Russia. Both facilities offer prefabrication and assembly of larger steel constructions and pipe systems to offshore projects as well as on mainland projects. However, their main market is on the oil & gas industry. (Reinertsen, 2011c)

### Civil contractor division

In collaboration with the other divisions, the civil contractor division delivers solutions for construction projects from preconception development, through project planning, procurement, fabrication, construction/installation and operation/maintenance. This division is one of the bigger civil contractors in Norway, with an annual revenue of 1,2 billion NOK. The division has about 360 employees localized in Trondheim, Oslo and Bodø. (Reinertsen, 2011d)

### Installation division

The installation division executes and carries out the task on the construction sites, both offshore and on mainland. This division is multidisciplinary with many different professions at their disposal; some of them are Health-Safety-Environmental executives, process- and quality controllers, and mechanical operators. (Reinertsen, 2011e)

### Large (mainland) projects division

This division plans and executes large mainland construction projects, and is specialized into taking larger roles and responsibilities of construction projects (Reinertsen, 2011f). They

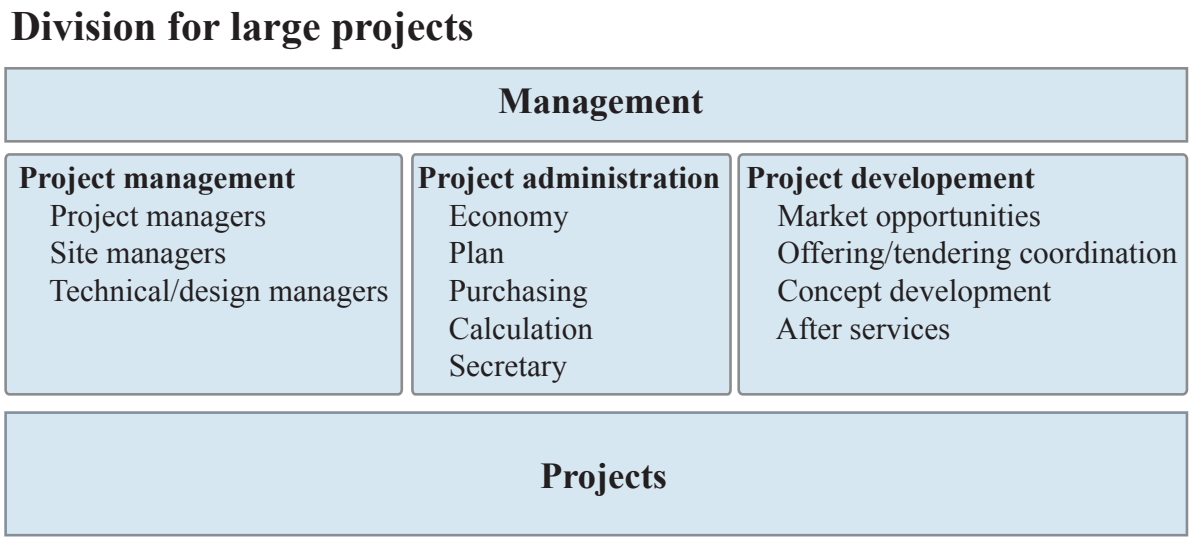


Figure 11-3. Large project structure
Source: Based on slides from Reinertsen

work closely with their customers/principals and other collaboration partners in order to execute and fulfill the completion of constructions on behalf of their customers/principals. This division consists of many disciplinarians illustrated by the division structure in Figure 11-3. As shown by the figure, the division is mainly responsible for the management of larger constructions projects, in particular project management, -administration and development.

## 11.3 Business markets

The two main business industries for Reinertsen today are construction and engineering services for **mainland construction-** and **oil & gas** industry. In the following sub sections a brief presentation is given for both markets.

### *11.3.1 Mainland*

This market encompasses all construction activities in the mainland. In addition to the construction of larger buildings and facilities, infrastructure and transportation is also a significant market segment for Reinertsen. About 700 of their employees are working in this market with tasks such as project planning and engineering, in addition they have a significant workforce in professions such as concrete and timber. Hence, the firm can carry out a variety of tasks such as construction of roads, bridges, subterranean water- or sewerage systems, or larger buildings such as schools and offices.

The large (mainland) project division was founded in 2009 in order to strengthen this market. Reinertsen have in 2010 about 1,3 billion NOK in revenue from the mainland projects.

### *11.3.2 Oil & gas*

Reinertsen have since the 1980s delivered services to the oil & gas industry. They supply this industry from raw materials such as subsea pipes, to offshore constructions, such as

underwater facilities and oil rigs. In addition, they also take tasks such as modification and maintenance of existing offshore facilities. (Reinertsen, 2011g)

## 11.4 How Reinertsen's purchasing function is organized

Looking at the corporate structure of Figure 11-2, Reinertsen's purchasing function does not belong to a specific division. Instead, the purchasing function is working as a support function for all the divisions of the company. Reinertsen's purchasing function is mainly structured into two broad categories, see Figure 11-4.

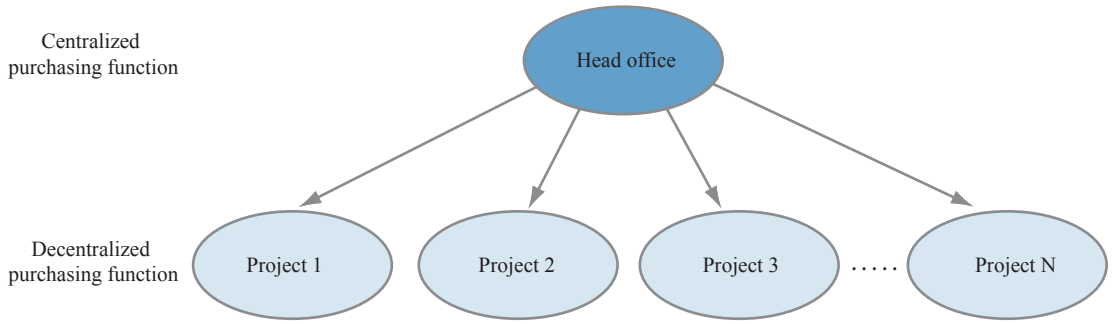


Figure 11-4. Organization of the purchasing function
Source: Own presentation

### *11.4.1 Centralized function*

The staff of the centralized function is working mainly at the head office in Trondheim. Their task is to support their projects, by participating in bid estimates, identification of strategic suppliers, looking for opportunities for international procurement etc. The major tasks for the central function in Reinertsen are summarized below:

- Participate in bid estimates
- Identification of strategic partners at home and abroad
- Supplier relations and follow-up
- Further development of work practices / procedures and tools
- International procurement

### *11.4.2 Decentralized function (project purchasers)*

The decentralized function is taking place on the different ongoing projects. Purchasers are typically assigned to each project, and most of them will remain there from the pre-phase of the project and till it ends. The decentralized purchasing function's main tasks are as follow:

- Responsible of bid requests, evaluation, negotiation and contract signing of all types of agreements / purchases
- Establish procurement plan and procurement budget
- Participation in project implementation
- Contract and supplier follow-up

### *11.4.3 Purchasers in the purchasing function*

Most of the purchasing is taking place by purchasers on site, as a part of the project

administration. In addition, the responsible purchasers on the projects are quite autonomous, and have a high degree of control and decision making on how they would like to organize the procurement. The Project Procurement Manager, Espen Mellbye, expressed that this is maybe the characteristic that is not similar to some of their competitors, which have more directions from central top management (e.g. the central purchasing function). The purchasers have a lot of freedom within the projects to do what they want to do, from bid requests, evaluation on suppliers, negotiation, to contracting signing of all types of agreements and purchases. Hence, quite a lot of work and decisions are done at the decentralized purchasing function on the projects.

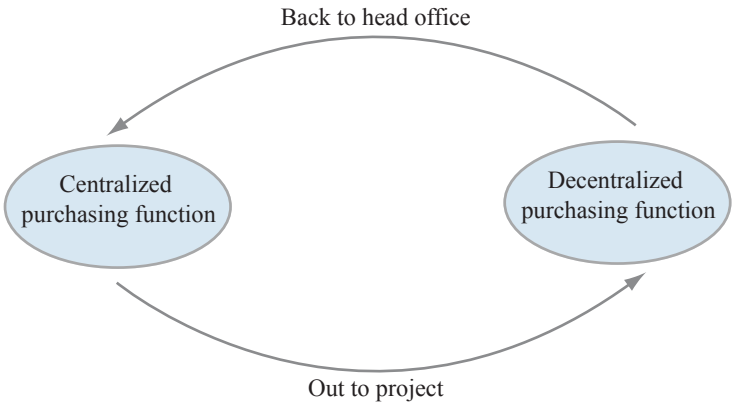


Figure 11-5. Purchaser's working loop
Source: Own presentation

In general, most of the purchasing staff members are working at both the centralized and decentralized purchasing function, but not at the same time. A typical scenario is that a purchaser is assigned to a project, thus working at the decentralized purchasing function. As soon as the project ends, he/she is then returning to the centralized purchasing function. When a new project is available, the purchaser is once again moved out; hence the purchasers are working in loops, shifting back and forth between centralized-, and decentralized purchasing tasks. See Figure 11-5. Thus, the head count of purchasers either at the centralized- or decentralized purchasing function depends on how many ongoing projects the firm has.

## 11.5 Reinertsen's management system for purchasing (MSP)

Reinertsen's IT Management System is a computer tool with information that describes in detail all the **purchasing procedures** for the different processes in a typical construction project. In this thesis, only the part in the system that is related to purchasing will be described. According this system, there are six distinct processes related to each purchase, see Figure 11-6.

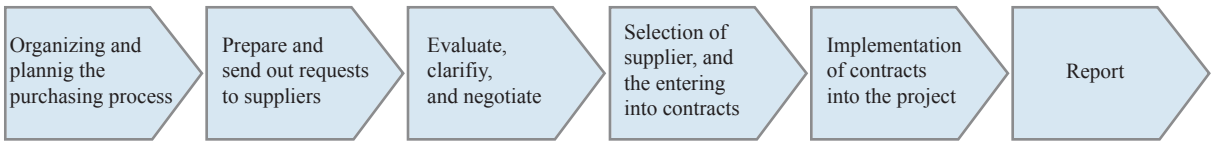


Figure 11-6. Reinertsen's Management System (MSP)
Source: Own presentation based on Reinertsen's IT system

In the following sub sections, summary descriptions are given for each of the six processes.

### *11.5.1 Organizing and planning the purchasing process*

In this process, the purchasers receive an outlay over what materials and services that needs to be acquired for a specific project. The purchasers' task is then to go through this outlay and establish a purchasing plan for each of the materials or services in collaboration with project-, and technical managers, and accountants. The purchases are divided into different **profession categories / special trades** (e.g. timber, steel, concrete, etc.), and for each category a decision need to be made about what **subcontract form** to use. For instance, whether the purchases include engineering services, installation on the field, or as a pure material delivery. Further, the purchasers need to budget the estimated costs, and carry out a prequalification of potential suppliers.

When prequalifying their potential suppliers some factors to consider are, whether Reinertsen have existing **framework agreements** with some suppliers, to buy locally or globally, and the risk associated with the suppliers in consideration. Regarding the associated risk of purchase, the purchaser need to credit check their suppliers in case they may have problems on delivery, or going bankrupt during the construction. Lastly, the purchasers alert their prequalified suppliers that a tendering-request is soon to be handed out to them.

### *11.5.2 Prepare and send out requests to suppliers*

The preparation in this process involves working out the needed specifications and drawings, in a way that the request form is specified in such detail that the suppliers can give a realistic offer.

In this process, the purchasers have to follow the Norwegian standards of tendering-requests, thus the firm use standardized specification-, and request forms for each profession category. There are also additional checklists available for the purchasers to ensure that a right procedure has been undertaken; for instance, whether the request form coincides with the chosen subcontracting form, and that the prepared request form is based on correct technical interfaces and other technological aspects.

This process ends with sending out tendering requests to the suppliers, followed by confirming that the suppliers have received the request. The dialogues with a supplier are

assigned to a purchaser, and all communication should go through that person (Single point of contact). As a rule, all communication should be documented. In cases where oral information exchange is given, a confirmation is needed from all involved parties in written form.

### *11.5.3 Evaluate, clarify, and negotiate*

The person who is responsible for the technical details on the project, review the incoming offerings for deviations and lacks. All deviations or lacks are then recalculated and expressed in terms of costs. The purpose is to reveal the differences between the offerings in price, such that the comparison between all the offerings is as realistic as possible. For instance, if the technical managers reveal that a supplier gives additional service, or the purchaser reveals that the supplier offer extra guarantees that are not accounted for, this should be considered in the evaluation- and comparison process. Thus, in this process, both purchasers and technical managers collaborate to evaluate the supplier offerings, to ensure a total evaluation of both commercial and technical aspects.

In general there are both internally and externally activities in this process. The internally activities in this process involve purchasing meetings, status updates of the tendering requests. The external activities include offering-clarification-, setting up-, and carry out pre negotiations with the suppliers.

### *11.5.4 Selection of suppliers, and the entering into contracts*

Based on the total evaluation done in former process, the purchasing leader creates an offering-evaluation document. The MSP has a template for this document that the purchasing leader can use. The template encompasses the direct cost, the costs that emerge during use, and a technical statement of the offerings.

Based on this document, the project manager takes the responsibility for the selection of offerings/suppliers. The purchasers prepare a pre-contract for negotiation, and call the involved parts into negotiation meeting. Before the meeting, the purchasers and the project managers go through the pre-contract.

After meetings with the supplier, a final contract is worked out. The contract should encapsulate all the agreed terms and intensions in the former pre-negotiation process, such that misconceptions are avoided.

### *11.5.5 Implementation of contracts into the project*

The purchasing leader undertakes a review over special aspects/circumstances of the contract, for instance insurances offered by the supplier and the responsibilities/risks that the supplier is willing to take.

The purchaser then sends payment information and schedule, and pass down the responsibility of following up the contract to the project economist/accountant.

### *11.5.6 Report*

The final process is to report the ongoing status of the purchase, and send in negotiation results and experiences of the supplier in question. The purchasing leader also creates and store all documents, reports and contracts into the archive.

## 11.6 Purchasing practice in a typical construction project in Reinertsen

Since most of their purchases are done on the project sites, there is a need to understand how a typical construction project looks like. This section describes an exemplified project. Data collection for this section is based on one of Reinertersen's ongoing construction project. The end customer (principal) of this particular construction project is Sør-Trøndelag Fylkeskommune, and the construction task is to build a college facility at Charlottenlund, Trondheim. The information about this project is mainly obtained through onsite visits followed with interviews from key informants on the project.

### *11.6.1 Brief description of a typical construction process in Reinertsen*

A typical construction project is divided into three phases: tendering-, interactive-, and execution phase. See Figure 11-7. The following three sub sections describe aspects related to purchasing in a construction project context. Note that the presentation of the three phases is simplified, because in practice the phases overlap and hence there are no clear boundaries.

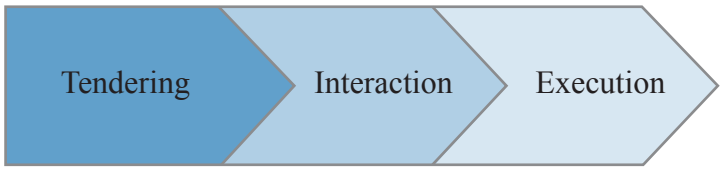


Figure 11-7. The three phases in a typical construction project
Source: Own presentation based on interviews

**Tendering phase**

A construction project starts with a need from the end customer or **Principal**, for instance a building. Usually the principal sends out a request for a competitive tendering, where various general contractors compete on offering the best deal for the principal. There are in general two forms of competitive tendering that the general contractors can compete on. The first form is competition on price only (competitive tendering on a **partial contract**). In this situation the principal has already engaged architects and other technical consultants to draw and specify the overall features of a given construction, thus Reinertsen and their rivals are competing on solely on price and the project fulfillment of the construction. In the second form, the competitive tendering involves both design and price (competitive tendering on a **turnkey contract**). In this situation the principal evaluates both the price and the design solutions that the general contractors offer. The main difference between the two forms is

whether Reinertsen can choose their own architects and technical consultants (e.g. price and design competition), or if the principal has already chosen these partners that Reinertsen has to work with. For simplicity, the thesis only deals with **turnkey contracts** for the rest of this paper.

To send in an offer to the principal, Reinertsen sets up a tendering team. The team consists of various professions, such as engineers, architects, project managers etc. taken out from the different divisions in Reinertsen. The objective is to find out what the tendering is about, and the principal's needs. In addition, purchasers and accountants are also involved in this team to calculate cost estimates of the project. The purchasers usually take the role of finding suitable suppliers, evaluate and setting up contracts etc., i.e. following the procedures described by the MSP system.

Because the supply market fluctuates in terms of price and demand, Reinertsen's purchasers usually need for each project to go out and ask specific suppliers for prices. Even so, in the tendering phase Reinertsen only ask actors that are critical for the pre-phase of the project. The critical actors are divided into three technical special trades, which are plumbing-, ventilation-, and electric. Each special trade needs a supplier and a consultant. Supplier in this context is supplying the construction project with materials and workforce and is responsible for carrying out the installation tasks on the construction site, while consultant is responsible for the technical design features. Sometimes both supplier and consultant are coming from the same firm, while other times Reinertsen or the supplier engages an external consultant.

For turnkey contracts, Reinertsen need to early involve actors in these three technical special trades, because of their specialized knowledge and "know how" that the firm do not possess. Further they are responsible for whole system-solutions; hence they stand for a big proportion of the design- and the total cost of the project. In summary, Reinertsen early-involved actors in these three technical trades to participate in the tendering team, and thus have much influence on the offering outcome to the principal.

**Interactive phase**

If the principal decides to give Reinertsen the job, the company typically gets the full responsibility for the undertaking and fulfillment of the whole construction project. This implies that Reinertsen is responsible to manage and coordinate all actors involved in the construction project.

This phase is characterized by high collaboration effort between Reinertsen, their early-involved suppliers and architects. Due to the complexity, law and regulations, and the specific customer requirements of every construction project, other specialized actors are

also involved, such as technical consultants for engineering, security, acoustic and fire. In summary this phase involves mainly on planning the construction process carried out on the next phase in collaboration with the principal and all the early-involved suppliers and consultants. Some activities in this phase are for instance creating time schedules, defining roles and responsibilities for the involved actors, and come in agreements regarding critical design feautures of the construction object/facility.

**Execution phase**

The execution phase is where the actual construction is taking place. In this phase, Reinertsen creates a project organization specifically adapted for the project (more details on the next section). This project organization is then deployed at the site where the construction is being built. Except for the purchase agreements with the early-involved suppliers, most of the other purchases are done in this phase.

In general, Reinertsen intentionally tries to not freeze the project specifications at an early stage. The reason is that there are many uncertainties involved with a typical construction project. Thus things may not be specified in such detail that purchases can be made earlier. Further, their customers demand some flexibility, and thus changes and redesigns are bound to happen in most construction projects. Therefore there is an advantage to delay the purchases as close as possible to the actual execution time.

### *11.6.2 A typical project structure*

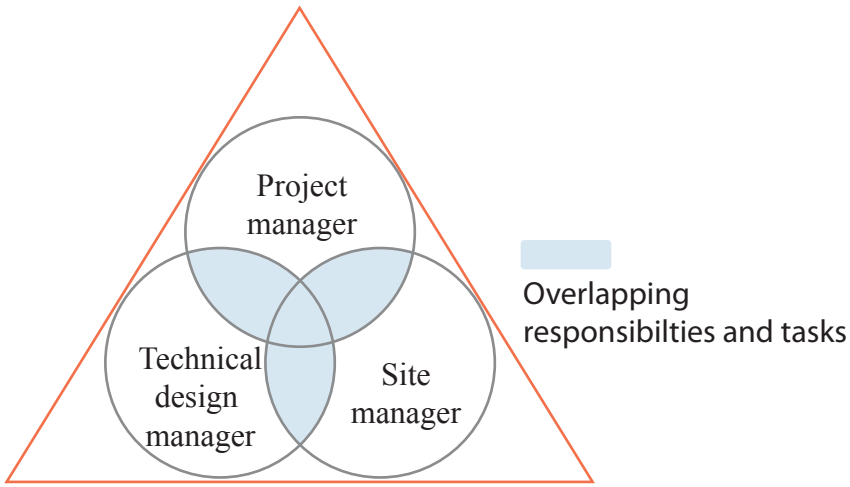


Figure 11-8. Overlapping responsibilities in the management triangle
Source: Own presentation based on interviews

On the top of the project organization is the **principal** that has ordered the construction. Reinertsen take the role as the **general contractor** and is directly assigned under the principle. Reinertsen further assign a **project manager**, who is responsible for the completion of the project within the agreed timeline and cost budget. His/her direct subordinates are the **site manager** and the **technical design manager**. Reinertsen call these three managers as the

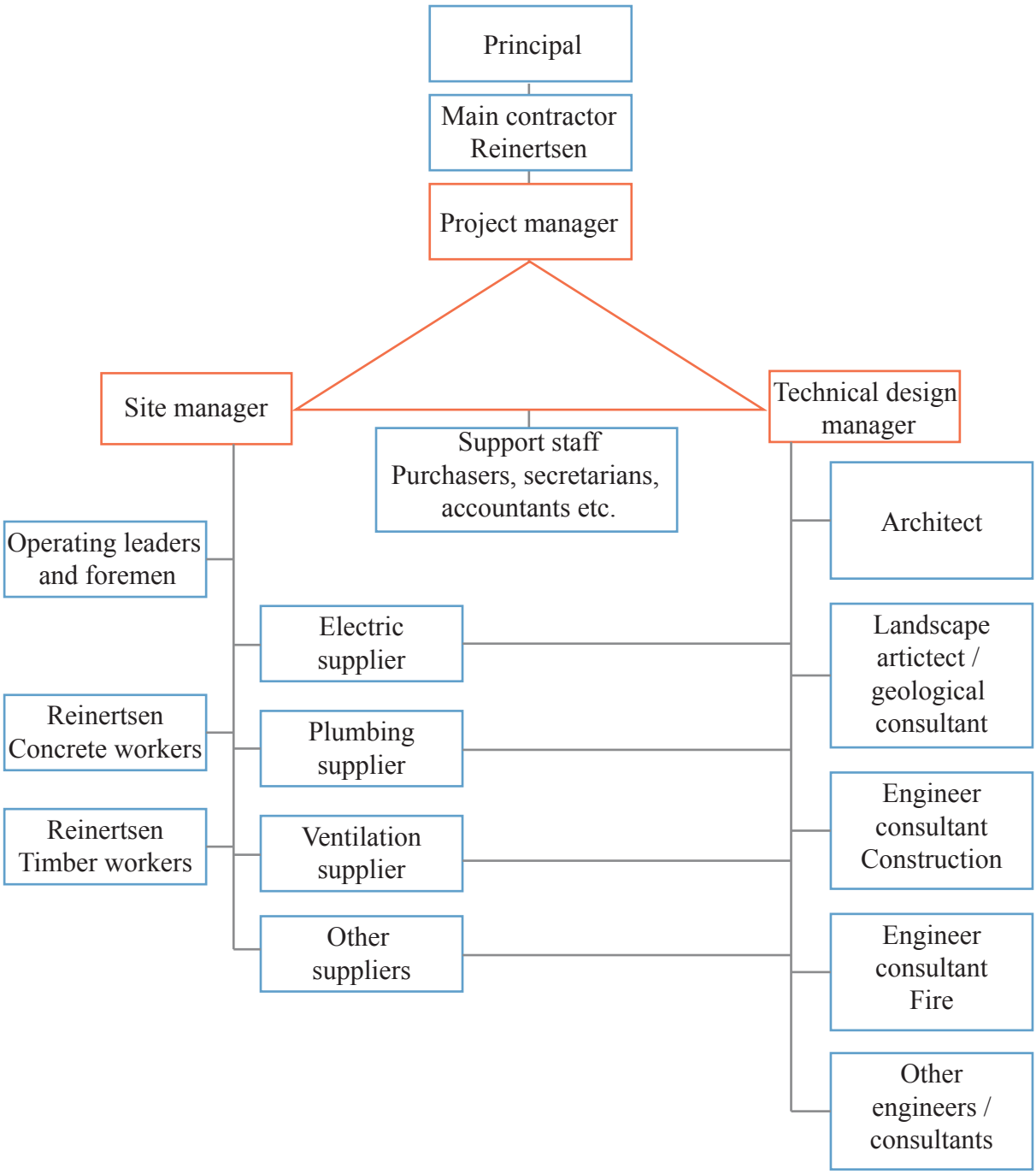


Figure 11-9. The three phases in a typical construction project
Source: Own presentation based on interviews and archival records

"management triangle", which underpins that they have to work closely and coordinated with each other. The reason is that their responsibilities and tasks are overlapping, see Figure 11-8 for illustration. In addition, there is a support staff to aid the management triangle, consisting of accountants, secretaries, health-safety-environmental executives, and purchasers.

In Figure 11-9, an exemplified illustration is given for a typical construction project. As depicted by the figure, the design manager is responsible for the design processes of the construction project, and works as a coordinator between all the involved architects and

technical consultants. Most of these consultants are external and hired in by Reinertsen. However, since the firm has their own engineering division and architects, there are in some cases where they hire their own people for the work. The consultants, engineers and architects also work in close collaboration directly with the suppliers, which carry the onsite construction activities.

The site manager's responsibility is to carry out the actual construction. He/she coordinates and schedules all the labor works on the field, with the help by a couple of operating leaders and foremen. Each operating leader or foreman is responsible for a certain profession(s) (special trade), and coordinates the workers on the construction site. Reinertsen employ their own timber and concrete workers, but need in addition other specialized professions, such as painting, electric, plumbing and ventilation, i.e. the special trade contractors. Since most of these tasks are tightly attached to each other, employees from both Reinertsen and their suppliers are working closely together to solve and complete the day-to-day tasks.

### *11.6.3 The supply base of a typical project*

| Type of purchase | Percentage relative to total purchase expenditure in a project<br>X = expenditure<br>High == X >10%<br>Medium == 10%>X>5%<br>Low == X<5% | Contract (usually) includes |
|---|---|---|
| Prefabrication concrete | High | Material, assembly |
| Plumbing | High | Engineering, materials, installation |
| Ventilation | High | Engineering, materials, installation |
| Electro | High | Engineering, materials, installation |
| Architect | Medium | Engineering |
| Elevator | Medium | Engineering, materials, installation |
| Glass/aluminum | Medium | Materials, installation |
| Concrete (raw) | Low | Materials |
| Painting | Low | Materials, installation |
| Roofing | Low | Materials, installation |
| Windows | Low | Materials, installation |
| Tiles | Low | Materials, installation |
| Armouring / reinforcement | Low | Materials, installation |
| Flooring | Low | Materials, installation |
| Bricks and walling | Low | Materials, installation |

Table 11-1. Exemplified supply base in a construction project
Source: Based on Reinertsen's archival records

Depending on the size and the type of construction the number of suppliers and their roles varies from around 20-50 suppliers. Table 11-1 is an exemplified version of a typical construction project. The table is based on archival records from the construction project at Charlottenlund, and not all suppliers are included into the table. Due to confidentiality and sensitive information, the real numbers (e.g. costs) are not used directly. The costs to hire external consultants and engineers are also omitted from the table. A noticeable aspect given from the table is that most of the suppliers do not only deliver materials, but in fact providing services such as engineering and installation.

## 11.7 Reinertsen's use of supply strategies: The Kraljic matrix approach

Reinertsen use primarily an extended Kraljic matrix for a systematic approach to the market to minimize risk and achieve better prices. The following sections give an overview on how this is perceived in the firm based on interviews and archival documents.

### *11.7.1 Identification of parameters along the dimensions*

For the identified components, Reinertsen give points along the Kraljic matrix axes based on the following parameters:

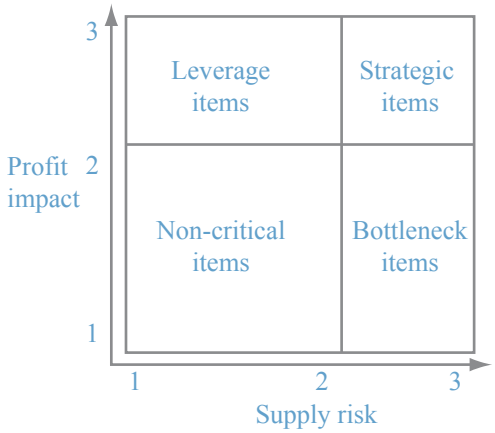


Figure 11-10. Reinertsen's Kraljic matrix methodology
Source: Based on Reinertsen's archival records

**The supply risk axis, points 1-3:**

- Number of suppliers: Many (1), Few (2), One (1)
- Product standardization degree: Off the shelf (1), Adapted (2), Custom (3)
- Delivery time: 1 day (1), 2 weeks (2), 3 months (3)

**Profit impact, points 1-3:**

- Risk of production loss: No (1), Some (2), Major (3)
- Purchase cost [MNOK]: x< 0,2(1), 0,2<x<2, (2), 2 < x (3)
- Dependence on the supplier's competence: Not important (1), Important(2), Critical (3)

### *11.7.2 Some concrete purchasing categorization*

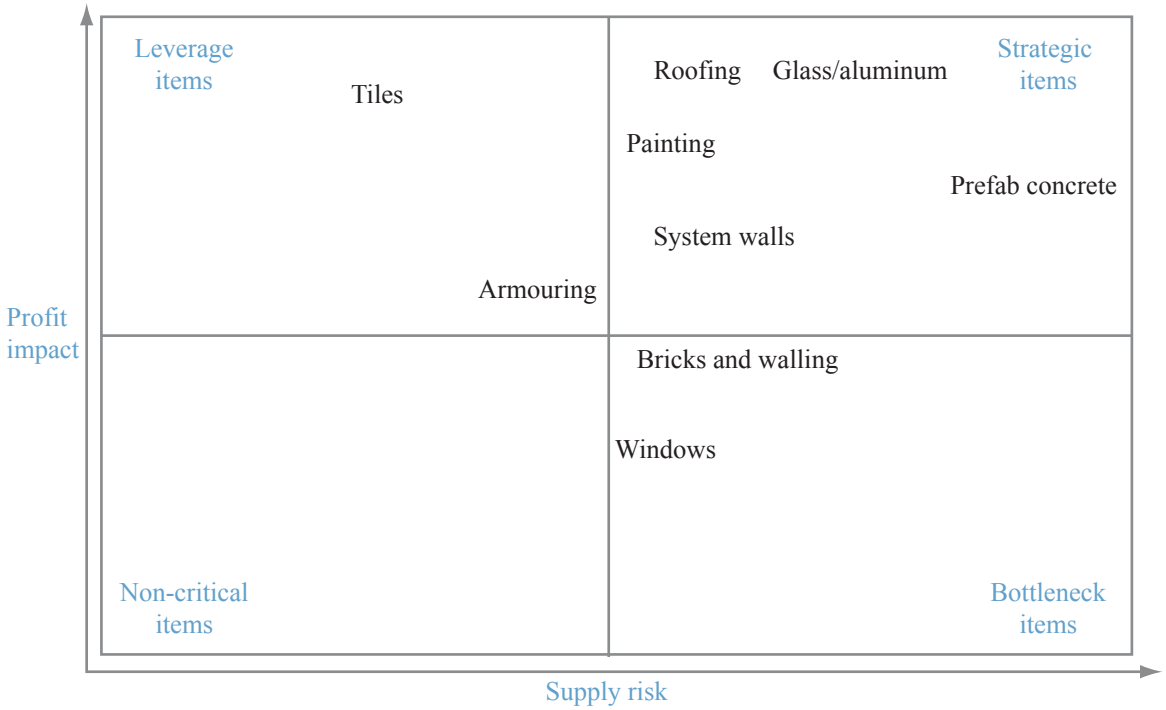


Figure 11-11. Kraljic matrix categories defined by Reinertsen
Source: Based on Reinertsen's archival records

Reinertsen have themselves identified some typical purchases related to a construction project, and placed them into the Kraljic matrix. The result is depicted in Figure 11-11.
As shown by the figure, many typical purchases involve high supply risks. During the interviews, the respondents answered that there is in general too few available suppliers to select from. The reason can be explained by many factors, and is dependent on the overall supplier market. Right now, their suppliers have many jobs to take and thus may be unavailable for Reinertsen. Hence, even though there are many suppliers in the market, the suppliers may not necessarily be available for Reinertsen to use. Further, especially in good times, many of the their suppliers may prefer closeness to their operation vicinity. Thus they may only be interested in taking jobs that are close to their location.

Based on the information given by the respondents and the firms archival records, there are typically a few suppliers that stand for a big proportion of a project's total cost (Table 11-1). For instance, the ventilation-, the plumbing-, and the electro supplier together encompasses for about 30%-40% of a construction project's costs. The remaining costs are divided among numerous (20-50 depending on the size of the project) suppliers that each stands for about 1%-10% of the total cost.

### *11.7.3 Specific strategies by category*

Reinertsen's category strategies are given in Figure 11-12. The letters at the end of each bullet point divides the strategies into five sorts: Market / selection of suppliers (M), specification

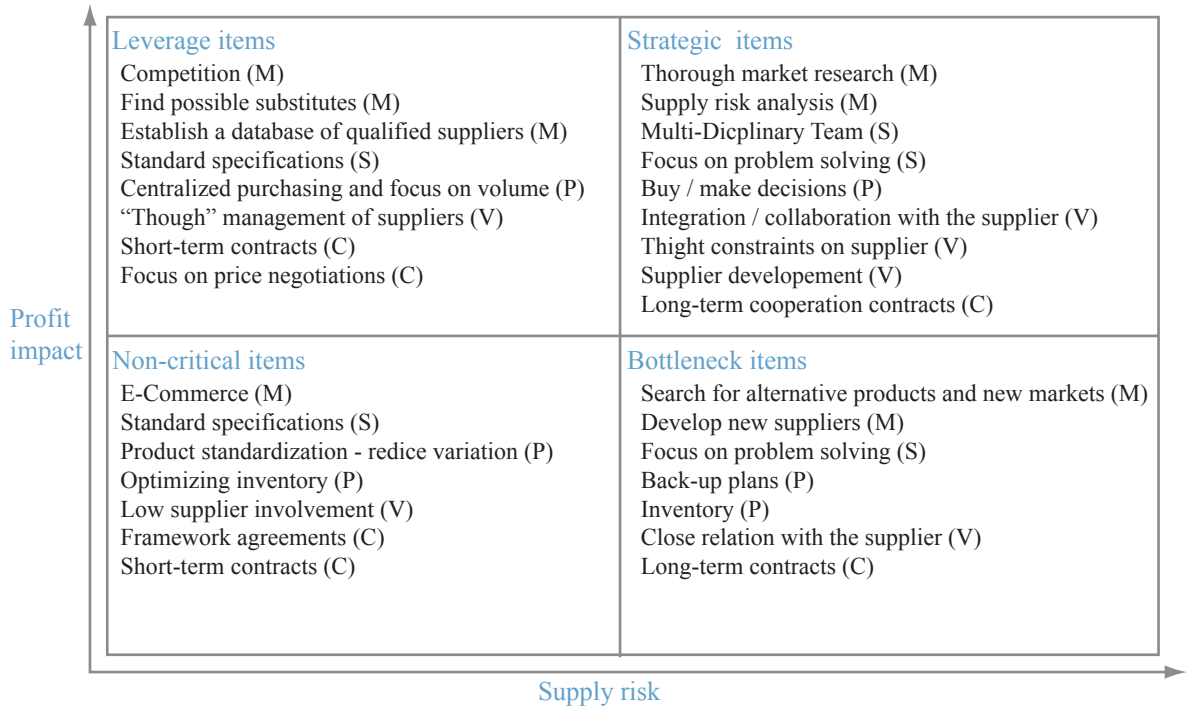


Figure 11-12. Category strategies in Kraljic matrix
Source: Based on Reinertsen's archival records

strategies (S), planning-related strategies (P), vendor strategies (V), and contract strategies (C).

The Kraljic matrix above is the guidelines that Reinertsen's purchasers use in relation to their suppliers. However, some of the purchasers explained in the interviews that this is may not illustrate the actual practice. The construction industry is heavily cost focused; most of the construction projects are competitive tendered, thus the competition among the construction firms is fierce. For Reinertsen to propose a competitive offering to the principals, the company in turn needs to be cost focused. The impression taken from the interviews is that a relationship with a supplier usually ends with the project, thus it only lasts for the project's lifetime. This aspect is making it difficult for Reinertsen to have a long-termed relationship with their suppliers.

Even so, Reinertsen use framework agreements with their suppliers, and can in some sense be viewed as a long-term collaboration agreement. These framework agreements usually encompass how Reinertsen and the supplier in question collaborates (routines and procedures), and some price limits, i.e. in the worst-case scenario the supplier ensure that the price will not exceed the agreed price limit. Further, framework agreements are usually made for "off the shelf" commodities with little or no customizations (e.g. tiles, brick, painting etc.). In addition, these framework agreements encompass quantity discounts that give incentives to Reinertsen to deal more business with the particular supplier. In a sense, these framework agreements reduce the uncertainties and the cost of transactions (duplicated work, e.g. re-

negotiating terms, or work out procedures and routines for multiple projects). Even so, these framework agreements are not specified in such detail that no interaction is needed when a new project starts; the purchasers still need to ask the suppliers for price, however, the process goes smoother since the basic terms are already agreed on beforehand.

## 11.8 Summary and conclusion

Q.2 asks in general what is Reinertsen's purchasing practice. In summary Reinertsen mainly organizes their purchases on the basis of each individual project. First a project organization is formed that consists of various professions from Reinertsen's own divisions as well as people from their suppliers and other partners. From this temporary project organization, most of the purchasing decisions are taken; except the three technical special trades, which are early involved in the project, most of their purchases are done at later stage at the construction site.

The purchasing function is organized based on their ongoing projects by delegating purchasers out to the different project organizations, and in terms of head count of purchasers the decentralized purchasing is often the dominant part in size. Further, Reinertsen use the MSP system to control the consistency of the purchasing process/procedure. Lastly, based on interviews and the author's observations Reinertsen strategize their purchases based on the Kraljic matrix framework.

# PART 4

## Analysis, recommendations, conclusions, limitations, and further research

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# Chapter 12 – Analysis part 1: Systematic combining and analysis of Reinertsen's practice

An analysis shall be conducted with Reinertsen's practice in relation to the sourcing literature. However, the analysis is divided into two parts; the focus in the first part of the analysis (which is this chapter) is the **current situation** of Reinertsen, while the second part (in Ch.13) is **future oriented** and is centered around giving concrete recommendations for Reinertsen in relation to sourcing strategy.

The first section of this chapter explains how the whole analysis is being conducted, thus brief the reader through how the analysis is perceived.

## 12.1 Analysis part 1: Sequence and methodology

The thesis first analyze the case firm's top down strategy by using the findings in Ch.3. In particular Mintzberg and Waters (1985) model and Figure 3-7 is used to analyze the top down approach related to purchasing. See figure Figure 12-1. This is done as an initial overarching analysis of Reinertsen in relation to purchasing, and as the analysis shall show it has some influences on Reinertsen's purchasing practice in relation to sourcing strategy.

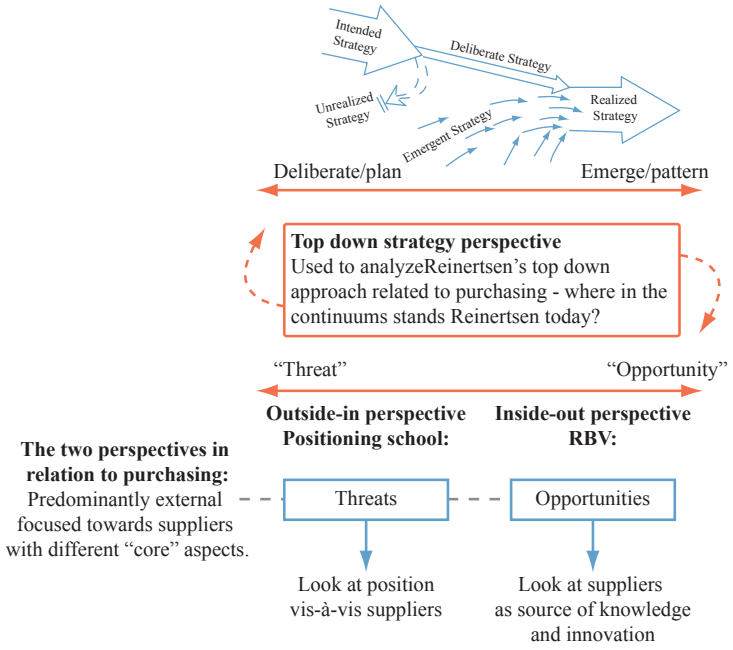



Figure 12-1. Step 1 of analysis part 1
Source: Own presentation

The thesis' next step is to analyze Reinertsen specifically to the sourcing models/frameworks. Regarding this step, the sourcing strategy figure developed through the literature review is used. This analysis step is divided into three perspectives, where each section represents one of the three main aspects of sourcing strategy. See Figure 12-2. The last step of analysis part 1 is to consider all the perspectives together to evaluate Reinertsen's current practice in relation to the sourcing strategy literature.

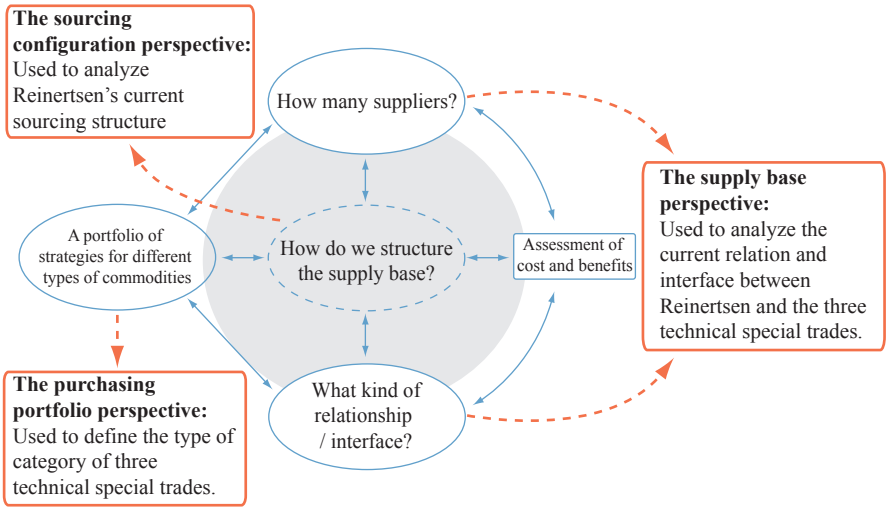



Figure 12-2. Step two of analysis part 1
Source: Own presentation

## 12.2 Reinertsen's top down approach in relation to purchasing

### *12.2.1 Use of competitive tendering, but also differentiate*

Reinertsen is placed on *differentiation* in relation to Porter's (1985) generic strategies. The division and project leader for purchasing administration, Nina Oxås, remarked that Reinertsen differentiate itself from their competitors in that they have both engineering- and architect capabilities in-house. She reflected that most of their competitors are purely construction firms that need to hire those capabilities, or they are a subdivision of a real estate development company. For Reinertsen, they do not buy and develop land; the firm is focused on carrying out the construction task that their customers' contract out. To do that, Reinertsen have the essential capabilities internally in their engineering- (with architects) and larger project division that can cover from design, to planning and execution.

However, the firm is also cost focused, their main top down purchasing policy is given by the firm's CEO, and states that their purchases should be competitive tendered as much as possible. Although the firm is cost focused, no indication is given that they are a cost leader actor in the industry, because all the general contractors are almost on par when concerning costs. This can perhaps be explained by the fierce competition in the industry in general; the project leaders point out that the profit margin is as low as 3% for a given project. Reflecting on these observations, the "profit-pie" is not large and the key informants also remarked that in order for the firm to be profitable, much pressure has been placed on their suppliers to hold the costs down as much as possible.

### *12.2.2 A mix of deliberate and emergent strategies: Though focus on adaption to each individual project*

Reinertsen's purchasers explained that each of their construction projects are unique, thus their business is focused towards projects. This is reflected through how their purchasing function is organized. In general the purchasing function is scattered around the different

ongoing projects. Further, the central purchasing function is small compared decentralized purchasing function. Hence, their purchasing function is quite decentralized. Based on the interviews and observations in general, the firm is placing much more priority and responsibilities on the decentralized function. Regarding priority, when there are enough projects ongoing, most of their purchasers are assigned to those projects, leaving a few purchasers at the central function. The project procurement manager, Espen Mellbye, for instance remarked that "In good times, we don't have many people in the central function; they are all working at the projects". In relation to responsibility, most of the purchasing decisions are taking place on the specific projects; the decentralized purchasing function has a lot of freedom to do what they want to do.

Using Minztberg et al.'s (1998) terms, strategies can be long-termed and act as a *plan*, and at the same time strategies can also emerge themselves to form a *pattern*. For Reinertsen it is indeed a mix of both, however, as described above it seems that the firm is leaning more on the latter because of the decentralized functions' freedom of decision making. Except for their developed Kraljic matrix and the available framework agreements, there are relatively few formal written purchasing plans/strategies.

In the literature, Gadde and Snehota (2000) reflected that there is a common illusion that the distinct "strategic decisions" from the top management outline the company's profile of a supply strategy. They argue that managers almost always immediately amend, modify, and change these decisions as they interact with suppliers, because either something does not work out, or could be done better. By the author's observations, this notion fits with Reinertsen's practice, because much more emphasis has been placed on to rather adept to the emerging circumstances; an example of this is their practice of not freezing the project specification at an early stage, and as a consequence, except from a few early-involved suppliers, many of their purchases are done at a late stage. For Reinertsen, the purchaser at the Charlottenlund project explained that every purchasing process differs from project to project. Thus, due to every project's uniqueness, they cannot *strictly* follow a methodology or procedure.

Even so, guidelines are given from the top management of the firm, but the purchasers are given a lot of freedom to overrule these if the circumstances tell otherwise. Based on the interviews with multiple purchasers at the firm, they seem to have a common or shared point of view regarding which direction the purchasing function is heading. Some examples are the higher focus on international purchasing, and the possibility of long term relationships with some important suppliers. Hence, even though there are few written plans, Reinertsen's purchasing function and its purchasers still have a common sense of direction. This can somewhat be explained by their meetings, where various managers and purchasers are gathered together to discuss the future of the firm.

In conclusion, Reinertsen do plan ahead regarding their purchasing strategies, but compared to the focus on adapting to the projects' circumstances (project-based focus), their purchasing strategies seems to rather emerge as their projects take form.

### *12.2.3 How is purchasing strategy perceived in Reinertsen?*

Based on the discussion in this section so far, Reinertsen is leaning more towards emergent than deliberate; there are forces that pull Reinertsen to both sides of the upper continuum in Figure 12-3, however, based on the interviews and the author's observations Reinertsen emphasizing more on projects and local decision making. Therefore, their purchasing strategies are more on the emergent type by tailoring and formulating specific strategies for each individual project. This observation is also confirmed through the interviews, the key informants explained that purchase strategies are not the same for each project, for instance in some projects they focus more on international purchasing than others and is dependent of the projects' circumstances.

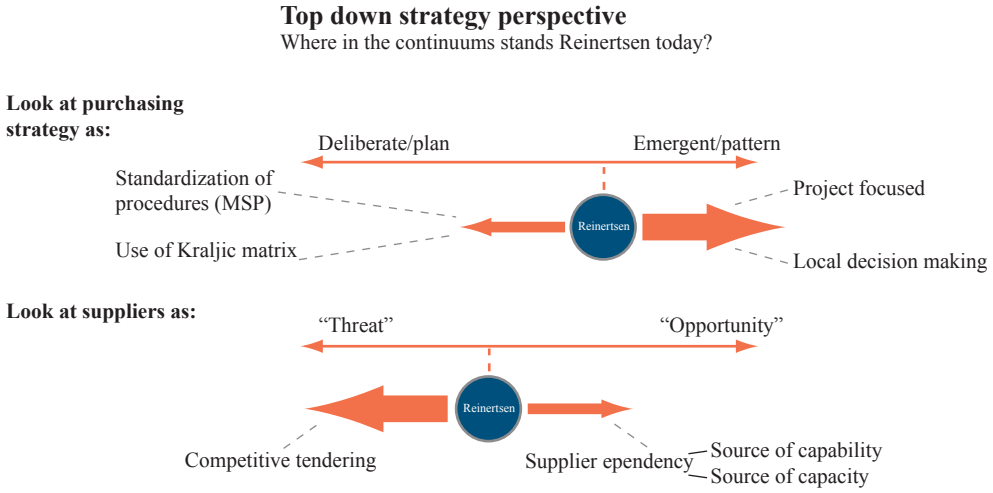



Figure 12-3. Is Reinertsen using parallel sourcing?
Source: Own presentation

Further, Reinertsen's overarching purchasing policy is to use competitive tendering when selecting suppliers. This "force" is the dominant part when comparing to Reinertsen's dependency of capability and capacity of the suppliers; usually Reinertsen have more than one supplier to select from with similar capability, and makes them quite independent of one single specific supplier. Thus it can be argued that Reinertsen view their suppliers as "threats". The meaning of "threats" in this context can be explained by the profit-pie analogy; competitive tendering can in essence be argued as a "win-lose" situations that involves price negotiations, thus Reinertsen and its suppliers are negotiating for the largest slice of the profit-pie. Even so, as the key informants expressed, this is the simplified version of how Reinertsen look at their suppliers; because Reinertsen **is** dependent of their suppliers' capability and capacity, thus their suppliers need to be profitable in order for the firm to continue to do business with them in the future.

## 12.3 Using the purchasing portfolio perspective (Kraljic matrix)

### *12.3.1 Defining the supplier analysis scope*

As described in the empirical study chapter, Reinertsen usually has a large array of trades in their projects. Hence, analyzing all potential trades is a complex task since the trades varies from project to project, and may even be impossible when this thesis is limited by time.

Therefore there is a need to limit the scope of the analysis. The analysis will mainly emphasize the three technical special trades, which are plumbing-, ventilation, and electro. These three trades have been chosen, because they stand for a large proportion of a project's costs; as illustrated in Table 11-1, these three trades account for about 30-40% of Reinertsen's total expenditure for a given project. Further, the three trades are usually needed in all Reinertsen's construction projects (at least for facility/building constructions), as opposed to for instance elevators which is only involved in projects that needs elevators.

Another notion is that the analysis further focus on suppliers, rather than commodities alone. It can be argued that the term *sourcing strategy* primarily considers given commodities or trades, and especially Kraljic's framework (the purchasing portfolio perspective) depicts this emphasis. However, given that the analysis also considers the supply base perspective and the sourcing configuration perspective, the relationships and interfaces between buyer and supplier are also considered in the analysis. In addition Reinertsen and their industry in general use subcontracting (see Ch.10.1.2), thus they buy services rather than pure materials. Therefore in conclusion, analyzing the suppliers and the tasks they undertake seems to fit better.

To simplify the analysis, the service of technical/engineering consultancy are also a part of the trade, i.e. the three suppliers are whole-system providers which are responsible for materials, engineering/design features, and installation.

### *12.3.2 Placing the three suppliers in the Kraljic matrix*

As described in the literature, the Kraljic matrix use two dimensions, profit impact and supply risk. In the following subsections each dimension is evaluated in relation to the three technical trades defined in the former section.

**Profit impact dimension**

This dimension encompasses the percentage of total expended costs, but also the value added by the product/service (Kraljic, 1983). In addition, in Ch.11.7.1 Reinertsen also evaluates the risk of production loss (i.e. the delivery/completion punctuality), and the dependency on the suppliers' competence.

Regarding total cost of expenditure, Table 11-1 shows that the three suppliers account for the largest proportion of a project's total cost. Further, since they are whole-system providers, critical design features are added by these three suppliers. Hence, Reinertsen are dependent on their competence and the value they add for the construction project. Lastly, since they provide critical value activities the risk of production loss is significant if they do not finish on time.

The conclusion is therefore that the profit impact is high for the three technical suppliers. This notion depicts that the suppliers are either leverage or strategic suppliers when placing them on the Kraljic matrix.

**Supply risk dimension**

The supply risk dimension can be gauged by supply scarcity (Kraljic, 1983). In line with Porter's (1980) five forces model, the pace of technology or substitutes, rivalry, entry barriers, and buyer's and supplier's power all influence this dimension. Analyzing all these aspects is a complex task, thus Reinertsen simplify this process by focusing on the number of suppliers in the market, the degree of product standardization, and delivery time (see Ch.11.7.1).

When evaluating the three technical suppliers, the purchasers at Reinertsen responded that there are in general about 5-6 electro- and pluming suppliers, and about 8-9 ventilation suppliers in the market. However, not all are available at all time; it depends on the current

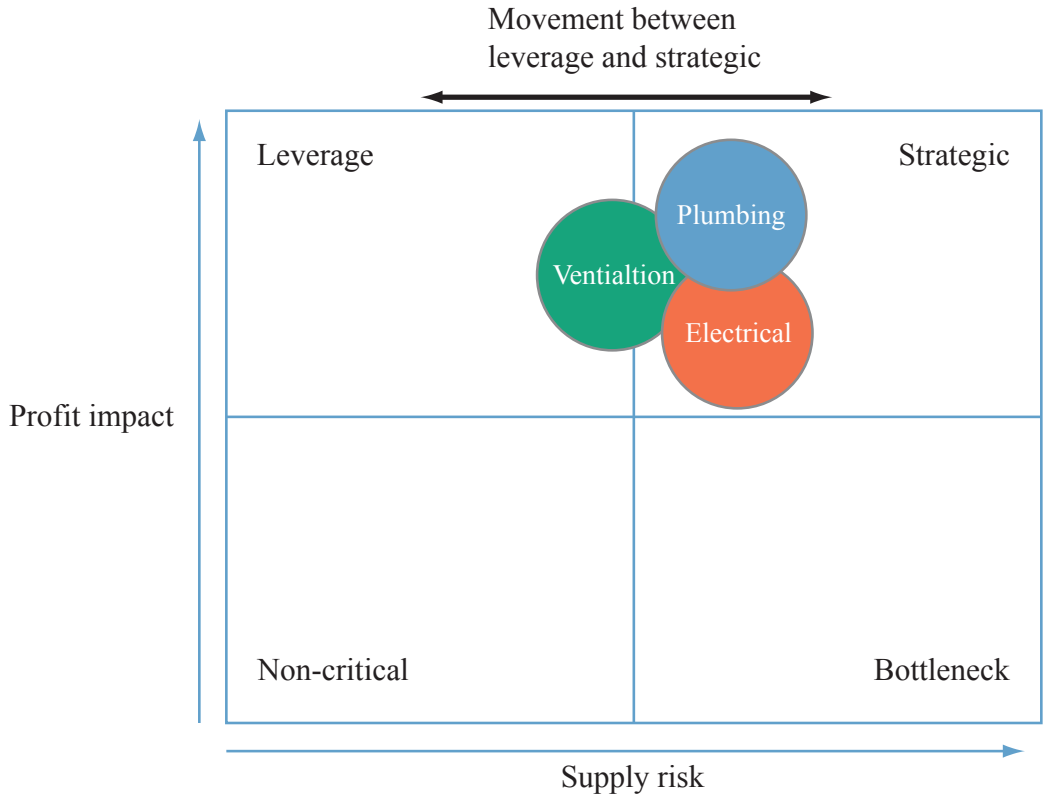



Figure 12-4. The placement of the three suppliers in the Kraljic matrix
Source: Own presentation

market workload. Hence, the actual available suppliers are usually less than those numbers, and the delivery time fluctuates proportionally to the market. Lastly, they do not provide "off the shelf" products because every project entails customization.

In summary, for Reinertsen the three types of suppliers can be either be leverage or strategic suppliers, and is dependent on the current market. However, the analysis will further treat the three special trades as **strategic**; the reason is that if the purchasers at Reinertsen have to decide which category they belong to, the answer would be strategic because the trades are complex system components that require close collaboration efforts.

## 12.4 The supply base perspective

### *12.4.1 Supplier subcontracting*

For Reinertsen, subcontracting is the most dominant part of their purchases and stand for the biggest proportion of costs in their projects. As explained earlier every project is unique; individual customer preferences, customized buildings, and different site locations, all add higher degree of uncertainties in projects. Hence, the firm cannot plan ahead the required labor capacity or specialized profession. They are reliant on their suppliers' capabilities and capacities *when* needed.

As described in the empirical study chapter, Reinertsen deploy a project organization at the construction site, which primarily consist of project administration staff and timber- and concrete workers. This is coherent with their core competence, which is the focus on engineering and administration of the construction projects. For any other tasks, the firm is reliant on their specialized suppliers, by subcontracting out a whole set of task or responsibility. For Reinertsen, their special trade contractors act as a resource pool, and in addition lighten up the complex task of coordinating the second- and third tier suppliers and controlling the labors on the construction site.

Another benefit of using subcontracting is that Reinertsen can move the risk and responsibilities over to their suppliers. However, during an interview with one of Reinertsen's purchasers, the respondent expressed that they have to balance between "risk-movement" and costs when subcontracting. When negotiating for contracts, they prefer to reduce the uncertainties by moving the responsibilities and risks over to their suppliers. But by doing so, the cost of the contracts is also going up proportionally.

### *12.4.2 Supplier roles and buyer-supplier interface*

When analyzing the buyer-supplier interface, there is a mixed impression on what interface it is between Reinertsen and its suppliers. In the literature, Dubois and Gadde (2002) argue that due to the nature of subcontracting, the supplier roles are somewhat diffuse since the suppliers' tasks and responsibilities vary in scope from project to project.

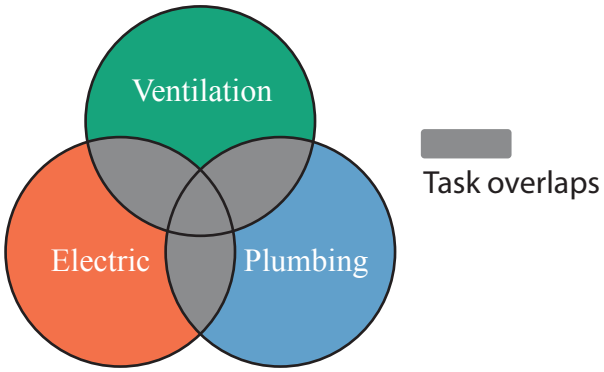



Figure 12-5. The suppliers' task overlaps
Source: Own presentation

This notion seems to affect the Reinertsen's purchasing practice; most of their purchases involve contracts because they use subcontracting and competitive tendering, and as a consequence the firm uses substantial time and efforts to specify the contracts. The three technical areas have overlapping tasks (see Figure 12-5); for instance a ventilation system needs electricity and an on/off switch, therefore Reinertsen need to specify whether it is the ventilation- or the electric supplier that is responsible for the installation of the ventilation's electrical system. Further, as previously noted Reinertsen use subcontracting to move some of the project's uncertainties and risks over to their suppliers, however, this implies that Reinertsen need to specify as much as possible to reduce the uncertainties of their purchases. A purchaser at Reinertsen reflected that substantial unexpected costs may emerge because of poorly specified contracts, thus when a supplier is selected and involved into their projects, it is already too late to change. In general, the same purchaser also reflected that since the whole industry is cost focused, their suppliers may offer a bid in the tendering phase that is almost not profitable, and might instead gamble that Reinertsen need to change or re-specify the contracts during the interactive or execution phase to reap more profits.

Due to the firm's reliance in contracts and specifications, it seems that Reinertsen mainly have a *specified* interface with their suppliers. However, this only seems to fit in the tendering phase (and also partly in the interactive phase) where Reinertsen select and designate the suppliers' tasks, roles and the associated risks and responsibilities. These are the activities that are taken **outside** the project context, because the principals have yet to decide which general contractor to use, and Reinertsen still need to form the final project organization.

When analyzing **within/inside** the project context, i.e. in the interactive and execution phase where a project organization has been formed, Reinertsen and its suppliers need to work closely and integrated. This is required because the plumbing-, ventilation-, and electric suppliers often take larger roles in Reinertsen's projects. They are acting as *adult* suppliers (Kamath and Liker, 1994), because although specifications are given from Reinertsen, the suppliers develop or suggest improvements for the projects. For instance, ventilation and plumbing systems can be installed together in the walls to reduce costs, and these kinds of

things may not be already specified in the contracts. In general Reinertsen provides *functional descriptions*, and then the three suppliers collaborate together to find ways to satisfy the requirements. Therefore, inside the projects between Reinertsen and its suppliers, as well as between suppliers themselves, a *translation* or *interactive* interface (Araujo et al., 1999) is taking place.

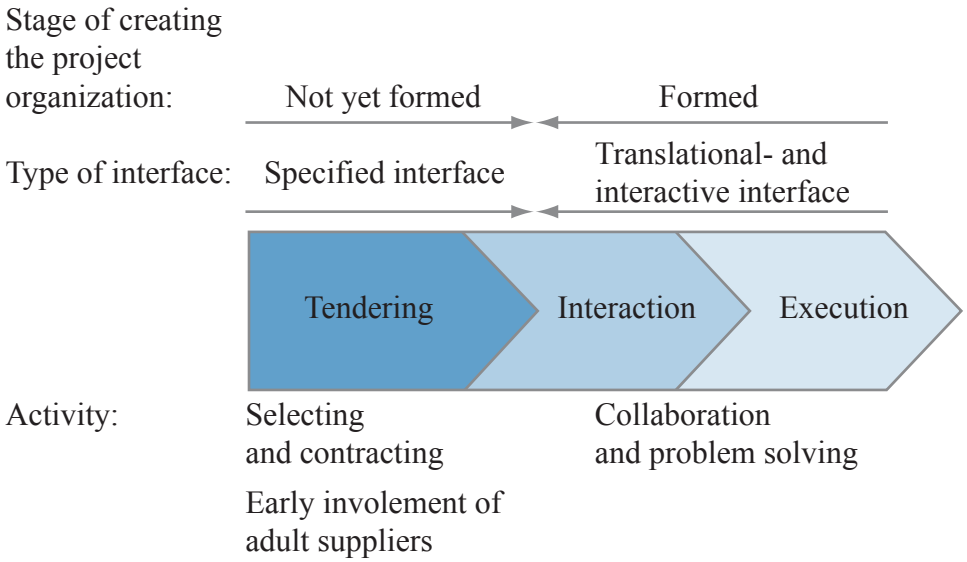



Figure 12-6. Interfaces in the context of creating a project organization
Source: Own presentation

To summarize, it seems that there are varying buyer-supplier interfaces and is dependent on the project's stage/phase. Typically, it starts with a specified interface and then goes over to a translational or interactive interface. See Figure 12-6.

### *12.4.3 The relationships*

Based on the interviews, the thesis' author did not see any significant form of specific adaption between Reinertsen and its suppliers. The Project and Purchasing Administration Leader, Nina Oxås, explained that their suppliers are in general not very loyal, and may as well work for their competitors. This fact implies that the switching cost is nonexistent, which in turn depicts no specific adaption to Reinertsen or vice versa.

Even so, saying that there is no adaption is not quite correct. The suppliers do adapt once they are selected, i.e. the interactive and execution phase. The plumber, ventilation and electric suppliers adapt substantially to Reinertsen's needs, and the interaction between them can be quite intense. However, these adaptations are not in tangible assets like facilities, machineries or equipments; they are more intangible in nature like adaption to Reinertsen's procedures, practice and how Reinertsen "do things" in general. In a sense, the actors adapt to each other by dedicating people to learn each other's practice, and may have a positive effect for future projects. An example is given from one of Reinertsen's purchasers; he explained that they have been using the same plumbing supplier for the last four years. The reason is not that

they have formally decided to use that particular plumbing supplier for all their projects, because they still use competitive tendering when selecting; however, that plumbing supplier has always offered the best deal during the competitive bidding phase. Some explanations are that the plumbing supplier knew Reinertsen so well that they do not accommodate risks or uncertainties premiums in their bidding-offerings, or the biddings that Reinertsen receives are so indifferent that the plumbing supplier is chosen due to their past performances and interactions.

In summary, before any projects (outside the project context) the relationship between Reinertsen and its suppliers are more or less kept at an arm's length; but when a project starts, there is a joint effort to develop solutions to problems in the particular project, thus on the contrary the relationship is close. The consequence is that the actors may adapt to each other's practice to form some kind of informal long-termed relationships. However, the point is that there are no formal long-termed agreements of collaboration, because when the project ends there is no guarantee that the same supplier will be used for the next project.

All the respondents reflected that the company in general does not have any closely tied relationships with their suppliers that are beyond individual projects, even with the type of suppliers that are typically early-involved. This may be explained by the industry's trend of competitive bidding; Reinertsen's purchasers explained that as rule of thumb (a policy given from the firm's CEO), they have to ask three to four suppliers before deciding which one to use. However, since it is the people at the project organization that actually carry out the decision making, individual relationships can occur, which can favor certain suppliers if they performed well in former projects.

### *12.4.4 An overview of Reinertsen's practice*

Based on the analysis so far, it seems that Reinertsen's practice does not deviate much from the construction industry characteristics described by Dubois and Gadde (2002). Due to the focus on specific projects, Reinertsen emphasize more on local- adaption and decision-making and can be partly explained by the uniqueness of each project; each project involves unpredictable environmental factors such as governmental regulations or the specific needs from the principals. Their philosophy of not "freezing" projects and its specification, as well as their heavily decentralized purchasing function, support the fact of local adjustments. Therefore, Reinertsen rely on subcontracting and competitive tendering to cope with uncertainties associated with specific capabilities or capacities.

However, competitive tendering has another effect, which is it does not foster closely long-term supplier relationships or loyalty with Reinertsen. Thus in general, arm's length relationships are often the case. But as explained the by the plumbing supplier example,

informal long-term relationships might be “unconsciously” developed as they work together in projects.

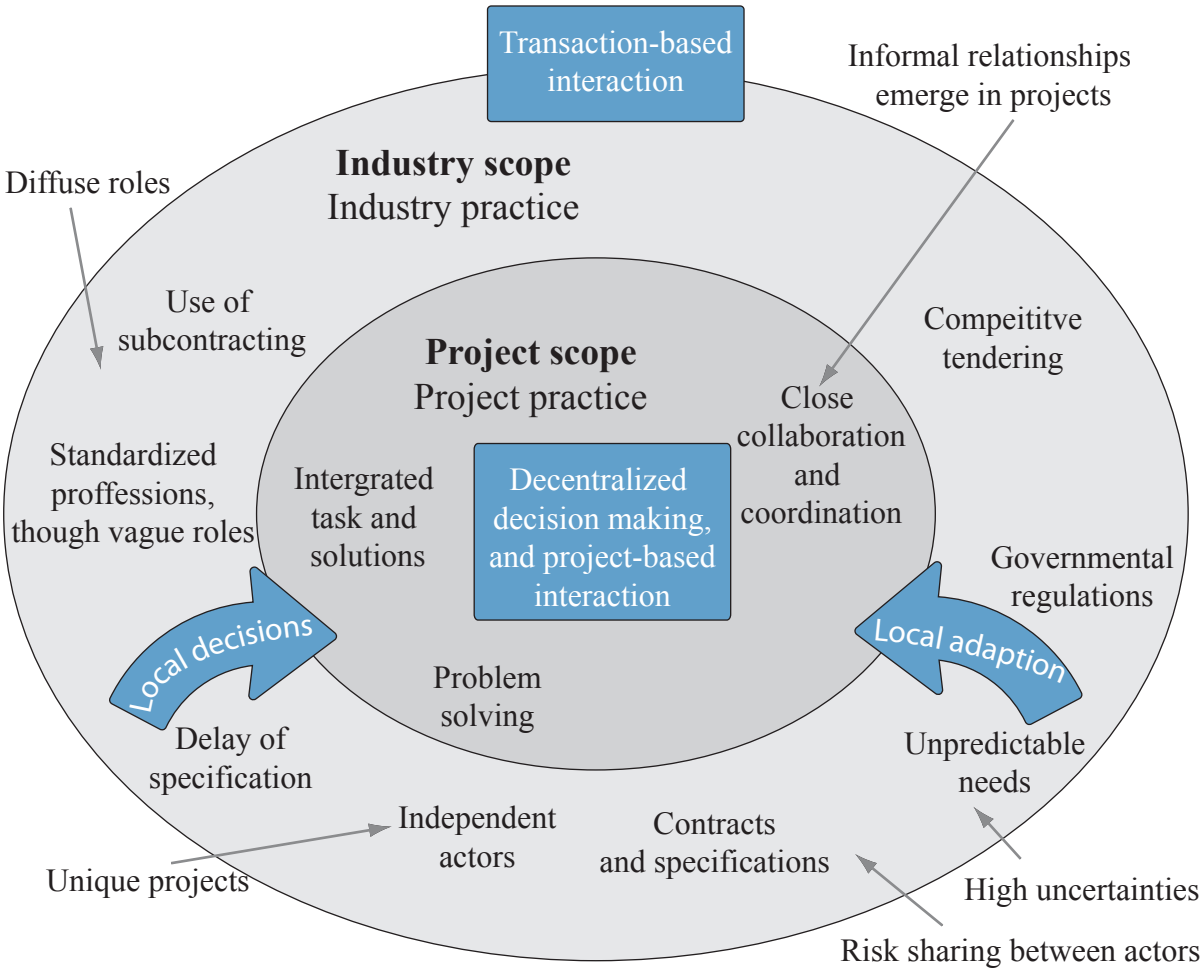



Figure 12-7. Interpretation of Reinertsen’s practice
Source: Own presentation, based on Dubois and Gadde (2002)

In Figure 12-7, inspired by Dubois and Gadde’s (2002) observation of the construction industry, Reinertsen’s practice is illustrated.

## 12.5 Using the sourcing configuration perspective

Figure 12-7 in the former section has some implications when analyzing Reinertsen’s sourcing configuration. In line with Dubois and Gadde’s (2002) observations of the construction industry in general, Reinertsen and its suppliers are also loosely coupled. The reason is partly because they are project focused thus the relationships are usually short-termed, and as a consequence competitive tendering is the common practice in this industry. Therefore, when relating to the sourcing configuration literature, the loosely coupled actors in addition to the practice of competitive tendering would suggest that Reinertsen is using multiple sourcing.

On the other hand, when gaining insights on how Reinertsen and its suppliers are carrying out their projects, which often entail high degree of collaboration, integrated tasks, and problem

solving the suggestion is that they are tightly coupled. Thus, this seems **not** to coincide with the typical description of a multiple sourcing relationship/interface. As mentioned in the literature, multiple sourcing is characterized by low involvement and low dependency. By the author's observations, within the projects Reinertsen and its suppliers are working as they are single sourced because the firm is reliant on their suppliers' competence.

Therefore, the author had some struggles when analyzing Reinertsen using the perspective of sourcing configuration. It seems that when analyzing Reinertsen by an industry scope the suggestion would be multiple sourcing, while by project scope the observations would point to single sourcing. See Figure 12-8.

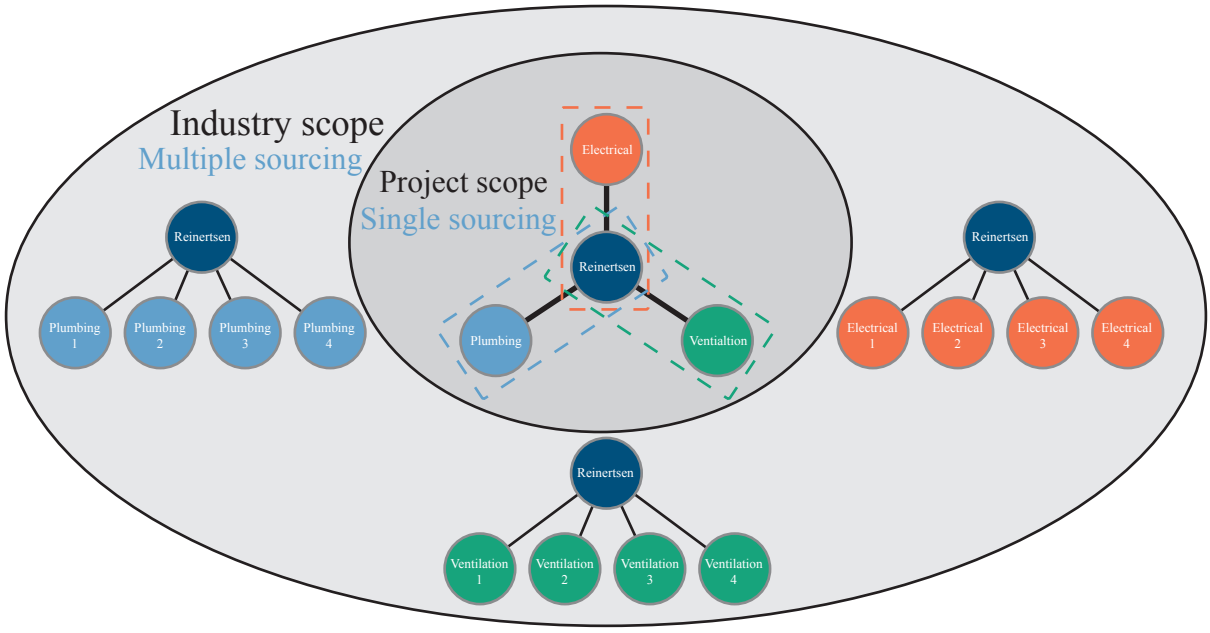



Figure 12-8. Reinertsen's practice using the sourcing configuration perspective
Source: Own presentation

In this section more explanations are given for why Reinertsen's practice resembles the basic sourcing structures (i.e. single- and multiple sourcing) by analyzing the industry- and project scope separately. In addition, this section shall also see Reinertsen's practice in relation to a hybrid structure.

### *12.5.1 Analysis of the industry scope*

**Why Reinertsen's purchasing practice resembles multiple sourcing**

As previously mentioned in the literature, the construction industry is heavily reliant on competitive bidding as the source of enhancing efficiency performance.

The key informants reflected that due to the importance of being cost efficient to win the principal's construction projects, the whole industry is price-focused; Reinertsen is forced to focus on costs and efficient project fulfillment. Hence, Reinertsen is reliant on competitive bidding to foster efficiency in their projects. The result is that the firm in general does not

have any "favorite" suppliers, and their purchasers also expressed that they want to treat all their suppliers equally when selecting them for projects. Using Anderson and Narus' (2004) *buying orientations*, Reinertsen is somewhere between *buying*- and *procurement* orientation. The purchasers expressed that price is an important factor when selecting suppliers, though they also accommodate a *total cost of ownership* perspective. Examples are that Reinertsen evaluate the risks that the suppliers are willing to take, the services they offer in addition to materials, and their quality and time delivery performance based on former experience and interaction with them.

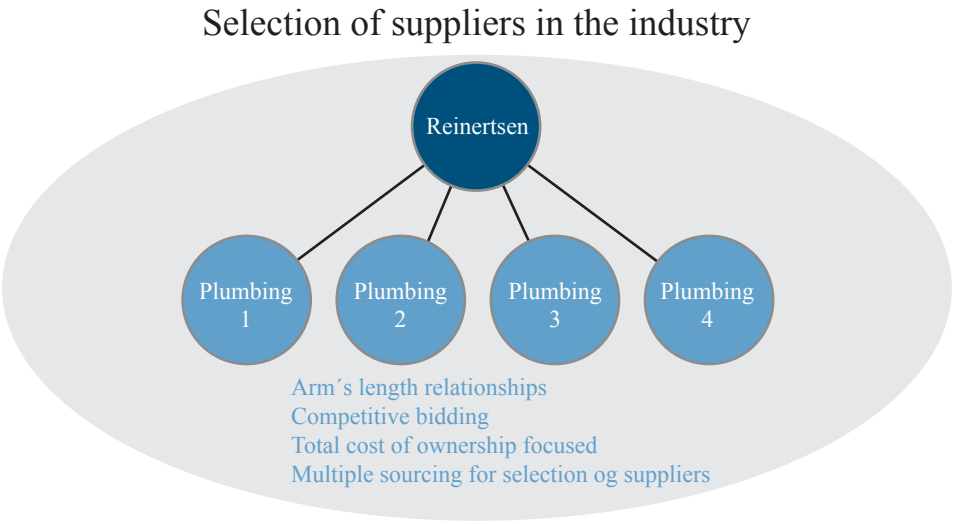



Figure 12-9. Reinertsen's practice in industry scope
Source: Own presentation

Due to Reinertsen's focus on costs, the reliance on competitive bidding and keeping their suppliers at an arm's length, the suggestion is that they use multiple sourcing. The choice of multiple sourcing would fit the Reinertsen's environment. First, a single supplier may not have the required capacity to fulfill multiple on-going projects for Reinertsen, and therefore by using alternative suppliers, the firm is also assured additional sources for materials and services. Secondly, as described in the literature the buyer firm reduces the risk of being locked into certain technological/professional solutions. Hence, conjunction with multiple sourcing, Reinertsen has a greater degree of flexibility in technical areas, since each project requires different assortment of professions depending on what they are constructing.

### *12.5.2 Analysis of the project scope*

**Why Reinertsen's purchasing practice resembles single sourcing**

The resemblance of single sourcing is primary seen in their projects. It has been pointed out that an interactive interface (Araujo et al. 1999) is taking place between Reinertsen and the plumbing-, ventilation-, and electric suppliers inside projects. They have to work closely together from tendering phase and through the interactive-, and execution phase. Thus for each individual project, the three suppliers follow Reinertsen from start to finish, and the success of the project is much placed on their collaboration- and problem solving efforts. A

purchaser at Reinertsen reflected that his firm and their adult suppliers "stand or fall together", because they all have to meet the predefined goals; the risks and responsibilities are divided among all the big actors in the project (though not equally), thus when problems arises this will affect all actors' profitability in a way or another.

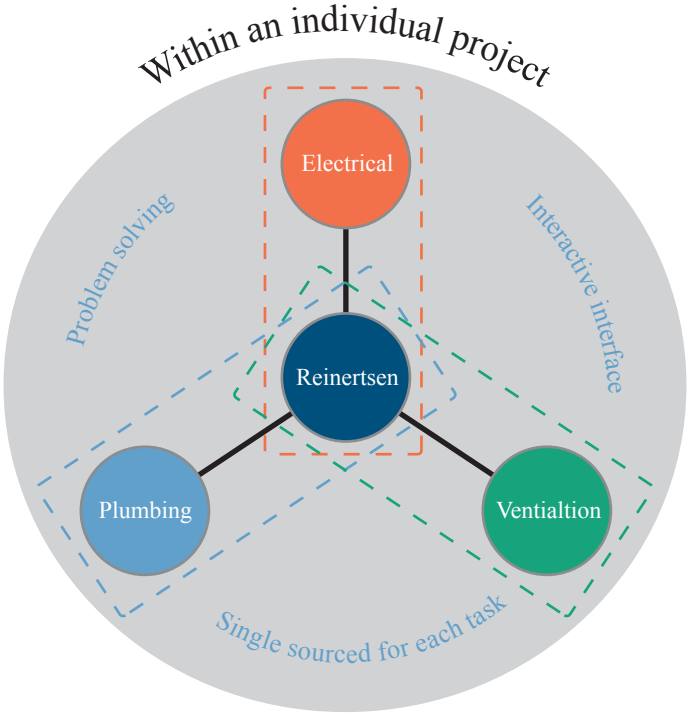



Figure 12-10. Reinertsen's practice in project scope
Source: Own presentation

The reason for why Reinertsen's purchasing practice resembles single sourcing is that for each project, no other ventilation-, plumbing-, or electric companies are involved. Hence, once they are selected and the contracts signed, these suppliers are usually guaranteed as the only source that Reinertsen is going to use for a given project. Hence, the competitive nature only lasts during the selection/tendering process, while after this phase the suppliers are actually single sourced for the given project and the relationships resembles more or less partnerships with Reinertsen.

## 12.6 Merging the different sourcing perspectives together: A hybrid system?

The objective of this section is to merge the different sourcing perspectives together between Reinertsen's practice and the sourcing strategy literature. For this purpose Table 8-1 in Ch.8.2 is used, and is reproduced on the next page.

In Ch.12.5.1, it has been argued that Reinertsen is mainly using multiple sourcing for the selection of suppliers. There are many facts that support this observation. First, as mentioned, competitive bidding is the "accepted practice" in the construction industry, and in some situations Reinertsen are even forced to do so by their principals. This is usually the case when the firm is dealing with governmental projects such as constructions of schools or other

| Sourcing structure/ Framework | Kraljic (1983) | Kamath and Liker (1994) | Wood et al. (1996) | Araujo et al. (1999) |
|---|---|---|---|---|
| | Category items | Supplier roles | Supplier typologies | Supplier-buyer Interfaces |
| **Single sourcing** | Bottleneck<br>Strategic/critical | Partner<br>Mature/Adult | Problem solver<br>Collaborative | Translation<br>Interactive |
| **Multiple sourcing** | Routine | Child<br>Contractual | Tech. specialists<br>Commodity suppliers | Standardized<br>Specified |
| **Delegated sourcing** | Leverage<br>Strategic/critical | Partner<br>Mature/Adult | Problem solver<br>Collaborative | Translation<br>Interactive |
| **Parallel sourcing** | Strategic/critical (though other categories may fit) | All possible (though preferable for Partner or Mature/Adult) | All possible (though preferable for problem solver or collaborative) | All possible (though preferable for translation- or interactive interface) |

Reproduction of Table 8-1
Source: See Ch.8.2

public related facilities. Secondly, Reinertsen develops highly specified contracts for each project, thus it resembles the standardized or specified buyer-supplier interface (Araujo et al., 1999). Thirdly, as explained in the relationship subsection, Reinertsen's relationships with their suppliers are more or less transactional or an arm's length.

Even so, according to Table 8-1, multiple sourcing would be ideal for *child* (Kamath and Liker, 1994) or *commodity* suppliers (Wood et al., 1996), which is not the case for Reinertsen. Their suppliers are *adult* suppliers, which take larger responsibilities. Reinertsen do not usually buy "pipes", they buy a "plumbing system". Hence, the plumbing supplier is responsible for the whole system. The whole system responsibility (or the role as adult supplier) also has other implications. First, as already noted, the supplier is the only source for the given project. Secondly, based on the interviews, Reinertsen have little or no communication with second- or third tier suppliers. Therefore, the adult suppliers are both taking care of and coordinating the sub-suppliers such as raw material suppliers.

When reflecting on the analysis so far, Reinertsen would both using single- and multiple sourcing at the same time, while both alone does not necessarily describe completely the actual practice, i.e. Reinertsen's practice do not coincide with the connections depicted in Table 8-1 in relation to single- or multiple sourcing. So how do these contradicting observations coincide? Perhaps the answer is in the literature about hybrid structures; they might fit because hybrids encompass both the basic structures.

For further discussion, the main attention is placed on the parallel sourcing rather than delegated/network sourcing. As argued in the literature, there are not many differences when regarding the main mechanisms, both encompasses single- and multiple sourcing features. As assumed in Ch.7.2.2, the main difference is that delegated/network sourcing is focused more on restructuring the suppliers into second- and third tier supplier. Due to the focus on Reinertsen's practice and their first tier suppliers, less attention has been placed on suppliers further upstream during the data collection.

In the following subsections, arguments are given for why Reinertsen's practice resembles and deviates from parallel sourcing by incorporating relevant aspects given from the three sourcing perspectives.

**Reinertsen's purchasing practice in relation to parallel sourcing**

Using Table 8-1 Reinertsen's practice can be argued to be parallel sourcing, because the the aspects considered so far fits with the table; the three technical trades are strategic commodities, and are provided by highly capable adult/problem solver suppliers, through translation- or interactive interfaces during the fulfillment of projects. Further reasons for why Reinertsen's practice resembles parallel sourcing is that the firm use multiple sourcing initially for the selection of suppliers; however once chosen, the purchased materials and services are single sourced for a given project. See Figure 12-11.

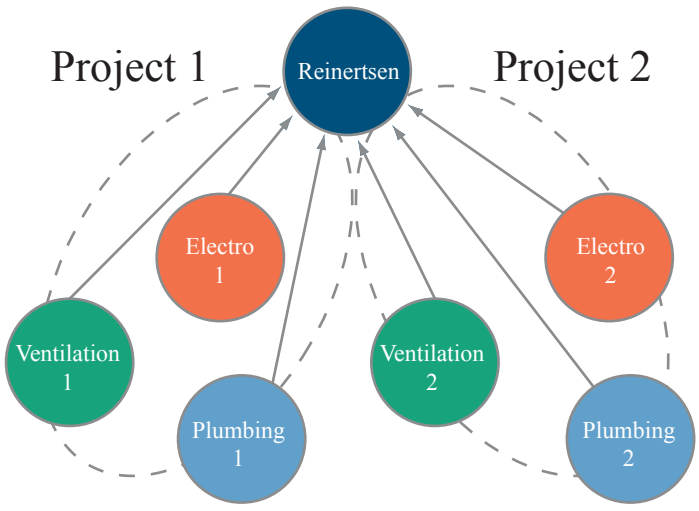



Figure 12-11. Is Reinertsen using parallel sourcing?
Source: Own presentation

During the interviews, the respondents answered that their ventilation-, plumbing, or electro suppliers do not differ much in capabilities; for instance, ventilation supplier 1 would have about the same ability to fulfill the required tasks as a ventilation supplier 2. Hence, Reinertsen has for each special trade multiple suppliers with about the same capabilities, though capacity-vise it depends on the suppliers' size and current workload occupied by other ongoing projects.

Thus, instead of “car models” in the automotive industry, Reinerten is parallel sourcing for each “project”. According to the literature, the benefits of such structure are that it provides the advantages of both basic structures, whilst excluding the disadvantages; cooperation and competition is used to maximize the benefits of the supply source. For instance, collaboration is used to foster innovative solutions, and competition provides performance comparison and rivalry bidding for the next cycle of business. Thus the question that remains is that whether Reinertsen is utilizing the benefits of parallel sourcing.

**Is Reinertsen’s utilizing the benefits of parallel sourcing?**

In the literature, Richardson (1993) underscores the importance of combining supplier competition with long-term and close relationships to reap the benefits of superior supplier performance. Thus, parallel sourcing entails long-termed relationships with their suppliers. Based on the analysis so far, even though Reinertsen’s practice somewhat resembles parallel sourcing, the firm does not utilize the benefits that the hybrid structure would give. In this sub section some explainations are given to highlight this argument.

As pointed out previously, Reinertsen and its suppliers are in general loosely coupled dominated by an arm’s length relationships. The relationships are short-termed because the focus has been placed in individual projects. Thus, when an individual project ends, the whole project organization disbands including all its suppliers. Therefore, there is no continuity in their relationships that can give them time to develop mutual long-termed relations.

In the literature review, an example has been given for how the focal buying firm can foster long-termed relationships while enhancing competition/rivalry; Mazda utilize a number of future oriented incentives, for instance based on performance comparisons across car models, the supplier which excels are guaranteed a larger proportion of the auto-assembler’s expenditure. For Reinertsen, these kinds of incentives seem to be more subtle. Off course Reinertsen evaluates their suppliers’ performance and there is a higher chance to work with Reinertsen again if they performed well with former projects (as with the case of the plumbing supplier), but there are neither explicit rivalry competition between similar suppliers across projects nor any guarantee for future businesses. Each project work so independently of each other that in a hypothetical case, ventilation 1 may not directly look at ventilation 2 as a rival during the course of a project fulfillment. Further, no guarantee for future business means that there are no performance incentives in terms of competition between supplier rivals.

In conclusion, Reinertsen’s practice is not parallel sourcing because there is no intended continuity in the relationships, and no explicit probability for future business with the suppliers.

## 12.7 Conclusion of the analysis part 1 addressing Q.3

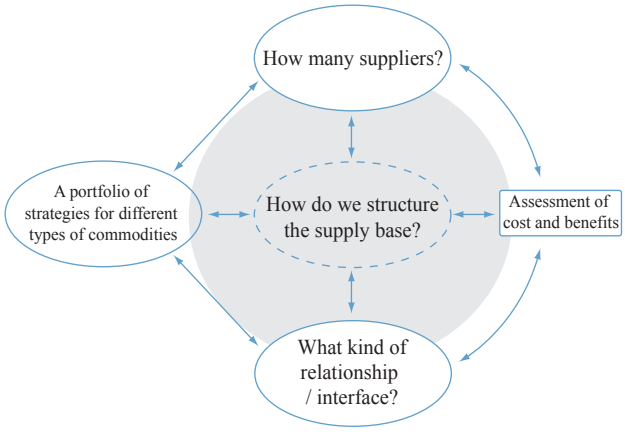
Using Table 8-1, the literature argue that multiple sourcing fits best with routine items that are produced by child or contractual suppliers. When comparing this with Reinertsen's practice, they use instead **multiple sourcing** for the selection of leverage- and strategic- suppliers, and hence the firm is not reliant or dependent on a single source of supply. One important aspect of the construction industry is that the actors are project oriented; each project is different and implies that the case firm cannot plan way ahead in time, thus promote short termed decision making.

On the other hand, Reinertsen actually use **single sourcing** within the project context, because of the use of subcontracting; a given supplier is contracted as the only source for a project. The reason is perhaps that in the construction industry subcontracting is much more common, and implies more than buying commodities; suppliers are taking the role as adult suppliers instead of child or contractual. Instead of solely providing materials based on specifications, they take major responsibilities with close guidance by Reinertsen to suggest and develop the final solution.

Lastly, the analysis has considered **parallel sourcing** with the empirical study. The conclusion is that Reinerten's practice does resembles somewhat with that particular structure, however, it seems that Reinertsen do not use the structure's full potential. In particular, no explicit long-termed relationships are sought with their suppliers, and no performance competition is given across the different projects. As it is today, the competitive nature is only at the tendering phase; after a supplier is selected for a particular project there is no more competition between similar suppliers for future business.

Subject to Q.3, there are some similarities between the literature and the empirical study. For instance multiple sourcing retains an arm's length short-termed relationship between buyer and supplier and is coherent with how Reinertsen is loosely coupled with their suppliers. Although this is the case, the empirical study has also shown that there are some differences. Especially when an analysis is conducted at the project scope; short-termed or arm's length relationship does not always depict low involvement (e.g. standardized or specified interface); Gadde and Snehota (2000: 312) reflected that "*in some short-term supplier relationships high involvement may be an effective approach*". In a sense, it seems that Reinertsen has adopted its own effective way of doing things that fits more to their construction environment.

# Chapter 13 – Analysis part 2: Improvements and recommendations for Reinertsen




Reproduction of Figure 8-3
Source: See Ch.8.3

In this chapter recommendations are given to Reinertsen in relation to sourcing strategy. Based on the literature review (Figure 8-3), there are in general four questions to answer: (1) what strategy for a given commodity, (2) how many suppliers, (3) what kind of relationships to pursue, and (4) how do we structure the supply base.

## 13.1 Which commodities are these recommendations for?

The given recommendations in this thesis is mainly focused on the three technical trades; ventilation, plumbing, and electro. As analyzed by the previous chapter, these three technical commodities are somewhere between leverage and strategic in the Kraljic matrix. In line with Kraljic's (1983) second matrix, the recommendations are either exploit, balance or diversify, and the choice should be made through the power balance between the buying- and supplier firm.

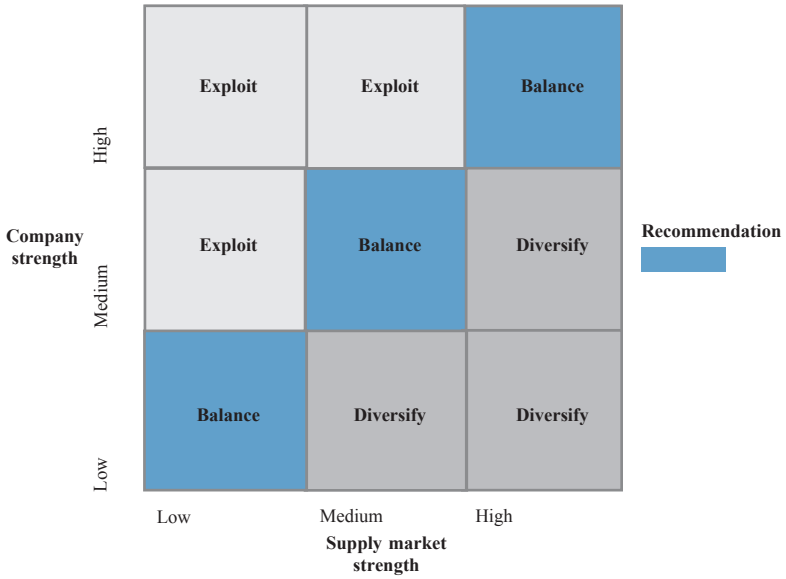



Figure 13-1. Recommendation using Kraljic's (1983) second matrix
Source: Own presentation based on Kraljic (1983)

Based on the information obtained through the interviews, the power balance is quite balanced; neither Reinertsen nor their suppliers seem to have the “upper hand”. Reinertsen is dependent on the suppliers’ competence, while the suppliers are reliant on the businesses that the general contractors can give. Although this is the case, since the industry is loosely coupled, none of them are deeply dependent of each other. There are other actors in the industry that can act as substitutes. Therefore none of them has tremendously power which can be used to exploit. Hence, for the three technical trades, the recommendation is to seek well-balanced “intermediate strategy” between exploit and diversify.

## 13.2 Which sourcing structure to use?

Using Table 8-1, the literature would suggest either single sourcing or a hybrid structure for leverage and strategic commodities (i.e. the three technical trades).

Based on the empirical study and the analysis so far it has been argued that Reinertsen’s practice does resembles a parallel sourcing; they use in general multiple sourcing in the tendering phase, but soon shift over to single sourcing for a particular project. Even so, as pointed out by the previous chapter, Reinertsen does not utilize parallel sourcing to its full potential. The main issue is that Reinertsen and their suppliers are looking at the project organizations as temporary, with no explicit long-termed relationship agreements that surpass the given projects. See Figure 13-2.

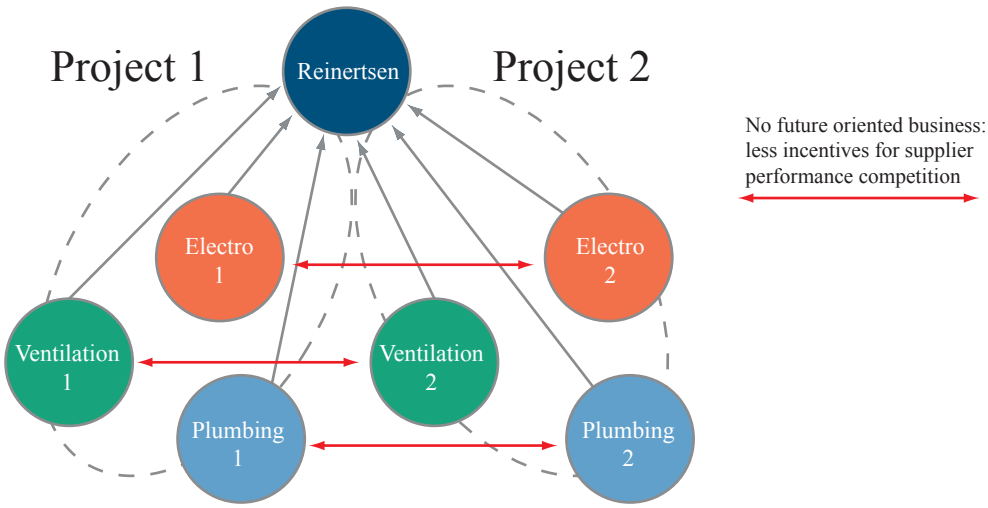



Figure 13-2. Recommendation using Richardson’s parallel sourcing model
Source: Own presentation based on Richardson (1993)

By evaluating the findings in the literature review and comparing it with Reinertsen’s circumstances, parallel sourcing is beneficial for Reinertsen because this structure fits with Reinertsen’s environment of business; there is a need to hold the costs down because the industry is heavily cost focused, while collaboration and problem solving are essential factors at project level. Hence, in their business, there is a need to consider both the industry- and the project scope at the same time. Therefore, a hybrid structure like parallel sourcing with

the ability to both maintain cost focus (multiple sourcing) and collaboration benefits (single sourcing) is recommended. A final argument for parallel sourcing is that this structure somewhat coincide with the previous section; balanced purchasing strategy between exploit and diversify is recommended, and parallel sourcing incorporates this feature by inducing both competition and collaboration in the supply base.

## 13.3 How many suppliers?

In parallel sourcing, the number of suppliers needs to be limited. In the literature, the empirical examples (e.g. Hines, 1995; Richardson, 1993) usually involve two suppliers for the same type of item (i.e. two suppliers for seats). One of the reasons is that parallel sourcing involves high involvement, and according to Gadde and Snehota (2000) high involvement relationships are costly because coordination, adaption and interaction entail substantial costs.

Reinertsen practice currently involves competitive tendering and usually involves around four suppliers in this process. As argued, parallel sourcing involves long-termed collaboration and involvement, thus it is costly, and therefore today's practice of having about four sources of supply for their three technical trades seems to be too much. The recommendation is hence to reduce the number to two suppliers for each technical commodity. With fewer suppliers in their supply base, it is also easier for Reinertsen to compare their suppliers' performances, and giving out future business incentives. The consequence would be that suppliers with similar capabilities would to a larger extend see each other as rivals and compete more intensely for future businesses.

Another recommendation is to select the two competing suppliers wisely. Since the number of suppliers is reduced, the firm becomes more dependent on the remaining suppliers both in terms of capability and capacity. Capability-vise they need to off course evaluate their suppliers' technical competences, but capability or willingness to collaborate is also an important factor. Capacity-vise the firm need to evaluate the size of the suppliers; too small might not have the required capacity while big suppliers might be too independent of Reinertsen's business incentives. The capacity aspect is one of Reinertsen's biggest challenges in building long-term relationship; the DSL division manager, Trond Soligard, remarked that building long-term relationships with suppliers is challenged by the uncertain future demand. Reinertsen needs to win the principals tendering rounds in order to do business with their suppliers, thus they cannot promise a certain purchase volume like the way auto-manufacturers can do. Even so, he also reflected that some of their competitors indeed have established future-oriented relationships, thus there are possibilities for this option.

## 13.4 What kind of relationship to pursue?

In the previous section, there has been argued that there are no explicit long-termed

relationship between Reinertsen and its suppliers. As is it is today, Reinertsen is quite project-focused with much emphasis on the short-termed benefits. Though this short-termed view may add considerable costs for Reinertsen in future projects. For instance, each time they participate in principals' tendering rounds, they have to seek for available suppliers in the market and collaborate with them in order to give an offer. Based on a statement from one of their purchasers, Reinertsen only win in about one out of ten bids. Hence, the tendering rounds induce many hours in designing, calculating and planning that are never used. The bottom line is that the tendering rounds represent significant sunk costs for the firm if they do not win the principals' projects.

Gadde and Snehota (2000) pointed out that there are different kinds of costs related to suppliers, both costs that are directly linked to *transactions*, and costs that are more related with *handling* the supplier relationships. The relationship handling costs are hard to evaluate, but they do exist; due to Reinertsen's practice of competitive bidding, the *procurement/ transaction* costs are the firm's main focus and also what the firm is most aware of.

On the other hand, Reinertsen also has handling cost when involving suppliers, such as communication, learning, and adaption. These kinds of costs will be sunk, if Reinertsen do not utilize these "investment" for future projects. According to Gadde and Snehota (2000) *cost benefits* are saving in various operations that can be related to collaboration with suppliers; the benefits are hard to evaluate but can contribute to efficiency improvements. Therefore, the case firm's current sunk costs should instead be utilized as a cost benefit for future projects. The example with the particular plumbing supplier has somehow shown that there is indeed some form of cost benefits by collaborating together over a longer period; the purchasers at the firm could not exactly explain the reasons, but that particular plumbing supplier had always won the competitive bidding by offering the best deal.

Therefore, long-termed relationships with some of their critical suppliers (e.g. ventilation-, plumbing- and electro suppliers) seem beneficial; first, their purchasers and other managers do not need to spend significant time in evaluating all available suppliers for every projects; secondly, by working closely with their suppliers over time they get to know each other's practice and procedures better and may have a positive efficiency effect.

To summarize, the recommendation for Reinertsen is to focus more on long-term collaboration with a limited set of suppliers, thus making their practice more coherent with the literature's description of parallel sourcing.

## 13.5 Implications

### *13.5.1 From emergent to intended*

Intended strategies is important to execute plans (Mintzberg and Waters, 1985), hence if the plan is to establish parallel sourcing with closer long-term relationships with a limited set of suppliers, a certain level of formalization is needed. As previously argued, Reinertsen have lower degree of formalization, because even though they use the MSP system and the Kraljic matrix, there are in general few written documents; the purchasers also entail a high degree of freedom, thus the procedures and strategies may not be strictly followed.

Therefore, to establish long-termed relationships, Reinertsen need to formalize the purchasing function such that long-termed plans can be followed by the employees. In other words, using Mintzberg and Water's (1985) terminologies, to establish parallel sourcing there is a need to focus more on intended or deliberate strategies.

### *13.5.2 More emphasis to centralize the purchasing function's responsibilities*

Another implication which is highly related to the previous subsection is the degree of purchasing centralization. Parallel sourcing require a more top down approach, because the purchasing function needs to consider aspects that are across individual projects; for instance, building a long-termed relationship requires time that exceeds the life time of a project, and evaluating supplier performances cannot be done solely based on each individual project, because comparisons between supplier rivals across projects are essential in parallel sourcing.

As argued previously, Reinertsen is project focused with localized decision making, and this seems to conflict with the establishment of long-termed collaborations and parallel sourcing. Hence in order to establish parallel sourcing, Reinertsen need to centralize more of the purchasing activities and give the centralized purchasing function a higher degree of responsibilities. In other words, Reinertsen should delegate the three technical special trades to the centralized purchasing function, while leaving the non-critical commodities to the decentralized function.

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# Chapter 14 – Conclusions, theoretical contributions, limitations and future research

## 14.1 Conclusions and main findings

In the following sections each of the main direct sub-questions given in Ch.1 are addressed subsequently. However, as each of these questions are already addressed in their respective summary and conclusion section (at the end of each chapter); they are instead briefly repeated in this chapter coupled with the author's own reflections.

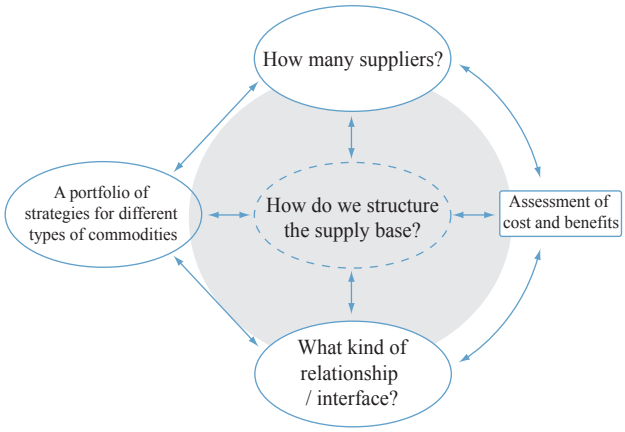
### *14.1.1 Addressing Q.1*

**What models of sourcing strategy exists in the literature?**

To answer Q.1 the author had to first define what *sourcing strategy* means. Initially the author perceived the term sourcing strategy as the different sourcing configurations/structures (multiple sourcing, single sourcing, hybrids). However, when the author dig deeper into the sourcing literature, defining the term became far more complex. As argued by Harwood (2009) the issues of sourcing is well established in the literature, however, the boundaries may be debated. For instance the author saw many similarities and resemblances in the supply base management-, make or buy decisions- and international purchasing literature. However, covering all possible aspects that *could* be within the term of sourcing strategy is quite impossible given the time frame of this thesis.

The way this thesis perceive this definition is that sourcing strategy is more focused towards devising concrete strategies for certain purchased product categories. Therefore, aspects such as supply base management, portfolio purchasing and sourcing configuration were chosen as the main topics. By focusing on these main topics, the main models in sourcing strategy is the Kraljic matrix and the different sourcing configurations. In addition, supply base management oriented frameworks (Kamath and Liker, 1994; Wood et al., 1996; Araujo et al., 1999; Gadde and Snehota, 2000) were also supplemented to add further refinements and explanations for the two former frameworks.

The following figure shows the main aspects of sourcing strategy as it is perceived in this thesis, and the table shows the different sourcing strategy related models' connections to each other and represent the findings in the literature review that address Q.1.




Reproduction of Figure 8-3: Main aspects in sourcing strategy
Source: See Ch.8.3

| Sourcing structure/ Framework | Kraljic (1983) Category items | Kamath and Liker (1994) Supplier roles | Wood et al. (1996) Supplier typologies | Araujo et al. (1999) Supplier-buyer Interfaces |
|---|---|---|---|---|
| **Single sourcing** | Bottleneck<br>Strategic/critical | Partner<br>Mature/Adult | Problem solver<br>Collaborative | Translation<br>Interactive |
| **Multiple sourcing** | Routine | Child<br>Contractual | Tech. specialists<br>Commodity suppliers | Standardized<br>Specified |
| **Delegated sourcing** | Leverage<br>Strategic/critical | Partner<br>Mature/Adult | Problem solver<br>Collaborative | Translation<br>Interactive |
| **Parallel sourcing** | Strategic/critical (though other categories may fit) | All possible (though preferable for Partner or Mature/Adult) | All possible (though preferable for problem solver or collaborative) | All possible (though preferable for translation- or interactive interface) |

Reproduction of Table 8-1: The models' connections to each other
Source: See Ch.8.2

### *14.1.2 Addressing Q.2 and Q.3*

**How is the purchasing function of the case company organized today, and how does the company carry out their purchases?**

**To what degree is there a conformity between observed practice and the theoretical models in the sourcing literature?**

Based on the interviews and the author's observations in general the case company's purchasing function is organized as a hybrid (organization) structure with both a centralized- and decentralized function, however, leaning more towards the latter. This implies that Reinertsen to a larger degree utilizes local decision making with the benefits of adaption

to each project's needs and requirements. As explained by the literature conducted in the construction industry (Ch.10) this form of practice is typical for the actors in this industry and implies that they are generally loosely coupled or relative independent. However, both the construction literature and this thesis' empirical study has depicted that in a project scope (analysis within individual projects) the actors are tightly coupled. The case firm and the three technical trades need to work closely together during the tendering/design phase to offer the best deal for the principals; in addition the on-site tasks are overlapping, complex and tied together in a way that there is a need for thorough coordination and problem-solving efforts to meet the construction projects' goals in terms of costs and time.

When considering these observations with the sourcing literature, it became apparent for the author that the sourcing literature is not fully "compatible" with the construction industry's environment. As noted, the sourcing literature is mainly developed by empirical studies in the automotive manufacturing industry, whereas this thesis is conducted in the construction industry. One fundamental aspect that limits the application of the sourcing strategy frameworks to the construction industry is the environmental difference between the automotive- and the construction industry; the automotive industry is producing their products in fairly static (manufacturing) environment whilst the construction industry is producing unique products in accordance to distinct customer needs in different locations and environments. As a consequence there are higher uncertainty/unpredictably for the construction actors because the demand is more fluctuating, and repetitions are more rare.

Based on interviews and the author's observations, Reinertsen has adapted to their environment by maintaining a relative short-termed view with their suppliers; they are mainly project-based focused that acquire or purchase products and service for each project individually. Thus less focus has been placed on synergies across projects, or future oriented businesses with their suppliers. One positive effect of maintaining adversarial relationships with their suppliers is that Reinertsen can use the suppliers as resource or capacity pool when the needs come, i.e. when the firm wins the principals' competitive tendering rounds, without any further responsibilities for the suppliers' business turnover.

Further, by the author's impression, Reinertsen are not in general thinking of *sourcing configurations*; they pay less attention to how to structure the supply base, perhaps because they see each project as a temporary organization that dissolves after completion. On the other hand, the firm is emphasizing to a much larger extend in relation to the Kraljic matrix; they try as much as possible to follow the recommendations given by this framework in their purchases. Even so, due to the special characteristic of the construction industry, even if the Kraljic matrix in general recommends long-term partnership with strategic commodities, the empirical study has shown that this is not strictly followed by Reinertsen; at least not in the

same sense as depicted in the literature.
By the author's point of view, a long-termed relationship for Reinertsen is not necessarily explicit expressed in a contractual form (though framework agreements can be argued to be one form) or mutual adaption of resources, they are far more subtle or informal and rests mainly in the mind between Reinertsen's and their suppliers employees, which can in the longer run turn to favor one actor instead of others.

In conclusion, the observed practice of Reinertsen do to some extend resembles the theoretical frameworks in the sourcing literature. Reinertsen do use distinctive strategies based on what commodities they are buying, however, seeing this in relation to the Kraljic matrix the firm has adapted or reconfigured it to suit their project-based business. Further, by mapping how the supply base is structured for the three technical trades, it does resemblence somewhat with parallel sourcing in that they use similiar suppliers accross different projects.

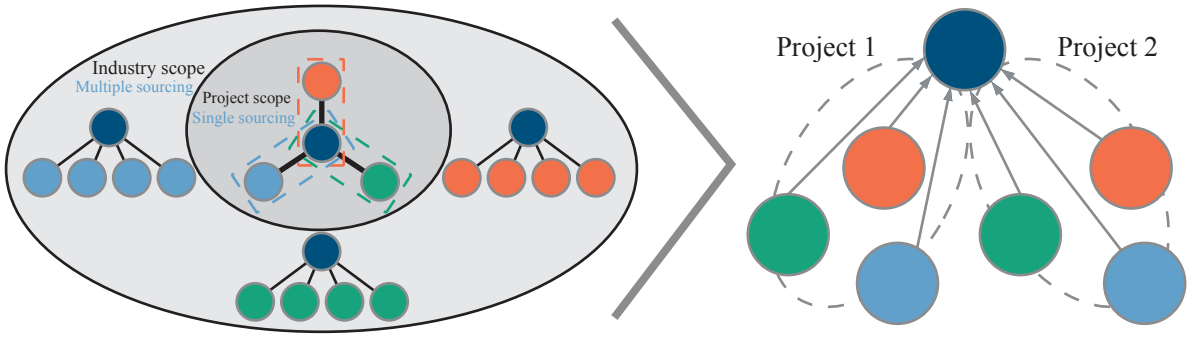



Figure 14-1. Reinertsen's practice in relation to sourcing configuration
Source: Own presentation

### *14.1.3 Addressing Q.4*

**Using the knowledge from the literature review and the empirical study of the case company, how can the case company improve in relation to the various use of sourcing strategies?**

The analysis concludes that Reinertsen's practice does resembles a parallel sourcing. Even so, Reinertsen does not fully reap the benefits of this sourcing structure; based on the empirical study the firm does utilize the competitive nature of this structure, however, their practice lacks the long-term collaborative potentials. As it is today, the main issue is that less emphasis has been placed on the single-sourcing aspects of parallel sourcing; there is less focus on relationship continuity. Based on the literature review, single sourcing foster higher buyer-supplier involvment thus may have a possitive effect on cost- and revenue benefits in terms of productivity and innovations (Cousins et al. 2008; Gadde and Snehota, 2000; Araujo et al., 1999).

Therefore the author argue that Reinertsen should consider the positive effects of higher long-termed involvment with their suppliers. By doing so, this would be more coherent with the

parallel sourcing structure. As argued earlier in Ch.13, parallel sourcing is beneficial for the firm; Reinertsen need to hold down the costs because the industry is in general cost focused, while the construction tasks require tight collaboration and problem solving efforts. Hence a hybrid structure like parallel sourcing would fit their business.

By following the recommendation of parallel sourcing, Reinertsen need to reduce their current number of suppliers of the same technical special trade. At the same time, the firm is also recommended to pay more attention to the centralized purchasing function making it to be responsible to build and develop long-term relationship with the limited set of suppliers.

## 14.2 Theoretical and practical contributions

**The jungle of definitions and concepts in purchasing**

In the start of Weele's (2009: 9) text book, the professor expressed following:

> *"In practice, as well in the literature many terms and concepts nowadays are used in the area of purchasing. However, no agreement exists about the definition of these terms. Terms like procurement, purchasing, sourcing and supply chain management are used interchangeably."*

Indeed when the author embraced the purchasing literature and in particular in relation to sourcing strategy, no clear lines or boundaries were explicitly drawn. For the author, as a student in the field of purchasing, it was confusing when writing a master thesis with the subject of sourcing strategy.

The author hope that this thesis can contribute to the field of purchasing by structuring and connecting some of the main aspects in the sourcing strategy literature. For students and researchers, the developed frameworks (Figure 8-3 and Table 8-1) can act as a springboard for further improvements; as noted not all aspects are incorporated into the frameworks (limitations are further described in the next section). For practitioners, the same frameworks can work as an overview that denotes the main issues in relation sourcing strategy, thus may contributes to the process of formulating purchasing strategies.

Finally, the case study and the empirical analysis is conducted for an actor in the construction industry, hence the thesis has described and analyzed some characteristics that are typical for this industry in relation to sourcing strategy. As the sourcing literature is predominantly embedded into the automotive industry, the author hope that this thesis can contributes a deeper understanding of the use of sourcing strategy in the construction industry.

## 14.3 Evaluation, limitations and areas for future research

The thesis has two objectives; first the purpose is to describe and discuss the purchasing practice of the case firm in relation to the sourcing literature, and secondly the objective is to give the case firm, Reinertsen, improvement recommendations in relation to the various uses of sourcing strategies. Therefore the thesis is exploratory in nature and a decision has been made to conduct the thesis as a case study with the help from the various qualitative data collection techniques.

Both the literature review and the empirical study have its strengths and weaknesses. For both parts the strengths lie in the use of Dubois and Gadde's (2002) systematic combining framework; both parts influences each other dynamically. According to Huberman and Miles (1994) too much structuring of the analytical framework may blind the researcher to important factors in the case study or misreading informants' perceptions. On the other hand, too loosely structured might lead to confusing data collection and data overload. Dubois and Gadde (2002) argue that systematic combining can comprehend this dilemma because the analytical framework evolves through successive refinements as data are collected in the real world. The author has conveyed the study in accordance to the systematic combining approach and followed the general guidelines/customs of conducting a qualitative research; for instance by using open-ended questions emphasizing the informants meanings, and multiple data sources to validate the accuracy (multiple interview data, observation data and document data).

The main weakness of the empirical study lie in the generalisability; only the mainland business of the case firm was emphasized, and only one project (the Charlottenlund project) within the case firm has been explored, thus it may not describes the purchasing practice of the case firm completely. Further, concerning the generalisability of the construction industry as a whole, only one general contractor (Reinertsen) has been studied, hence the thesis may be limited to present the practice of the case company alone. However, the author has to emphasize that the main intend was to study the case firm alone and not the construction industry in general. Even so, as emphasized in the previous section, this case study can act as a springboard for further research of the construction industry. Thus regarding the external validation of the observed practice of the firm (i.e. Figure 14-1) the author proposes to other students/researchers to see if other general contractors' purchasing practice resembles the studied case firm.

Lastly, concerning the developed frameworks (Figure 8-3 and Table 8-1), the weaknesses are that they only incorporate a limited set of models in sourcing strategy literature. Hence, for further research other related literature, such as global sourcing and make-or-by decisions, can be reviewed and be used to further extend the developed frameworks' coverage in relation to sourcing strategy.

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# Appendix 1: Master thesis proposal

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# NTNU-Reinertsen - Master Thesis Project Plan 2011

## I. Contents



## II. Thesis Title

Sourcing strategies – A case study in the construction industry

## III. Thesis Organization


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## IV. Revision History

Date: 14. February 2011 Revision version: 1
Description: First draft.

Date: 25. April 2011 Revision version: 2
Description: Modifications in paragraph VI and VII.

## V. Background

The master thesis' author is a fifth grade student in Industrial Economics and Technology Management with specialization within the field of Strategic Purchasing and Supply Management. The master thesis "Sourcing strategies – A case study of Reinertsen in the construction industry" will be the final result of a research conducted between 24th January and 20th June, 2011.

In order to complete the master thesis, the author seeks help both internally and externally. The internal partner is NTNU, with professor Luitzen De Boer at the department of Industrial Economics and Technology Management, who will supervise the author during the whole project. The external partner will be Reinertsen Norge AS (hereby also referred as the case company), more specifically Project Procurement Manager Espen Mellbye will function as the representative and coordination person between the author and the firm.

This paper serves as a research plan for the master thesis. The contents in this research plan are preliminary and may be subject to change. Thus the main purpose of this plan is to outline the master thesis' focus and objectives.

## VI. The overarching description of the project

The overarching description of the master thesis is stated in following text:

> *The master thesis will be a case study of Reinertsen's current purchasing practice, including descriptions of how the firm organizes and carries out their purchases, and an analysis of their current sourcing strategies in relation to the models discussed in the literature (single, multiple, parallel sourcing etc). In addition, other relevant aspects in the context of sourcing strategies such as international purchasing, organizational structuring, developing supplier relationships etc. might also be discussed. The master thesis will conclude with concrete recommendations for Reinertsen's strategy regarding the uses of various sourcing strategies.*

## VII. Research questions

To address the overall objectives of the master thesis, some theoretical and empirical questions need to be answered. Q.1 is grounded mainly on theory reviews, whereas the rest will be based on empirical findings or a combination of both.

Q.1) What models of sourcing strategy exists in the literature?

Q.2) How is the purchasing function of the case company organized today, and how does the company carry out their purchases?

Q.3) To what degree is there a conformity between observed practice and the theoretical models in the sourcing literature?

Q.4) Using the knowledge from the literature review and the empirical study of the case company, how can the case company improve in relation to the various use of sourcing strategies?

## VIII. Theoretical background

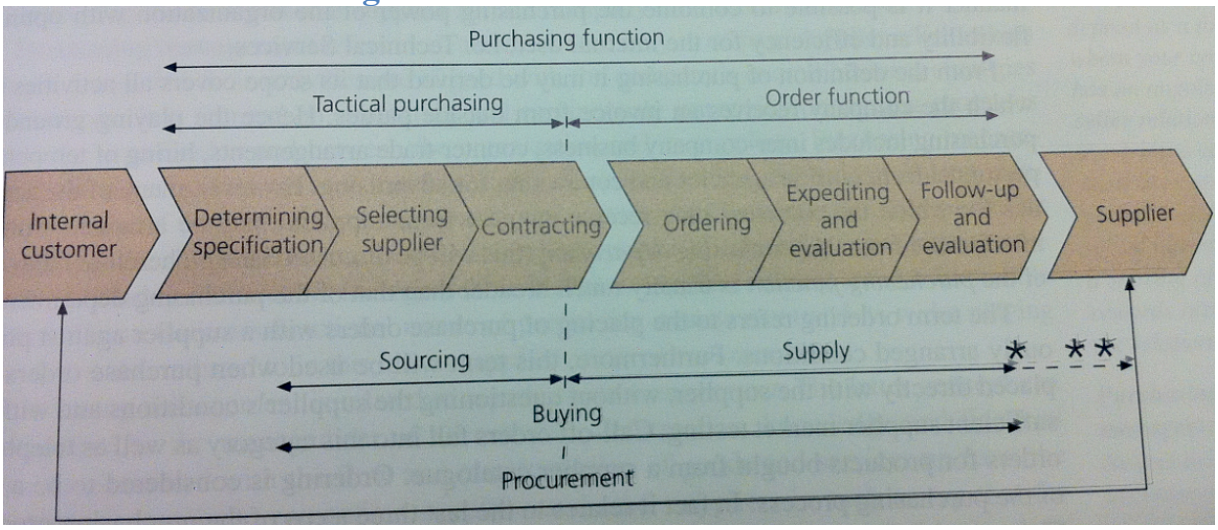


**Figure 1, Source: Weele (2010: 9)**

The master thesis' main subject would be on sourcing strategies, though some fundamental theories/framework about procurement and supply strategies needs to be in place to explain the thesis' context. (See figure 1)

Using the framework from van Weele (figure 1), the main focus would be on what van Weele call *tactical purchasing*. As we see from the figure, less emphasis will be placed on the *order function*. Within tactical purchasing, highly relevant theories will be *make or buy decisions* (e.g outsourcing), *purchasing portfolio approach* (e.g Kraljic matrix) and *sourcing configurations* (e.g single-, multiple sourcing).

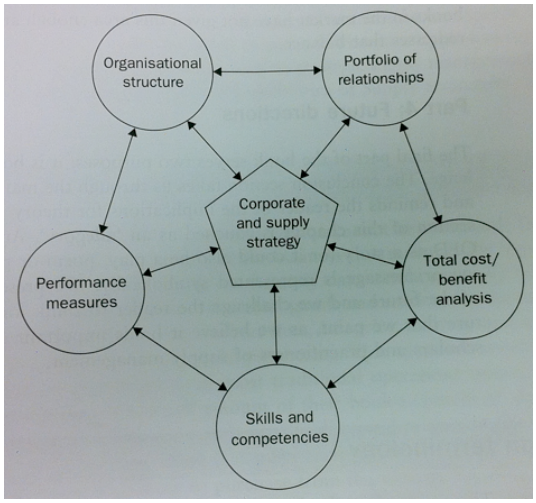


**Figure 2, Source: Cousins et al (2008: 5)**

Using the supply wheel model from Cousins et al (2008), other relevant aspects in terms of sourcing strategies are alignment between corporate and supply strategy, supplier relationships (and development), organizational structure and total cost/benefit analysis. Less emphasis will be placed on performance measures and skills and competencies.

## IX. Research Method and Design

Since the main research questions are "how"-questions and the master thesis' focus is on contemporary events (finding potential improvements of the current situation), case study as a research strategy is appropriate for this master thesis. Further the main research questions are also highly explorative and descriptive in nature, thus a qualitative approach is considered to be favorable. The data collections will be based on interviews, documentations, archival records and the author's observations.

As in most case studies, literature review and empirical findings will play an important role. In this master thesis a research approach called *systematic combining* (Dubois and Gadde, 2002) will be used. In this particular approach the objective is to match theory and reality. As the researcher gains insights about these two dimensions, the direction of both the development of framework and the analysis of the case may be changed.

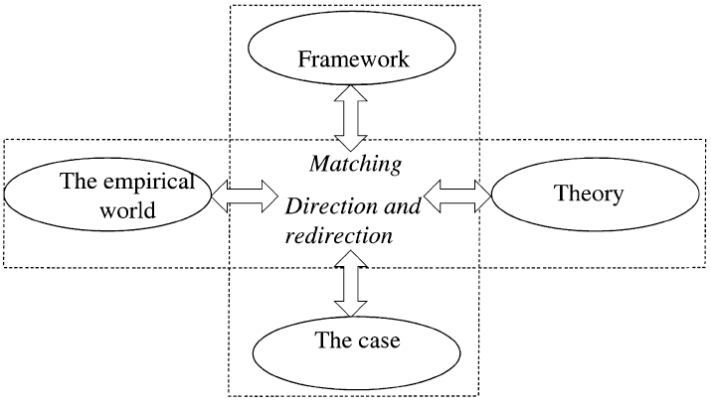


**Figure 3, Source: Dubois and Gadde (2002: 555)**

The systematic combining approach thus fit the explorative nature of the research, as the researcher is relatively new to the construction industry, new discoveries may induce redirections. In addition this approach also fits with the purpose of comparing the sourcing configuration models with the case company's purchasing practice.

## X. Work Breakdown Structure

Phase 1 – Literature review

Using existing literature, this phase involves answering Q.1-Q.3. The literature review will start broad in scope, covering aspects illustrated in figure 1. The main objective is to get a fair understanding of what aspects that would commonly be referred as "Sourcing strategy".

Further, the literature review will be more narrowed in scope and concerns mainly in sourcing configurations and portfolio purchasing. Underlying theories such as transaction cost theory, buyer-seller power balance etc. will also be explained.

Phase 2 – Data collection

In this phase, the first step would be to get an overview of the firm in general and its industry. The second step would be to conduct an in-depth study of the purchasing function.

*Step 1 – Reinertsen: Business strategy and business issues:*
Main data collection method: Interviews and documentations.

- Corporate strategy
- Business goals and issues.
- Market and industry characteristics.
- Infrastructure and other organizational conditions.

*Step 2 –The Purchasing function & supply strategy at Reinertsen*
Main data collection methods: Interviews, documentations and archival records.

- The organization of the purchasing function.
- Objectives and statements in terms of: cost, quality, lead-time etc.
- How it is coordinated with the various projects and throughout to the rest of the organization.

- Supply strategy in terms of: Preferred contract, location of suppliers, preferred supplier relationship, sourcing strategy for different product types etc.
- Current suppliers & alternative available suppliers.

Phase 3 – Analysis

- Structure up collected data.
- Analyze data and classify Reinertsen's sourcing strategy according to the literature.
- Write up conclusion and recommendation for the case company.

## XI. Time schedule

See appendix 1.

## XII. Limitations and boundaries

1) The research fields of sourcing strategy are wide, thus in this master thesis the focus will mainly be on sourcing configurations and portfolio purchasing approaches.

2) Reinertsen Norge AS has two main business areas: Oil & gas and (land) construction. The master thesis will only concern the purchasing function related to the construction part of the firm.

## XIII. References

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## Appendix 1 – Time Schedule

**Appendix 1**
**NTNU-Reinertsen - Master thesis project 2011**
**Student: William Wong**
**Last updated: 10/02/11**

| TIME SCHEDULE | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 | Week 13 | Week 14 | Week 15 | Week 16 | Week 17 | Week 18 | Week 19 | Week 20 | Week 21 | Week 22 | Week 23 | Week 24 | Week 25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Visitation at Reinertsen (for data collection) | | | | | | | | | | | | | | | | | | | | BUFFER ZONE | | |
| MILESTONES | | | | | | | | | Phase 1 | | | | | Phase 2 | | | | Phase 3 | Final draft | | | |
| **PAPER OUTLINE** | | | | | | | | | | | | | | | | | | | | | | |
| **Part 1: Introduction** | | | | | | | | | | | | | | | | | | | | | | |
| * Introduction: Purpose, research questions etc. | | | | 20.feb | | | | | | | | | | | | | | | | | | |
| **Part 2: Literature review** | | | | | | | | | | | | | | | | | | | | | | |
| * The procurement context (Broad in scope) | | | | | | 6.march | | | | | | | | | | | | | | | | |
| * Sourcing strategies (Narrow down to the focus subject) | | | | | | | | | 27.march | | | | | | | | | | | | | |
| * What do we know about sourcing strategies? | | | | | | | | | 27.march | | | | | | | | | | | | | |
| * Differences & similarities between them | | | | | | | | | 27.march | | | | | | | | | | | | | |
| **Part 3: Data collection** | | | | | | | | | | | | | | | | | | | | | | |
| * Research method | | | | | 27.feb | | | | | | | | | | | | | | | | | |
| * Preparation for interviews | | | | | | | | | | 3.april | | | | | | | | | | | | |
| * Reinertsen Norge AS | | | | | | | | | | | | 17.april | | | | | | | | | | |
| * Corporate strategy | | | | | | | | | | | | 17.april | | | | | | | | | | |
| * Business goals and issues | | | | | | | | | | | | 17.april | | | | | | | | | | |
| * Market and industry characteristics | | | | | | | | | | | | 17.april | | | | | | | | | | |
| * Infrastructure and other organizational conditions | | | | | | | | | | | | 17.april | | | | | | | | | | |
| * Purchasing function | | | | | | | | | | | | | | 1.may | | | | | | | | |
| * Supply strategies | | | | | | | | | | | | | | 1.may | | | | | | | | |
| * Organization | | | | | | | | | | | | | | 1.may | | | | | | | | |
| * Framework agreements | | | | | | | | | | | | | | 1.may | | | | | | | | |
| * Suppliers | | | | | | | | | | | | | | 1.may | | | | | | | | |
| **Part 4: Analysis** | | | | | | | | | | | | | | | | | | | | | | |
| * Classifiaction of Reinertsen's sourcing strategies | | | | | | | | | | | | | | | | 15.may | | | | | | |
| * Comparison between the practice and literature | | | | | | | | | | | | | | | | | 22.may | | | | | |
| **Part 5: Closure** | | | | | | | | | | | | | | | | | | | | | | |
| * Conclusion and recommendation | | | | | | | | | | | | | | | | | | 29.may | | | | |
| * Limitations & further research | | | | | | | | | | | | | | | | | | 29.may | | | | |

# Appendix 2: Interview guides

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# Interview with Project- and Purchasing administration leader Nina Oxås

Date: 14.04.2011

This interview is formed to be very open-ended. The objective is to get an overview of the organization and its purchasing practice.

Introduction

- Presenting myself
- Ask permission to record the interview

General

- What is your position and tasks?
- What is the firm's corporate strategy?
- What would you say is the firm's core competence?
- Who are the typical customers for the firm?
- How is the firm organized? Corporate hierarchical structure

Discussion map

| Main Questions | Additional questions |
|---|---|
| How is the purchasing function of the case company organized today? And what are the responsibilities? | The respondent's view of purchasing function's **importance** for the organization<br><br>Any typical project organization? Amount of purchaser in those projects? Their roles? |
| How does the case company coordinate and carry out their purchases? | Solely independent projects?<br><br>How do the projects coordinate and collaborate with their suppliers?<br><br>Any strategic important suppliers? And what theirs contributions and roles? |
| How does the company strategize their purchases? | Is competitive bidding their only choice?<br><br>Any strategies for any product categories?<br><br>Long-term relationship important in purchasing?<br><br>Any concrete goal for purchasing?<br><br>How does the respondent view of the alignment between the purchasing function and the corporate strategy? |
| How does the respondent interpret "sourcing" and "sourcing strategy"? | |

# Interview with International Purchaser Thomas Kristiansen

Date: 26.04.2011

This interview is formed to be very open-ended. The objective is to get an overview of the organization and its purchasing practice.

Introduction

- Presenting myself
- Ask permission to record the interview

General

- What is your position and tasks?

Discussion map

| Main Questions | Additional questions |
|---|---|
| How is the purchasing function of the case company organized today? | The respondent's view of purchasing function's **importance** for the organization<br><br>The respondent's **occupation** in relation to the purchasing function<br><br>Any typical project organization? Amount of purchaser in those projects? Their roles? |
| How does the case company coordinate their purchases? | Solely independent projects?<br><br>How do the projects coordinate and collaborate with their suppliers? |
| How does the company strategize their purchases? | Competitive bidding their only choice?<br><br>Any strategies for any product categories?<br><br>Long-term relationship important in purchasing?<br><br>Any concrete goal for purchasing?<br><br>How does the respondent view of the alignment between the purchasing function and the corporate strategy? |
| How does the respondent interpret "sourcing" and "sourcing strategy"? | |

# Interview with Purchaser Tarald Larsen

Date: 04.05.2011

This interview seeks to get a deeper understanding of the firm's purchasing practice in relation to a concrete project. The location for this interview is at construction site of the Charlottenlund project.

Introduction

- Presenting myself
- Ask permission to record the interview

General

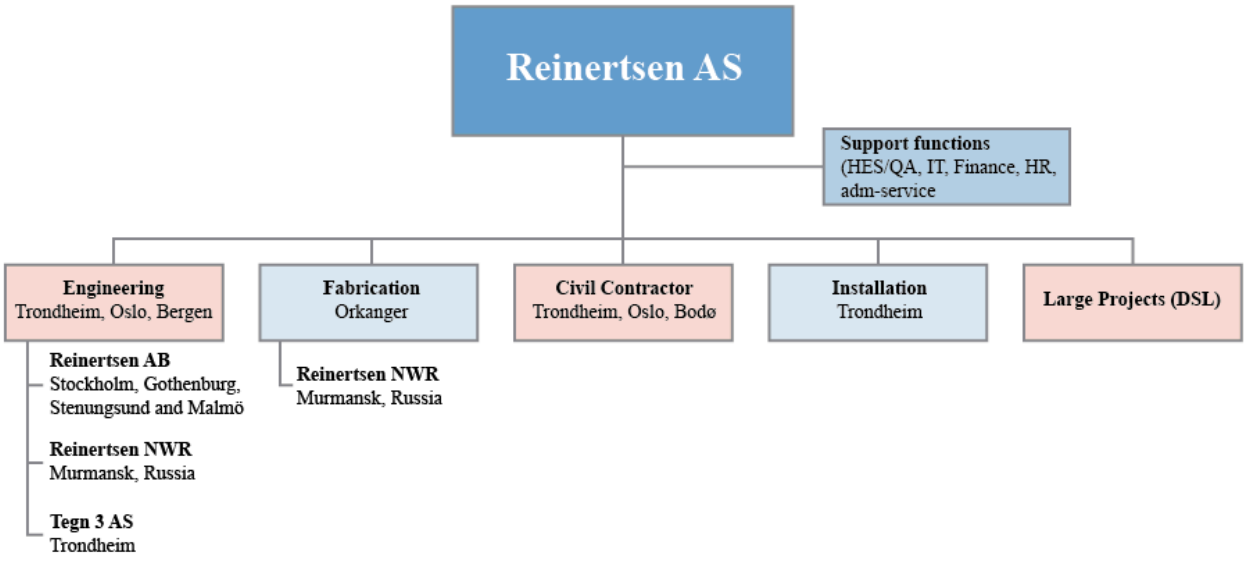
- What is your position and tasks?

Discussion map

| **Main questions** | **Sub questions** |
|---|---|
| How is the project organized? | The project hierarchical structure<br><br>What professions do the case firm employ at the project site, and what are employed by the suppliers. Use figure 1 to see what divisions are involved in the project.<br><br>What are their roles, and their suppliers' roles? |
| What tasks are done in the various phases of the project? | The purchaser's involvement in those phases.<br><br>How the purchaser interact with the different suppliers. |
| How is the purchasing process done? | Specifications: Highly specified or functional in nature?<br><br>Selection process: By competitive tendering? Or by earlier interaction and experiences?<br><br>Contracting process: Contract forms and negotiations |
| How does the project organization manage the supply base? | Who are their most important suppliers in relation to the fulfillment of the project?<br><br>**Buyer-supplier interface**<br>What are the suppliers' roles? And how do the case firm and the suppliers interact?<br><br>**Relationship**<br>Are the suppliers highly involved with the planning- and design features of the project? |

| | |
|---|---|
| | When a project has been terminated, do they retain interaction with their suppliers?<br><br>How does the respondent reflect the relationships with their suppliers in general? Is it an arm's length or long-termed? |
| Do the project organization use any form of supply strategy in relation to a specific commodity? | What commodities are of high importance to the project?<br><br>Is it easy obtainable in the supply market?<br><br>How do the firm obtain/purchase those commodities? |
| The respondent's interpretation of sourcing strategy | Does the company use sourcing strategy? (Observe how the respondent interpret this question)<br><br>What challenges makes it possible/impossible? |

**Figure 1**



# Interview with Site Manager Ole Eggen

Date: 05.05.2011

This interview seeks to get a deeper understanding of the firm's purchasing practice in relation to a concrete project. The location for this interview is at construction site of the Charlottenlund project.

Introduction

- Presenting myself
- Ask permission to record the interview

General

- What is your position and tasks?

Discussion map

| **Main questions** | **Sub questions** |
|---|---|
| How is the project organized? | The project hierarchical structure<br><br>What professions do the case firm employ at the project site, and what are employed by the suppliers.<br><br>What are the managers' responsibilities at the construction site? |
| What tasks are done in the various phases of the project? | The purchaser's involvement in those phases.<br><br>How the project administration interact with the different suppliers. Do the managers involve directly with the suppliers? |
| How is the purchasing process done? | Specifications: Highly specified or functional in nature?<br><br>Selection process: By competitive tendering? Or by earlier interaction and experiences?<br><br>Contracting process: Contract forms and negotiations |
| How does the project organization manage the three technical trades? | Are the three technical trades (plumbing, ventilation, electro) critical for the project?<br><br>How do the firm interact with the three suppliers from pre-phase- to the fulfillment of the project?<br><br>Do the three suppliers themselves interact highly with each other? Are the tasks highly complex, overlapping and closely tied to each other?<br><br>How would you interpret the relationships between Reinertsen and the three technical trades? |

# Interview with Project Procurement Manager Espen Mellbye

Date: 24.05.2011

This semi-structured interview seeks to confirm some of the findings in the empirical study so far. In addition, this interview seeks to emphasize more on the centralized purchasing function's tasks and responsibilities.

Introduction

- Ask permission to record the interview
- Introduce some findings so far from the empirical study

General

- What is your position and tasks?
- Does the purchasing function taking an important role in developing the firm's top strategy?

The purchasing function

- What are the centralized purchasing function's tasks and responsibilities?
- Do centralized- and decentralized purchasing function have regular meetings?
- How many people are employed respectively to the centralized- and decentralized purchasing function? Is the purchasing function mainly centralized or decentralized, or is it quite balanced?
- By your opinion, are the purchasers working systematically for each trade? Or do they "improvise" or adapting to each project?

Kraljic matrix

- How does the firm use the Kraljic matrix?
- Do the firm use the Kraljic matrix actively in their purchases? Or does their developed Kraljic matrix describe the ideal situation?
- Where would you place the three technical trades in the matrix?

Supply base management

- How would you interpret the relationships between Reinertsen and the three technical trades? (Talk about the industry scope, and project scope)
- Is there any continuity in the relationships? i.e. long-termed
- Do the firm give any performance incentives?
- How do the firm evaluate the suppliers?

Sourcing configuration

- By your opinion, is Reinertsen using any form of sourcing configuration?

# Interview with DSL division leader Trond Soligard

Date: 30.05.2011

This semi-structured interview seeks to confirm some of the findings in the previous interviews. Even though the questions are highly specific, the author tried to let the informant steer the discussion as he pleased.

Introduction
- Presenting myself
- Ask permission to record the interview

General
- What is your position and tasks?
- What is the firm's corporate strategy?
- How does it influence purchasing?
- What would you say is the firm's core competence?
- Does the purchasing function taking an important role in developing the firm's top strategy?

Purchasing
- What objectives or goals have the purchasing function?
- What are the purchasing functions responsibilities?
- By your opinion, are the purchasers working systematically for each trade? Or do they "improvise" or adapting to each project?
- Is the purchasing function mainly centralized or decentralized, or is it quite balanced?
- Why is the function organized the way it does today?

Kraljic matrix
- How does the firm use the Kraljic matrix?
- Are the three technical trades easy to obtain in the market?
- Are they important for Reinertsen in terms of profitability?
- Where would you place the three technical trades in the matrix?

Supply base management
- How would you interpret the relationships between Reinertsen and the three technical trades? (Talk about the industry scope, and project scope)
- How do the firm work and coordinate with their suppliers?
- When regarding the current relationships with the suppliers, what are the advantages and disadvantages?
- By entering a long-termed relationship with the three technical trade suppliers, is it an advantage or disadvantage for Reinertsen?
- Are there some challenges when establishing a long-term relationship with a supplier?

Sourcing configuration
- By your opinion, is Reinertsen using multiple- or single sourcing? or a mix of both?
- If so, is it intended or did it emerges itself?