

Department of Industrial Engineering and Management

Orchestration of External Resources

Aki Laiho

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Aki Laiho

A doctoral dissertation completed for the degree of Doctor of Science (Technology) to be defended, with the permission of the Aalto University School of Science, at a public examination held at the lecture hall TUAS/AS1 of the school on 10 December 2015 at 12.00

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Aalto University publication series

DOCTORAL DISSERTATIONS 191/2015

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ISBN 978-952-60-6525-0 (printed)

ISBN 978-952-60-6526-7 (pdf)

ISSN-L 1799-4934

ISSN 1799-4934 (printed)

ISSN 1799-4942 (pdf)

<http://urn.fi/URN:ISBN:978-952-60-6526-7>

Unigrafia Oy

Helsinki 2015

Finland

Publication orders (printed book):

tuta-library@aalto.fi



Author

Aki Laiho

Name of the doctoral dissertation

Orchestration of External Resources

Publisher School of Science

Unit Department of Industrial Engineering and Management

Series Aalto University publication series DOCTORAL DISSERTATIONS 191/2015

Field of research Industrial Management

Manuscript submitted 27 May 2015

Date of the defence 10 December 2015

Permission to publish granted (date) 20 August 2015

Language English

Monograph

Article dissertation (summary + original articles)

Abstract

The way economic value is created is fundamentally changing. As a result of increased utilization of resources of suppliers and partners, the cost of purchased goods and services can be even 70-80% of revenue. These suppliers and partners producing the majority of the costs, value and innovation of a company can be considered as the external resources of a company. Management of external resources is problematic for companies, as rules which apply for internal management do not apply as such. At the same time relying on pure market approaches is neither a sufficient approach. From a governance model theory perspective new, network and hybrid forms have emerged.

In the research reported here, the practices for management of upstream external resources are investigated from a focal company perspective. The research is scoped around practices of a manufacturing company. The research question is: How a focal company can manage its supplier base in different managerial situations?

Findings of this research demonstrate that the concept of orchestration is relevant from the external resource management point of view, and it can be identified empirically. The concept of orchestration is characterized as an activity, where a company is intentionally leading and influencing its external resources beyond the set of operative activities it conducts itself.

In order to develop a strategy for external resource management, a firm must identify and define its business objectives. This should be done both from the overall company perspective, and also for each of the buyer-supplier relationships, choosing between innovation focus and cost competitiveness focus. Additionally, the business objectives must be combined with an intended governance approach in order to develop an appropriate strategy for external resource management.

As a part of this research, a categorization model for management situations is developed. The buyer-supplier relationships can be arranged according to the dimensions of relationship focus – between cost and innovation, and governance approach – between bilateral and unilateral governance. For each of the situations it is necessary to adapt a suitable managerial practice. Findings from the research suggest, that the practices related to orchestration of external resources can be divided to four broader clusters: value positioning, product and network architecture, relationship governance practices, and operative management practices.

Keywords orchestration, external resource management, supply base management, purchasing

ISBN (printed) 978-952-60-6525-0

ISBN (pdf) 978-952-60-6526-7

ISSN-L 1799-4934

ISSN (printed) 1799-4934

ISSN (pdf) 1799-4942

Location of publisher Helsinki

Location of printing Helsinki **Year** 2015

Pages 169

urn <http://urn.fi/URN:ISBN:978-952-60-6526-7>

Tekijä

Aki Laiho

Väitöskirjan nimi

Orchestration of External Resources

Julkaisija Perustieteiden korkeakoulu**Yksikkö** Tuotantotalouden laitos**Sarja** Aalto University publication series DOCTORAL DISSERTATIONS 191/2015**Tutkimusala** Teollisuustalous**Käsikirjoituksen pvm** 27.05.2015**Väitöspäivä** 10.12.2015**Julkaisuluvan myöntämispäivä** 20.08.2015**Kieli** Englanti **Monografia** **Yhdistelmäväitöskirja (yhteenvedo-osa + erillisartikkelit)****Tiivistelmä**

Taloudellista arvon luomisen tavat ovat muutoksessa perustavaa laatua olevalla tavalla. Toimittajien ja kumppanien osuus arvontuotannosta kasvaa niin, että yrityksen ulkopuolelta hankittujen tavaroiden ja palveluiden osuus voi olla jopa 70-80% liikevaihdosta. Näitä toimittajia ja kumppaneita, jotka tuottavat suurimman osan sekä kustannuksista että monesti myös innovaatioista, voidaan pitää yrityksen ulkoisina resursseina. Ulkoisten resurssien hallinta on ongelmallista pääosalle yrityksistä, sillä sisäisiä toimintatapoja ei voida hyödyntää sellaisenaan ulkoisten kumppanien kanssa. Samalla kuitenkin myöskään puhtaasti markkinaehtoiset toimintamallit eivät ole riittäviä ulkoisten resurssien johtamiseen. Johtamisen näkökulmasta on syntynyt uusia teoreettisia malleja, mm verkostoon perustuvia hallintamalleja sekä hybridimalleja. Tässä tutkimuksessa on selvitetty käytäntöjä ulkoisten resurssien hallintaan, keskittyen valmistavan yrityksen arvoketjun alkupäähän. Tutkimus on tehty ydinyrityksen näkökulmasta. Tutkimuskysymys on: Miten ydinyritys voi johtaa ulkoisia resurssejaan erilaisissa liiketoimintatilanteissa?

Tämän tutkimuksen löydökset keskittyvät neljän teeman ympärille. Tulokset osoittavat, että orkesteroinnin käsitteellä on merkitystä ulkoisesta resurssien hallinnan kannalta, ja että käsitteen mukaista toimintaa voidaan tunnistaa empiirisesti. Käsite orkesterointi luonnehtii toimintaa, jossa yritys tarkoituksellisesti johtaa ja vaikuttaa toimittajiinsa ja partnereihinsa tavoilla, jotka menevät perinteistä operatiivisen toimintaa pidemmälle ja laajentavat perinteistä toimittajaverkoston johtamisen sisältöä.

Jotta voitaisiin kehittää asianmukainen strategia ulkoisten resurssien hallintaan, yrityksen on tunnistettava ja määriteltävä sen liiketoiminnan kokonaistavoitteet. Erityisesti tulee määritellä painottuminen innovaatioiden ja kustannuskilpailukykyyn keskittymisen välillä. Lisäksi liiketoiminnan tavoitteet on yhdistettävä tavoiteltuun johtamisotteeseen. Osana tätä tutkimusta kehitettiin luokittelumalli johtamistilanteiden tunnistamiseksi. Ostaja-toimittajasuhteet voidaan järjestää tämän mallin dimensioiden mukaan. Vastaavasti orkesterointikäytännöt voidaan mukauttaa tilanteeseen sopiviksi johtamisprofileiksi. Tutkimus osoittaa, että ulkoisten resurssien orkesterointikäytännöt voidaan jakaa neljään laajempaan ryhmään: arvon tuottamisen strategiaan, tuotteen ja verkon arkkitehtuurin johtamiseen, suhteen hallintaan, sekä operatiivisen rajapinnan käytäntöihin. Nämä neljä ryhmää käytäntöjä muodostavat perustan ulkoisten resurssien orkestroinnille.

Avainsanat orkesterointi, ulkoisten resurssien johtaminen, toimittajaverkoston johtaminen, hankintatoimi

ISBN (painettu) 978-952-60-6525-0**ISBN (pdf)** 978-952-60-6526-7**ISSN-L** 1799-4934**ISSN (painettu)** 1799-4934**ISSN (pdf)** 1799-4942**Julkaisupaikka** Helsinki**Painopaikka** Helsinki**Vuosi** 2015**Sivumäärä** 169**urn** <http://urn.fi/URN:ISBN:978-952-60-6526-7>

FOREWORD

This research started a long time ago, already early in this millennium. There were clear signals about world changing in a very significant way with digitalization, ever easier and cheaper communication, and quickly proceeding globalization, but no-one really knew what was actually going to happen. At the same time there was a simple idea, which still at the time was quite a visionary one: What if it would be possible to connect a firm with everyone, quickly, anywhere? How would it be possible and how such a system could be handled?

Now, more than a decade later, we know that the change was over-estimated in the short term, but very much under-estimated in the long term. Who was able to imagine the social media, all those mobile applications and the global connections, which today are everywhere? Within a decade, the wild visions have become a reality. The change in the industry is said to be as large as the change that took place with the invention of the steam engine. History will show if that is the case, but there are signs in the air.

I have had a great privilege to follow the change closely with this research. When I started the work, it was way too early to seriously talk about orchestration. Time passed by, sometimes the work proceeded and sometimes it did not. Between the starting point and today, life took me to four different companies, to myriad of jobs, to four different countries, and gave me a great family.

I want to address my sincere thanks to all people having been part of the journey, helping and supporting along the way. Professor Eero Eloranta has been guiding the research throughout the whole process. His openness to accept students with unusual profiles, and his unique way to guide the doctoral candidates with straightforward comments to life, universe, and everything, have been pivotal for this work to ever be finished.

During the years I have had some wise superiors, and many colleagues with empathy and interest. Mr. Jari Laine, Mr. Jaakko Laine and Mr. Juha Usva deserve special thanks for making this work possible at the early years of the journey. Later on colleagues at Aalto University, especially prof. Kari Tanskanen, prof. Jussi Heikkilä, Dr. Riikka Kaipia, Ms. Mervi Vuori, Mr. Kari Iloranta and the whole GlobeNet research team provided an environment where it was easy, sometimes even fun, to learn how to do research.

Research work together with family life and a daily job is always a challenge. Special thanks belong to my parents, who have always managed to show understanding. Most important thanks go to Mari, first a girlfriend, then the fiancée, and now my wife. All these years you've been the one who kept our life in balance and on track. And all the friends – thanks for the endurance.

Helsinki, October 2015
Aki Laiho

ABBREVIATIONS

B2B	Business-to-Business
CEO	Chief Executive Officer
CNC	Computerized Numerical Control
CPO	Chief Procurement Officer
3-DCE	Three-Dimensional Concurrent Engineering
DFX	Design for Excellence
DSN	Demand / Supply Network
EDI	Electronic Data Interchange
EMS	Electronics Manufacturing Services
ERP	Enterprise Resource Planning
GMVN	Global Manufacturing Virtual Networks
ICT	Information and Communication Technology
IPR	Intellectual Property Right
KPI	Key Performance Indicator
NPI	New Product Introduction
OEM	Original Equipment Manufacturer
OTD	On Time Delivery
RFID	Radio Frequency Identification
SCM	Supply Chain management
SET	Social Exchange Theory
STP	Short Term Planning
Supply Network	All inter-connected companies that exist in the value system
Supply Base	A portion of the supply network that is actively managed by the focal company through contracts and purchasing of parts, materials, and services.
S&OP	Sales & Operations Planning
SW	Software
RBV	Resource-Based View
R&D	Research and Development
TCE	Transaction Cost Economics
TCO	Total Cost of Ownership
TPS	Toyota Production System
TQC	Total Quality Control
VMI	Vendor-Managed inventory

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1 INTRODUCTION

1.1 Increasing focus on external resources

As a result of the trend of outsourcing, subcontracting and increased focus on utilization of resources of suppliers and partners, a significant share of value is actually produced by third parties. This trend increases the importance of processes related to purchasing of goods and services. Supply chains have become complex networks of organizations, where the number of relationships is high, and stakeholders are keeping various positions and roles. This development is connected to the fast development of new technologies and globalization of products and markets. At the same time the appearance of new forms of organizations has encouraged firms to adopt new ways to compete, for example by specialization. This development seems to apply for different industries and supply chains.

In case of a manufacturing company, the share of purchased goods and services can be up to 70-80% of revenue. The situation is illustrated in the Figure 1.

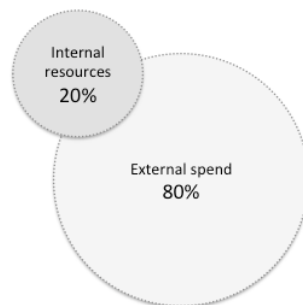


Figure 1: Internal resources vs. purchased resources (Iloranta, 2010)

In alignment with the increased significance of the external resources, in many cases competitive advantage no longer resides with a company's own capabilities, but is related to the ways a company utilizes competencies and innovations of its suppliers and partners. Teece and Pisano actually suggested already in 1997 that in some cases the most qualified centers of excellence may be located outside the boundaries of the large corporation, and that competitive advantage will increasingly be gained with the relationships and linkages a firm can forge with external organizations (Gadde and Snehota, 2000). Similar thoughts were promoted e.g. by Cox and Lamming (1997) who argued that management of the competencies outside the firm in a flexible, malleable, and dynamically reconfigurable manner is a new strategic challenge for companies, called "external resource management" (Cox and Lamming, 1997a).

The external resource management is problematic for companies, because rules, which apply for internal management i.e. for company internal hierarchy, do not apply as such with external resources. At the same time, neither relying on pure market approach is sufficient, since a focal company often has a substantial interest to direct and control its

network. The traditional, pure forms – market and hierarchy – appear to have limited explanatory power and are too stylistic for descriptive and expository purposes (Bensaou and Venkatraman, 1995), and negotiation, contracting and effective management of both internal as well as external contracts is necessary for sustaining competitive position (Cox and Lamming, 1997a).

Overall there are at least three perspectives that motivate the research on management of external resources. The first perspective centers on *evolution of purchasing and supply management*. Management of external resources and orchestration of them may be the next step in evolution path of purchasing and supply management. There are authors who have recognized that the current theoretical basis is insufficient in many respects (e.g. Choi and Krause, 2006). The second perspective relates to the *concept of external resource management* itself. In an academic discourse there is a disagreement, if the external resources can be managed: Some authors argue that it is impossible to manage networks, referring with that statement to a concept of network as an almost unlimited constellation of companies and relationships (e.g. Håkansson and Ford, 2002, Möller et al., 2005). Still, there is increasing empirical evidence indicating that to a certain extent management of a network-type supplier base is not only possible but also commonly focused on (e.g. Handfield and Nichols, 2004, Choi and Krause, 2006). There is also a question about *context-dependency* of the management approach. Often the management approach towards external resources can be based on traditional view where there is a powerful buyer, and weak suppliers. This model has especially been applied in the automotive industry (Bates and Slack, 1998). This view is problematic as the competition of best resources emerges. Factors like attractiveness and methods for influencing are seen increasingly important. We can also identify the emergence of different contracting methods in practice, as well as in academic literature, driven by recognition that transactions are always embedded in a social context.

1.2 Research objective and research questions

1.2.1 The evolution towards external resource management

Purchasing and its role in company management have been under constant debate for a long time. From an academic procurement and supply chain management perspective, an increasing amount of attention is directed towards researching development of effective supplier relationships. Consequently a supplier relationship management discourse has emerged. There is a growing body of literature on integration in supplier relationships, as well as on organizational aspects of purchasing function (i.e. Trent, 2004; Trautmann et al., 2009). Several contributions have been related to supplier development (Krause and Ellram, 1997b; Sako, 2004; Handfield et al., 2006). Still the management of the overall supplier base has received less attention, with only few contributions (e.g. Choi and Krause, 2006; Handfield and Nichols, 2004; Cousins, 1999). The contributions are primarily rooted to transaction cost view, and it can be agreed with Choi and Krause (2006) who argue that a richer theoretical foundation is needed to consider supplier responsiveness and supplier innovation. Similarly, a broader set of management practices would be necessary to manage each buyer-supplier relationship accordingly.

One of the major cornerstones in the evolution of purchasing and supply management research and practice is the widely known article of Peter Kraljic entitled “Purchasing must become supply management” (Kraljic, 1983). This article started a process in which supply management became gradually an established concept describing the extended strategic role of purchasing function in firms. In the 1990’s Andrew Cox and Richard Lamming proposed the “external resource management” term when talking about the new strategic function in firms (Lamming, 1993; Cox, 1996; Cox and Lamming, 1997; Cox et al., 1998; Cox, 1999). In their articles, they contrasted ERM to the “traditional” purchasing, the clerical function that purchasing had those days much more commonly than today. In their paper Cox and Lamming (1997) argue that in the future it is necessary to take a holistic total supply chain view and recognize that a firm is part of a network. They also argue that the flow of value takes place in a loosely aligned array of assets and competencies over which no one commercial organization has ultimate control (Cox and Lamming, 1997). Since the launch of the term “external resource management” the focus on external resource network of a company has only increased. The increasing importance of knowledge, technological complexity, global competition, and the availability of digital information technology has been driving the change (Möller et al., 2005).

1.2.2 Idea of orchestration

Orchestration is the study or practice of writing music for an orchestra (or, more loosely, for any musical ensemble) or of adapting for orchestra music composed for another medium (Wikipedia).

Orchestration describes the automated arrangement, coordination, and management of complex computer systems, middleware, and services (Wikipedia).

Impact of the new, emerging information technology on value chains was anticipated already at mid-80's when for example Porter and Millar (1985) argued that dramatic reductions in the cost of obtaining, processing and transmitting information is changing the way the business is done. They saw that information technology was greatly enhancing a company's ability to exploit linkages between activities both within and outside the company, and coordinate actions more closely with customers and suppliers (Porter and Millar, 1985). Later on the phenomenon was called e-business transformation at late 20th century, and it was seen as a driver for changes in the value creation and distribution of value in value chains and even fragmentation of value chains into multiple businesses (see e.g. Edelman and Heuskel, 1999; Hagel III and Singer, 1999; Möller et al., 2005; Sawhney and Parikh, 2001; Häcki and Lighton, 2001; Evans and Wurster, 1997). Closely related to this deconstruction was the emergence of new roles and management concepts, like the concept of orchestration.

The first ideas about orchestration of a value system relate to strategic alternatives for a vertically integrated company (Edelman, 1998; Hagel III and Singer, 1999; Hagel III, 2002; Häcki and Lighton, 2001). For example, Hagel and Singer (1999) argued that interaction costs determine the way companies organize themselves and the way they form relationships with other parties. They saw that while traditional, vertically integrated companies need to make compromises to keep their business processes bundled together, highly specialized companies that can optimize a particular activity they perform and gain an advantage over the integrated companies, are emerging (Hagel III and Singer, 1999). The main idea of a related concept, orchestration, was that as the deconstruction of value systems break vertically integrated companies and industries into an array of discrete businesses, a strategic option is to orchestrate the pieces of a value chain rather than own them (Edelman, 1998). Similarly, Hagel and Singer (1999) also identified a rise of a new role, which they called an *infomediary*, a company which controls the follow of commerce while using resources of other companies to execute most of the activities (Hagel III and Singer, 1999).

Sawhney and Parikh (2001) discuss the digitization of information, and argue that it has fundamentally changed how all networks operate. The intelligence of a network is its functionality – its ability to distribute, store, or modify information (Sawhney and Parikh, 2001). They see that as a consequence of the improved information technology organizations split into separate infrastructure and customer management businesses, and value is being captured at the ends. This evolution may result for example to value capture at scale-intensive network core and customized front end by common infrastructure: shared infra, common business functions, and processes by modularity in which organizational capabilities will be restructured to well-defined, self-contained modules that can be easily reconfigured and plugged to as many value chains as possible. They see the orchestration strategy as an option, considering it as an ability to coordinate among the earlier mentioned modules, and argue that the coordination capability modules will become the most valuable business skill.

Today orchestration is also associated to management of physical – sometimes outsourced and so called virtually integrated – networks (Choi et al., 2001; Brown et al., 2002; Edelman and Heuskel, 1999; Hagel III et al, 2002; Hagel III and Singer, 1999), to management of innovation networks (Dhanaraj and Parkhe, 2006; Möller et al., 2005; Ritala et al., 2009) and potentially to management of general external resource networks and supply chains, as noted by a few authors (Choi et al., 2001; Hinterhuber, 2002).

Intended benefits of orchestration approach

On conceptual level the deconstruction of value chains and related emergence of new strategic roles may be offering competitive advantage in several ways: by increased leverage of assets owned by other companies, by increased specialization, as well as by increased agility and flexibility.

Leverage of assets without owning them may provide benefits, as the orchestrators use existing advantages, like powerful brands, to retain control of an industry's value added while minimizing their own assets (Stern, 1998; Evans and Wurster, 2000). Strategies where outsourcing and subcontracting play a significant strategic role are highlighting this aspect.

Specialization perspective in turn highlights the advantages of learning and focus, and is rooted to the concept of core competencies (Prahalad and Hamel, 1990). In short, this aspect emphasizes the opportunities of an orchestrator to gain advantage by utilization of specialization of suppliers (Brown et al., 2002). The power of loosely coupled processes is ability to optimize the value of specialization and to avoid the compromises inevitable with tightly coupled processes (Brown et al., 2002).

The third potential source for benefits relate to the re-configurability of the value network and the agility and flexibility that can be gained. Configuring and re-configuring the network and focal company position in the network may in certain business environments become a capability of increasing importance (van Liere et al., 2010).

In short, the underlying promise of value related to orchestration approach is based on utilization of resources and competencies of the network. Instead of a company owning all the assets and maintaining all the capabilities itself, orchestration approach can lead to increased efficiency and agility, which is based on assumed capability to configure and reconfigure the network rapidly.

1.2.3 Orchestration of External Resources – objective of the research and a priori definitions

Orchestration of external resources is at the cross-section of two relatively new concepts. External resources as such and their management have been gaining increasing attention lately, as the economic importance of external resources has been increasing rapidly. The concept of orchestration emerged late 1990's, as companies and academics started to look for strategic alternatives for vertically integrated companies. This research focuses on orchestration of external resources in a manufacturing environment. Objective of the research is to identify principles and practices for managing an external resource network in different managerial situations in a manufacturing environment.

From a theoretical perspective, the research topic orchestration of external resources can be approached in different ways. Initially possible perspective on the challenge of external resource management is for example to consider orchestration as a governance model question (Poppo and Zenger, 2002a; Powell, 1990; Williamson, 2008; Cannon et al., 2000). At the same time it has been argued that the traditional, pure forms – market and hierarchy – appear to have limited explanatory power and are too stylistics for descriptive and expository purposes (Bensaou and Venkatraman, 1995). Also one could consider the orchestration concept as an integration issue (Das et al., 2006; Swink et al., 2007) or as a coordination question (Martinez and Jarillo, 1989; Arshinder et al., 2008). Fourth perspective, which has its roots in Resource-Based View (RBV), is the capability perspective with particular focus on capabilities connecting the buyer and the supplier (Barney, 1999). The dynamic capabilities, which are the driving force for change in capability networks are particularly relevant for the influence discussion (Eisenhardt and Martin, 2000; Barney, 1991; Teece et al., 1997; Winter, 2003).

For this research, the concept of orchestration can be initially defined based on the contributions in existing literature. Hinterhuber (2002) defines orchestration as *a way of creating and capturing value by structuring, coordinating and integrating activities of previously separated markets, and by relating these activities effectively to in-house operations with the aim of developing a network of activities that create fundamentally new markets*". With the definition he captures a broad range of activities analyzing separately both the perspectives of network configuration, i.e. selection of partner companies, and network management i.e. optimal resource utilization (Hinterhuber 2002), connecting as well the orchestration concept to new value creation and new markets.

Focusing on the loosely coupled systems, Dhanaraj and Parkhe (2006) define orchestration of an innovation network *as the set of deliberate, purposeful actions undertaken by the hub firm as it seeks to create and extract value from the network* where the term hub firm refers to a role of an orchestrator. They connect the orchestration activity to loosely coupled innovation networks in a sense that no hierarchical controls exist in the relationship and the parties also reserve certain degree of independence. In the same way focusing on the innovation networks Ritala et al. (2009) follow mainly the perspective of Dhanaraj and Parkhe adding however a network design and recruitment perspective. They define

orchestration as *the capability to purposefully build and manage inter-firm innovation networks*.

Vollmann et al (2005) approach the orchestration concept from Supply Chain management perspective, putting emphasis on facilitation and coordination aspects of the concept. Choi & Krause (2006) recognize the orchestration approach, connecting it with the recent trend of increasing levels of outsourcing. They see that orchestrating activities with suppliers in the supply base from the perspective of a focal company has become a top strategic issue. Certain companies can be seen as “process orchestrators”, since the key to achievement is the way companies manage processes, not how they structure and monitor outsourcing contracts or implement technologies (Brown et al., 2002). Role of a process –focused orchestrator (Brown et al., 2002) is a kind of specialization too, where only product of a company is the process itself, and the orchestrators assume the ultimate responsibility for end product recruiting right provides and structuring the incentives and configuring the process modules to each customer need. They are also overseeing the performance (Brown et al., 2002).

Management of external resources can also be viewed from similar perspectives as the orchestration concept. Additionally, it can be approached from more practice oriented point of view. External resource management can be seen as question of how to direct and manage external resources and suppliers in particular by supply chain management (e.g. Fisher, 1997; Cox, 1999a; Mentzer et al., 2001) or alternatively as a purchasing topic where particular focus is put on management of relationship with suppliers as dyadic inter-company relationships as well as management of supplier base and supplier network overall. However, as was argued earlier, there is a need to depart from traditional purchasing approaches and rather see the suppliers and partners as external resources, which can and should be directed by the focal company. The strong and further increasing emphasis on sourcing and procurement makes management of external resources, i.e. suppliers and partners, an essential success factor for any company.

Following the existing definitions, in this research orchestration as a concept is initially defined as ***an intentional act where a company is creating and capturing value by building, directing and leading networks of external resources.***

The definition, however, fails to answer at least on two critical aspects. First, what practices actually relate to the generic concept of orchestration remains unanswered. Second, do the definition or related practices are dependent on situation, context, or capabilities of the orchestrator?

Objective of this research is to investigate further the concept of orchestration itself. This research focuses on the practices that an orchestrator company actually does, and also on potential enablers and disablers that may affect the ability of a company to operate as an orchestrator towards its external resources. Focus is on management of external resources in a manufacturing context. Several earlier contributions identify lists of activities that orchestrators may do or may need to do in general, but specific research findings identifying activities that make orchestration possible and happen, especially in specific

situations and in manufacturing environment, are scarce. The specific research question consequently is: *What practices a focal company uses to orchestrate its external resources?*

The research question is further divided to a set of focal aspects:

- Existence of external resource management and orchestration as concepts
- Practices that can be used for the purpose
- Context-dependency of the practices, following the contingency theory view.

1.2.4 Scope of the research

Orchestration of external resources can be investigated from multiple perspectives and with different units of analysis. In order to focus the investigation, and also in order to be able to accumulate the necessary rich in-depth knowledge about the research domain, this research has been scoped relatively tightly.

1. The research has an upstream orientation. This selection is driven by the paramount importance of the supplier base and the buyer-supplier relationships (see e.g. Iloranta, 2010)
2. The focus of the research is manufacturing companies and their practices. This selection to focus manufacturing field is done in order to keep factors driven e.g. by business model more consistent
3. It is concentrating on management of supplier base from the focal company perspective. This selection is driven primarily by access to data.

1.2.5 Contingency theory view

The fundamental underlying axiom of this research is the Contingency Theory of Organizations. According to the contingency theory, the best way to organize operations – in this case *management of external resources* – is contingent to the environment (Lawrence and Lorch, 1967). Internal stages and related processes need to recognize the context they are applied in.

This world view has been visible already in a range of well-known contributions in the area of sourcing and procurement. It is widely agreed that there is no single way to manage all of the suppliers (Cox, 2004). Rather, segmentation of the supplier base and selection of appropriate methods for each of the segments is necessary (Bensaou, 1999; Olsen and Ellram, 1997).

The basic notions of contingency theory, with focus on *Situation, Ends* and *Means* are used in the research to structure the overall research design.

1.3 Thesis composition

This thesis consists of eight main chapters following a common structure of a case-based doctoral dissertation.

Chapter 1: The first chapter is an introduction to the thesis. It is introducing the reader to the study presenting the background of the research theme as well as the motivation for the study. Chapter 1 also introduces the research objectives and the actual research questions.

Chapter 2: The chapter two focuses on related literature. In the chapter the research grounding to governance approaches and models is presented and the most relevant underlying theories and perspectives for management of external resources are discussed. Furthermore, the current understanding of supplier base management, supplier relationships and upstream supply chain management is reviewed. This section is forming the basis for creating the a priori constructs for case research.

Chapter 3: The third chapter explains the research design. It begins by explaining the research strategy and overall approach. The reasoning for the strategy as well as the actual research design are described and discussed. The chapter also includes description of the used research material.

Chapter 4: The fourth chapter specifies the a priori constructs for the empirical inquiry. A priori constructs are developed based on the extant literature. They are used to focus the empirical data collection and analysis

Chapter 5: The chapter five introduces the cases and the case observations. Each of the cases is described and analyzed based on the a priori constructs. The case research consists of the cross-case analysis phase comparing the findings from the cases. Following and inductive case study approach the findings of the cross-case analysis are summarized to a set of propositions highlighting the potential results of the study.

Chapter 6: The sixth chapter focuses on research findings. The research findings combine the findings from the literature added with the findings from the empirical enquiry. The findings are introduced according to the four main focus areas.

Chapter 7: The chapter seven focuses on theorizing. Following the path from cross-case analysis to introduction of the research findings the actual contribution to theory is discussed in this chapter.

Chapter 8: In chapter eight applicability of the research is discussed. Applicability is elaborated from the point of view of validity and generalizability including also a view to managerial relevance. Additionally, suggestions for further research are introduced.

2 LITERATURE REVIEW

This chapter focuses on existing related literature. The research grounding to governance approaches and models is presented and the most relevant underlying theories and perspectives for management and orchestration of external resources are discussed.

Furthermore, the current understanding of supplier base management, supplier relationships and upstream supply chain management is reviewed. This section is also used as a basis in creating the practical approach for case research.

The literature review focuses on the following perspectives:

Governance: From a generic perspective, management of a supplier base is closely related to governance of dyadic relationships, as well as to governance of larger entities like supply chains and company networks. The governance model questions complemented with the perspectives of buyer-supplier integration and coordination theories are reviewed. The three theoretical views provide the theoretical base for external resource management overall.

Integration and coordination: One of the main theoretical perspectives on buyer-supplier relationships is supplier integration motivated by realization of interdependence between the buyer and the supplier. A perspective closely related to the integration view is the perspective of coordination. Some authors in fact consider terms like integration, collaboration, cooperation and coordination are complementary to each other (Arshinder et al., 2008).

Influence capability, power and dependence: Based on the preliminary understanding of the topic it can be identified that the focal company ability to influence on its supply base is vital for successful orchestration and leadership. The influence capability is discussed through review of selected core literature focusing on power, dependency and attractiveness in a buyer-supplier relationship.

Supply base management: including sourcing, procurement and inbound supply chain management perspectives, from the more specific supply chain and purchasing viewpoint. Furthermore, literature related to management of a supplier base, buyer-supplier relationships and inbound supply chains is reviewed.

Orchestration: The orchestration concept in a business context relates to a company ability to design, influence and lead its value network. The extant literature is reviewed, elaborating the idea of orchestration from strategic and innovation network management perspectives, as well as related to network management overall.

For clarity, certain theoretical perspectives are omitted in this literature review. Most important perspective not discussed is Resource-Based View (RBV) and related aspects,

i.e. the capability view and dynamic capability discourse (see e.g. Wernerfelt, 1984; Barney, 1991; Barney, 1999; Eisenhardt & Martin, 2000). The RBV may well provide a valid and relevant theoretical grounding for supply base orchestration as well. It needs to be considered, however, as an alternative to governance model grounding and TCE-related aspects like integration theory, and not as a complementary or as a supporting theoretical base.

2.1 Research grounding – Governance of supplier base

The word governance derives from the Greek verb κυβερνάω [kubernáo] which means to steer and was used for the first time in a metaphorical sense by Platon (Wikipedia).

Governance is the mechanism through which a firm manages an economic exchange. In dealing with risk included into business transaction and uncertainty about its outcome, parties to a transaction will select a governance structure that provides appropriate safeguards against that risk. Those safeguards will lead to more complex governance structures as levels of risk increase (Ring and Van De Ven, 1992).

Markets and hierarchies

In his article of the nature of a firm, Coase (1937) sees a firm as a governance structure breaking the former view of a firm as a black box production function (Coase, 1937); (Powell, 1990). His view was that markets and companies are alternative means for organizing similar kinds of transactions. Following the view of Coase some scholars (e.g. Williamson, 2000; Williamson, 2008) see that economics exchange can be arrayed in a continuum-like fashion with discrete market transactions on one end and the highly centralized and integrated firm at the other. The key attributes of the transactions to which transaction cost economics (TCE) calls attention are asset specificity, uncertainty and frequency (Williamson, 2008). Williamson also proposes that the market-mode features high-powered incentives, little administrative control and a legal-rules contract law regime. Similarly, where transactions have highly uncertain outcomes, recur frequently, and require unique or transaction –specific investments they can be performed most efficiently within hierarchies.

Transaction Cost Economics (TCE) forms typically the basis for the applied supply base management literature: the general position of this literature is that managers align the governance features of inter-organizational relationships - like relationships with the supplier base – to match know or anticipated exchange hazards (Poppo & Zenger, 2002). This theoretical basis, however, drives focus to contracts as well as to hard sourcing and procurement practices like process integration, coordination practices, and to ICT systems. For instance, so called hybrid (long-term) contracting is an example of such an intermediate mode of governance (Williamson, 2008).

The hybrid mode is a compromise mode that is located between market and hierarchy, and includes three different styles for management: Benign, muscular and hardheaded (Williamson, 2008). Possible methods in hybrid governance may be for instance coordination of investments, sharing expectations and targets, and communication and information exchange (Williamson, 2008). The three TCE –related perspectives to governance are illustrated in the Figure 2 below.

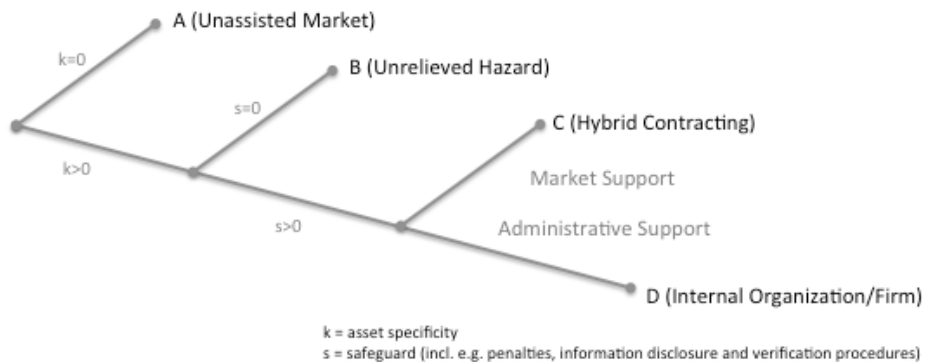


Figure 2: Market, hierarchy and hybrid contracting (Williamson, 2008)

The transaction cost economics perspective to governance has been broadly discussed and challenged by myriad of authors. It has been recognized that the traditional, pure forms – market and hierarchy – appear to have a limited explanatory power and are too stylistic for descriptive and expository purposes (Bensaou and Venkatraman, 1995). Markets and hierarchies are the polar modes of economic transactions and also multiple types of other, often intermediate forms do exist. Many scholars, including transaction cost economists, have observed that governance of inter-organizational exchanges involve more than formal contracts: Inter-organizational exchanges are embedded in social relationships (Poppo and Zenger, 2002). Furthermore, according to Ring and Van der Ven (1992), the inter-organizational relationships can be also governed by two other types of contracting: recurrent and relational. Consequently, it is easy to agree with e.g. Choi et al. (2006), who argue that supply base management would require a richer theoretical foundation to cover successfully the organizational and relational side of the task.

Recurrent contracting

Recurrent contracts involve repeated exchanges that have moderate degrees of transaction specificity (Ring and Van der Ven, 1992). They are predominantly market-based transactions, where terms of the exchanges tend to be certain but some contingencies may be left for future resolution. Temporally recurrent contracting is relatively short-term. Parties see themselves as autonomous and legally equal. Recurrent contracting is used to explore and experiment with safeguards and alternative methods for conflict solving. For

example command structures and authority systems, incentive systems administered pricing systems, and structures for conflict resolution and standard operating procedures (Ring and Van De Ven, 1992).

Relational contracting

Relational contracting in contrast to the recurrent contracting tends to involve long-term investments and transactions characterized with high asset specificity, uncertainty, and recurrence in a small number of bargaining conditions (Ring and Van De Ven, 1992). In relational contracting parties see themselves legally autonomous and equal parties. Relational governance involves property, products or services jointly developed and exchanges entailing highly specific investments. It is typically used in ventures that cannot be fully specified or controlled by the parties in advance. Typical safeguards in a relational governance approach are e.g. consultation to reduce information asymmetry, practices for gathering and disseminating information, use of hostages and collateral as a means to reduce risk and requirement for reciprocity especially in exchange of tacit know-how. Authority and control systems can be loosely specified in the contract, and issues like cost and quality can be left relatively open-ended.

A central theme in relational contracting is inter-organizational trust. Inter-organizational trust can be considered as an organization's expectation that another firm will not act opportunistically (Gulati and Nickerson, 2008). Even if trust can be considered as a soft item, the rationale for trust building is hard: well-functioning social relationships can economize the governance of the relationships in a network. The importance of trust for smooth and effective functioning of network organizations has been broadly recognized and discussed (Jarillo, 1988). Some scholars see that trust between organizations can complement any mode of governance and thus improve exchange performance whenever contracting hazards are present by reducing conflicts and costs of conflict resolution (Gulati and Nickerson, 2008). As such, inter-organizational trust operates as a governance mechanism that mitigates opportunism in an exchange context characterized by uncertainty and dependency (Doney and Cannon, 1997) and creates an opportunity for plural mode of governance where contractual agreements can be complemented with relational social norms (Cannon et al., 2000). Trust emerges over time and through successful interaction (Jarillo, 1988) and forms the basis for the reciprocal relationships. In addition to the role of trust as a part of relational governance trust impacts also the business continuity. For example a highly cited study by Doney and Cannon (1997) demonstrates how experienced trust in an industrial buying context significantly increases the likelihood that buyers anticipate doing business with a particular supplier firm also in the future.

The relational contracting is typically applied to govern joint R&D, technology, or product development ventures (Ring and Van De Ven, 1992). In practice, real-world contracting often involves both formal and relational incentives, creating situation where both contractually enforced mechanisms as well as self-enforced mechanisms are affecting in the relationship governance (Levin, 2003; Poppo and Zenger, 2002c).

Network governance

Traditionally, the underlying assumption of supply base management literature as well as practice has been that a strong focal company exists being structurally located in the middle of a network. In addition to relational and recurrent governance models and a network governance approach have recently received increasing attention.

Common for network-like mechanisms is focus on horizontal patterns of exchange, interdependent flow of resources and reciprocal lines of communication (Powell, 1990). The main mechanism related to network forms of governance is inter-organizational collaboration. A part of the dyads in the network is managed directly by the focal company, while other dyads are considered to be in a more arms-length relationships being considered as market-driven and transaction oriented. At the same time there is a realization that network of suppliers is increasingly relevant for a company performance; the supplier network is seen to include a broader set of companies many of them not being in a direct contact with the focal company. As defined by Choi and Krause (2006), a supply network is a network of all inter-connected companies that exist upstream to any one company in the value system. Supply base in turn is the portion of the supply network that is actively managed by the focal company through contracts and purchasing of parts, materials, and services (Choi and Krause, 2006).

Network forms of organization are providing an alternative view to the supply base management. Network form of organization is contrasted with the traditional forms of organization – markets and hierarchies – and e.g. Powell (1990) argues that as firms are blurring their established boundaries and engaging in forms of collaboration where neither market nor hierarchy represents well the model of operation. According to Powell (1990) the network form of organization is not a hybrid form of organization between a market and hierarchy as is argued e.g. by Williamson (2008) but a completely different dimension (Powell, 1990). There are, however, conflicting views to that as well. In addition to Williamson, for example also Thorelli (1986), sees networks as something between markets and hierarchies. Building on his view Jarillo (1988) develops a 2x2 matrix, arguing that one of the quadrants could be called strategic network characterized by close to hierarchical relationships, however with external companies. Those relationships would include relatively unstructured tasks, long-term viewpoint and relatively unspecified contracts (Jarillo, 1988). According to Powell (1990), typical characteristics for network – type of organizations are lateral or horizontal patterns of exchange, interdependent flow of resources, and reciprocal lines of communication (Powell, 1990).

Operating with a network form of organization has several perspectives, which can be seen complementing or sometimes challenging the traditional supply base management practices. For instance, supply base management literature considers extensively the issue of partner selection. Often the partner selection, the consequent formulation of relationship strategy, targets and objectives are based on factors like complexity of the purchasing situation and the relational power of the purchasing company (see e.g. Kraljic, 1983). From the network management perspective partner selection is essential as well; from this perspective however the central concern is the alignment of values and motivations (Jarillo,

1988). Since factors like values and motivations relate to people and not to organization as such, the personal relationships are of importance. Therefore we can argue that in practice, the networks form around individuals engaged in reciprocal, preferential mutually supportive actions (Powell, 1990).

The literature on governance models is summarized in the Table 1.

Governance model	When applicable	Safeguards and practices	Authors
Market governance	Market –based discrete transactions	High-powered incentives, little administrative control, focus on legal contracts and financial incentives	Coase (1937), Williamson (1985, 1989, 2008), Barney (1999)
Hierarchy	When transactions have high uncertainty, high frequency, or require transaction – specific investments	An exchange brought inside the company boundaries, e.g. company owning and operating a factory	Williamson (1985, 1989, 2008), Barney (1999)
Hybrid or intermediate governance	Complex contracting situations and different forms of strategic alliances, joint ventures	Safeguards e.g. long-term supply contracts, coordination of joint investments, sharing expectations and targets, co-locationing	Williamson (2008), Barney (1999)
Recurrent governance	Repeated, predominantly market-based exchanges that have moderate degree of transaction specificity	Command and authority systems, incentive structures, structures for conflict resolution, standard operating procedures	Ring & Van der Ven (1992)
Relational governance	Typically applied to govern joint R&D, technology, or product development ventures	Practices related to reduction of information asymmetry: consultation, use of hostages and collateral. Loosely specified contracts combined with processes for joint problem solving	Ring & Van der Ven (1992), Grandori & Soda (2006)
Network governance	<ul style="list-style-type: none"> • Indefinite, sequential transactions, patterns of repeat trading • Networks of individuals engaged in reciprocal, preferential, mutually supportive actions • Dependence on resources of the other actors in the network, mutual orientation 	Circumstances in which there is a need for efficient, reliable information (Powell 1990). Exchange of commodities whose value is not easily measured: Know-how, technological capability Mutual interest and behavior is based on mutual standards	Eccles (1981), Jones et al. (1997), Powell (1990)

Table 1: Summary of Governance Models

Unilateral vs. bilateral governance

An interesting view to governance is provided by Heide (1994) who analyzes the governance of what he calls “nonmarket forms of governance”, referring to partnerships

and other inter-firm alliances. By analyzing relationship initiation, features related to relationship maintenance and relationship termination he divides the governance approaches to three categories - one of market governance and two types of nonmarket governance: Unilateral/hierarchical and bilateral (Heide, 1994) where bilateral governance includes many relational governance aspects.

	Market governance	Nonmarket governance	
Dimension		Unilateral/hierarchical	Bilateral
Relationship initiation	No particular initiation process	Selective entry; skill training	Selective entry; value training
Relationship maintenance			
<i>Role specification</i>	Individual roles applied to individual transactions	Individual roles applied to entire relationship	Overlapping roles: joint activities and team responsibilities
<i>Nature of planning</i>	Nonexistent; or limited to individual transactions	Proactive/unilateral; binding contingency plans	Proactive/joint; plans subject to change
<i>Nature of adjustments</i>	Nonexistent; Or giving rise to exit or immediate compensation	Ex ante / explicit mechanism for change	Bilateral / predominantly negotiated changes through mutual adjustments
<i>Monitoring procedures</i>	External / reactive; measurement of output	External / reactive; measurement of output and behavior	Internal / proactive; based on self-control
<i>Incentive systems</i>	Short term; tied to output	Short- and long term; tied to output and behavior	Long term; tied to display of system-relevant attitudes
<i>Means of enforcement</i>	External to the relationship; legal system/ competition/ offsetting investments	Internal to the relationship; legitimate authority	Internal to the relationship; mutuality of interest
Relationship termination	Completion of discrete transaction	Fixed relationship length, or explicit mechanisms for termination	Open-ended relationship

Table 2: Dimensions and forms of interfirm governance (Heide, 1994)

2.2 Integration and coordination of dyadic relationships

One of the main theoretical perspectives on buyer-supplier relationships is supplier integration motivated by realization of interdependence between the buyer and the supplier. As earlier the concern was to get various functional areas to work together to meet company goals, with increasing portions of value being created through external resource base the focus is moving towards integration of various partners in the value network (Frohlich and

Westbrook, 2001; Das et al., 2006). A growing body has also reported positive associations between firm level integration measures and organizational performance (Das et al., 2006). In general, external integration is a vehicle for communicating, learning, transferring and applying the knowledge obtained from internal integration actions to the supply based for joint benefit (Das et al., 2006).

To integrate activities, a variety of practices can be considered. Supplier integration is realized through practices that involve a combination of internal purchasing-manufacturing and external supplier related initiatives (Das et al., 2006) and also may involve a number of secondary activities that are concerned with value stream cohesion (Hines, 2008). Vertical mechanisms build on organizational authority and include mechanisms such as centralization and standardization. Lateral mechanisms on the other hand are based on communication rather than authority and they may be formal or informal and include structures such as task forces, liaison and integrator roles, boundary roles and various team and meeting arrangements and integrative units and can be both informal and formal in nature. Finally, information systems are a separate set of integration mechanisms where their role is more as a complement to vertical and lateral mechanisms offering a way to transfer information both vertically and laterally.

A perspective closely related to the integration view is the perspective of coordination. Some authors, in fact, consider terms like *integration*, *collaboration*, *cooperation* and *coordination* are complementary to each other (Arshinder et al., 2008). In any system the smooth functioning of entities is the result of successful coordination (Arshinder et al., 2008). Dependencies between e.g. supply chain members can be managed by utilizing some means and mechanisms of coordination targeting to improved performance of an overall supply chain (Arshinder et al., 2008). The most commonly accepted definition of coordination is the *act of managing dependencies between entities and the joint effort of entities working together towards mutually defined goals* (Malone and Crowston, 1994). Taken the perspectives together, the internal and external practices of supplier integration form an arrangement of organizational coordination routines that mutually support and sustain each other (Das et al., 2006).

Mechanisms of coordination can be divided roughly into structural and formal mechanisms. Formal mechanisms include departmentalization or grouping of organizational units, centralization and decentralization of activities and formalization and standardization with means like written policies, rules and operating procedures. With formal mechanisms also planning aspects like strategic planning and budgeting are emphasized. The control with formal mechanisms focuses on output and behavioral control (Martinez and Jarillo, 1989).

Informal and subtle mechanisms, in turn, consist of three kinds of managerial tools (Martinez and Jarillo, 1989): Lateral relations that cut across the formal structure, informal communication by means of creating a network and organizational culture through process of socialization; ways of doing things, decision-making style and objectives and values of the company. The main integration and coordination practices discussed in the literature are summarized in detail in the Table 3.

Mechanisms for integration/coordination	Authors
Formal mechanisms	
Integration and coordination through formal structures: Departmentalization, grouping, centralization / decentralization	Martinez & Jarillo (1989)
Formalization and standardization through written policies, rules and operating procedures	Martinez & Jarillo (1989)
Financial incentives for performance improvements	Trent & Monzcka (1998)
Strategic partnerships, development of collaboration structures	Das et al. (2007), Swink et al. (2007), Wagner (2003)
Contracts: Various versions of contracts can be applied to achieve coordination	Arshinder et al. (2008)
Shared IT systems enabling rapid information exchange	Swink et al. (2007), Sanders (2008)
Asset-specific investments	Das et al (2007), Williamson (2008)
Direct investments with suppliers, financial assistance to suppliers	Krause et al. (1998), Das et al. (2007)
Output and behavioral control: Performance monitoring and management, feedback systems	Martinez & Jarillo (1989), Das et al. (2007)
Formal supplier evaluations	Das et al. (2007)
Informal mechanisms	
Cutting across the formal structures: Development of informal lateral relations	Martinez & Jarillo (1989)
Relational capital development initiatives like co-development activities, supplier relationship development, use of buyer-supplier councils and similar mechanisms	Carter & Narashiman (1996), Das et al. (2007), Swink et al. (2007)
Joint planning and decision making	Martinez & Jarillo (1989), Das et al. (2006), Swink et al. (2007)
Joint problem solving	Das et al. (2007)
Inter-firm communication: Both information exchange as well as informal communication, sharing of sensitive information	Lee&Billington (1992), Das et al. (2007)

Table 3: Integration and coordination practices

Despite of the broadly elaborated benefits of integration and active coordination efforts, it would however be a mistake to apply the logic of maximizing the integration across the board. Heavy integration is not always feasible or desirable; rather it is necessary to find the optimal level for each case. In some situations potential relationship benefits are exceeded by the investment costs incurred and there are always limits to the investments a company can afford. Because integration is not cost-free it should focus on relationships with key customers and suppliers balancing the benefits with cost of coordination as well as cost of compromise and costs of inflexibility (Swink et al., 2007). Integration may also be a strategy that slows down response to change and by fostering interdependencies a rigid integration potentially creates inflexibility and impedes adaptation to uncertainty.

Additionally, a mutual interdependence between intra-organizational and inter-organizational integration demands internal cohesiveness and coordination as a prerequisite (Wagner, 2003). Some studies have found that promoting integration indiscriminately may actually decrease performance (Das et al., 2006).

Integration improves supply chain performance, but implementing such a relationship is a challenge and requires trust, commitment, and resources and capabilities that are not always possible to allocate to a specific supply chain relationship. Therefore, not all relationships target the highest level of integration, but rather it is necessary to find an appropriate level of integration (Laiho et al., 2009).

2.3 Influence capability, power and dependence in supply chains

The view on influence in the extant literature can be divided to two broad categories: to purchasing and supply chain management power view and to a view where influence is based on indirect, social mechanisms.

Power-based influence capacity

Purchasing power and supply chain management power can be defined in different ways. Stannack (1996) defines the supply chain management power as *the capacity to optimize the behavior of suppliers and subcontractors in accordance with desired performance objectives*. Under that definition, the supply chain management power is about influence through reduction, direction, as well as increase of supplier alternatives and actual actions. That influence takes place in an interaction, or in a series of interactions (Stannack, 1996) with suppliers. The influence actions can take forms of e.g. organizing competition or changing the degree of asset specificity and thus affecting the degree of dependence (Stannack, 1996). Critical aspects to recognize when considering power with external resources are the connection of power to social relations and methods of exercising power. First, power is always propriety of a social relation, not an attribute of an actor (Emerson, 1962). That observation led the way to the perspective where power in a relationship grew from another's dependence (Emerson, 1962). This view still dominates the concept of power in buyer-supplier relationships. The central point with power-dependence theory is that power grows from another's dependence, and in cases of mutual dependence it is more or less imperative to each party to try to control or influence the other's conduct (Emerson, 1962). In these relationships power and dependence is determined by the extent that the parties of a relationship value the benefits that they can obtain from the relationship and by the probability that they can obtain the resources from alternative sources (Stannack, 1996). As noted by Emerson (1962), power resides implicitly in the other's dependency.

Second, we can identify several ways to exercise power. In classical writings power has been to large extent defined as coercive power – an ability to reward and punish (Stannack, 1996). Following the power-dependency theory, the creation of dependency may also lead to a situation where on both actors and influence the conduct of another. Stannack (1996)

identifies also further way to exercise power: Influence, which he labels as exercise of usually non-material power. Cialdini (2001) defines a list of instruments, which can be used to derive influence: Reciprocation, consistency, social proof, liking, authority, and scarcity, and use of those to reinforce the other actor to perform a desired further action.

The power-dependence view and the related methods are often forming the basis for influence towards the external resources. It has been argued, based on the power-dependence view, that an integrated supply chain management can only be properly implemented when the focal organization is in one of two power positions. The first is when the focal organization is in a position of structural dominance over its extended network of suppliers. The second is when there is interdependence with the extended network of suppliers which results in power being shared willingly by both sides in these exchange relationships (Cox, 2001). As Cox (2001) argues, supply chains must exist as structural properties of power. Physical resources that are necessary to construct a supply chain will exist in varying states of contestation. The contestation will be based on horizontal competition between traditional rivals and also based on vertical power struggle over the appropriation of value between buyers and suppliers at each point of the chain (Cox, 1999a).

In a buyer-supplier relationship the power-dependence view can be used to analyze the relationship situation in order to determine the potential influence of the focal company. For example Cox (2004) has defined a power matrix, which describes how attributes of buyer and supplier lead to different power situation.

Attributes to Buyer Power Relative to Supplier	HIGH	<ul style="list-style-type: none"> • Few buyers / many suppliers • Buyer has high % share of total market • Supplier is highly dependent on buyer • Supplier's switching costs are high • Buyer's switching costs are low • Buyer's account is attractive to supplier • Supplier's offering is standardized commodity • Buyer's search costs are low • Supplier has no information asymmetry over buyer 	<ul style="list-style-type: none"> • Few buyers / few suppliers • Buyer has relatively high % share of total market for supplier • Supplier is highly dependent on buyer for revenue with few alternatives • Supplier's switching costs are high • Buyer's switching costs are high • Buyer's account is attractive to supplier • Supplier's offering is relatively unique • Buyer's search costs are relatively high • Supplier has moderate information asymmetry over buyer
	LOW	<ul style="list-style-type: none"> • Many buyers / many suppliers • Buyer has relatively low % share of total market for supplier • Supplier has little dependence on buyer and has many alternatives • Supplier's switching costs are low • Buyer's switching costs are low • Buyer's account is not particularly attractive to supplier • Supplier's offer is standardized commodity • Buyer's search costs are relatively low • Supplier has very limited information asymmetry advantages over buyer 	<ul style="list-style-type: none"> • Many buyers / few suppliers • Buyer has low % share of total market for supplier • Supplier has no dependence on buyer for revenue and has many alternatives • Supplier's switching costs are high • Buyer's switching costs are high • Buyer's account is not particularly attractive to supplier • Supplier's offering is relatively unique • Buyer's search costs are very high • Supplier has substantial information asymmetry advantages over buyer
		LOW	HIGH
		Attributes to Supplier Power Relative to Buyer	

Figure 3: The Power Matrix: attributes of Buyer and Supplier Power (Cox, 2004)

However, the power perspective raises questions about management capabilities of a company: all approaches may not be suitable or sufficient in all situations. The influence capabilities of a focal company can differ significantly. The power/dependency situation between the focal company and its supply base, as well as attractiveness of the focal company as customer affect the ability of the focal company to direct its supply network.

For example, a customer can be significantly smaller than the supplier, or represent a small proportion of the supplier's turnover (Bates and Slack, 1998), supplier may be in possession of key technologies and have effective monopoly power (Bates and Slack, 1998). Suppliers may also be supplying bottleneck products and consequently having a power position in the network, thus requiring special attention (Kraljic, 1983), or are located in the strategic quadrant and may be perceived having dominance in the buyer-supplier relationship (Caniëls and Gelderman, 2007).

Attractiveness in buyer-supplier relationships

As is recognized by several authors, e.g. by Hald et al. (2008), for management and control mechanism to work and thus the value to be created and transferred between the buyer and the supplier, the dyadic actors need to see the relationship attractive (Hald et al., 2008). Recent developments in industry support the growing importance of being attractive to key suppliers. The recognition of the role of attractiveness concept emphasizes that it is vital to understand the practices and influence mechanisms reaching beyond purchasing volume and bargaining power only.

The attractiveness concept has its roots in social exchange theory. Social exchange theory proposes that attraction is the force that inspires the parties to voluntarily create value for each other. Attractiveness is also a resource that increases the reward power in the inter-organizational relationships. Reward power is structurally induced and unlike coercive power, reward power does not need to be used intentionally to be effective (Emerson, 1962; Molm et al., 2000). In other words, when firm A is attractive in the eyes of firm B, firm B voluntarily aims to provide value for firm A, even though firm A does not ask firm B any favor (Tanskanen and Aminoff, 2015). Being an attractive business partner is a way to influence others and to make them to progress to the desired direction. With high level of attractiveness a company can mobilize a part of the network in the direction it wishes, if the actions are designed appropriately and seen to be positive by those whose support the company needs (Håkansson and Ford, 2002). As identified by Tanskanen et al. (2012) and in previous studies (Christiansen and Maltz, 2002; Ellegaard et al., 2003; Harris et al., 2003; Hansen et al., 2008; Mortensen et al., 2008; Ramsay and Wagner, 2009), communication, information sharing, innovation capability and growth are the most important determinants of buyer attractiveness. In addition, cost effectiveness, delivery capability and innovation capability emerged in their study as well as common attributes of supplier attractiveness, as in previous studies too.

2.4 Supplier base management, sourcing and procurement perspective

Throughout the most of industrial history, purchasing has been seen as a set of clerical function conducting operational activities, incapable of contributing strategically to overall organizational effectiveness (Monczka et al., 1993; Cox and Lamming, 1997a). Recently, however, the potential strategic contribution the purchasing and sourcing process can make to a firm's total performance has been increasingly recognized and the purchasing activity is moving from a clerical function towards a strategic process (Monczka et al., 1993; Cousins and Spekman, 2003). As Cousins and Spekman (2003) also point out, the focus of purchasing is moving away from managing the flow of goods and services more towards management of the entire supply process with particular focus on finding, developing and leveraging external resources to help to achieve the goals of the firm (Cox and Lamming, 1997; Hall, 2000; Cousins and Spekman, 2003). This change is well highlighted by definition of supply management by Cox and Lamming (1997): *Supply management: the*

strategic management of external and internal resources and competencies in the fulfillment of commitments to customers.

This chapter discusses the approaches to management of supplier base from three perspectives: Strategic supplier base management, buyer-supplier relationship management, and operative purchasing and supply chain management.

The role of supplier base management and purchasing as an interface between internal and external resources is critical in management of external supplier resources. The actual configuration of the interface between a buyer and a seller determines to a large extent what kind of value the buyer is able to capture from a supplier. Often the purchasing function is considered as the main factor in a company's intentions to leverage the effectiveness, efficiency and innovation, which potentially can be gained from external supplier resources. Procurement activities will lead in the development of the supply base to ensure that suppliers are world class and that their skills and capabilities are leveraged to bring value to the marketplace (Cousins and Spekman, 2003)

From the strategic supplier base management perspective it is critical to understand how to differentiate the management approach between different suppliers. This aspect is discussed later as strategic supplier base design. Araujo et al. approach the differentiation question by analyzing the types of interfaces between the buyer and seller (Araujo et al., 1999). Following the hypothesis of Dyer and Singh (1998), their basic argument is that control of resources as well as access to resources controlled by other parties (suppliers) defines the competitive position of a firm.

There are also various types of managerial aspects that have a role as a part of overall supply base management process. Such aspects are for instance supply chain design (Childerhouse and Towill, 2000; Fine, 2000), Also operational dimensions like management of logistics and order fulfillment (Mentzer et al., 2001; Lee and Billington, 1992) form a part of supplier base management.

Supplier base management

Choi and Krause (2006) define supply base as *a portion of the supply network that is actively managed by the focal company through contracts and purchasing of parts, materials, and services*. Structurally, the focal company is at the center of all suppliers in the supply base, coordinating and controlling its activities (Choi and Krause, 2006).

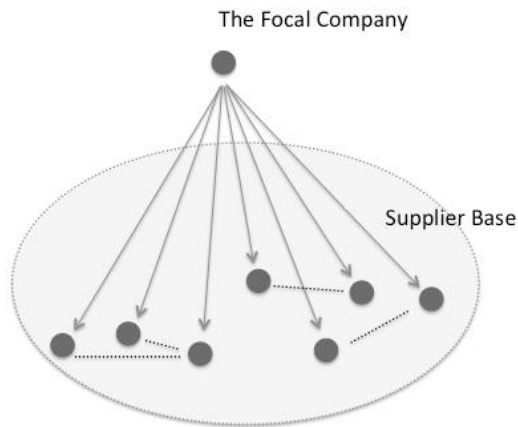


Figure 4: Focal company and its supplier base (Choi and Krause, 2006)

A supply base is the portion of the supply network that is actively managed by the focal company through contracts and purchasing of parts, materials, and services. A supply network in this regard includes all companies that take part directly or indirectly in supplying industrial inputs to a focal company with or without that company's knowledge. (Choi and Krause, 2006.) In this research a supplier base is considered to be effectively the same than a supply base: The portion of the network of companies upstream in the value system that is actively managed by the focal company. Structurally, the focal company is at the center of all suppliers in the supply base, coordinating and controlling its activities (Choi and Krause, 2006).

A supply network, instead, includes all the companies that take part directly or indirectly in supplying industrial inputs to the focal company (Choi and Krause, 2006). It is essential to note that a supply network emerges over time with no single company deliberately orchestrating its emergence (Choi and Krause, 2006) whereas the supply base is more actively recruited and managed by the focal company. The term management is more appropriately applied to supply base than to supply network (Choi and Krause, 2006), which is in line with the perspective of a network researchers who argue that it is not possible for a network to be managed by a single company (Möller et al., 2005) and to the view of Choi et al. (2001) who see the supply network being a complex adaptive system where autonomy and non-linear operations are integral parts (Choi et al., 2001). As they argue, instead of having the ultimate goal being to control the entire supply network the goals should be, in contrast, a strategy on how much to control of the supply network to control and how much of it to let emerge.

In the extant literature formal definitions of supply base management as an activity are missing, but the theme is discussed. Several authors use the concept of supply base management to describe issues related to supply base overall and to describe practices used by the focal company to influence the supply base and improve its performance. However, from the perspective of practical supplier base management actions, many buying

organizations appear to be operating under the belief that by after categorization of the supplier base merely expanding their current practices, processes and associated information system, they will be able to establish a manage a productive supply base (Handfield and Nichols, 2004). This view largely ignores several key aspects of supplier base management.

Structural questions and design of the supply base

Recently the most common observed supply base management aspect has been focused on number of suppliers the focal company maintains in its supply base (Choi and Krause, 2006). Choi and Krause study the design of supply base from the point of view of complexity and find out that reduction of complexity may lead to less transaction cost, and increasing supplier responsiveness. However reduction may also have an opposite effect on supply risk and supply innovation and may not always be desirable (Choi and Krause, 2006). On the other hand, it appears that too much autonomy may lead to anarchy and disintegration of coherent activities that could harness innovative thoughts (Choi and Krause, 2006).

In addition to the question of number of suppliers, design of the supply base has emerged as a critical issue from various perspectives and not only related to the discourse of supply base management as such. Also from supply chain management perspective, as well as in discourse related to aligned design of products, processes and supply chains (Fine, 2000) design of the supply base is recognized as a critical issue.

The design questions of a supply base have been extensively discussed in relation to segmentation of supplier base and related use of purchasing portfolio-mapping techniques. Portfolio approach in purchasing refers to analyzing and classifying purchasing items and creating purchasing strategies for each group. The classical way to do it is based on relative criticality of spend and the nature of supply market difficulty, as known as Kraljic matrix (Kraljic, 1983). The items are then divided into four classes: strategic items, leverage items, bottleneck items and non-critical items.

The introduction of portfolio approach has been considered as the major breakthrough in the development of professional purchasing (Gelderman, 2003). The benefit of portfolio models is that they simplify a complex situation and help companies to understand better the purchasing problems and to differentiate purchasing strategies. This has led to a more common use of portfolio approaches (Gelderman, 2003; Van Weele, 2005).

These models aim to 1) analyze products and classify them into four groups according to two dimensions, 2) analyze the required supplier relationships to deliver the products in each category, 3) develop action plans in order to bridge the gap between current and required supplier relationships. A later tendency in the development of portfolio approaches is to focus more on supplier relationships instead of purchasing items (Olsen and Ellram, 2003; Bensaou, 1999). Weighting of each factor, for example complexity of supply market, is the most important part of the implementation process (Olsen and Ellram,

1997). As such, portfolio approaches do not provide support for daily business situations, but serve rather as a strategic tool.

In addition to the portfolio approaches, other ways to segment the supplier base have emerged. For example Harland et al. (2001) introduce a taxonomy for supply networks.

	Dynamic Supply Network	Routinized Supply Network
Low Degree of Focal Firm Supply Network Influence	Product / Technological Innovation, Demand Management, problems - Buffer Stocks <i>Coping with Network</i>	Process Innovation/Operational Improvement, Stock Minimization <i>Coping with Network</i>
High Degree of Focal Firm Supply Network Influence	Product / Technological Innovation, Demand Management, problems - Buffer Stocks <i>Managing Network</i>	Process Innovation / Operational Improvement, Stock Minimization <i>Managing Network</i>

Figure 5: The Taxonomy of Supplier Networks (Harland et al., 2001)

Cox (2004) instead builds his analysis on relative share of value appropriation and on a way of working in the relationship. According to him, the key question is how each of the relationship management styles could be linked with particular sourcing approaches under specific power and leverage circumstances to create business relationship alignment? He identifies four basic relationship management styles that buyers and suppliers can choose from in order to manage relationships (Cox 2004). The relationship portfolio approach is illustrated in the Figure 6.

Relative Share of Value Appropriation	Inequality	Adversial Arm's-Lenght Relationship	Adversial Collaborative Relationship
	Equality	Non-Adversial Arm's-Lenght Relationship	Non-Adversial Collaborative Relationship
		Arm's-Lenght	Collaborative
		Way of Working	

Figure 6: Relationship Portfolio Matrix (Cox, 2004)

Development of buyer-supplier relationships as a part of supply base management

Issues on supplier capacity and capability have become important focus areas for supply base management. Many focal companies have chosen to conduct various forms of supplier development activities, ranging to improvement of single activities to structural changes and promotion of consolidation of smaller suppliers (Choi and Krause, 2006).

Trust as the foundation of positive and productive buyer-supplier relationship and communication and information sharing which is often considered as critical success factor in dealing with suppliers. Communication between people and information sharing in general create the foundation for personal relationships which are in some cases an inherent aspect of supply base management (Handfield and Nichols, 2004). As Handfield and Nichols (2004) also note, all of the four dominant bodies of theory, transaction cost economics, organizational design, relational theory, and network theory, support the perspective that effective communication of requirements with appropriate safeguards are critical to effective global supply base management.

Following the importance of also operative communication and information exchange, in supply base management (if the procurement and inbound supply chain management perspectives are included) information technology contributes to supply base management through several functions. This is based on the view that a global supply base can be linked using supporting information systems (Handfield and Nichols, 2004). Functions that the information systems cover, several authors (Laseter and Stasior, 1998; Simchi-Levi et al., 2003; Auramo et al., 2005) identify 1) information availability, visibility and management 2) efficient transaction management or execution and 3) support for decision making and planning, 4) as well as support for co-operation and collaboration (Simchi-Levi, 2003).

Technologies can be viewed from two perspectives. On one hand, technologies can support execution of inter-firm business processes, supplier co-ordination and price determination and can thus be labeled as transactional. On the other hand, technologies can support collaboration through integrating trading partners in terms of information sharing; thus to be labeled as relational (Johnson et al., 2007). This classification is based on transaction cost economics (Williamson, 1975) and on the relational view (Dyer and Singh, 1998) respectively. The uses of technology can be categorized accordingly: transactional uses of technology relate to the execution of the sourcing process and upstream supply chain fulfillment whereas the relational uses of technology can be associated with customer and supplier integration for joint inventory planning, demand forecasting, order scheduling and relationship management (Frohlich and Westbrook, 2002).

Monczka et al. (1993) discuss the strategies for maximizing supply base performance and argue that supply performance contribution would be best improved by focusing on aggressive approaches: Early and continuous supplier design involvement, worldwide co-ordination of purchase strategy, consolidation of volumes and setting high expectations (Monczka et al., 1993). Overall, measuring supplier performance effectively and communicating this information to all parties in the supply chain in a clear and effective manner is a fundamental part of effective supply base management (Handfield and Nichols,

2004). Cousins and Spekman (2003) argue, that in terms of performance management the challenge is to find out and accept performance metrics that are not short term and not easily quantifiable.

Managing Interfaces with suppliers

Another perspective to differentiation of the approach with suppliers is to look at buyer-supplier interface portfolio. Suppliers differ widely in their capabilities and in what benefits they can bring to a customer (Araujo et al., 1999). According to Araujo et al. (1999), the most important distinction between different resource interfaces is to what extent the customer and the supplier are aware of each other's contexts. Araujo et al. (1999) divide the supplier interfaces into four categories, according to how close the buyer and the supplier are with each other. This categorization is described in the Table 4.

Interface Category	Characteristics	Customer Benefits Productivity	Customer Costs Productivity	Customer Benefits Innovativeness	Customer Costs Innovativeness
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.	Adaptation 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 customer on how to produce.	Supplier can pool together similar orders; economies 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 as well as the customer's productivity.	Supplier may reap benefits that are not shared with customer.	Supplier has some leeway to propose innovation 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 of how best to make use of existing resources.	Supplier learning about user context opens up the gamut of solutions offered.	Requires investments in joint development and learning.

Table 4: Managing Interfaces with Suppliers (Araujo et al., 1999)

The categorization of the interfaces is most interesting from the perspective of fit: Which type of interface provides the most suitable management approach in different situations?

Standardized:

- Best option to make use of large-scale supplier operations
- Arm's-length relationships and adaptation to generic market standards
- No opportunity to direct learning
- Substantial learning curve opportunities possible

Specific interfaces:

- Limited opportunities to attain productivity gains
- Do not foster direct learning from suppliers
- Dominant role of the customer may limit suppliers learning opportunities too

Translation interfaces:

- Allow room for economies of scale and scope
- Limited potential for direct learning
- Degrees of freedom may enable supplier to reuse knowledge from other interfaces

Interactive interfaces

- Involve joint efforts with potential to affect cost structures

Conclusion is that a buyer needs a variety of interfaces which are interdependent. Because of changing internal and external conditions, it is important that the interfaces are continuously monitored and managed (Araujo et al., 1999). Relationships provide the opportunity for a company to influence others but the same relationships are also a force for these others to influence the company (Håkansson and Ford, 2002).

Management of buyer-supplier relationships

Dyadic inter-company relationships are one of the cornerstones for management of external resources. The focus in much of the existing research is on individual dyadic relationships between firms, such as between a manufacturer and a supplier (Wathne and Heide, 2004).

The discussion related to supplier relationships begins with an observation that supplier relationships should not be managed in a uniform way. The observation was surfaced through studies analyzing how automakers managed their supplier relationships (Dyer, 1996; Dyer et al., 1998). Dyer (1996) identifies two alternative models for management of supplier relationships. First one is the traditional arm's length model, advocating minimized dependence on suppliers and maximized bargaining power. Another approach can be a partnering -based model based on a view that close supplier relationships may also lead to superior performance (Dyer, 1996).

The traditional, competition-based approach to supplier relationship emphasizes the importance of independence and bargaining power of the buyer (Dyer, 1996). The goal of purchasing is to find mechanisms to offset or surmount the sources of supplier's power (Porter, 1980) and leverage the buyer's own power.

Partnering based model on the other hand emphasizes the benefits that close supplier relationships may bring. The superior performance in the close supplier relationships is based on sharing of information leading also to better coordination of tasks; investments in relation-specific assets; and more reliance on trust to govern their relationships, minimizing the transaction costs (Dyer, 1996).

The relationships have naturally more than two opposite stages and they have been seen e.g. as an integration continuum (Cousins and Spekman, 1998; Hines et al., 1996). The model developed by Cousins and Spekman (1998) suggests stages how supplier may develop into a partner. In the first stage, the relationship is based on price negotiations and an adversarial relationship. In the ‘cooperation stage’ long-term contracts are established and the number of suppliers is actively reduced. In ‘coordination’, the next stage, information linkages enable wider and more routine information exchange. In most supply chains all key supplier and customer relationships have achieved cooperation or coordination stages in their integration efforts.

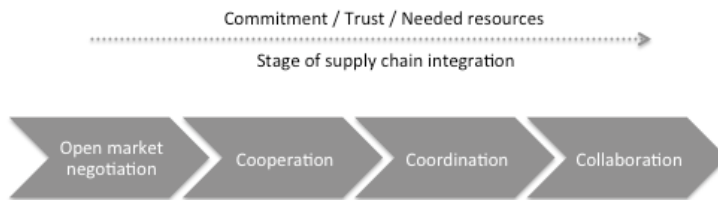


Figure 7: The continuum of supplier relationships (Adapted from Cousins and Spekman, 1998)

Hines (1996) presents another example of coordination stages, a coordination framework for supplier development consisting of four phases. The first phase is labeled ‘no-coherent strategy’ when price is the primary buying criterion and companies are not cooperating nor developing a common way of working. ‘Piecemeal coordination’, the second phase, describes a situation where departments or instances are functioning with the relevant department in the supplier company. The third phase, ‘systematic coordination’, occurs when companies are working proactively to eliminate waste. ‘Network coordination’, the fourth phase, is realized if companies are developing methods and procedures to maximize benefit along the total supply network.

Both authors agree that integration improves supply chain performance but implementing such a relationship is a challenge. Integrative linkages require trust, commitment and resources and capabilities that are not always possible to allocate to a specific supply chain relationship. Therefore, not all relationships target the highest level of integration, but rather aim to find an appropriate level to ensure an efficient supply chain. Most contemporary relationships are at the transactional or information-sharing levels.

The discourse on supplier relationships has also evolved significantly over time. Terpend et al. (2008) analyze the evolution of buyer-supplier relationships over a 20-year period, focused on value sought from the relationships and on buyer’s practices. They illustrate how the value sought from the buyer-supplier relationships has significantly increased from only operational performance-based and integration-based to include also a broad range of supplier’s capabilities that the buyer wants to leverage. At the same time also the range of mechanisms the buyers use has broadened significantly, from relatively operational buyer

practices to mutual efforts including also e.g. incentive structures, specific investments, knowledge sharing and integrated new product development (Terpend et al., 2008). Overall the buyer-supplier relationships have evolved from a rather operational activity to strategic elements where both the mechanisms as well as the expected outcomes are seen very broadly.

Role of purchasing as an interface

The role of purchasing as an interface between internal and external counterparts is critical in leveraging supplier resources. The actual configuration of the interface between a buyer and a seller determines to a large extent what kind of value the buyer is able to capture from a supplier. The question how the purchasing interface between internal and external resources should be configured is rarely discussed in literature (some exceptions are the paper by Dubois and Wynstra, 2005; Araujo et al., 1999) even though the purchasing function is considered as the main factor in a company's intentions to leverage the effectiveness, efficiency and innovation gained from well-managed supplier relationships. Araujo et al. (1999) approach the buyer-supplier relationship by analyzing the types of interfaces between the parties. Following Dyer and Singh (1998) their basic argument is that control of resources as well as access to resources controlled by other parties (suppliers) defines a firm's competitive position.

Supplier development

A related topic to supplier management and supplier integration is also a question of supplier development. Supplier development is a procedure undertaken by a company to help improve its supplier's capability. It may be interpreted as a firm's attempt to transfer (or replicate) some aspects of its in-house capability across firm boundaries (Sako, 2004).

In general, supplier development is a procedure undertaken by a company to help improve its supplier's capability. As defined by Watts and Hahn (1993), supplier development is "*a long-term cooperative effort between a buying firm and its suppliers to upgrade the suppliers' technical, quality, delivery, and cost capabilities and foster ongoing improvements*".

Supplier development efforts are motivated by recognition that in order to improve performance of the supplier base, companies have a set of alternative approaches for performance improvement (Wagner, 2006):

- Supplier switching, i.e. searching for alternative sources of supply and sourcing from more capable supplier
- Vertical integration, i.e. bringing the needed product in-house by acquiring or setting up manufacturing capabilities internally
- Supplier development, i.e. supporting the supplier in enhancing the performance of the products or improving supplier's capabilities

Because of the uncertainty of locating better source and the high cost of search and evaluation of new suppliers, the choice for working with current supplier may in many cases be the most viable alternative (Krause and Ellram, 1997b).

Supplier development activities generally have their roots back in 1940's in Japan where Toyota joined supplier association and started to assist a number of subcontractors in improving productivity (Hines, 1994; Sako, 2004; Wagner, 2006). Also today, for Japanese car manufacturers the first and most important mechanism is Kyoryku Kai, the supplier association. It is a mutually benefiting group of company's most important suppliers. The group benefits from an exploration of concepts and techniques such as just-in-time, statistical process control, and Kanban (Hines, 2008).

There is a broad range of supplier development practices identified in extant literature. Sako (2004), drawing from the practices of Japanese automakers, identifies both group activities based on supplier groups and activities based on individual assistance between buyer and supplier. In any case, multiple channels for supplier development are offered, in order to transfer both explicit and tacit knowledge. Supplier development activities as such vary widely and may include supplier evaluation (Krause and Ellram, 1997b), feedback of supplier performance (Krause and Ellram, 1997b) clearly communicated performance expectations and targets (Krause and Ellram, 1997b; Sako, 2004).

By analyzing the Japanese automakers Sako (2004) positions the supplier development as a "*capability-enhancing activity that fits neither market nor hierarchy*" and recognizes that capability for supplier development is a capability itself. On the other hand, when considered from the transaction cost perspective, direct supplier development refers to a transaction-specific investment by the buying firm (Wagner, 2006).

The practices identified in literature are listed in the Table 5.

Practices for supplier development	Importance	Authors
Supplier study groups	Provides an opportunity for lateral learning among suppliers, repository of kaizen know-how	Sako (2004), Hines (1996)
Supplier evaluation and feedback	Evaluation should provide a basis for performance target setting and project selection	Krause and Ellram (1997)
Policies, communication of performance improvement expectations and targets,	Provides and framework for development projects and investments	Krause and Ellram (1997), Sako (2004), Handfield et al (2006), Monzcka et al (2003)
Direct involvement in joint problem-solving projects, kaizen events	One of the key means to conduct supplier development activities	Krause and Ellram (1997), Sako (2004), Handfield et al (2006)
Financial incentives like repeat business, revenue growth, gain sharing	Motivates the supplier to invest in relations-specific assets and capabilities	Sako (2004)
Supplier certification and recognition, performance improvement rewards	Motivation for the personnel, rewarding mechanism through positive reputation	Krause and Ellram (1997), Monzcka et al. (1993)
Placement of engineering and other personnel at suppliers premises	Transfer of tacit knowledge, direct supplier assistance in hands-on problem solving	Krause and Ellram (1997), Sako (2004), Handfield et al (2006)
Standardization, documented systems and methods for operations, like TPS and TQC, manuals and written instructions	Standardization and codification of knowledge, sharing of explicit knowledge	Sako (2004)
Lectures and seminars, formal training	A method to transfer explicit knowledge from customer to suppliers	Monzcka et al (1993), Sako (2004)
Technological support, site visits by customer engineers	Transfer of tacit knowledge, feedback, and exchange of development ideas	Monzcka et al (1993), Sako (2004)
Direct shop-floor assistance, instructions and teaching, assignment of support personnel as supplier facility	Problem solving, a method for rapid corrective actions	Monzcka et al (1993), Sako (2004)
Direct capital investments	Provide capital support for the supplier to improve business	Krause and Ellram (1997), Monzcka et al. (1993)

Table 5: Practices of supplier development

As Krause and Ellram (1997) also note, both buyer and the supplier must be willing to invest resources and time in dedicated assets for a pay-off that may occur only over a relatively long time. Supplier development requires both the buyer and the supplier to commit financial, capital and personnel resources to work; to share timely and sensitive information and to create means to measure shared performance (Handfield et al., 2006).

Consequently, it is critical to understand not only the activities which may take place as supplier development but also the factors which allow the buying firm such approach and make suppliers to participate in supplier development activities.

Krause and Ellram (1997) have studied the potential critical elements of supplier development and identify that critical for the ability of the buying firm to influence on the supplier are:

- Effective two-way communication
- Top management commitment
- Cross-functional teams
- Consolidation of the supplier base, and purchasing a relatively large share of the supplier's output.

Cross-functional buying teams are an important contributor to supplier selection and development (Krause and Ellram, 1997b) primarily due to the broad range of problems areas that need to be addressed. Teams that are dedicated to supplier development are typically organized either around the material being purchased or according to suppliers' needs. Different practices exist, most notably the Toyota way to isolate the TPM-focused activities from purchasing in order to maintain the supportive environment and long-term learning focus (Sako, 2004).

However, as Sako (2004) also notes, extensive assistance and support are not available for all suppliers and the level of suitable involvement between different commodity groups and suppliers varies as well (see e.g. Handfield et al., 2006). Each Japanese automaker clearly distinguishes between the inner core of suppliers to which processes and capability enhancement are taught in a hands-on manner and the rest who are mainly given incentives to make improvements through long-term customer commitments (Sako, 2004).

Supply Chain management

Basic role of Supply Chain management is defined e.g. by Menzer et al. (2001): "*Supply Chain encompasses the planning and management of all activities involved in sourcing and procurement, conversion, demand creation and fulfillment, and all logistics activities*".

Previous management theory in the area of SCM can be broadly divided into two main categories. The first category is primarily studies of the chain structure and the second group is primarily about industrial networks and the relationships between organizations in the chain (Heikkilä, 2002). Additionally, a substantial amount of literature focuses on supply chain processes and flows, both material flows, information flows as well as financial flows.

In short, Supply Chain management addresses the fundamental business problem of supplying product to meet demand in a complex and uncertain world – from the point of

view of the entire supply chain (Kopczak and Johnson, 2003). Seen from the supply base management point of view, both strategic perspective of supplier base segmentation and design as well as operative procurement, daily ordering of goods and services from a supplier, order fulfillment, materials and inventory management and other daily interactions with the supplier base can all thus be considered also as a part of an overall supply chain of a focal company.

From the chain structure perspective, decisions related to the supply base focus on structure and control practices of the chain: number of echelons in the supply chain and their location, management practices of the material flow (Christopher et al., 2006) involving as well the upstream end of the supply base. Other supply chain design aspects are location of order penetration point and value offering point (Olhager, 2003; Holmström et al., 1999), approach to flexibility, lead-time and postponement (Naylor et al., 1999; De Treville et al., 2004; Lee, 2004) and supplier selection and relationship management (Lee, 2004; Gelderman and van Weele, 2005). Furthermore, many of the decisions involve also strategic business model and product decisions, for instance to make or buy questions, postponement strategies (Pagh and Cooper, 1998) and the alignment between product, process and supply chain (Fine, 2000).

When looking at supply base management from the perspective of overall SCM the needs for alignment and fit are recognized. Fisher (1997) sees a difference in supplier selection between innovative and functional supply chains: Where in functional supply chains suppliers should be selected based on cost and quality, in innovative supply chains the criteria should be speed, flexibility, and quality.

Already in his seminal article on innovative vs. functional supply chains Fisher (1997) recognizes the importance of appropriate design of supplier base for implementation of the necessary characteristics to a supply chain aiming to responsiveness or cost efficiency. Recently also Lee (2004), as a part of discussion on modern supply chains, connects the supply base design in particular to adaptability of supply chain. He highlights the criticality of supplier selection from the point of view of adaptability. Complementary suppliers are necessary to ensure adaptability and in complex cases vendors should be found close to main markets.

From a supply chain process perspective, focusing on the interaction with the suppliers on operative level, there can be identified four generic processes linking the buyer and supplier, which are modifiable in a relatively modular way (Laiho et al., 2009). The processes are:

- **Communication** processes involving operative communication and managerial support for execution
- **Supply chain planning** strictly standardized processes and company-wide monthly processes, which capture customer information and transform supply plans for suppliers
- **Fulfillment** processes i.e. physical material flow including ordering, logistics and inventory management

- **Performance management**, including both KPI:s used, and the review methods and consequent improvement actions.

2.5 Orchestration

Roles enabling orchestration

It's been proposed that networks as historically embedded set of relationship cannot be controlled by any actor or firm but also that there are management mechanisms that vary between different types of networks (Möller et al., 2005). Management in networks can be seen as a relative issue where opportunities and challenges of control and coordination vary considerably in terms of the types of networks (Möller et al., 2005). In a way orchestration as a concept is can be easily associated with the dominant model of Supply Chain Management where customer holds the power and customer needs are met by suppliers organized in cascading tiers of smaller companies (Bates and Slack, 1998). The same approach is mostly taken in supplier management and purchasing seeing buyer as principal and supplier as agent with focus on how supplier resources and competences can be leveraged to increase the buyer's expected value (Hald et al., 2008).

The major question for an orchestrator is the capability to have strategic influence on the network it is surrounded by. Critical issues are

- 1) Strategic positioning of the buyer and the supplier highlighted e.g. by popularity of different purchasing portfolio models (see e.g. Kraljic, 1983; Gelderman, 2003) and the perspectives of governance
- 2) Power (e.g. Cox 1999; 2001; 2004)
- 3) Dependency and attractiveness in buyer-supplier relationships, which have own extensive discourses (e.g. Dyer et al., 1998; Bensaou, 1999; Cox, 1999; Cox, 2001).

Capabilities of an orchestrator are a strategic core questions from the risk management perspective too: the company is more vulnerable of getting copied by the companies as more and more knowledge and activities take place outside the company (Hall, 2000). On the other hand, a proprietary, distinctive asset base can give the orchestrator power to offer compelling economic incentives to partners (Hagel, 2002). Participation offers for suppliers an ability to steadily improve their skills and performance: the orchestrator establishes detailed benchmarks across its process network; it can give valuable insight into particular strengths and weaknesses of a supplier. The result is a powerful platform for continuous performance improvement.

Edelman and Heuskel (1999) identify a set of roles, relating to the potential strengths of a company. They argue that one way of acting as an orchestrator is a "power brander", which orchestrates a network of suppliers and partners to deliver high quality in a variety of products under a single robust brand. Alternatively, taking roles of a layer player may be a possible option: in a situation of horizontalization (see e.g. Fine, 1999) where a company

focuses on one selected layers and leverages scale and specialization across different customer segments (Edelman and Heuskel, 1999). This view is similar to the perspective of Hagel (2002), who sees that the role of an orchestrator is to manage the process network, facilitating the collaboration of companies.

Hinterhuber (2002), in turn, identify four roles: *architect*, *judge*, *developer*, and *leader*. Network architect defines the objectives and selects the member companies to the network. Network judge defines and enforces performance standards across the network, remaining as the key interface for the end customers and are thus fully accountable for the network's output. Network developer is nurturing and developing physical and non-material assets. Of particular importance is knowledge management. Leader is clarifying roles, encouraging voluntary collaboration and rewarding performance (Hinterhuber, 2002).

Orchestration of an innovation network

Innovation networks can be viewed as loosely coupled systems of autonomous firms (Dhanaraj and Parkhe, 2006). Several authors connect the orchestration concept primarily to innovations and creation of new value through innovation networks (Dhanaraj and Parkhe, 2006; Möller et al., 2005; Ritala et al., 2009) either related to capability of a company to purposefully build and manage innovation networks (Ritala et al., 2009), to influence on intentionally engineered network of loosely linked companies (Dhanaraj and Parkhe, 2006), or to an actor's capability to influence the evolution of a whole business network (Möller et al., 2005).

According to Dhanaraj and Parkhe (2006) orchestration processes that the hub company must perform are *managing knowledge mobility*, *innovation appropriability*, and *network stability*. In their view, orchestration process focuses on knowledge resource of the network; how to generate an environment where the network members participate and share valuable information; how to create a cohesive force which keeps the network together as an entity; and how to establish the necessary formal and informal linkages which enable efficient sharing of the knowledge. Innovation appropriately relates to distribution and sharing of the generated value so that it is distributed equitably and is perceived as such by network members (Dhanaraj and Parkhe, 2006). This appropriation process relies largely on social interactions and related governance that are use of trust and reciprocity, rich information sharing, and joint problem solving. Their third component, promotion of network stability is a critical orchestration task focusing on long-term operability of a network. Stability does not mean that network would not change; rather it means *dynamic stability*, which refers to a status where a network keep growing and renewing in a desirable way. A hub firm can increase network stability by enhancing reputation, lengthening the shadow of the future i.e. highlight the anticipated future benefits for network members, encourage the formalization of new ties and promote cooperation between network members and also build more robust relationships by promoting multiplexity between the network firms (Dhanaraj and Parkhe, 2006).

Orchestration of a supply network

The emergence of network-type of operations and the related concept of orchestration is providing an opportunity for a renewed perspective on both the traditional supply chain management as well as on operations management. With the recent trend of increasing levels of outsourcing as recognized e.g. by Choi and Krause (2006) orchestrating activities with suppliers in the supply base has become a top strategic issue from the perspective of a focal company. From the operations management perspective for example Hayes (2002) notes that traditional supply chains are expanding into larger networks. Traditional arms-length relationships with competitors are evolving into shifting alliances and consortia. The implication is that the role of operations management is no longer confined to managing production and delivery within a single enterprise but rather facilitating and stimulating the production and delivery of compatible products through a network of companies which he calls an *extraprise* (Hayes, 2002). Companies like the in literature broadly discussed Li & Fung can be seen as examples of supply chain network orchestration where the key is the way companies manage processes (Brown et al., 2002; Fung et al., 2008; Magretta, 1998). The core capabilities of such companies are deep understanding of customers' needs and ability to fulfill them by mobilizing the necessary resources within the process network (Hagel, 2002). This involves also very operative facilitation of the supply chain focusing on matching and coordinating supply and demand (Fung et al., 2008).

Orchestration practices

Orchestration practices in the extant literature can be categorized to three categories: practices related to the positioning the network, practices related to network configuration and recruitment of network members, and practices related to network management and leadership.

Position of the focal company in the value creation system is commonly seen as one of the first conditions for successful orchestration. The first step in value chain orchestration is an internal perspective on costs and value added on each step (Hinterhuber, 2002). Following the awareness created by internal focus orchestrators assume the ultimate responsibility for end product (Brown et al., 2002) and identify areas where created value and be substantially increased (Hinterhuber, 2002). After having assumed the leaders role the focal company need to start translating a customer order in its constituent modules (van Liere et al., 2010).

The orchestrator position requires enablers from the focal company. Orchestrators may possess powerful brands and use them to retain control of an industry's value added while minimizing their own assets (Stern, 1998). Others would go along because of broad distribution, sales, and marketing capabilities (Hagel, 2002). Also the orchestrator needs to be able to tailor the product or service created by the overall group to the needs of a particular customer or customer segment and thus capturing value for itself as a knowledge broker (Hagel, 2002). Success depends on a deep understanding of the economics of both its customers and the resource owners in other words knowledge of the market (Hagel, 2002).

After having gained to understanding of the value creation systems and selected the value creation logic, the orchestrator needs to start recruiting participants into process network. The orchestrator selects appropriate suppliers from the dynamic ecosystem network based on criteria such as quality, price, and delivery time (Brown et al., 2002; Hinterhuber, 2002).

The value creation systems will evolve over time. Structuring the right incentives and encouraging specialization over time are central practices for orchestration as well as community building (Brown et al., 2002) in particular assembling communities with complementary skills and products. The loosely coupled networks have often modular network architecture. In network configuration phase the role of an orchestrator is to configure the process modules to each customer need (Brown et al., 2002), and determination of the most effective form of the relationship with the selected partner companies (Hinterhuber, 2002). Digital platform enables network orchestrators to occupy a more extensive and differentiated network position leading to higher performance (van Liere et al., 2010).

Orchestration concept, in particular the orchestration of supply chains, is often associated with operative coordination and facilitation of processes. As phrased by Hinterhuber (2002), once the network of partners is set up the orchestrators need to coordinate the activities of a wide array of partner companies and relate them to in-house activities. The basic skills that orchestrators need from a network management perspective (Brown et al., 2002) are ability to support business processes by aggregating and disseminating selected information across a number of enterprises and an ability to set up business standards and specifications, e.g. quality. Performance management and feedback to suppliers have a central role in which the orchestrator maintains a detailed, up-to-date view of supplier performance in a wide variety of context. This intense performance management approach makes it possibly not only to allocate work across the process network but also give its suppliers in-depth feedback which leads to ever stronger performance (Hagel, 2002).

2.6 Conclusions from the literature review and gaps in theory

2.6.1 Evolution of supply base management towards external resource management

Management of supply base is addressed in the literature from several perspectives. Both from the perspective of industrial network theories as well from the perspective of the authors focused on sourcing and procurement, the role of suppliers as a source for innovation, competitiveness and knowledge is emphasized. The potential role of suppliers enhancing competitiveness of both the network as well as the focal company is widely stressed in the existing literature. Organizations have learned that effective utilization of supply market opportunities does not mean just searching for more cost effective supply chains but as an equally important opportunity also new innovative approaches to utilization of resources and capabilities within supply networks.

Certain perspectives related to external resource management are extensively discussed in the existing literature. Transaction cost economics (TCE) forms the typical basis for the applied supply base management literature. The general position of this literature is that managers align the governance features of inter-organizational relationships - like relationships with the supplier base – to match known or anticipated exchange hazards (Poppo and Zenger, 2002b). This theoretical basis drives focus to contracts as well as to sourcing and procurement practices like process integration, coordination practices and to ICT systems. Essential key attributes of the TCE –rooted governance approach are both the management style as well as the utilized safeguards. The perspective of transactional governance directs the focus on asset specificity in the relationship, uncertainty in the relationship and in frequency of the transactions in the relationship (Williamson, 2008).

Analysis of the governance from the point of view of unilateral vs bilateral governance approach (Heide, 1994) directs the attention to relationship initiation and relationship maintenance dimensions, in particular on role specification in the relationship, nature of planning and adjustments as well as on monitoring procedures, including performance measurements, incentive system, and means for enforcement.

However, in many respects the external resource management still possesses a gap in the literature. Many scholars including transaction cost economists have observed that governance of inter-organizational exchanges involves more than formal contracts exchanges are embedded in social relationships (Poppo and Zenger, 2002b). Consequently other dominant theoretical backgrounds, organizational design, relational theory, and network theory are increasingly used also in purchasing area research. Relational mechanisms emphasize social interactions and socially embedded relationships in economic activities (Granovetter, 1985). The impact of relational mechanisms in buyer-supplier relationships has been investigated recently e.g. as a driving force for voluntary investments of suppliers in a relationship (Nieminen, 2011).

The division between management of the internal issues of a firm (hierarchy) and purchasing from external suppliers (market) used to be clear in earlier academic literature. Traditional management literature has focused on management and leadership of the internal issues and activities while traditional purchasing literature has oriented on purchasing from competitive markets. Literature on supply management has tried to address the management challenges of dependent relationships, collaboration and integration of suppliers. Supply Chain management literature, in turn, has addressed the operative management of information and material flows and their coordination leaving the leadership and influence aspects aside.

One can conclude that as theoretical basis for external resource management both the internal management and supply management concepts are becoming insufficient: Generally the concepts fail to capture firms' new needs to *extend their management practices* outside the firm's organizational boundaries, to external resources.

From a practitioner’s perspective a similar gap exist, as many companies need new tools to manage and lead the external resources and utilize them as a key source of competitive edge in the global competition.

2.6.2 The concept of orchestration

The main concept of the research is orchestration. Based on the literature review it can be concluded that as such the concept is known and identified in the existing literature. There are several contributions in the governance discourse elaborating different governance models that take place between markets and hierarchies. For example, Williamson (2008) has launched a term “hybrid contracting”, which focuses on contracting practices in cases where neither hierarchy nor market applies. Integration and coordination discourses focus on dyadic relationships, and sourcing and procurement literature discuss supplier relationship management and supplier development extensively. It can be concluded that orchestration as a concept exist, and conceptually it takes place in a “grey zone” between markets and hierarchies.

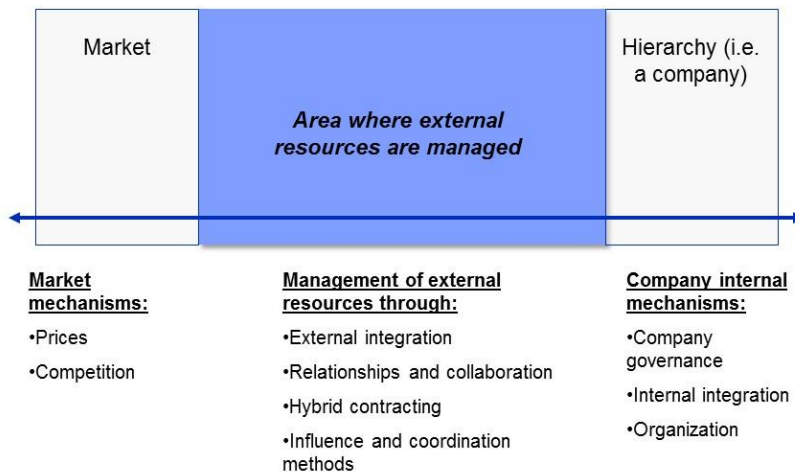


Figure 8: Orchestration of external resources between markets and hierarchies

However, at the same time it can be stated based that orchestration is vaguely defined in the context of industrial operations and needs further attention. The recognized importance of e.g. relational and network theories indicate, that orchestration is something more than just a different view on governance. There are contributions both in governance literature as well as in e.g. Supply Chain management field that are extending management theories

towards external resources, but they are still covering only carefully selected aspects. Potentially the most important gap in theory relates to context-dependency of orchestration: is it suitable for every situation, does the concept differ depending on the managerial situation, and what capabilities are required from the orchestrator.

A well-defined concept is necessary especially for further development of orchestration practices in different managerial situations. This gap in the literature calls for empirical research with particular focus on operationalization of the orchestration concept in a context-dependent way.

2.6.3 What are the practices in reality and do they relate to each other?

Practices that the literature suggests for management of a supplier base converge around a few cornerstones.

Structuring the right incentives and encouraging specialization over time (Brown et al., 2002) are central practices for orchestration, as well as community building (Brown et al., 2002), in particular assembling communities with complementary skills and products. Third, operative management and facilitation of the network activities have a central role. Orchestration concept, in particular the orchestration of supply chains, is often associated with operative coordination and facilitation of processes. This includes support to processes by aggregating and disseminating selected information across a number of enterprises, setting business standards and specifications, e.g. quality, performance management and feedback to suppliers (Hagel, 2002).

First, positioning of a company in the value creation network is commonly seen as one of the first conditions for successful orchestration by emphasizing the positioning of the focal company in the value creation logic (Edelman and Heuskel, 1999; Hinterhuber, 2002; Dhanaraj and Parkhe, 2006) As stated by Hinterhuber (2002), the first step in value chain orchestration is an internal perspective on costs and value added on each step followed by identification of areas where created value can be substantially increased. Position of the focal company in the value creation systems is seen as a factor, which may enable the focal company to have substantial influence on its supplier base, and potentially on the supplier network in broader scale. That perspective includes also the focal company taking responsibility on the overall product/service and the performance of the overall network including definition of network standards, measurements and also feedback.

Second, network configuration and recruitment of network members i.e. sourcing of suppliers, in this case, is an essential step. The appropriate suppliers are selected from the surrounding supplier network. The supplier base segmentation approach and the portfolio models (Kraljic, 1983; Caniels and Gelderman, 2007; Caniels and Gelderman, 2005; Bensaou, 1999; Olsen and Ellram, 1997) provide the primary basis for structural considerations of a supplier base. Supplier selection is affected as well on criteria such as quality, price, and delivery time (Brown et al., 2002; Hinterhuber, 2002).

Third, an increasing amount of attention is directed towards developing effective supplier relationships. There is a growing body of literature on integration in supplier relationships and organizing purchasing function (i.e. Faes et al., 2000; Hartmann et al., 2008; Trent, 2004; Trautmann et al., 2009) as well as several contributions related to supplier development (Krause and Ellram, 1997a; Monczka et al., 1993; Sako, 2004; Handfield et al., 2006). However, orchestration of external resources requires a new type of approach to supply base management less covered in the extant literature. The basic argument of e.g. Dyer and Singh (1998) is that control of resources as well as access to resources controlled by other parties (suppliers) defines the competitive position of a firm. This access is strongly influenced by the ability of a firm to influence and direct its external resources through various means such as governance approaches and contracting by integrating and coordinating and by development of social capital and the ability to utilize the network ties with suppliers. Development of social capital, reputation and trust as complementary building blocks in the exchange relationships are becoming more important than earlier. Furthermore, some mechanisms like collaborative practices for utilization of open innovation (See e.g. Chesbrough, 2006) and crowdsourcing may be practices that can in the future affect the effective utilization of existing networks relationships. This implies that a broader view to the management practices, including also aspects like relationship between people, influence practices, and the importance of social relationships overall economizing the commercial exchange should be considered.

Regarding the practices for orchestration of external resources, it can be concluded that there is no lack of suggested practices in the extant literature. However, several fundamental questions remain open. Are the practices generally applicable, or are they dependent on situation or context? What determines which are suitable practices, are there combinations or are they all available in all situations?

A few conclusions can be drawn from the literature review regarding practices for orchestration. First, extension of management to external resources requires a broad set of practices, including social and relational aspects. There is extensive about of suggested practices available, but what remains open to very large extent is context dependency. Furthermore, it is evident that the basic sourcing and procurement literature as such is not capturing well firms' needs to effectively influence and lead activities and relationships outside the firm's organizational boundaries.

2.6.4 Summary

The literature suggests that External Resource Management as a concept exist, and that there are a large about of suggested practices that can be used to manage the external resources. Furthermore, a concept called orchestration is gaining ground and is applied, in addition to strategy literature, to innovation management for instance. There is no identifiable reason to argue that the concept would not be applicable in pragmatic sourcing and procurement field also.

However, the problem of orchestrating a network of external resources, even when it is touched in the literature from several perspectives, remains still vaguely defined. It needs to be defined and operationalized far better to be applicable for further research and theorizing, not to mention the managerial applications. A substantial amount of managerial practices potentially related to orchestration of the external resources seem to exist, but their applicability in different situations and different contexts remain open. These gaps in theory, in particular the potential connection between orchestration practices and particular managerial situations, call for empirical research. The empirical part of this research intends to cover that gap.

3 RESEARCH DESIGN

In this chapter the research design and methodological choices are discussed. The chapter begins with introduction of the qualitative case study, which was selected as the research strategy. Also the research process is described.

The selection logic of the cases is discussed in detail, the data collection approach through the sample of embedded case studies is described and the case analysis methods including a framework used for data collection and display is illustrated.

Last, the method for cross-case analysis and theorizing through profiling and profile comparison is described. Last, the chapter discusses validity and reliability of the selected research design and research process.

3.1 Qualitative case study as a research strategy

Eisenhardt (1989) defines case study as a research study that focuses on understanding the dynamics present with single settings. In general, case studies are the preferred strategy when “how” or “why” questions are being posed, when the investigator has little control over events, and when the focus is on a contemporary phenomenon (Yin, 2008). Building theory from case studies is most appropriate in the early stages of research on a topic or to provide freshness in perspective to an already researched topic (Eisenhardt, 1989).

A case study has a distinctive place in research. Yin, who is approaching the use of case study from a very rigorous perspective, specifies five typical case study applications. Those are (Yin, 2008):

- To explain the presume causal links in real-life interventions that are too complex for the survey or experimental strategies
- To describe an intervention and the real-life context in which it occurred
- To illustrate certain topics within an evaluation in a descriptive mode
- To explore those situations in which the intervention being evaluated has no clear single set of outcomes
- Also, a case study may be a meta-evaluation, a study of an evaluation study.

Eisenhardt (1989), in turn sees the case study as a research strategy that involves using one or more cases to create theoretical constructs, propositions and/or midrange theory from case-based, empirical evidence. By nature, this research on external resource management with particular focus on supply base orchestration is qualitative, and also to a certain degree inductive in nature. Case study research, with its central notion to use cases as the basis from which to develop theory inductively (Eisenhardt and Graebner, 2007) is suitable for such research situation. Purpose of this research is to create new and theoretically expressed understanding at a situation where the traditional purchasing paradigm has

difficulties to respond to the emerging need of management of external resource in general. Compared to other types of research design, the case study was preferred due to its strength in revealing unique and rich insights into an emerging phenomenon and because the resultant findings are likely to be empirically valid since they have been intimately tied with empirical observation (Eisenhardt, 1989).

Case study research has been a subject for decades –long academic debate where perhaps the greatest concern has been over the lack of rigor of case study research (Yin, 2008). Also, a second common concern has been centralizing around generalization – whether they provide enough basis for scientific generalization. As has been noted e.g. by Yin (2008), case studies together with experiments are generalizable to theoretical propositions and not populations or universes.

In Operations Research field case studies have been relatively little used research method (Voss et al., 2002). Still, results of a case study –based research can have a very high impact also in operations management. The case study method can be used for different purposes such as exploration, theory building, theory testing and theory extension / refinement. However, as case study is less constrained by rigid limits of questionnaires and models, it can lead to new and creative insights, development of new theory, and have high validity with practitioners (Voss et al., 2002).

3.2 Research process

Multiple contributions have been developed over time to tackle the concerns related to case study –based research strategy. Both Yin (2008) and Eisenhardt (1989) identify the research design and the process of building theory from case study as central aspects to ensure the necessary rigor in case study research. Their approaches are however different. Yin emulates with the suggested research design closely the quantitative research tradition where Eisenhardt builds her suggested research design more on grounded theory approach referring e.g. to Glazer and Strauss (1967). Eisenhardt defines a process of building theory from case study in her “*Building Theories from Case Research*” (1989) as described in Table 6.

Step	Activity	Reason
Getting started	<ul style="list-style-type: none"> • Definition of research question • Possibly a priori constructs 	<ul style="list-style-type: none"> • Focuses efforts • Provides better grounding of construct measures
Selecting cases	<ul style="list-style-type: none"> • Neither theory nor hypothesis • Specified population • Theoretical, not random, sampling 	<ul style="list-style-type: none"> • Retains theoretical flexibility • Constrains extraneous variation and sharpens external validity • Focuses efforts on theoretically useful cases – i.e., those that replicate or extend theory by filling conceptual categories
Crafting instruments and protocols	<ul style="list-style-type: none"> • Multiple data collection methods • Qualitative and quantitative data combined • Multiple investigators 	<ul style="list-style-type: none"> • Strengthens grounding of theory by triangulation of evidence • Synergistic view of evidence • Fosters divergent perspective and strengthens grounding
Entering the field	<ul style="list-style-type: none"> • Overlap data collection and analysis, incl. field notes • Flexible and opportunistic data collection methods 	<ul style="list-style-type: none"> • Speeds analyses and reveals helpful adjustments to data collection • Allows investigators to take advantage of emergent themes and unique case features
Analysing data	<ul style="list-style-type: none"> • Within-case analysis • Cross-case pattern search using divergent techniques 	<ul style="list-style-type: none"> • Gains familiarity with data and preliminary theory generation • Forces investigators to look beyond initial impressions and see evidence thru multiple lenses
Shaping hypothesis	<ul style="list-style-type: none"> • Iterative tabulation of evidence for each construct • Replication, not sampling, logic across cases • Search evidence for “why” behind relationships 	<ul style="list-style-type: none"> • Sharpens construct definition, validity, and measurability • Confirms, extends, and sharpens theory • Builds internal validity
Enfolding literature	<ul style="list-style-type: none"> • Comparison with conflicting literature • Comparison with similar literature 	<ul style="list-style-type: none"> • Builds internal validity, raises theoretical level, and sharpens construct definitions • Sharpens generalizability, improves construct definition, and raises theoretical level
Reaching closure	<ul style="list-style-type: none"> • Theoretical saturation when possible 	<ul style="list-style-type: none"> • Ends process when marginal improvement becomes small

Table 6: Process of building theory from case study research (Eisenhardt, 1989)

The research design in the research is built on Eisenhardtian approach, as the research situation, research questions focusing on relatively novel phenomenon, as well as available strengths related to e.g. data collection and access to empirical evidence support the more

grounded theory oriented research design. The research process in this research consists of four phases:

- **Phase 0:** Review of extant literature of sourcing and procurement and supply chain management. This phase was partially built on prior industry experience from the researchers work background in the industry. The prior experience was used to scope the research. The first research protocol and a priori constructs providing additional structure for data collection were developed at Phase 0.
- **Phase 1:** The base case, TelTech Inc., was researched at the phase 1. The phase included close collaboration with the case company as a part of a research project SSOC 1 and included also close interaction with the case company over a period of approximately 1,5 years. Based on the base case and the previous literature review preliminary orchestration practices were identified.
- **Phase 2:** At the phase 2 of the process revised set of potential orchestration practices were consolidated, and a second version of research protocol was developed. Additional cases 2-5 were investigated and additional data collection with expert interviews focusing on innovation sourcing was conducted. Purpose of the additional data collection was to ensure sufficient coverage of data in the initially identified orchestration situations.
- **Phase 3:** the final phase includes cross-case analysis and related development of propositions, theorizing, as well as analysis of the findings: comparison with extant literature, discussion on applicability of the results, and proposals for further research.

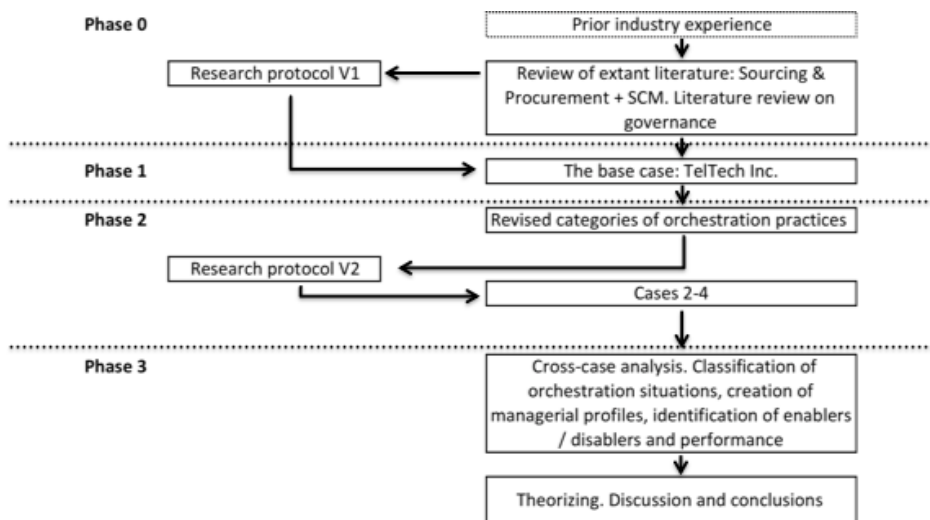


Figure 9: The research process

3.3 Selection of the cases

Selection of cases follows a theoretical sampling approach. First, the in-depth access to the empirical data, which is critical for qualitative case studies, was the first selection criterion.

1. All the researched focal companies are participants of operations and procurement –area research programs SSOC and/or GlobeNet both conducted in close collaboration between the companies and Aalto University, BIT Research centre. This limited the number of potential companies to approximately 10, being however a rather diverse group of manufacturing companies.
2. The basis for the second level selection of the focal companies to the research was conducted following the researchers pre-understanding about the level of influence of the focal company. The second level selection was also following a theoretical sampling logic with an intention to select case companies which are actively developing the supplier relationships and would provide perspectives to different industries and a broad diversity in terms of size, business area and business strategy. The necessary pre-understanding was gathered through close interaction with the case companies during the preceding research project. The pre-understanding was confirmed through interaction with the case companies while also the full access to data through interviews and other collection methods were ensured.
3. The third level of selection using theoretical sampling is the selection of the buyer-supplier dyads. The selection was made based on two simple criteria: First, the selected suppliers needed to be important for the focal company. Secondly, they should represent different commodities. The estimation of the importance was conducted together with the focal companies using the companies' own categorization as well as the Kraljic matrix (Kraljic, 1983) as the reference. The strategic importance was emphasized based on an estimation that the strategically important suppliers are being managed most intensively, and thus would reveal the broadest set of management practices at each focal company case.

According to Yin (2003) the greatest concern has been over the lack of rigor of case study research. Typical sources for criticisms towards case studies are concerns on systematic handling of data and reporting on evidence. Data validity is enhanced by employing basic case-study tactics, including having informants review interview transcriptions and intermediate case study reports and development of a case study database (Yin, 2008). Following the systematic combining approach (Dubois and Gadde, 2002) the literature is integrated with the collected empirical data and trajectories which would indicate possible supply based management practices. All empirical data is tabulated using the research constructs, following the advice of Miles and Huberman (1994) and Eisenhardt (1989).

Also, it has been argued that a case study is no basis for scientific generalization. From the perspective of initial theorizing this research design includes a two-part process, involving the revision of the research constructs based on empirical observations and constant comparison between data and the constructs. Last, the intention is to tie the emergent

findings to existing literature. These characteristics are likely to enhance validity, generalizability, and theoretical level of theory building from case study research (Eisenhardt, 1989). The case studies, like experiments, are generalizable to theoretical propositions and not to populations or universes (Yin, 2008). In this sense, the case study does not represent a sample. This is especially valid with the multiple cases approach also this research follows where it is appropriate to consider the multiple cases as multiple experiments following the replication logic (Yin, 2008). Under these circumstances the mode of generalization is “analytic generalization” in which a previously developed theory is used as a template with which to compare the empirical results of the case study. In analytical generalization the investigator is striving to generalize a particular set of results to some broader theory (Yin, 2008).

3.4 Data collection and analysis

3.4.1 Data collection

Collection of the empirical has taken place through interviews and participation as subject matter expert in the development projects in close collaboration with the companies. The earlier described research process has included as an integral part continuous iteration of the findings, continuous comparison between observations during participation, systematic collection of data from company cases, and comparison with related literature for data analysis. The data collection has taken place during the research process at three phases:

Phase 1: The first company was conducted as an extensive in-depth case study. It included close collaboration with the company in multiple areas. It focused on the three supplier relationships and included 38 interviews, several workshops, meetings and reviews of the company internal material. Based on the extensive case research and comparison with literature the first constructs were developed.

Phase 2: As the second data collection phase, the interviews were the main data collection methods. Like in the phase 1, the data collection was focused on three supplier relationships and on the overall company perspective. Data collection was more focused, and the interview structure was revised based on the interim observations at the phase 1 and their comparison with literature.

Phase 3: The phase three was based on the emergent learning from the two previous phases and was particularly focused on studying the innovation sourcing. The selection of the cases was based on the emergent research constructs. Also in phase 3 the main data sources were interviews of selected key informants.

The process of this study which intertwines empirical research and literature review can be seen as a systematic combining process as suggested by Dubois and Gadde (2002), where the ultimate objective is to match theory and reality in a non-linear manner.

The data sources include company strategies, participation in workshops and meetings and internal documentation of the companies. To improve validity, the informants reviewed the results and the results were joined with findings from literature. Furthermore, use of multiple data collecting methods and multiple cases increases the validity. (Yin, 2008)

3.4.2 Case descriptions

In case research the overall idea of case descriptions is to become intimately familiar with each case as a stand-alone entity (Eisenhardt, 1989). Purpose of such rich description logic is to allow unique patterns in each case to emerge before they are pushed towards pattern identification and generalization. On the other hand, certain replication logic has been seen mandatory for case studies as well to ensure the rigor (Yin, 2008). In this research each of the cases are reported following a below described uniform structure:

Context

Each of the case descriptions begins with case introduction. Both the case company, i.e. the focal company, and the embedded relationships i.e. the suppliers are introduced. The business context is described briefly, focusing on the characteristics that have arisen during the research as relevant.

Enablers

Based on the literature review, the following factors are considered in the analysis as enablers of orchestration, which may or may not affect the practices the focal company uses:

- Power (Stannack, 1996; Cox, 2001; 2004)
- Dependency (Stannack, 1996; Cox 2001; 2004)
- Attractiveness (Hald et al., 2008; Tanskanen et al., 2012)

First, the dyadic buyer-supplier relationships are all mapped from these perspectives. The three factors provide understanding on how well the focal company can operate in the relationships. The three perspectives are mapped visually to a matrix as illustrated in the Figure 10:

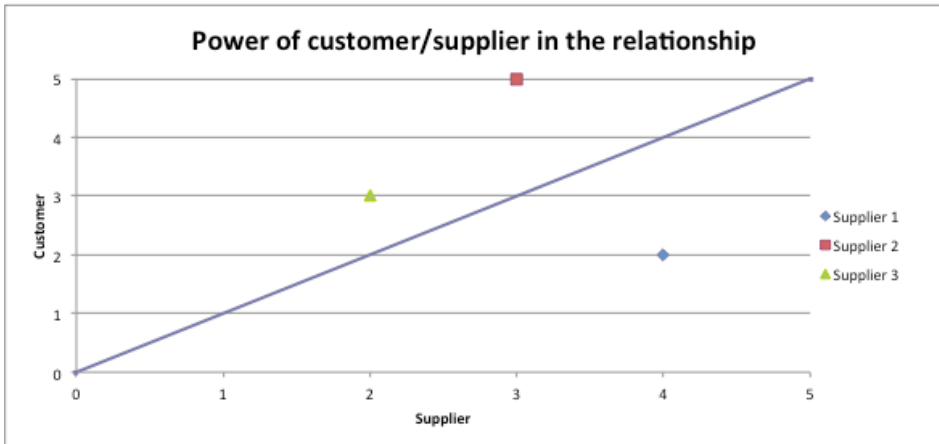


Figure 10: An example of illustration of the power, dependency and attractiveness situation

The second set of enablers relates to the internal characteristics of the focal company: Vision, strategy, and organization. The internal enablers reflect the internal maturity and level of internal integration of the focal company. The internal enablers are tabulated based on qualitative data.

Factors of Interest

Factors of interest illustrate the factors that the focal company is intending to influence and manage. The focused factors are captured under four complementary headings:

- Generic business objectives of the focal company, captured from multiple data sources
- Objectives and targets (potentially numeric) of the operations, supply chain management and sourcing & procurement of the focal company
- Goals and objectives stated for management of the external resources (on focal company level) / a supplier relationship (on relationship level)
- Factors in interest specifically captured through interviews highlighting the specific interest areas of the focal company. The factors of interest cover both the company level and on each of the investigated relationships

The factors of interest together with the stated and/or documented business targets of the company represent in this research the targets and motivation for management of external resources. The assumption is, that the company manages its external resources i.e. its supplier base in order to proceed towards its stated strategy in order to achieve its objectives and interests.

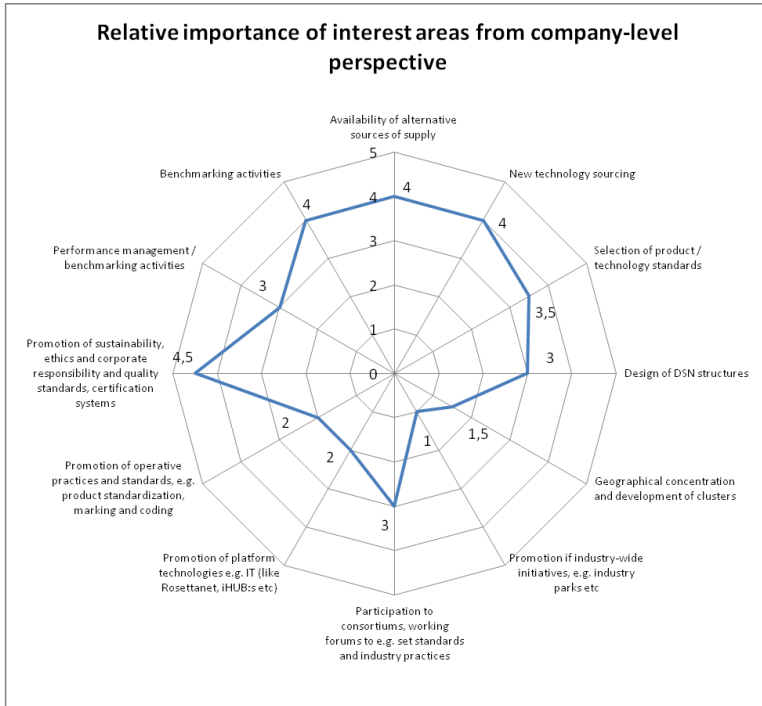


Figure 11: Graphical illustration of the factors of interest of the focal company

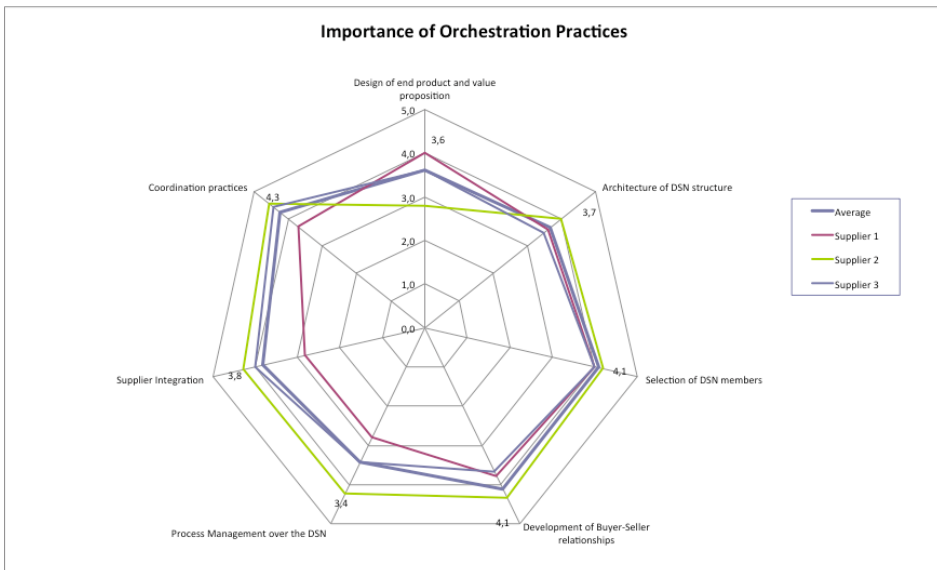


Figure 12: Graphical illustration of the practices used to manage the supplier base

Impact on performance

One of the critical aspects of the case research is construct validity, referring to need to establish correct operational measures for the concept being studied (Yin, 2008). In this particular research the measures relate to impact of the managerial activities to business performance of the focal company. Direct and indirect indicators to identify the potential impact of all the management activity are defined as a part of the research design as a priori constructs.

The original data of impact on performance is collected based on research interviews. It is, consequently, measuring most of all the perception of the informants of the performance of the relationships and the performance of the focal company. Depending on the maturity of the focal company in terms of performance management and supplier relationship management, the performance impact is assessed qualitatively, quantitatively, or both.

However, a direct measurable relationship between management activities and business or operational performance is not provided, due to the complex nature of the phenomenon.

3.4.3 Cross-case analysis

Purpose of the cross-case analysis is to search for cross-case patterns by looking at the data in many divergent ways (Eisenhardt, 1989). There are several tactics to that ranging from selection of analysis dimensions to pairing grouping and clustering of data and data sources.

In this research the cross-case analysis is conducted by analyzing the data according multiple dimensions, which may provide insight to the common patterns between the data. A priori constructs are used as the dimensions of analysis and all case results are tabulated accordingly. A close fit and multiple iteration rounds between literature, a priori constructs and empirical data is providing additional validity to the theorizing.

4 'A PRIORI' RESEARCH CONSTRUCTS

In this chapter the 'a priori' research constructs are introduced. These constructs were used and replicated in each customer case study.

Based on the literature study it can be concluded, that External Resource management as a concept, and a phenomenon called orchestration exists in the literature. Current body of knowledge is mainly rooted on strategy field and it can be argued that the both concept of external resource management as well as concept of orchestration are not well developed yet. Especially the aspect of managerial application is not discussed in the existing literature and research focusing more on managerial practices of the concepts has possibility to a high level of novelty still.

A priori constructs summarize the already existing – *a priori* – knowledge to a set of constructs that are used in the empirical research to focus the data collection and analysis (Yin 2008) on aspects that can be considered relevant. The second aspect influencing on the definition of a priori constructs are the research questions.

The basic axiom of the research is that there is no one best way to manage the external resources but rather it depends on the situation of the focal company and the situation it operates in (Lawrence and Lorch, 1967). Consequently, it is necessary to focus in this research the a priori constructs focus on three broad areas:

1. **Situational factors:** Taking under the loop the aspects of the focal company position, objectives, and ability to influence
2. **Performance objectives:** Indicators and perceived results that the focal company identifies, yielding from the management practices in the given situation
3. **Management practices:** Focusing the empirical research on efforts the focal company does to manage the external resources, on its approach to governance, and on the practices it uses

The a priori constructs and related indicators are elaborated further next.

4.1 Situational factors

Situational factors in general and their impact to focal company ability to manage the external resources have been discussed in the literature from various different perspectives.

First, strategy literature and the orchestration literature in particular discusses broadly the impact of company position in the value chain, value network or value system, and how that enables or hinders the focal company aims to influence its value chain.

Second, the long discourses focusing on power and dependency, and later also the emerging discourse around the concept of attractiveness, are touching the management

capability from situational point of view very clearly. The power/dependency theory argues that the focal company power/dependency situation with its suppliers determines the ability of the focal company to manage its supplier relationships. The attractiveness discourse in turn argues that attractiveness of the buyer in case of this research the focal company is the determining factor.

Third, starting from the beginning of the discourse from 1930's (Coase, 1937) it has been argued and later agreed that the focal company approach to governance is having a substantial role in a relationship between focal company and its suppliers and partners some being more suitable than others and affecting the performance of the relationship. Relationship management objectives need to be considered when analyzing the situational factors. Companies set targets not only for themselves but in many cases also for suppliers and for relationships they have or want to have with their suppliers and other external resources. These objectives are in various ways guiding the efforts, resource usage and activities done in that context.

The Table 7 specifies the a priori constructs that are used to observe and analyze the situational factors.

	CONSTRUCTS	INDICATORS	REFERENCES
SITUATIONAL FACTORS	Focal company position in the value network	Stated position	Kraljic, 1983; Bates and Slack, 1998; Gelderman, 2003
	Strategic focus areas	Focal company interest areas	Edelman and Heuskel, 1999; Hagel, 2002; Hinterhuber, 2002
	Approach to governance	Type of uncertainty	Williamson, 1985; 1989; 2008; Barney, 1999
		Asset specificity	Williamson, 1985; 1989; 2008; Barney, 1999
		Adaptation in a relationship	Williamson, 1985; 1989; 2008; Heide, 1994; Barney, 1999;
		Type of contracting	Williamson, 2008; Ring and Van der Ven, 1992; Grandori, 2008
		Other safeguarding methods	Eccles, 1981; Powell, 1990; Ring and Van der Ven, 1992; Grandori, 2008
Ability to influence	Power, dependency, attractiveness	Emerson, 1962; Stannack, 1996; Cox, 1999; 2001; 2004; Cialdini, 2001	

Table 7: A priori constructs used to observe and analyze the situational factors

4.2 Performance objectives

The constructs related to performance focus on experienced / perceived performance of the external resources i.e. suppliers in the particular relationship.

The performance is in the research related to the objectives and key performance indicators that the company has set for itself and in also for the objectives and performance indicators that may have be set for the particular resource or for the relationship.

The performance constructs and their measurement are specified in the Table 8.

	CONSTRUCTS	INDICATORS
PERFORMANCE OBJECTIVES	Measurable key performance indicators	KPI's set for the relationships
		Actual performance
	Competitive factors	Defined objectives for the relationships
		Identified competitive factors

Table 8: A priori constructs used to observe and analyze performance objectives

4.3 Management practices

Management practices in dyadic relationship in a value network, in supply chains and other set-ups are researched by multiple different schools of thought. One of the main objectives of this research is to identify which practices are truly used for management of the external resources.

The Table 9 specifies the a priori constructs that are used to observe and analyze the practices.

	CONSTRUCTS	INDICATORS	REFERENCES
MANAGEMENT PRACTICES	Design of end product and value proposition	Type of value creation strategy	Edelman and Heuskel, 1999; Brown et al., 2002; Hinterhuber, 2002; Möller et al., 2005; Dhanaraj and Parkhe, 2006; Ritala et al., 2009
	Architecture of DSN structure	Number of alternative suppliers	Choi and Krause, 2006
		Type of external resources	Cox and Lamming, 1997; Hall, 2000; Cousins and Spekman, 2003
		Alignment of product, processes and supply chains	Fine, 2000
	Selection of DSN members	Supplier selection principles	Kraljic, 1993; Gelderman, 2003; van Weele, 2005
	Development of buyer-supplier relationships	Type of relationship	Dyer, 1996; Dyer et al., 1998; Bensaou, 1998; Cousins and Spekman, 2003; Hines et al., 2000; Olsen and Ellram, 2003; Terpend et al., 2008
		Type of interface between buyer and supplier	Araujo et al., 1999; Dubois and Wynstra, 2005
		Supplier development practices	Watts and Hahn, 1993; Hines, 1994; 2008; Krause and Ellram, 1997; Sako, 2004; Wagner, 2006
	Process Management over the DSN	Process management practices	Laseter and Stasior, 1998; Menzer et al., 2001; Frohlich and Westbrook, 2002; Simchi-Levi et al., 2003; Handfield and Nichols, 2004; Auramo et al., 2005; Laiho et al., 2009
	Supplier integration	Formal mechanism	Martinez and Jarillo, 1989; Krause et al., 1998; Trent and Monzcka, 1998; Swink et al., 2007, Sanders, 2008, Williamson, 2008
Informal mechanism		Martinez and Jarillo, 1989; Carter and Narashiman, 1993; Swink et al., 2007	
Coordination practices	Formal mechanism	Das et al., 2006; Arshinder et al., 2008	
	Informal mechanism	Lee et al., 1997; Stanck et al., 1999; Das et al., 2007	

Table 9: A priori constructs used to observe and analyze management practices

5 CASE ANALYSIS

This chapter presents an analysis of the case studies. Building on the earlier defined a priori constructs the empirical analysis focuses on enhancing the current knowledge towards managerial practices.

The case descriptions begin with introduction of the focal companies and the embedded relationships i.e. the suppliers. Based on the empirical case data supported by related literature review the buyer-supplier dyads are categorized according to their dominant governance approach and their main focus and objectives. Using the categorization the supplier base management practices in different business situations are identified. The practices that the focal companies investigated are using are grouped under three broad categories and their subcategories and also based on the literature review.

The case descriptions are constructed as follows:

- Focal company, the suppliers and their relationships
- Objectives of the relationships
- Practices used to manage the external resources
- Factors affecting co-operation
- Impact on performance
- Case summary

The last subchapter consists of cross-case analysis.

Introduction to the case companies

TelTech Inc.

TelTech Inc. is a large globally operating electronics manufacturer with manufacturing plants in Europe, Asia and the United States. The company sources globally and in many cases the suppliers are global players in their field. The product is delivered to customer sites and assembled.

Pharma Inc.

Pharma Inc. is an innovative European R&D-based company with an emphasis on developing medicinal treatments and diagnostic tests for global markets. It develops, manufactures and markets human and veterinary pharmaceuticals, active pharmaceutical ingredients as well as diagnostic tests for global markets. Pharmaceutical product account for about 95% of company net sales of which a considerable part comes from proprietary patented pharmaceutical innovations.

CommTech Inc.

CommTech Inc. is an international technology group specialized in broadband video and data communication systems and services. The group is divided into two strategic business areas, which are focusing on broadband cable networks and video networks. The business

area of cable networks serves cable operators and a major part of its business activities are handled through direct customer contact. Another business area supplies solutions for optical signal transmission and video network management software solutions for video surveillance. A major part of its business is handled through system integrators. CommTech Inc. is a professional supplier in selected niche segments. Both units of CommTech Inc. are among the leading providers in their market areas. They are globally recognized for their know-how and ability to produce technically cutting edge solutions year after year. At the same time CommTech Inc. is a typical small company competing against larger competitors.

HeavyMetal Inc.

HeavyMetal Inc. is an industry-leading group of lifting businesses that offers a complete range of advanced lifting solutions for a wide range of industries worldwide. The strategy of HeavyMetal Inc. is based on the combination of capitalizing on extensive service network, leading technology, fast paced industrial consolidation and a focus on efficient supply chains. The core business areas of HeavyMetal Inc. are service business and equipment business offering customers pre-designed components, cranes, and material handling solutions. HeavyMetal Inc. can be considered as a technology leader.

Design Inc.

Design Inc. is a leading textile and clothing design company. The company designs, manufactures and markets high-quality clothing, interior decoration textiles, bags and other accessories. Vision of the Design Inc. is to be the most acclaimed print designer in the world and one of the most appealing design-based consumer brands.

	Business	Revenue (MEUR)	Personnel	Reach
TelTech Inc.	Large globally operating electronics manufacturer having manufacturing plants in Europe, Asia and the US	>10000	60 000	Global operations and sourcing
Pharma Inc.	Develops, manufactures and markets pharmaceuticals, active pharmaceutical ingredients and diagnostic tests for global markets. An innovative European R&D-based company	770	3000	European based operations, global sourcing
CommTech Inc.	European-centric international electronics manufacturing, installation and service company	120	1200	Three manufacturing locations (EU, China), global sourcing
HeavyMetal Inc.	Offers a range of machinery solutions in B2B market. Operations based on the combination of service network, leading technology and a focus on efficient supply chains	1700	10 000	Production facilities in 12 countries, global sourcing
Design Inc.	Design & brand consumer goods company with both own manufactured and subcontracted and traded goods portfolio (branded)	<100	400	European-centric operations, global sourcing

Table 10: The case companies (key figures by the time of research)

5.1 Case TelTech Inc.

TelTech Inc. is a large globally operating electronics manufacturer with manufacturing plants in Europe, Asia and the US. The company sources globally.

The product is delivered to customer sites and assembled. The complexity in the business comes from the wide variety of products where the delivery size and configuration varies. Furthermore, the uncertainty in business has increased due to intensive competition. From category management perspective the importance of the suppliers is obvious. The case company has over 100 purchasing categories in use, which are organized as larger

category clusters. All selected suppliers are strategic suppliers based on the classification developed by Kraljic (1983). In many cases its suppliers are global players in their field. The monetary purchasing volume is relatively high in all three relationships and all the suppliers operate globally serving the manufacturing locations of the case company worldwide.

Focal company and the suppliers

Relationship with the Supplier 1

Supplier 1 is a component supplier with a high technological capability and ability to develop both products and processes together with the case company.

In general, the relationship with the Supplier 1 can be characterized as relatively balanced collaboration with a strongly R&D oriented spirit.

From Supply Chain perspective the Supplier 1 was across the interviews considered as a very good partner often referred as *the easy to deal with supplier* and as *the benchmark*. In the context of supplier integration the Supplier 1 is more willing to accept the case company processes and way of working. The Supplier 1 is the only company with advanced VMI agreement and is also recognized to know how to handle the case company requirements e.g. demand forecast. The Supplier 1 also has all advanced logistics models in use with the case company, implementation covering all supplier component codes and all plants. The processes are supported by the case company preferred tools, including system-to-system integration.

Additionally, Supplier 1 has resources e.g. to regular discussion on KPI's, proposals and proactive activities. They are also mentioned to be interested in improving the performance.

Relationship with the Supplier 2

Supplier 2 is a contract manufacturer. Supplier 2 operates as a capacity provider and also collaborates in product development. The relationship with Supplier 2 is to be characterized as a relationship with high volume and broad range of items. The Supplier 2 is one of the three strategic suppliers in the category. It has around 40 000 employees, operations at 18 countries with 70% of the headcount is located in low-cost countries.

History of the relationship is relatively unique. TelTech Inc. sold several factories to the supplier in the past. Today, TelTech Inc. is being served from multiple Supplier 2 factories in Finland, India, China, and as a 2nd tier also from Hungary, USA and Mexico.

The supplier 2 is serving the case company in multiple different ways: EMS services to all business lines, manufacturing of custom components, repair services, NPI services, and engineering services. TelTech Inc. is strategically and from revenue perspective one of the top five customers.

From the Supply Chain perspective the relationship with Supplier 2 is relatively dynamic in particular related to modifications and changes of codes and locations. DSN is managed with dedicated assets and personnel and is balanced between case company own operations and the part managed by the supplier.

Supplier 2 has a basic capability to manufacture with relatively generic capacity. The supplier owns the capacity excluding the test equipments, which are owned and specified by the case company. Some of the products are single source components. Case company strategy however is dual sourcing (opportunity) either in-house or with another contract manufacturer. In terms of component sourcing most of the sourcing/contracting is taken place by the case company (A and B components) and the Supplier 2 takes care of the C-components.

Relationship with the Supplier 3

Supplier 3 is a global Original Equipment Manufacturer (OEM). It provides a complementary OEM product, which is a ready end product and an essential part of a total system provided by the case company.

The relationship is characterized as a relationship of two global giants both intending to orchestrate the overall demand-supplier network. This conflicting interest is visible in the relationship where the Supplier 3 is – from the focal company point of view – delivering its own OEM products to case company solutions as components. However, the Supplier 3 perspective may be that it is delivering the core products for solutions, which are complemented with telecom infrastructure from TelTech Inc. and all other suppliers.

The key data of the TelTech Inc. supplier relationships is summarized the following table.

Volume	Supplier 1	Supplier 2	Supplier 3
Type of supplier	Component supplier	Contract manufacturer	OEM
# of items	500 SKU:s	5500 SKU:s	standard configurations, 600-1000 units annually
Purchases of total spend %	1,6	2,6	0,8
Purchasing order lines	Thousands / year	Over 10000 /year	appr. 500-1000 /year
Relationship coverage	global	global	global

Table 11: Case TelTech Inc., Buyer-Supplier relationships

Objectives of the relationship

In general the objectives of TelTech Inc. related to its supplier base management approach are relatively common and conservative. The most important objectives mentioned by the informants were rationalization of the supplier base, cost development, and lead-time, delivery, and quality objectives.

Additionally, the case company focuses on technological development. Questions regarding strategic perspectives like the selection of technology standards are as well visible on the agenda of the case company. As one of the leading companies in its own industry globally the case company is strongly focused on industry development as well.

The objectives and observations on the governance approach of the focal company in each of the relationship are elaborated on the Table 12.

	Supplier 1	Supplier 2	Supplier 3
Objectives	Product and value - driven objectives: Performance of end product, meeting certain product criteria, e.g. design complexity. Overall based on open books. KPI like performance, capacity, cost factors, time to market	Very cost and efficiency -driven objectives: Cost, supply chain efficiency, delivery accuracy, product quality	Complicated relationship of two giants. Efficiency-driven objectives: Cost, quality, and delivery accuracy. Conflicting objectives: Buyer intending to move to open competition, supplier focusing on own value add.
Governance approach	Close R&D collaboration, relationship-oriented governance: Tightly aligned product architectures, high mutual investments on R&D, broad multi-level communication. High level of personal relationships. Relationship is of bi-lateral nature, and appears very balanced	Supplier very tightly integrated to focal company: Strategy aligned, processes integrated, buyer owning certain assets. Broad communication. High level of personal relationships. Relationship is of bi-lateral nature, however strongly dominated by the focal company	Low adaptation or alignment taking place. Buyer moving from proprietary to open standards and competition approach. Broad coordination and operative management by buyer, medium level personal relationships or executive contacts. Relationship is of unilateral nature
Asset specificity	High asset specificity: Mutual investments in R&D and supply chain	High asset specificity: High dedicated investments in manufacturing capacity and personnel	Medium asset specificity: Investments in relationship building
Uncertainty	Related to R&D success	Related to availability of products and capacity	Relationship-related uncertainty
Frequency	Long-term contracts with daily interaction	Long-term contracts with daily interaction	Long-term contracts with daily interaction
Interface between buyer and supplier	Interactive interface	Specified interface by the buyer	Translation interface (but may be due to supplier's desire)

Table 12: The objectives and observations on the governance approach of the focal company in the three relationships

Practices used to manage the external resources

Based on observations in TelTech Inc., the practices to manage the external resources take place on four strongly interlinked areas:

- Definition of the value proposition
- Strategic technology and architecture
- Product and DSN design
- Supply Chain operations and performance

Value positioning

Supplier base management practices at TelTech Inc. can be evaluated starting from the definition of the company overall value proposition toward its customers. From that perspective focus was on definition and influence activities related to desired business models and value creation of both the case company and suppliers. It included business strategy creation for the overall value creation network, technology strategy development, and technology architecture development in light of creating fit to TelTech's strategy and offering.

Product and network architecture

Technology architecture activities focus on definition and influence activities related to desired business models and value creation of both the case company and the suppliers. Practices that TelTech Inc. was applying towards its supplier base included:

- Technology strategy development and technology architecture development in light of creating fit to the case company strategy and value offering.
- Communication of the technology selections and preferences to selected suppliers
- Assessment and feedback on supplier's strategy and value add
- Feedback on supplier strategy where the case company as especially a cost effectiveness perspective.

Possible activities are best illustrated with a case of a collaborative R&D design project. It is a significant investment-driven move to open technology architecture (from the Supplier 3 proprietary). The project is ensuring a strategically more beneficial purchasing situation for TelTech Inc. by neutralization of a controlling position of the Supplier 3. Direct consequence of this strategic move can be more direct competition and more influence and freedom for the focal company to operate and orchestrate the supplier network. Both TelTech Inc. and the end customers can at least in theory, switch between alternative providers and products and also try to achieve reduction of prices through normal market mechanisms.

The approach of the case company towards the Supplier 3 was having characteristics normally seen in information technology industry. Proactive influence on suppliers was

considered very important. However this was more related to e.g. support of technology standards than e.g. Supply Chain -related activities.

Buyer-supplier relationships

Activities at the Supply Chain design involves both product and service design to support effective delivery process (DfX processes) and Supply Chain design itself in terms of design of geographical locations, capacity & flexibility, logistics systems, as well as design and implementation of processes and systems linking the organizations. This level was most visible with the contract manufacturer Supplier 2.

The importance of the Design for Excellence (DfX) processes in effective influence orchestration is worth recognizing. Supply base focused DfX processes have a critical role process for supplier selection in driving R&D to select and implement accepted components and suppliers. In the same way, possible renewal of the Supply base and changes in Supply Chain structure would be best to implemented through supply base focused DfX requirements and following supply chain structural design which take place during R&D phase. The structural decisions, which determine to large extent the achievable performance at delivery phase, are made as a part of this process.

The supplier's capacity and flexibility as well as supplier's geographical location and coverage are of particular interest for the case company. As an example, the case company has been prompting for the strategic suppliers the importance of having activities in India, which is and is expected to be one of the main markets now and in the future.

Important for supply base management from this perspective is also the role of supplier development projects driving the implementation of the selected Supply Chain design in form of logistics agreements and logistics solution implementation projects.

Activities at supplier development and integration cover

- Joint business planning and development project road mapping with suppliers
- Quality development
- Logistics development projects
- KPI development and reporting

The relationship with Supplier 3 appeared in many respects more arms-length that the two other relationships and was considered to be very difficult to influence by the case company. The case company ability to influence the supplier was limited and the supplier responsiveness was seen inadequate. At the same time, TelTech Inc. has Supplier 3 specific process descriptions describing how to deal with the supplier which is an indication of the case company adapting to supplier ways of operations not vice versa. Examples of these processes are order management, supplier collaboration and logistics quality feedback processes.

Operatively, with Supplier 3, the performance of the relationship was considered good, however being a challenging one to manage. As an example, it required from the case company a high level of internal cohesion and integration – e.g. messages towards the supplier needed to be the same for instance in the earlier mentioned change from proprietary to open technology. It was seen, that the whole case company was required to stand behind the change giving the same message. This internal integration appeared important in collaboration with the Supplier 3 overall.

The case company also had a supplier development plan including items like total cost savings, logistics channel development, production development initiative, end-to-end supply chain analysis and development of procurement. In general, the Supplier 3 was still considered to be a good supplier – a technology leader and also a globally performing company from supply chain management perspective. In terms of responsiveness it was clearly visible that the size/complexity of the Supplier 3 organization was a hindrance for its ability to respond.

Management of daily operations

The Supply Chain management perspective seems to be a very strong area of TelTech Inc. The combination of global operations and related organization including supply base focused global material management organization, globally defined supplier base management processes and global delivery processes in particular the volume planning process and sales and operations planning (S&OP) process supported with state-of-art ICT tools, make it possible for TelTech Inc. to effectively facilitate the daily operative level and orchestrate the information and material flow.

During normal operations a cross-functional category management team is primarily concerned of managing demand and supply uncertainty. The team includes members from both global and local organizations and from different functions. Procurement, manufacturing, quality, and supplier development all are represented. They are operating the relationship with a high level of empowerment. When seen from the change management perspective, formalized procedures and project management practices reduce significantly the implementation-related uncertainty in change situations. Project management methodology is reducing the uncertainty related to implementation projects and their success. Clear supplier requirements, audit procedures and involvement of quality experts in teams reduce the quality-related uncertainty both at the change situations as well as in normal daily operations.

The importance of Supply Chain related cost efficiency can be predicted to increase in the future when the products and their technology are getting more commoditized and open for competition. In anticipation to that, supply chain performance and related aspects had already been increasing in importance; focus was increasingly on software (SW) business as well as Supply Chain effectiveness, in particular in cost effectiveness and speed.

Performance management was also raised as one of the core focus areas with a desire to drive the metrics much more and take it as the basis for fact-based management. More forward-thinking metrics was targeted.

Interestingly, supplier's organization, suppliers' suppliers (2nd tier) and supplier's internal aspects in general were considered as factors that intentionally were not under discussion. The buyer-supplier relationship was in this sense unilateral and maintaining the independence of both parties despite the fact that the commitment of both parties was significant at all relationships and asset specificity was high with Suppliers 1 and 2.

Operative supply chain management with the investigated suppliers is described in the Table 13:

Operative Supply Management	Supplier 1	Supplier 2	Supplier 3
Information processes			
# of people involved	50-60	Broad range of persons involved	Few, 6 buyers
Frequency of operative contact	Weekly/Daily	Hourly/Daily	Weekly
Regular calls	Yes: Follow-up calls for material availability twice a week	Yes: Weekly calls for broad range of topics	Yes: Monthly/Biweekly
Planning processes			
Mid-range planning	13 months forecast, monthly	13 months forecast, monthly	13 months forecast based on planning items, monthly
Short-range planning	Weekly	Weekly manual updates for selected products	Monthly
Conference calls for planning review	Biweekly	Weekly	Monthly
Inventory level updates	Case Company on monthly basis, supplier in consignment stock	Case Company on weekly basis	Case Company responsibility
Technologies in use	SAP, Rosettanet	SAP, Rosettanet, EDI	SAP, EDI
Execution			
Purchasing model	Classical purchasing, VMI, contract warehouse	Classical purchasing, VMI (one plant)	Classical purchasing
Logistics model	Contract warehousing, consignment stock at Case Company plants	Traditional fulfillment to Case Company plants, some consignment stock at Case company plants	Direct to customer/site fulfillment
Demand Visibility	Daily execution view	Daily execution view	Daily execution view
Inventory management	Supplier 1 (consignment) and Case Company	Case Company	Case Company
Ordering	Weekly/Daily	Daily	Weekly
Joint problem solving (calls / emails)	Daily	Daily / Hourly	Daily / Weekly
Deliveries	Supplier determines	Daily, Case company coordinates	Daily, Case company coordinates
Delivery time	12-16 weeks	1 day - 1 week	3 weeks
Performance management			
Joint metrics in use	Yes	Yes	Yes
Review methods	Regular discussions on KPI:s, Supplier 1 proactively proposing actions	Regular discussions and reviews, corrective actions	Monthly reviews
Actual Performance	Short lead times, flexible	Flexible, very short LT:s	Inflexible contacts, long lead times

Table 13: Supply Chain management practices between TelTech Inc. and its suppliers

The information sharing is supported by web-based supplier collaboration tool and relatively intensive weekly collaboration processes which enable close communication. Key information delivered is the 13 months forecast in monthly cycle and the execution view is updated daily monitoring on weekly basis for the next 16 weeks. An interesting observation regarding performance management is that despite the common perception of Supplier 1 performing very well it is not directly showing in Supply Chain KPIs like On Time Delivery. An explanation to that may be in the way VMI set-up is measured by the case company.

Overall the relationships were facilitated by executive – level meetings involving R&D executives and e.g. product marketing. Operative collaboration took place through various practices for information sharing e.g. weekly conference calls. These communication practices keep the communication open between the companies enabling more proactive and rapid problem solving. Responsible person is always the operative category manager. Operative collaboration is based on a weekly call including 6-10 participants and all the case company factories and suppliers customer service with flexible participation. Standard agenda for the calls include meeting minutes, shared action log and weekly numbers for review. Additional follow-up calls can take place regarding materials availability issues, shipment allocations etc.

Factors affecting co-operation

Based on the interviews it seems that the two important factors enabling TelTech Inc. to influence the relationships are the purchasing volume and the proactive approach to business and development:

- The case company alone was an important customer especially for the suppliers 1 and 2 and additionally it could partly utilize its parent company volumes and bargaining power in the relationships, e.g. in price negotiations.
- It was also recognized that the case company could have an influence because it had “proposals in place” – ready made plans and specifications for different aspects of collaboration for example for integration with suppliers.

From governance approach point of view the case company was intending to orchestrate especially the Supplier 2 relationship with a notably tight approach:

- In terms of strategic integration and guidance it was reported to have an EMS strategy and a specific strategy considering the supplier 2
- These strategies seem to guide the activities at the case company organization providing guidance of focus areas and advice of supplier development. However, despite of the tight collaboration relationship it is shared with the supplier only briefly.
- The relationship management included executive meetings twice / year, quarterly business reviews with senior management and also a joint short-term plan (Action plan – type of a plan, including numerical targets and budget) focused on the relationship. This is updated twice a year and includes e.g. delivery –related activities, TCO development topics early supplier involvement.

Generally it seems that the case company has good process and technical capabilities to effectively orchestrate its supplier base.

One of the main enabling factors seems to be the strong competences of the case company in global sourcing and global category management. TelTech Inc. has a long experience and qualified organization in this field and the global category management approach seem to provide the necessary internal integration for effective orchestration.

Strategy process, in particular the category strategy, has a major role in giving guidance for the daily activities. The actual strategy (document) is sometimes mentioned or referred but the strategy development process (including short term planning (STP) and personal targets) and ability to participate in the process is almost unanimously mentioned as the most important guiding mechanism.

The respondents mention the category strategy to be the most useful tool. However, the quality of content is sometimes mentioned to vary and that is directly causing conflict situations in e.g. time and resource allocation.

The fact that the case company has a clear agenda and solutions (processes and tools) was considered as an enabling factor allowing it to drive the supply base design and supply chain development with suppliers.

Impact on performance

The case study indicates that there is a connection between orchestration practices in supplier relationship and the performance achieved at the buyer-supplier dyad.

In dyad 1 the Supplier has a superior capability to provide high-technology products which capability is leveraged in the relationship.

From supply chain point of view actual performance is the following:

- The supplier has advanced logistics models in use
- According to interviews major improvements in material availability and delivery performance has been achieved through investments in the relationship
- Lead times are considered short even if achieved through use of inventories at distribution centers
- The supplier is considered flexible and easy to do business with – considered as “the example supplier”
- It was mentioned that the supplier has never missed the inventory target levels when operating in the VMI model

In dyad 2 the most important characteristics of the supplier are the ability to provide flexible production capacity both for existing and new products. The supplier is described as flexible and open and easy to do business with.

Performance in the relationship with the supplier 2 is characterized from the supply chain management point of view as:

- Having very short lead times
- Supplier being able to deliver continuously changing volumes with variation from 70 % up to +150 % of average load

- The formal and regular collaborative planning process supports fast-changing operations well which was considered as one of the core factors for the case company on operational management of the overall supply chain.

For Supplier 3 there are substitute products available in the markets but customers are requiring Supplier 3 brand products. For the supplier the purchased volume is relatively low and the importance of the case company relates mainly to its reference value.

In general the Supplier 3 is described as professionally high-level supplier with high quality levels, delivery accuracy and speed. However, at the same time performance is in the interviews characterized as inflexible and not an easy supplier to change practices due to inflexible business agreement and quality of operations being on average level.

Additionally, the interface between the buyer and the supplier is described as difficult relationship, requiring special efforts like specific process descriptions guiding the case company.

Case summary

Overall the focal company manages the supplier relationships intensively allocating a substantial amount of resources, especially dedicated people, to daily operations. This indicates that asset specificity is high at all relationships.

Power balance varies between the dyads and correspondingly the case company ability to influence varied. With supplier 1 the relationship was relatively balanced also from the power/dependency situation point of view. This situation was indicated through the practices, which were typically bilateral by nature and involved the organization of both of the companies. Also alignment activities in the relationship were conducted in a balanced manner. In relationship supplier 2 the focal company had a dominant position. With the high level of asset-specific investments of both parties and a high mutual dependency the relationship can still be considered to be bilateral in nature strongly led by the focal company. Processes and systems were tightly integrated and the focal company was providing the leadership in the relationship. With supplier 3 the implications of missing influence capability can be observed and it can be concluded that the power in the relationship was at the supplier side. It is important to recognize the role of product and technology architecture in this respect. The architectural choices contributed clearly to the situation. On the other hand the transfer to open technology architecture and the consequent ability to introduce alternative suppliers may release the situation later and change the situation in the future.

Supply base management practices in the case TelTech Inc. can be divided to interlinked perspectives of activity:

1. The starting point for supply base orchestration is the definition of a company value proposition and value creation strategy

2. Supply base management practices seem to take place on interlinked perspectives
 - Strategic technology and architecture perspective
 - Product and DSN design perspective
 - Delivery process operations perspective

These perspectives of orchestration are illustrated in the Figure 13.

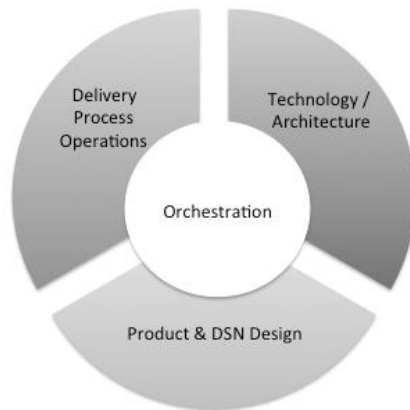


Figure 13: The three perspectives of orchestration

Consistency between the perspectives – in other words internal integration between the organizations responsible for related activities – is critical for effective orchestration. Consistency here means fit between

- Objectives set in strategy for a supplier relationship,
- Activities in relationship management type of activities, and
- Alignment of operative supply management activities to the overall relationship goals.

The consistency can be analyzed through adaptation of processes, operative communication, and availability of resources for management of the interface between buyer and a supplier. This emphasizes in particular success of implementation of the strategy whether the strategic targets set for a relationship are brought to practice.

Through the implementation perspective also the link to availability and use of development resources become clear. Adaptation of the operative supply management to a relationship usually requires changes in processes and tools. This change is implemented by development resources focusing on logistics processes and tools. Decisions related to allocation of these resources are important from strategy implementation perspective, since they determine whether the operative interface in a particular supplier relationship can be advanced in practice.

From this perspective there are at least two organizational connections that need to be highlighted:

1. Connection between the overall strategy and the allocation and usage of supplier development resources and supplier integration resources. The most important mechanism to make this linkage work is category strategy.
2. Alignment between supplier relationship-level activities and the daily operations, executed mainly by buyers at plants as well as the operative materials management team

There were some potential gaps further emphasizing the importance in the linkages between layers. First, quality of the category strategies was perceived to vary. This was reported to cause sometimes unclear priorities both overlapping activities with one supplier and at the same time slow progress with another. Second, the category management for Supplier 3 was not yet reaching all the activities taking place locally at remote countries. This was a known problem, and was reported to cause variation on operative level in logistics terms, service levels, and prices.

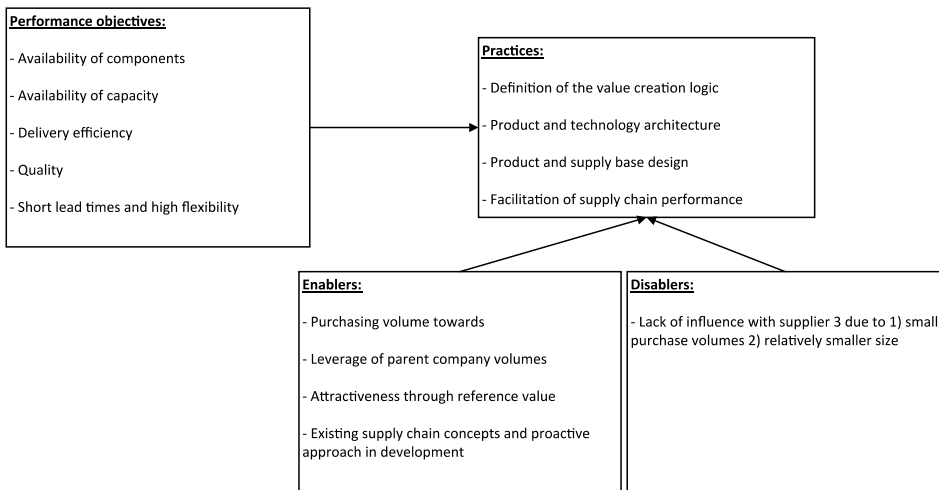


Figure 14: Summary of the case TelTech Inc.

5.2 Case Pharma Inc.

Pharma Inc. is an innovative European R&D-based company with an emphasis on developing medicinal treatments and diagnostic tests for global markets. It develops, manufactures and markets human and veterinary pharmaceuticals, active pharmaceutical ingredients as well as diagnostic tests. Pharmaceutical products account for about 95% of company net sales of which a considerable part comes from patented pharmaceutical innovations.

Pharma Inc. has also a large portfolio of generic, off-patent prescription medicines, hospital treatments and self-care products. These products are sold mainly in Finland, other Nordic countries, the new EU countries and Germany. In animal health Pharma Inc. has the leading market position in the Nordic countries. A subsidiary produces active pharmaceutical ingredients for both for Pharma Inc. and other pharmaceutical companies. An expansion is on-going, direction to the Nordic Countries and Eastern Europe. The company has grown also in purchased products.

While Pharma Inc. is a market leader in its home market, it is a small player in global markets where competitors are large, multinational companies.

Focal company and the suppliers

Relationship with Supplier 1

Supplier 1 is the world's second largest consumer packaging group and a leading global beverage can maker serving a number of markets including the beverage, personal care, healthcare and food markets. Turnover is approximately £4.6 billion. Overall Supplier 1 employs approximately 24,000 people in more than 20 countries. With operations worldwide and key expertise in plastic injection and high-speed automated assembly, Supplier 1 produces drug delivery and medical devices, metering pumps and valves, primary packaging and diagnostic disposables.

Supplier 1 produces inhalators based on a patented design owned by the focal company. For Pharma Inc. Supplier 1 is an essential one: it is single source contract manufacturing relationship in an important and monetary-wise significant business. In addition to the fiscal value the products developed and produced by the Supplier 1 create end consumer commitment. Patients are typically not willing to change the product when they have taken the Supplier 1 product into use.

From the supplier point of view the business with focal company is not clearly significant judging by the fact that the volumes have been relatively low and the purchasing volume accounts approximately 15% of the business segment of the supplier which at corporate level is insignificant. For an individual factory, however, the business volume may make the Pharma Inc. a top #3 or #4 customer. Additionally, pharmaceutical business segment

is important for the supplier with good margins, stable growth and relative stability it is a strategic business segment but overall small at the group level for the supplier.

Targets for the relationship are traditional such as quality, delivery reliability and effectiveness. For the supplier an implicit target is to grow the pharmaceutical business.

Relationship with Supplier 2

Supplier 2 is a local Finnish graphical industry manufacturer founded in 1935. Today it employs almost 100 people and turnover amounts to around 13 MEUR. Supplier 2 offers its customers printed products and services for packaging and advertising. Key areas of expertise include printed cartons, folded instruction leaflets, brochures, annual reports, posters and customer magazines delivering high quality and service combined with the very latest technology.

The relationship between the focal company and Supplier 2 has lasted, for decades. At the supplier market there are similar types of suppliers but there are actually only few companies that fulfil the pharmaceutical business requirements. The Supplier 2 has specialized on pharmaceutical segment, which has required significant investments from the supplier.

Supplier 2 is highly dependent on Pharma Inc. Approximately 50% of supplier's business is conducted in the relationship. Long joint history is an important factor, which allows the supplier to know the requirements of pharmaceutical industry. However, as the informant most closely related to Supplier 2 argues, Supplier 2 is not a single source supplier. There are alternatives and a real competition situation. Still, Supplier 2 is the only one in Finland that can provide the all three components that are required for complete packaging solution in pharmaceutical industry (package, guide, and label).

Targets for the relationship with Supplier 2 are VMI, ready-made labelling at the supplier and RFID technology implementation. The relationship is also being developed to be even more in-depth. Supplier performance measurements are OTD, delivery time, price, and quality (every quarter).

From the governance model perspective legal contracting is conducted with price negotiations annually and also potential re-allocations of purchasing volumes are considered along the process. The Supplier 2 is performing well which also allows the position. Also joint projects and deep collaboration has led to the current situation. However, the risk level is relatively high as there is a high-level dependency between the companies. Supplier failure will lead focal company to major delivery problems.

Relationship with Supplier 3

Supplier 3 is an India-based publicly listed company founded in 1986. It commenced operations first with single unit manufacturing semi-synthetic penicillin. Today the company is the market leader in semi-synthetic penicillin drugs. It has a presence in key

therapeutic segments like cephalosporin, antivirals, cardio-vascular, gastroenterology, etc. The Supplier 3 has international operations in over 100 countries.

Supplier 3 was chosen to be generic product supplier as it is considered to be a lowest cost supplier. Quality matters with Supplier 3 are reported to be acceptable, however Supplier 3 was a problematic supplier due to its delivery issues. Pharma Inc. is the sixth important customer and for European markets an important distributor.

Primary targets related to the Supplier 3 relationship were cost, quality and delivery capability. Some common development projects had been taking place but intention of the focal company was to minimize these. Supplier 3 is not a single source supplier. Other possibilities exist, but qualification of a new supplier is a process that may take from 1,5 to 2 years, which significantly increases the switching cost. Consequently, the focal company was considering itself to be locked in with a low-performing supplier with the relationship with Supplier 3.

Relationship with IPR suppliers

In addition to the material and packaging suppliers, the case company is actively maintaining and developing relationships to potential IPR suppliers. Pharma Inc. sources IPR through two alternative methods by either partnering with other pharmaceutical or biotechnology firms and by developing new products through joint R&D projects or it sources and licenses ready product components from other medical companies and produces drugs based on those components. In this research three anonymous IPR supplier relationships were included as examples of such supplier relationship category.

For the case company the IPR suppliers represent an opportunity to source complementary skills and knowledge thus increasing the coverage of the product portfolio and also the probability of creating new patented drugs. The existing IPR suppliers are companies with similar focus and with other complementary characteristics, for example a geographical scope, and no directly competitive positioning.

Objectives of the relationship

In the long term expiration of patent protections will cause a substantial change in the business situation of Pharma Inc. The position of the focal company in pharmaceutical market is expected to change significantly with the expiration of patents. At the same time market mechanism in pharmaceutical industry in general are changing towards regulator price control, so-called *price pipelines*. Consequently, the pharmaceutical market can be divided to three main segments that are patent products, generic products, and brand products for customers. As the market changes emerge the case company business situation is expected to become more complicated with the continuing price pressure. At the same time the revenue growth is expected to continue.

The changing market dynamics is causing challenges for the case company. As the price pipeline is applied pharmaceutical firms are put out to tender every 1-4 weeks and the

winner is only allowed to sell certain drugs. This dynamics is causing significant fluctuation also the supplier base. At the same time the price regulation lowers entry barrier to a particular market and allows possible new competitors to enter.

In general, the competitive advantage in the pharmaceutical industry is to a large extent based on patents for drugs. For other drugs (without patent coverage) key factors are flexibility and availability and ability for price competition.

The most important objectives of the case company are:

- Expansion to Europe, market leadership at its local markets, flexibility and agility to compete and grow in generic drug business. The leads also to objective of cost reduction of the end products through productivity improvements.
- For operations, sourcing key objectives focus on operational excellence: lead time cut to half, flexibility, agility, cost effectiveness, high delivery reliability (99,5%), and reduction of cash-to-cash-cycle with 10%.

Factors of interest for Pharma Inc. are related to availability of raw materials and products at competitive prices. The primary concern is availability of alternative sources of supply. Registering a new supplier may take 2 years, which increases the importance of supply risk management and also total costs in procurement. Another core factor is new technology sourcing in basic procurement standard solutions. In R&D-cooperation new technology and products are sought and possibility to choose product/technology standards is also important. A new focus area, which comes together with the increasing business of licensed products, is the emphasis on Supply Chain flexibility and agility.

Overview on interest areas is illustrated in the Figure 15:

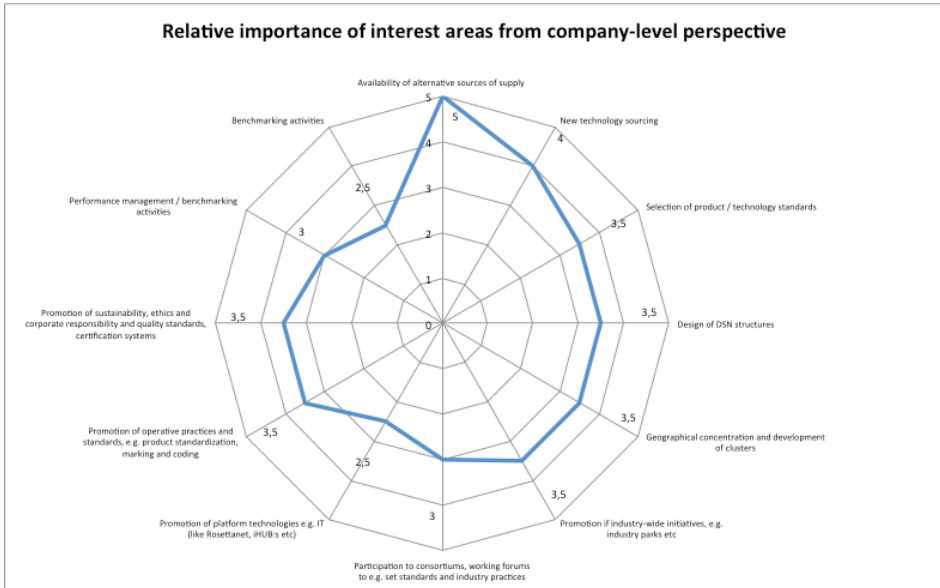


Figure 15: Overview on interest areas for Pharma Inc.

Based on the interviews it is evident that the case company is not intentionally orchestrating its supplier base as a whole. This may be partially explained by the size and purchasing power of the company. The focal company is from the perspective of size approximately at the place of 200th as a medicine company and spend has broken up to very wide portfolio resulting e.g. that the case company demand alone is not enough for e.g. development of medicine.

Practices used to manage the external resources

Of the main categories of external resource management mechanisms, Pharma Inc.'s focus is clearly based on coordination practices. Emphasis is placed on written policies and operating procedures defining how to work with suppliers. Practical examples of those would be e.g. the supply contract the company has with each of its suppliers (mentioned to be 25 pages long), documented VMI rules, quality contracts, auditing, standards have to be fulfilled.

Value positioning

From the perspective of product and value proposition design the case company has explicitly decided the desired position in the value chain. That decision affects several aspects in its value chain design:

- The company has decided to be in the consumer interface in those countries where it is present on the market directly
- Original products have been decided to be manufactured by the case company itself
- The case company is not using resources to generic products but they are sourced which is limiting the amount of investments required

Product & network architecture

The Pharma Inc. does not use architecture of the Demand/Supply Network very extensively as a management practice. The opportunities for e.g. Supply Chain development or changes in the supply base are mainly not considered.

There are two aspects where the architectural considerations can be identified:

- The focal company has promoted changes in the inventory management, process integration and inventory ownership only in the relationship with the Supplier 2. The companies have together implemented VMI solutions utilizing the proximity of the companies as an enabler
- The focal company has started to source components from a low cost country the Supplier 3 relationship being an example of that.

The case company considers the sourcing and selection of the DSN members to be an important management practice. The focus in member selection is in ensuring quality of the products. The case company reports to have advanced processes and practices in place to select and evaluate and monitor suppliers on continuous basis. At the same time, however, it was reported that the objectives in supplier selection varies a lot and sometimes process performance related criteria is not well taken into account.

The company has also decided to apply more focused on single sourcing with carefully selected suppliers and commitment to develop single source supplier relationships. Aspiration of the focal company is to guide supplier community towards larger suppliers and networked approach.

The sourcing and selection of the suppliers is among the most important activities in the area of IPR sourcing. With the approach where partnering leads to joint R&D project it is critical to select a right partner and mutual trust and strategic alignment need to be developed very rapidly as a part of the negotiation process. Normally trust and alignment develop over longer period of time through share successes with the R&D projects the long joint history does not always exist beforehand.

The negotiation process with potential partners include a very careful evaluation of the partners strategy, approaches and skills, as well as a due diligence approach where other capabilities of the potential partner are assessed. The auditing is supported with a thorough negotiation process and internally with several approval rounds involving also the company board of directors.

Buyer-supplier relationships

The practices for supplier base management at case Pharma Inc. concentrate on two areas: on relationship management with Supplier 2, and on operative management and coordination practices with Suppliers 1 and 3.

With Supplier 2 management of the relationship has a big emphasis. Related practices are:

- Joint development projects both related to products and processes, VMI implementation as an example
- Shared performance monitoring and management
- Frequent feedback and information sharing

In the case of Supplier 2 the processes are “intertwined” (as reported by the focal company category manager) but at the same time roles and responsibilities are not too clearly described. Overall governance approach with Supplier 2 has characteristics of relational governance.

With Suppliers 1 and 3 the relationship management is considered as important but at the same time was reported to take place more on routine manner. Supplier 1 is clearly more powerful than the focal company and the relationship was considered as more adversarial and coordination focused and the relationship with Supplier 3 as transactional and very cost-oriented.

With the IPR suppliers, development of the buyer-supplier relationships takes a different form. Before a relationship is established a lot of focus is based on attracting potential IPR suppliers and partners. During the negotiation phase the basis for potentially successful buyer-supplier relationship is assessed very rigorously. In case a relationship is established, critical factors are personal relationships of the people that operate the relationship, conduct the R&D efforts and commercialize the results. Equally important are the personal relationships at management level. The critical success criteria are e.g. trust, openness in information sharing, and allocation of resources.

Management of daily operations

Regarding integration and coordination the relationships differ sharply. With Supplier 1 there is a particularly low emphasis on aspects like monitoring business performance of supplier network and facilitating benchmarking activities with and among supplier network. Also coordination practices like acquiring, consolidating and sharing strategic information with suppliers are with low emphasis.

With Supplier 2, in turn, there is an especially high emphasis on dedicated assets, monitoring supplier activities and monitoring business performance of direct suppliers.

Also the relationship with supplier 3 has an emphasis on supplier integration and coordination practices, like on sharing business critical, confidential information with

suppliers. Also we can observe the importance of written policies and operating procedures, strong culture and values, and acquiring, consolidating and sharing strategic information with suppliers.

With Supplier 1 also the process management aspects have a lower priority. The companies do not focus on aspects requiring integration and close collaboration, like specifying the products and conditions several tiers upstream in the supply chain, communication of technology standards for the overall supplier network, monitoring and managing the interfaces between suppliers or defining the business standards for supplier network.

The relationship with Supplier 2 is instead conducted with higher intensity and having a high emphasis on use of advanced communication technology to exchange information with supplier, planning, monitoring and controlling movements of materials, components and finished products and also on IT systems to share key business information with suppliers.

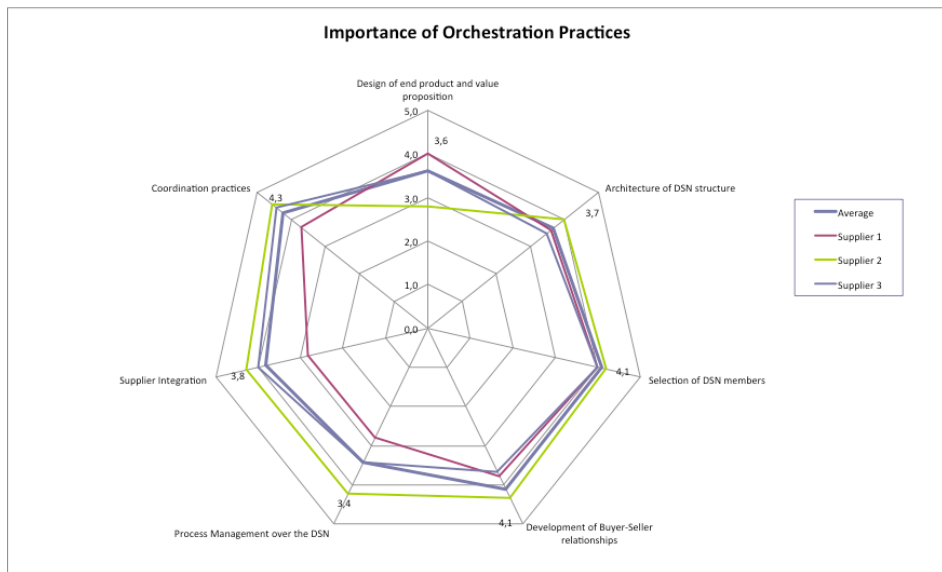


Figure 16: Overview on orchestration practices Pharma Inc. uses in the relationships

Factors affecting co-operation

Pharma Inc. is a small manufacturer in global scale. Some of its local products are however well known brands and on the other hand it owns some important patents.

In terms of power balance in the relationships the observations correlate with the size of the supplier. Supplier 1 is considered to be more powerful in the relationship than the focal company due to the high switching costs and switching time. The ramp-up costs were estimated to be 2,5MEUR/supplier, which makes the payback slow. The focal company is

to a large extent, based on its own decisions, in a dependency situation with the Supplier 1. The relationship with Supplier 2, in turn, is perceived to be focal company dominated but the strong mutual dependency from the supplier is affecting the situation. With the Supplier 3, despite the fact that the focal company is the sixth important supplier and financially interesting, the overall power level of the focal company is perceived to be low. With IPR suppliers, the dependency situation changes very rapidly from no dependency and attractiveness as a partner toward high level of dependency as the collaboration begins and investments in the R&D collaboration develops.

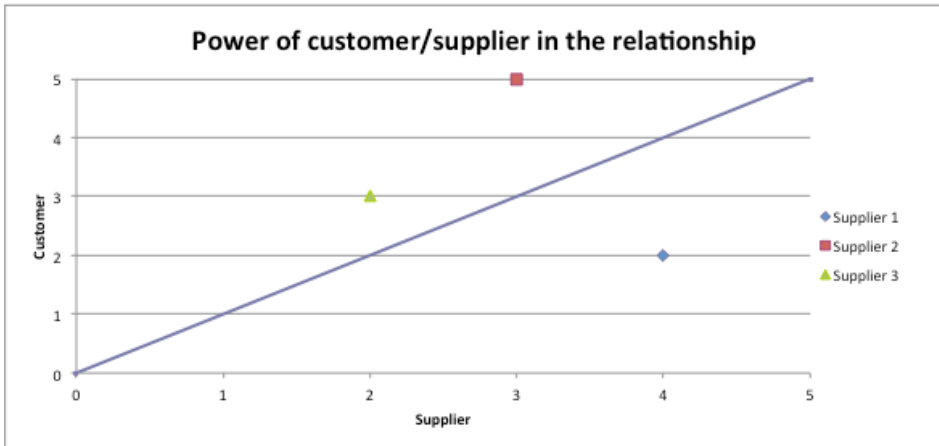


Figure 17: The power situation in the relationships

In general Pharma Inc. has alternative suppliers in raw materials but there are areas with a strong dependence from supplier base. Interestingly, a large part of the perceived dependency is related to the registration process of medical components and the consequent switching costs, which are considered high. Medicine registrations and the switching difficulty force the focal company to operational models, which may differ from desired ones.

Additionally, the drivers for the dependency situation in each of the relationships can be identified:

- In case of Supplier 1, the high switching cost due to need for capacity transfer and requalification of a supplier is making the focal company dependent from the supplier
- With Supplier 2, the supplier is perceived to be very dependent on the focal company. Also the focal company is highly dependent on the supplier due to the significant role the supplier conducts as a part of the focal company processes
- In the relationship with Supplier 3 the dependency situation is perceived to be a low dependency situation, and also relatively balanced. No unique products are involved in the relationship (copy drugs) but replacement of a supplier is

troublesome. From the supplier point of view the focal company has focus on attractive markets but the access via the focal company is not a unique set-up.

- With the IPR suppliers, before a collaborative relationship is formed the focal company power is minimal and there is basically no dependency between the parties. The possible power in a potential relationship is derived from factors like existing market position, brand, and recognized competence. When the relationship is formed dependency grows very rapidly as both of the parties invest in the shared R&D.

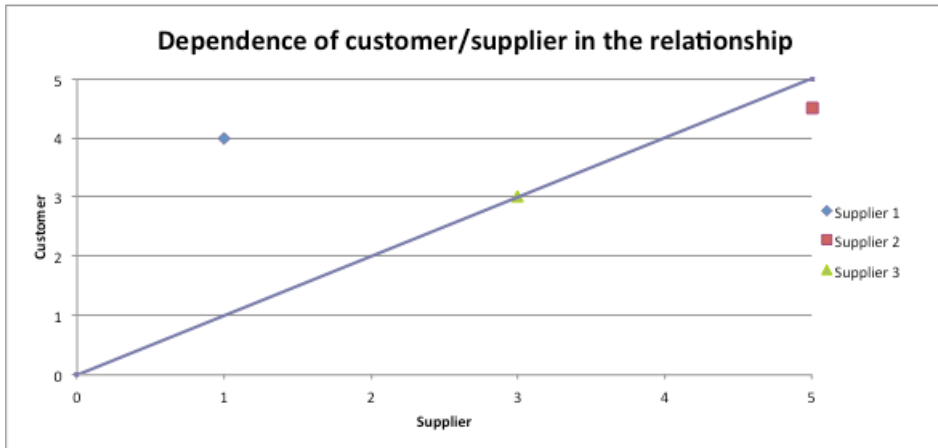


Figure 18: The dependency situation between Pharma Inc. and the three suppliers

In general, from attractiveness point of view, Pharma Inc. is volume-wise a small customer in the pharmaceutical customer segment and this reduces the business potential. At the same time the small size makes the cooperation with Pharma Inc. simple, e.g. through avoidance of bureaucracy. The focal company improves its attractiveness as a customer through its attempts to trade information about the environment seeking for business opportunities. Also, based on the view of the informants, pharmaceutical industry as an industry is on many operational aspects (e.g. use of ICT, processes) so far behind that focal company is able to profile itself as a forerunner and help supplier to improve its own operations.

With Supplier 1, attractiveness of the supplier is based on supplier capability to produce growing volumes and innovation potential. From the supplier point of view the attractiveness is based on buyer position in medical industry, the know how to make products, and reputation as a reliable company.

In the relationship with Supplier 2, the attractiveness is based on buyer's position in pharmaceutical industry, which is a strategic focus area for the supplier. Supplier attractiveness is based on supplier's capability to do all three components of products in addition to service capability and specialization.

In the relationship with Supplier 3 the attractiveness of the focal company is perceived to be based on business potential it can provide in a form of well-functioning sales force and knowledge about pharmaceutical markets. Supplier, in turn, attracts the focal company due to the simple fact that it can provide the lowest price.

Attractiveness of the focal company towards the IPR suppliers is based on the business potential that the company represents towards its potential IPR suppliers. Factors affecting the business potential are the market position of the case company in Scandinavia and also its competent R&D organization combined with a good track record in past R&D projects. Additionally the case company has in relation to its size good financial resources, which are also increasing the attractiveness as a potential development partner and IPR customer. Towards the IPR supplier the case company conducts focused actions to communicate its capabilities and increase its attractiveness as a potential partner in a form of professional publications, participation to industry fairs and forums and usage of the best scientists to promote the company are used to attract IPR suppliers and development partners.



Figure 19: The perceived attractiveness between Pharma Inc. and the three suppliers

In general, Pharma Inc. is not in a very strong position in relationship to its suppliers. In case of Supplier 1, the focal company is clearly the one with less influence in the relationship. With Supplier 3 the relationship is relatively balanced but distant. The relationship with Supplier 2 is the only one where the levels of attractiveness and dependency are high and the power is at the focal company.

We can identify several factors that can be considered as enablers for potential orchestration activities of the Pharma Inc. and also a factor that can be considered as a disabler.

The Pharma Inc. has developed a vision to be one of the best supply chains in a few years and a view on how to implement the vision. The vision and related strategy is consequently defining the ways the company has to operate.

At the corporate level strategy is related to market access of the company, guiding towards broad market approach and also very diverse product portfolio. This strategy leads almost automatically to increase in a number of suppliers.

The strategic goals for management of the supplier base are derived directly from the business goals, which are delivery accuracy, price development, flexibility, quality standards. Targets for management of the supplier base are selected and implemented per supplier relationship within the relationship management framework. An action plan for purchasing and logistics – next year targets and their implementations – is typically developed for suppliers.

With Pharma Inc. the relative attractiveness as an IPR customer and development partner is based on a set of factors that indicating the business potential for the IPR suppliers. The main factors are:

- Brand and market position at domestic markets
- Credibility and track record of the R&D organization
- Financial resources in relation to the company size

The case company promotes actively its skills and capabilities as IPR customer. On the one hand it is indicating the business potential that it can provide through commercialization and distribution of innovations, on the other hand it as well establishes itself as a potential and capable R&D partner. Both of the aspects appear central in the company ability to source innovations and knowledge in a competed medical marketplace.

Organizational centralization of responsibility: One of the most important enablers for Pharma Inc. is centralized procurement responsibility. The centralized organization is supported with processes and tools to guide and direct the activities of the procurement and supply chain organization. The main levers are:

- Processes, strategy, personal target settings
- KPI's measurement (based on strategy, SC strategy and action plans)
- Most important meters: part targets derived from meters, action plans/year, development discussions, portfolios (classification of suppliers)
- Use of an ERP system has a central role as well
- Centralized availability of information
- Future focus in cross-functional teams – more centralization

Internal integration: The organizational centralization is an internal integration method. From this perspective we can argue that in case of Pharma Inc. internal integration represented by the central procurement organization is a key enabler in orchestration activity. At the same time it was reported by the company informants that lack of internal

integration i.e. communication gaps and misaligned targets of different functions were hindering the company ability to effectively manage its supplier base. Also with the IPR suppliers the role of business development function as the internal integration force was seen as a main enabler.

Impact on performance

In the performance point of view the focal company reports the improved supply chain efficiency. Still, as was reported by the case company, the delivery reliability needs to be improved especially from consistency point of view. Of the case examples the Supplier 3 provides an example of such situation.

Overall, the broad product portfolio makes the faltering delivery performance of specific suppliers visible for consumers. The generic products with low margins have also the biggest uncertainty while patent drugs are easier to forecast.

Case summary

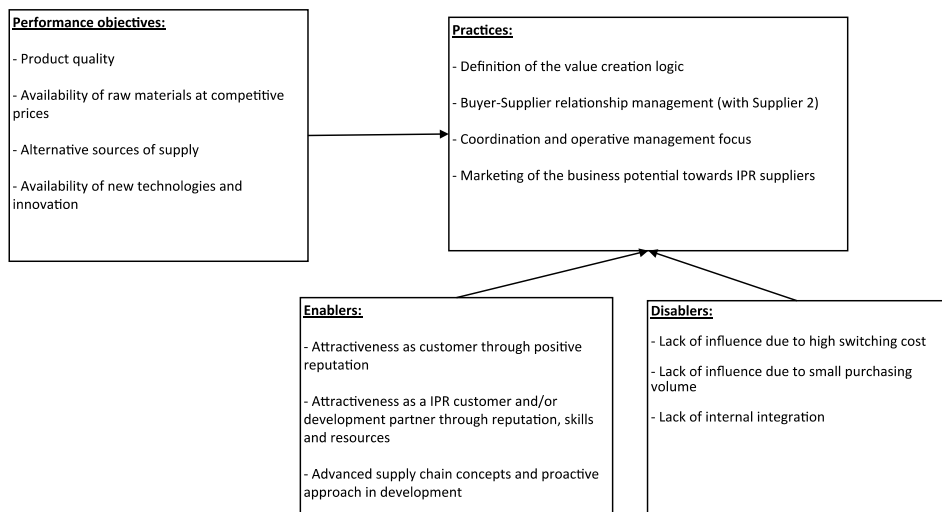


Figure 20: Summary of the case Pharma Inc.

5.3 Case CommTech Inc.

CommTech Inc. is an international technology group specialized in broadband video and data communication systems and services. The group is divided into two strategic business areas where one serves cable operators and a major part of its business activities are handled through direct customer contact and another supplies solutions for optical signal transmission and video network management software solutions for video surveillance. A major part of its business is handled through system integrators. Both business units are among the leading providers in their market areas and are globally recognized for their know-how and ability to produce technically cutting edge solutions year after year.

In 2008 the group's net sales totalled EUR 109 million and the group employed 677 persons at the year-end. As a company engaged in high technology, innovations and R&D are crucial to the business of the case company. The company has a strong commitment in R&D. Its product development engages approximately 150 R&D engineers, which guarantees the world-class know-how. Being locally present is one of the most valued cornerstones of business strategy of the case company.

CommTech Inc. is typical a small company competing against larger competitors. For long the main competitive edge has been gained through leadership in technology. The main markets for the case company are primarily in Europe where 80% of its revenue is generated. Overall, the profile of the case company is one of a specialized supplier in selected niche segments. Its basic business is mature and is expected to decline in next 10 years. At the same time service revenues are growing and a technology-driven market disruption is also expected.

Focal company and the suppliers

Relationship with Supplier 1

The Supplier 1 is a large international distributor of optical and electronic components. It was formed in June of 1997 by a group of engineers and industry professionals with the goal to provide high quality optical components at affordable prices for Laser, Telecom and other OEM Industries. The company has consistently grown each year with time and experience and is now well positioned in the respective industries.

Relationship with Supplier 2

Founded in 1989, the Supplier 2 is a Finnish manufacturer of precision sheet metal components. It has specialized for the challenging requirements of telecommunication industry and especially certain niche areas like the complex world of EMC- shielding.

The Supplier 2 has two manufacturing locations - small manufacturing in Finland and another unit in Estonia for component manufacturing. The Supplier has capabilities to produce high level of variation and has modern machines and loyal employees.

Relationship with Supplier 3

The Supplier 3 is an international systems supplier and contract manufacturer to the communications sector and electronics industry. The company has over 30 years of experience of supplying demanding subcontracting and manufacturing services. The supplier has production plants in Finland, China, Estonia and Hungary. It has broad global service capabilities and a wide product range. The company holds a strong position as an international contract manufacturer.

Objectives of the relationship

In general the competitive advantages in the industry the case company is in are cost, time, and quality, where the emphasis varies according to the business strategy. Over longer period of time the case company has been selling technology but recently factors like price, time, and logistics flexibility have become increasingly important with customers. According to the case company, this change has taken place at 2005-2010, and is to a large extent a consequence of professional purchasers having been replacing the design engineers as the main counterparty at the customer organization. Still factors like customization and technological advancement are an advantage in the industry. Characteristic for the overall industry is also a need for fast and flexible solution integration and customization. The field is technologically still very fragmented and opportunities to provide standard solutions are limited.

Most important business objectives for the case company are:

- Growth
- Profitability
- Improving cash flow.

The business objectives of the company are reflected in the objectives for supply base management of the company. In addition to the general business objectives of growth, technological innovativeness, and cash flow, the objectives in supply base management center around risk management and innovativeness. Consequently, the primary target is to ensure alternative sources of supply. This is a factor that is vital for the case company from the perspective of risk management. Furthermore, the case company raises the company values to a central position in the operative management of the supplier base as they are used especially in selection of the suppliers. As stated by the case company: "As the target of sourcing procurement is to support the overall company targets, choice of supplier has to be in line with company values".

The value-based supplier selection is based on a few cornerstones:

- Customer centricity, strategic fit with the focal company, and technological talent of the supplier

- Result orientation: cost effectiveness and health of the business
- Limited dependency: the supplier needs to have more customers, not only the case company
- Reliability and quality aspects both in product and in supply chain
- Respect: supplier needs to be also willing to collaborate deeply with the case company
- Overall, focus of the case company is in optimization of the end-to-end chain from the perspectives of cost efficiency, speed and flexibility. Quality is considered as a basic assumption, a qualifier.

In order to manage the risk with related to the situation with the suppliers, the case company has decided to implement following activities:

- DfX activities with a primary target to use standard components, e.g. components that are used in computer industry
- Review the selection of product / technology standards, again moving towards selection of computer industry standards.

Additionally, Design of DSN structures optimizing end-to-end chain is considered as a central point in ensuring the long-term performance. Additionally, performance management/benchmarking activities with performance comparison and focus on production were considered central, capturing external information and a reference point.

Areas of interest are illustrated in the figure below:

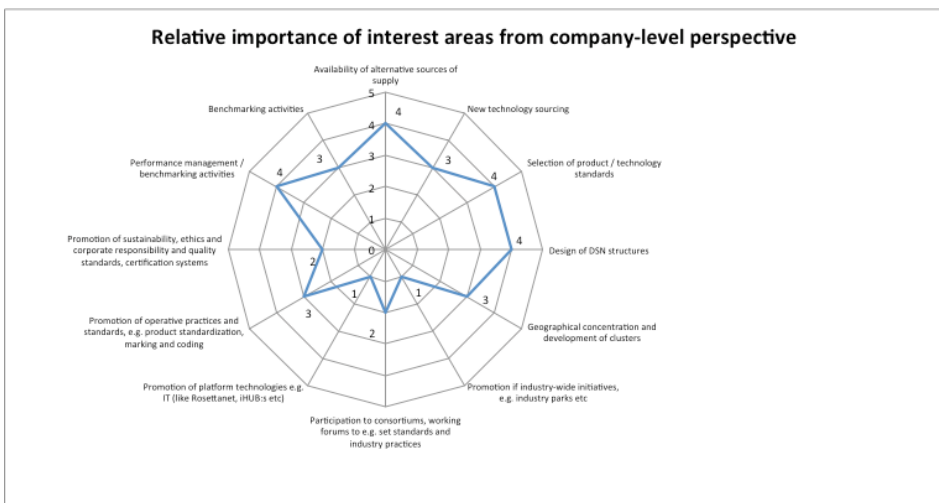


Figure 21: Overview on interest areas for CommTech Inc.

Practices used to manage the external resources

Value positioning

Design of end product and value proposition provides the basis for the supplier base management overall. The value proposition focuses on technology leadership and customer focus. An essential part is customization capability, as practically every customer order is customized.

Product & network architecture

Architecture of the demand/supplier network is not yet used as a practice to influence the supplier base. However, it is well known that there is a long chain behind the immediate customers and the case company conduct actions to understand that better.

Selection of DSN members is along the buyer-supplier relationship management the central practice of the case company for supplier base management. By the continuous sourcing and selection of supplier the company values and fit should be important.

In the company culture also other stakeholders than sourcing organization alone are selecting suppliers. This may be leading also undesired results when sometimes designers are connecting to a specific supplier/component manufacturer and will be locked in to a specific technology selection. Sometimes component design may also favour certain components or create bottlenecks. Understanding of design aspects and related true competitive factors are very important.

Buyer-supplier relationships

For the case company the Supplier 1 is a sole source supplier the case company is relatively dependent on its suppliers.

In general the personal relationships are at the core of the buyer-supplier relationship management. With the important relationship with the supplier 1 there are no targets in measurable format. Instead, there are unwritten targets, such as the companies need to meet a few times a year. Also in new projects the Supplier 1 is involved early and companies are conducting some maturing practices like joint forecasting which are however not documented. The critical aspect in the relationship is technology advancement and competence/knowledge exchange which increase the attractiveness of the case company but also gives also early feedback for it about coming technologies.

The same approach is followed also with suppliers 2 and 3 in which most important for the case company is the good collaboration with R&D e.g. through a “Technology day” – concept where knowledge is offered to the case company openly. The successful collaboration is a must for the case company since in current supplier base there is no existing second source for critical components.

Interestingly there are aspects that are not being used to drive forward the buyer-supplier relationships. There is relatively low emphasis on sharing risks, costs, and gains of improvement initiatives. There is also very little resources and money for supplier development as such. Also, it is strongly believed that relationships develop by joint projects and activities, not by tools. Even contracts are seen as a necessity but without a real significance in the management of the relationship itself.

Management of daily operations

The supplier integration and coordination practices by the case company focus mainly on utilization of existing practical operating models and supporting tools in the supplier interface. Examples of those are forecasting practices and logistics solutions, VMI for example. However, as was noted by the case company, the area is underdeveloped: “it could be a bit of an exaggeration to talk about processes”.

The case company generally considered process management of the demand/supply network as a low focus area. In general it was seen by the case company that process management is not an applicable practice due to the low influence capability.

Similar low emphasis was placed on practices like specification of the products and conditions several tiers upstream in the supply chain. In general it was expected that main processes at suppliers are modular and can easily be reconfigured.

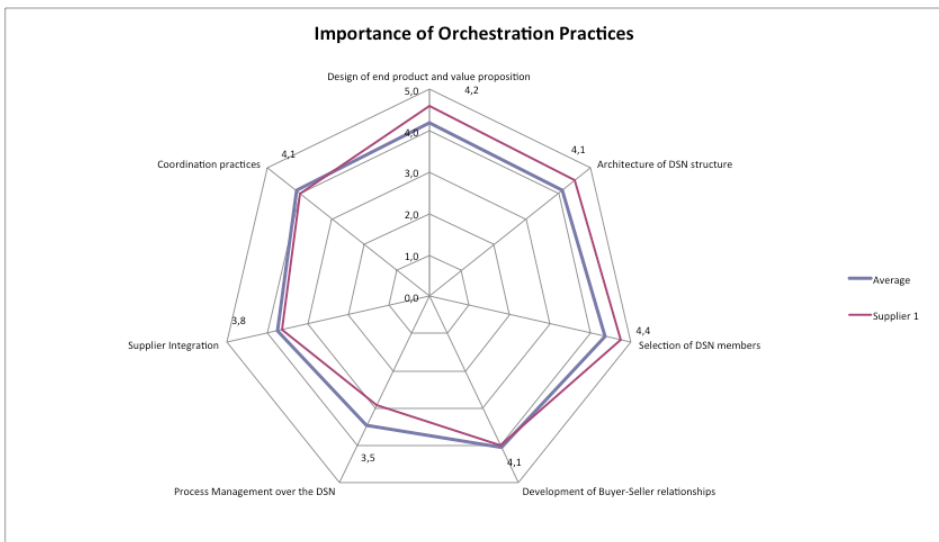


Figure 22: Overview on orchestration practices CommTech Inc. uses in the relationships

Factors affecting co-operation

The relationship situation in the three selected relationships was assessed through power, dependency and attractiveness - all perceptions by the informants.

Overall the case company is a relatively small player and its global competitors may be 100 times larger. That affects the company power towards its suppliers. Overall power is weak but interestingly it is also seen that through focused R&D efforts it can be managed. The supplier network has not dominance over the case company either.

The power situation with case companies 1 and 2 is illustrated in the figure below.

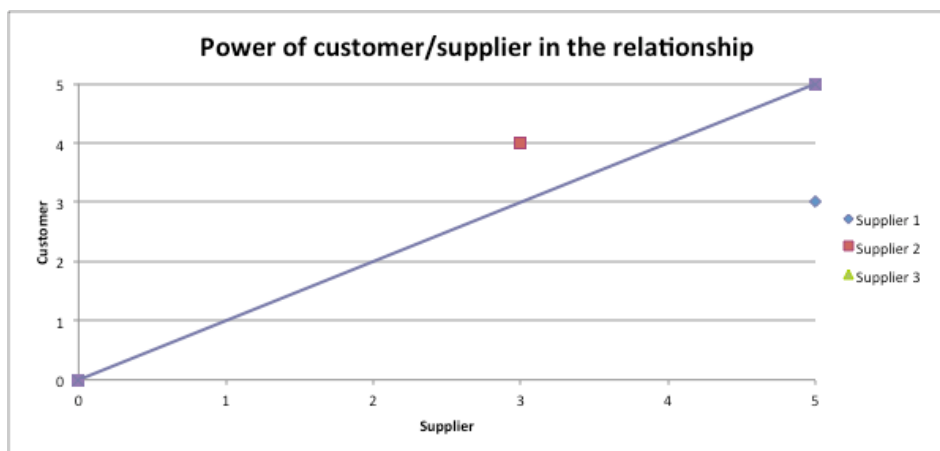


Figure 23: The power situation in the relationships

In terms of power balance in the relationships the Supplier 1 is seen to have more power than case company. The situation is related to the sole source set-up and also through easiness doing business with the Supplier 1. On the other hand it was also seen that the case company influence over the larger supplier is related to the technological advancement of the case company, and to its intentional efforts of conducting focused R&D with the supplier. Furthermore, close and trusted personal relationships were identified as a factor balancing the power situation further.

In relationship with the supplier 2 the case company is considered to have a more powerful position. The power is based on purchasing volumes, which are significant in the scale of the supplier 2, and also on the status as a customer. From the Supplier 2 point of view its power is based on long relationship and reputation – good service –, which have created tight personal and business relationships between the companies.

From the overall dependence point of view the case company is relatively dependent on its supplier in general. It has a very broad supplier network through many business segments

and small volumes which has led to a situation where it cannot split purchasing volumes to dual/multiple sources or apply very competitive approach over its supplier base. With the Supplier 1 additional dependence is created through a long switching time and high switching cost. At the same time the supplier network in general is not very dependent on the case company. The dependency situation with the Suppliers 1 and 2 is illustrated below.

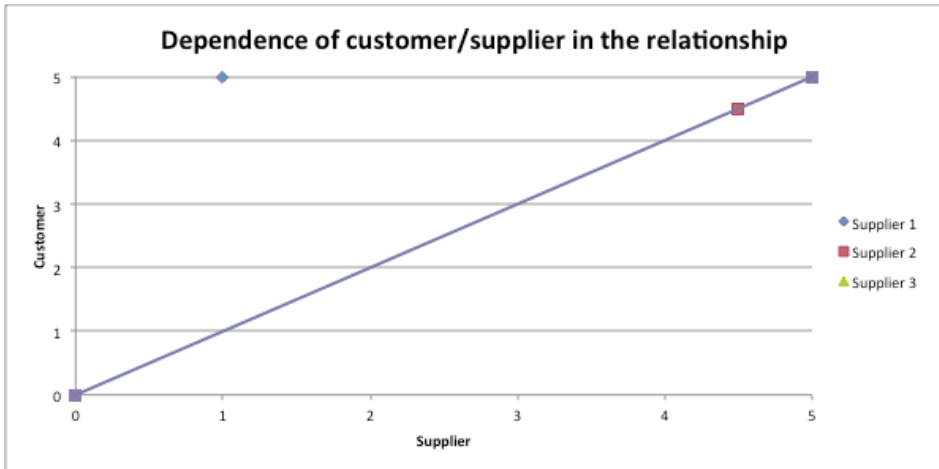


Figure 24: The dependency situation between CommTech Inc. and the three suppliers

In terms of attractiveness both relationships are in balance. The Supplier 1 is believed to see future business potential in relationship with the case company mainly through the R&D efforts and technology development that the case company conducts. At the same time the Supplier 1 is an attractive partner due to successful history, reputation as a reliable partner in R&D and cooperation in general. In the relationship with the Supplier 2 the attractiveness is based on business potential and certain joint activities. The case company is sourcing relatively high volumes and is a good reference customer for the supplier. Furthermore, the case company has helped the supplier in China sourcing and conducted R&D collaboration both aspects, which have further increased the attractiveness as a customer. The supplier, in turn, is known to be able and willing to fulfil the case company requirements and wishes to the extent that a supplier change is not attractive at all. The relationship is considered to “just work almost automatically”.

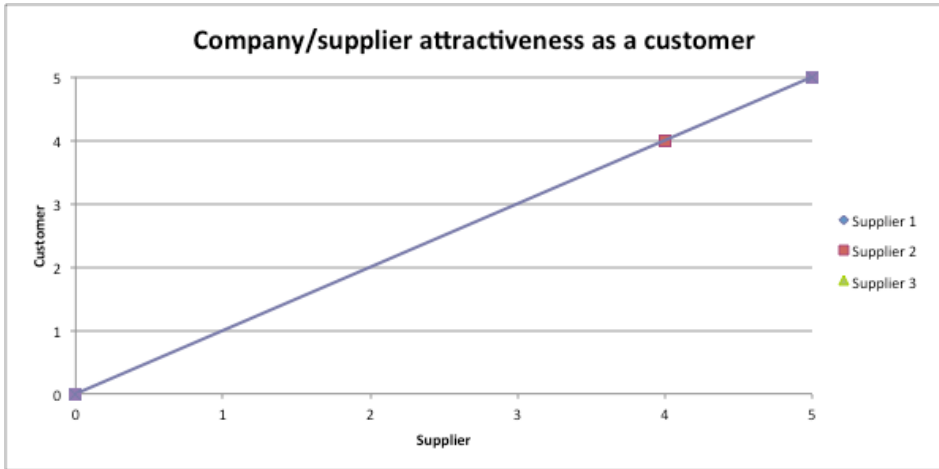


Figure 25: The perceived attractiveness between CommTech Inc. and the three suppliers

In general with both of the suppliers the case company attractiveness is based on R&D, believed potential in the relationship and well-developed personal relationship.

Impact on performance

Generally the impact on performance is mixed. First the company has been successful in business over 50 years and has successfully renewed its technological base several times. The case company is in its own segment the leading European company. Financially in 2011 net sales increased by 9.4% and operating profit with over 25%. A substantial part of the financial success can be attributed to successful renewal of the supplier base and joint technology development with suppliers.

From the operational point of view the orchestration of the supply chain is not so successful. The transparency of the chain is considered weak. From delivery capability point of view the case company itself is relatively fast and flexible but has been based on an expensive inventory-based strategy. In some cases the small size and consequently limited purchasing power is visible in certain cases where suppliers have refused to serve the case company and in other cases prices have been raised.

Case summary

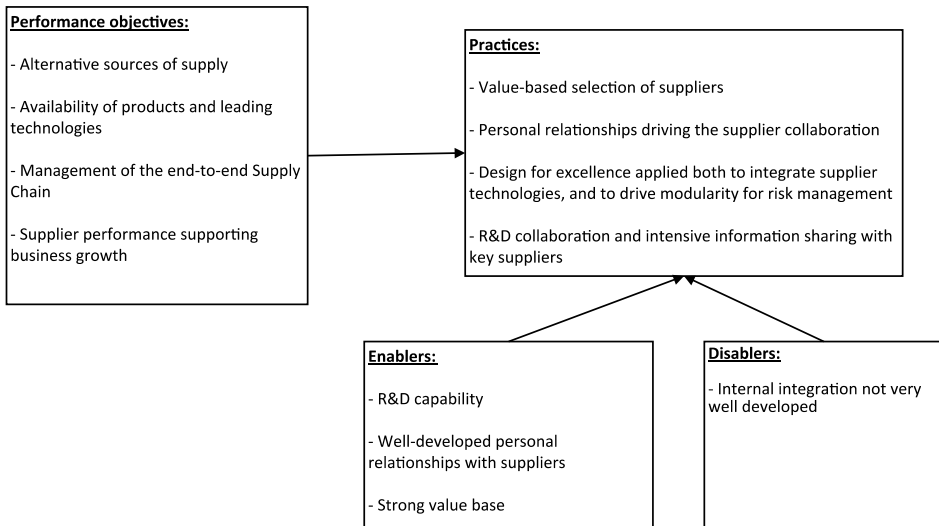


Figure 26: Summary of the case CommTech Inc.

5.4 Case HeavyMetal Inc.

HeavyMetal Inc. is an industry-leading machinery manufacturer that offers a complete range of advanced machinery solutions to many different industries worldwide.

The company strategy is based on the combination of capitalizing on extensive service network, leading technology, fast paced industrial consolidation and a focus on efficient supply chains. Over half of the sales come from Europe, Middle East and Africa and about 30% from Americas.

The core business areas in HeavyMetal Inc. are to offer service and maintenance solutions for all industrial brands in the same business field and to offer pre-designed components, end products and complete solutions for a wide range of industries.

Focal company and the suppliers

Relationship with Supplier 1

Supplier 1 is one of the Europe's largest engineering conglomerates. It has three main business sectors: industry, energy and healthcare. Supplier 1 and its subsidiaries employ more than 400 000 people in nearly 190 countries and it has reported global revenue of over 70 billion EUR. The Supplier 1 supplies low voltage components (electric centers), PLC's automation products, software, and licenses for the case company. The annual spend of the case company with Supplier 1 is <10MEUR which makes the Supplier 1 a top three supplier in the focal company electric category but is at the same time is very small business for the supplier.

From technological point of view important investments have been done around the Supplier 1 technology. This has created a lock-in situation for the focal company to supplier. It was reported that the focal company is investing in renewed product design to open the lock-in and allow alternative suppliers – the architectural choices are central in the case to maintain options for procurement to leverage.

The objectives the focal company has set to the relationship are delivery friendliness and cost development. Also a target is to create a global procurement contract which has not succeeded due to country organizations of the supplier. A target is a global harmonious relationship.

Relationship with Supplier 2

Supplier 2 is a Chinese metal component manufacturer. It has ISO 9001, ISO 14000 international welder certificate and its main production equipment is CNC machining centers and special equipment. Supplier 2 focuses with its business plan to support customer's growth and development plans and could be considered as contract manufacturer of components. Supplier 2 is an important supplier for HeavyMetal Inc., but not a single source. Two to three suppliers for similar parts are used. Particular emphasis

in the relationship is on delivery punctuality and quality level. Supplier 2 competes with other manufacturers through quality, availability and cost.

The original selection criteria why the focal company has selected the Supplier 2 is location. Taking into account the transportation issue of heavy parts, transportation cost and control, and also aspects like supplier audits, which are much easier with short distance. The supplier size has also an important role. This is referring to finding the right size suppliers, investment plan made by the supplier owner, and total quality performance.

Relationship with Supplier 3

Supplier 3 is a manufacturer of electric motors, major components for the focal company. Considerable expansion of the supplier started in 2003 when the focal company, a long-time partner, decided to end motor manufacturing and transfer it completely to the supplier. Companies are very closely tied to each other as HeavyMetal Inc. owns 19% of the supplier shares.

Supplier 3 the largest supplier for the case company with 4% share of total spend. The purchased products or product segments, motors, and electric assemblies are key components to the focal company, and the supplier is a single source. Objectives for the relationship are cost competitiveness, functionality and quality, and flexibility on capacity.

Objectives of the relationship

In a long term the case company is intending to move from a challenger position to a leading company in its own business segment. Today the case company has a relatively large market share and in specific product segments is the only globally operating player. From a product and technology point of view central are future functionalities, intelligence, electronics, software and safety. In the overall industry sources for competitive advantage come from generally from product security, product technology and quality. In addition to the product business the case company is conducting maintenance business for products from all manufacturers, which is a unique concept.

To reach the leading company position in a global marketplace the company has developed a defined approach. A central concept for the competitive approach is standardized, modularized components, which should lead to global economies of scale. Realization of this advantage is seen to require specific characteristics from the manufacturing system:

- Optimized subcontracting (steel construction manufacturing).
- Low cost level manufacturing capacity
- Specific focus on procurement of components

Following the competition approach the most important objectives for the company are, besides safety, quality and people, focus on growth and profitability. For operations, central aspects are systematic category management, systematic supplier management, best price, quality, and supply chain effectiveness.

While the case company is focusing on measurable savings and is developing a systematic approach to involve suppliers in the strategy implementation, the suppliers were experiencing the case company as a relatively good buyer and the main development areas have been in communication with suppliers.

The key factors on interest relate directly to the growth strategy of the case company. The central themes arise from the availability of alternative sources of supply. Through qualification of alternative sources the case company is intending to increase competitive situation between suppliers and thus achieve cost competitiveness. As an overall strategy the case company sees that dependence on one supplier or one technology is not desirable at all.

Other major interest area is new technology, which increases attractiveness and customer satisfaction and often includes also the safety factor. There are few product/technology standards that are all specific for the industry segment the case company operates in, however no dominant standards exist.

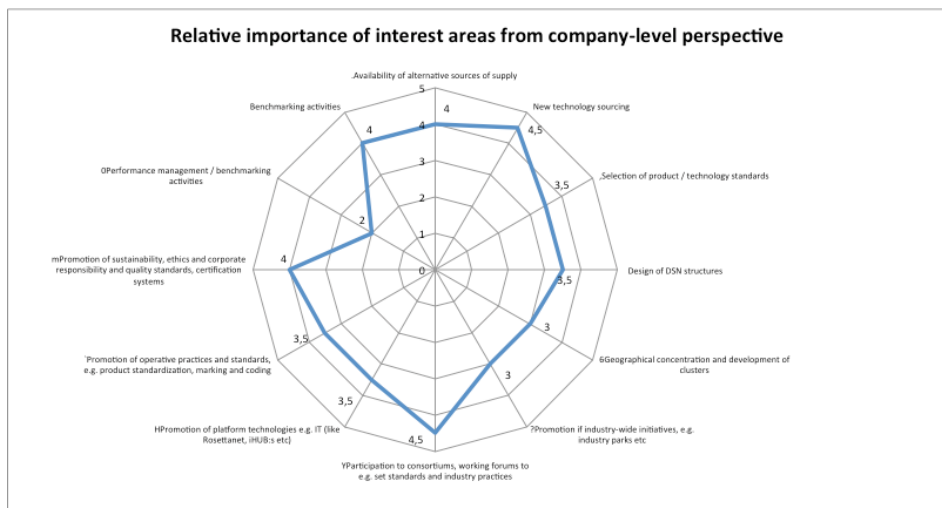


Figure 27: Overview on interest areas for HeavyMetal Inc.

Based on the interviews it can be summarized that the case company is not yet orchestrating supplier network as a whole. The first category strategies have been done and they are seen as the fundamental enabler for management of the overall supplier network. As the case company sees it, the category strategies provide first time an ability to manage the supply base as a whole. In addition, there are named supply managers being in charge of the supplier relationship in each of the relationships.

Practices used to manage the external resources

Value positioning

Also with HeavyMetal Inc. the business strategy is directly driving the supply base management strategy and practices. In particular the growth and market leadership objective, as well as the general approach to reduce cost and minimize dependency from suppliers drives the activities. This is highlighted with the company objective to introduce alternative suppliers and increase competition between the suppliers. Furthermore, the global leadership strategy is driving towards global footprint also in supply base management.

The second aspect, which is particularly notable, is the interdependency between the product architecture and supply base management practices. The relationship with Supplier 1 provides an example of how the proprietary architecture creates dependency situation and prevents the execution of desired sourcing and supply base management strategy. Similarly, the situation can be changed by the redesign of product architecture. The case is highlighting the interdependency of the product and technology architecture choices, and the sourcing strategy

Product & network architecture

The Demand/Supply network architecture is used only with Supplier 2, where the physical proximity to the supplier, as well as the proximity of the supplier to customers of the case company was actually raised as key supplier selection criteria. Generally the case company also follows an independence approach, i.e. it is not willing to be involved with 2nd tier suppliers or supply chain in a broader sense. Instead the interface to suppliers is respected, and suppliers are expected to manage the own suppliers independently.

The selection of Demand/Supply Network members is raised as one of the critical aspects. Especially the right size of the supplier is considered important; the case company intends to be among the most important customers measured as purchasing volume, still however avoiding a situation where dependency of a supplier would increase too high. This perspective emphasizes the relationship between relative purchasing volume, consequent dependence, and ability to influence on the supplier.

Buyer-supplier relationships

The case company considers development of buyer-supplier relationships as the most important mean to direct the supplier base. Focus on development of buyer-supplier relationships is on deep cooperation with a few selected suppliers, the strategic ones.

With this approach the company places relatively high emphasis on strategy meetings, involvement of suppliers early in design of products and processes as well as strong culture and values of the suppliers.

Management of daily operations

To certain extent also coordination practices were applied with the suppliers. The coordination aspect involved mainly written policies and operating procedures, defining how to work with suppliers.

Supplier integration was having relatively low overall emphasis, partly due to the clear intention to avoid dependency with suppliers. Some emphasis was placed on most important suppliers having aligned resources and organization to support the relationship with the case company, using financial incentives to promote high performance and to encourage performance improvement actions.

In general process management over the DSN was having a low focus in supply base management by the case company. Practices that however were used are definition of roles and responsibilities for suppliers, task allocation, and process management practices are necessary for working with suppliers.

A physical logistics system, which provides a platform for overall network was having a high emphasis, and also IT support, and ERP system to monitor and manage the interface between suppliers in supplier network was considered an important mean to manage the supplier base.

Observations regarding the orchestration practices are illustrated in the Figure 28:

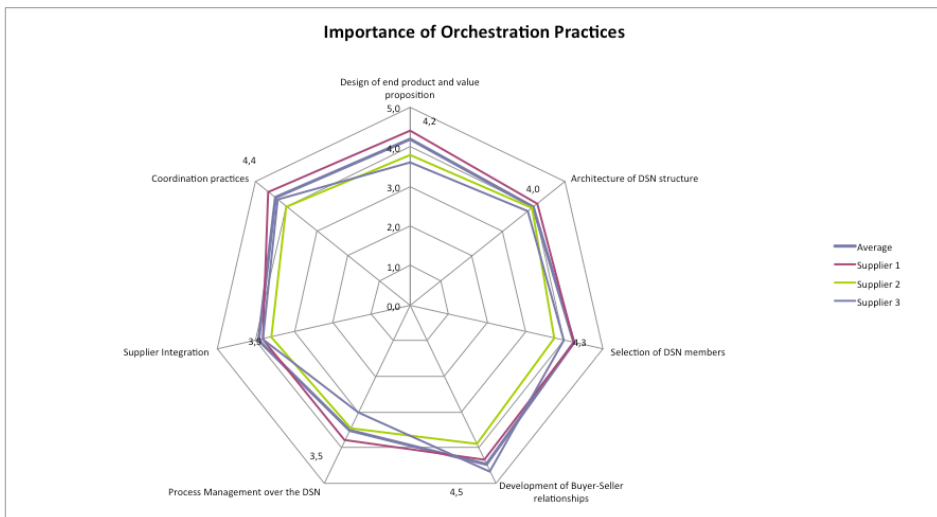


Figure 28: Overview on orchestration practices HeavyMetal Inc. uses in the relationships

Factors affecting co-operation

From the power / dependency point of view the company size and technology selections limit the power of the case company. Over longer period of time the target of the case

company has been to increase the share standard components. On the other hand, the company has a good reputation at large supplier companies as well, and is the biggest possible customer in the industry-to-industry specific suppliers.

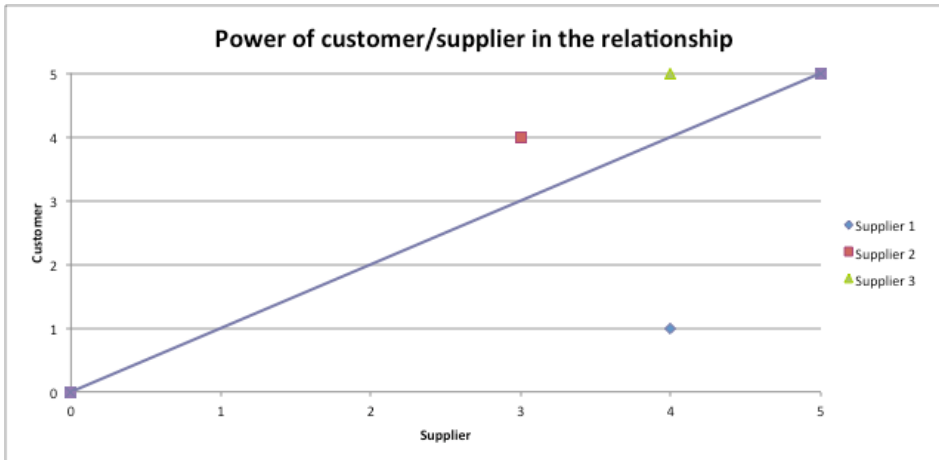


Figure 29: The power situation on the relationships

In terms of power balance in the relationships, the perception regarding the power situation with suppliers follows the size of the suppliers.

- The supplier 1 is considered as more powerful in the relationship than the case company because of its size. The case company is an important customer but in practice it's not visible at the top of the supplier's priority list.
- Power in the relationship with Supplier 2 is relatively balanced and depends on turnover and potential in the relationship. The case company covers 38% of the supplier's business; strategy of the supplier may be to keep the case company at certain level, certainly below 50%.
- In case of the Supplier 3 the case company 19% ownership of the supplier affects the situation, and actually a desire of the case company is the Supplier 3 to be less dependent from the case company.

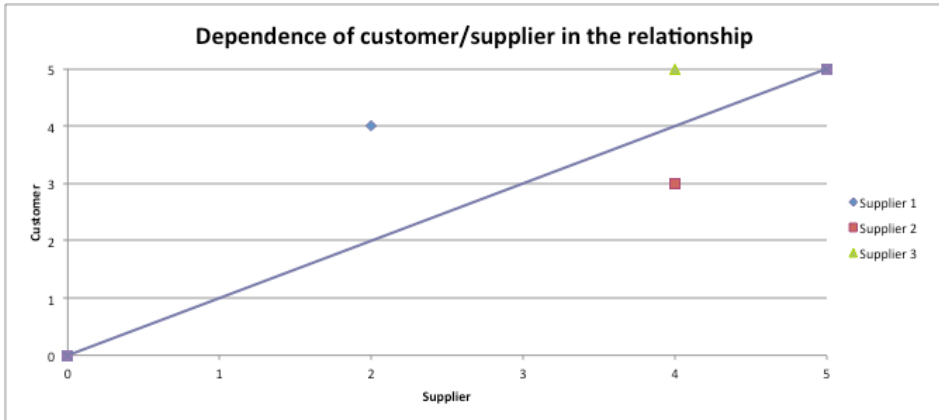


Figure 30: The dependency situation between HeavyMetal Inc. and the three suppliers

From the dependency point of view there are large differences between the relationships. In the relationship with Supplier 1 the buyer is clearly more dependent on the supplier than vice versa. This is mainly related to the proprietary technology of the supplier 1, which is applied in the case company software platform. The case company reported that it is in fact replacing the automation/software platform due to the dependency situation and its consequences. For the supplier the case company is just a customer among many others.

With the Supplier 2 the dependency is more on supplier side: The case company is a significant customer for the supplier, it has three alternative suppliers and it can allocate the volume between the alternative suppliers. From the supplier point of view the dependency relates to high purchasing volume of the case company, to capital-intensive equipment dedicated to the case company, and to special stock for raw materials.

In case of Supplier 3, there is a strong mutual dependency between the buyer and the supplier. The case company owns 19% of the supplier and is by far the largest customer. At the same time the Supplier 3 is the largest supplier, and the sole supplier of critical components.

According to the case company, in general its attractiveness towards its suppliers varies significantly at different parts of the world; among its European suppliers the case company is a potentially large customer with multiple brands, and as such rather attractive customer. In among North American suppliers the situation is the same; in Asia the case company presence not at the same level, affecting the attractiveness as a customer as well.

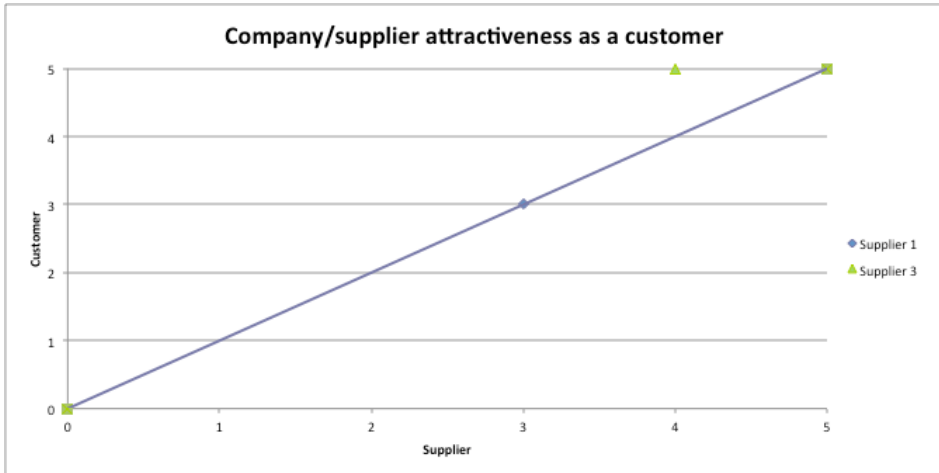


Figure 31: The perceived attractiveness between HeavyMetal Inc. and the three suppliers

Only the relationships with Suppliers 1 and 3 were investigated from attractiveness point of view. In the relationship with Supplier 1 the parties have, according to the focal company, a balanced but average level of mutual attractiveness. From the buyer point of view it is based on revenue and potential growth; Supplier attractiveness, instead, is based on good technology and solid delivery performance.

With Supplier 3 the buyer is clearly an attractive customer due to its dominant position; the buyer also considers Supplier 3 as an attractive supplier. Attractiveness factors with Supplier 3 are especially cost competitiveness and flexibility in capacity.

A well-developed strategy and centralized organization are the main enablers that arise in the research. The two factors allow HeavyMetal Inc. to orchestrate its suppliers.

The case company has recently developed vision of future development of its demand/supply network. The vision and related strategy is guiding the evolution and development of supplier network, and also the related purchasing practices. Consequently the main focus areas are:

- Consolidation of the supplier base
- Cost saving initiatives
- Value-based supplier selection criteria: safety, people (satisfaction), customer (delivery accuracy), supplier reclamation process
- Growth and profitability, which translates both to cost savings, and to use of low cost sourcing.

The impact of strategy on daily purchasing, supplier collaboration and on demand/supply network management is considered essential. The same strategic direction is also reflected throughout the organization, e.g. in purchasing and in category strategies.

The case company has also recently conducted a substantial transformation in its organization, moving from a very decentralized mode of operation to a centralized global sourcing organization, which is responsible for managing the external resources of the company. The organization is responsible for operations, sourcing and procurement/DSN management, and is led by a high-profile CPO (Chief Procurement Officer), who is reporting directly to the CEO of the company.

The central organization consists of six clusters, each being led by a global sourcing director. Additionally, in central sourcing areas there are three regional directors, and five business unit procurement heads. The organization, which is then focused on development of suppliers and supplier base, includes global sourcing directors, category managers, supplier managers, and supplier development managers.

As a part of the transformation the company has implemented internal integration mechanisms in several different ways. The actions include processes and tools to guide and direct the activities and initiatives of the procurement and supply chain organization, as an example:

- Procurement board quarter
- Monthly calls to procurement society
- Team rooms
- Savings reporting monthly
- Category teams
- Supplier audits

Impact on performance

The case company has set for itself and for its suppliers measurable targets for performance improvement, mainly focusing on cost and delivery performance improvements. As a part of the consolidation of the supplier base there is at the same time more business available for the suppliers, which is intended to provide an incentive for the suppliers to price reduction.

The measurable overall impact on performance has been:

- By 2010 the focal company has realized 10% cost savings in sourced materials
- Amount of suppliers have decreased significantly
- One global operating model has been implemented
- Increasing competitiveness of the focal company, measure as prices and technology competitiveness

Case summary

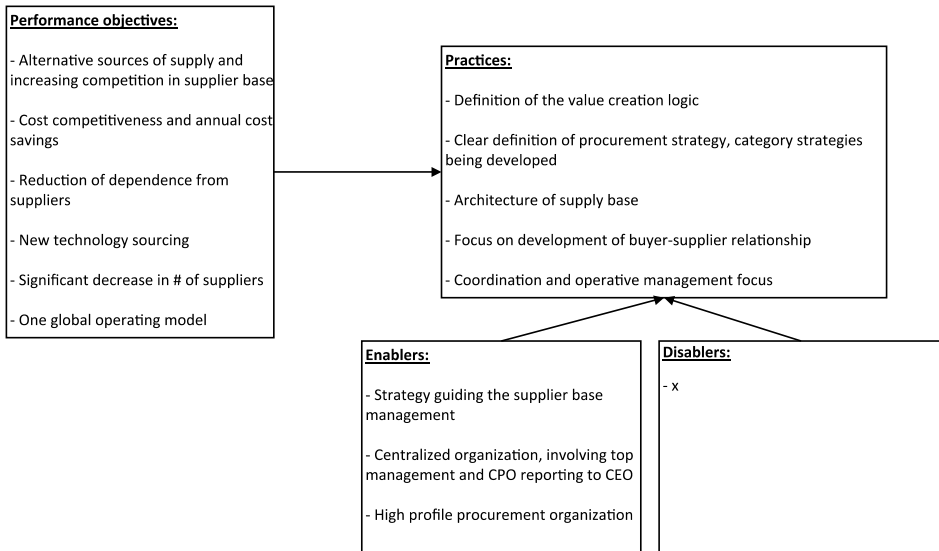


Figure 32: Summary of the case HeavyMetal Inc.

5.5 Case Design Inc.

Design Inc. is a leading textile and clothing designer company. The company designs, manufactures and markets high-quality clothing, interior decoration textiles, bags and other accessories under a well-known international brand. The vision of Design Inc. is to be among the most recognized design companies in the world and one of the most appealing design-based consumer brands. Business development primarily focuses on controlled organic growth in domestic markets and international growth at selected export markets.

The company has chosen a desired position in the value chain. Design Inc. wants to be the last link before the branded product is sold to the consumer. This choice has had an impact on operations, where consumer interaction and downstream capabilities are highly important. In these terms situation has changed compared to the past. Design Inc. understood the brand value which resulted a move of focus closer to end consumer, while the production was not seen a core operation anymore.

The importance of production skills and capabilities has grown recently again. When the company started to develop procurement, essential things of own production were discovered such as sewing of marquee bags and textile printing. These have proved to be

very important for the overall value proposition. Currently the core manufacturing competences are textile printing know-how and linking of it to design. For the case company this re-found core area has meant large investments in manufacturing, swimming against the tide in the industry. The manufacturing competence is as a strategic thing, essential both for new product development as well as for building brand.

For supply chain a future vision exists as well, being aligned with the company overall strategy of growing in new areas as well as through renewed offering. The supply chain needs to move towards global reach in sourcing having products sourced and delivered globally. There are indications to supplier base too as number of suppliers in supply chain will decrease as the case company intends to move towards more general suppliers gaining flexibility and cost competitiveness to supplier base. In production the current situation is expected to remain and competitiveness being improved. The detailed strategy for development of supplier network is still in clarification phase. No sourcing/supplier - related strategy exists nor a procurement strategy. A need for procurement strategy has been identified as the company is all the time sourcing new suppliers and building and strengthening the future supplier network and developing supplier relationships through e.g. longer contracts.

Organizationally the case company has a decentralized organization for procurement and supply base management. The procurement organization refers to buyers in product lines, being integrated through informal integration mechanisms like purchase contractual basis mode of operation (what commitments, contracts, terms e.g. payment terms, social responsibility). In practice internal integration in the case company is at a low level, the organization is very function- and individual- focused organization. Functional responsibilities have a limiting influence on the flexibility of operations with suppliers and are also affecting the picture that supplier gets. Need for more integration to achieve improvement is clearly recognized not only within purchasing organization but also with other sectors e.g. finance. Increased integration is seen potentially improving the power of negotiation and target-orientation of operations. For supplier base development no dedicated development organization exists. Supplier development is based on active operative management of the buyer-supplier interface i.e. discussions, requests for improvements, and mutual adaptation around operative tasks.

The industry where the Design Inc. operates is a highly competitive and mature. At the same time the company brand offers a differentiation opportunities at the market. The main competition depends on the point of view. Direct competitors in different sectors can be recognized but at the same time similar competitors covering the similar portfolio are not recognized.

Focal company and the suppliers

Relationship with Supplier 1

Supplier 1 is Portugal-based textile industry supplier providing classical fabrics for Design Inc.'s own production. The purchasing spend is approximately 1,5MEUR annually. Supplier 1 is generally capable of producing and supplying also other similar type of products, not only the product that is currently produced. However, from the viewpoint of product portfolio the Supplier 1 still considered as a narrowly focused supplier. Supplier 1 itself aims to be a leading European supplier of shirting and outwear fabrics using natural fibers with innovative designs and finishes.

The relationship with Supplier 1 is highly important as knitted goods are a significant part of product portfolio of the case company. Supplier 1 is a strategic single source supplier. The main driver for the case company to concentrate the volumes to a single source has been a need to achieve consistent quality.

For the supplier the case company is equally important being one of the top five customer financially. Furthermore, there is a longer-term business perspective. Supplier 1 and Design Inc. have 20 years of common history. In the situation where a large part of textile industry has been offshored from Portugal to Far East, long relationship is highly valued.

Originally the supplier has been selected based on product quality. Today there are no set targets for the relationship as the relationship been based on popularity of the products produced through the relationship. Additional criteria for evaluation of the relationship are way of action, delivery certainty and clarity in operating daily business. However there are no measurements or systematic follow-up use in the relationship.

Relationship with Supplier 2

Supplier 2 is a vertically integrated textile company. One of the core competences of Supplier 2 is printed fabrics, which is the same competence area that the internal manufacturing of the case company has. Supplier 2 was originally established in 1857 in Estonia. After changes in East-European countries it became possible to privatize the enterprise in 1994 whereby a Swedish company became the main shareholder.

Supplier 2 is one of the largest suppliers for the case company. It provides, in addition to the normal textile supply, a benchmark in terms of manufacturing technology and skills for the case company. Importance of the Supplier 2 is based on business volume, joint history, as well as performance, highlighted through cost competitiveness as well as quality and flexibility that the supplier demonstrates on continuous basis. For the Supplier, the importance of the case company is not directly known but as the supplier is known to be economically unstable, a substantial business volume that the case company can provide is expected to be important. Supplier is not a single source. There are a few more expensive alternatives used as well.

Relationship with Supplier 3

The Supplier 3 is a Portuguese family owned company founded in 1959. The Supplier 3 produces all kinds of terry articles such as hand and bath towels, bath sheets and bathrobes. The present management has implemented a production system guided by high quality standards that the supplier believes can open doors to new markets in Europe and America. It has invested in technology, quality, and design in order to achieve a more competitive position and distinction of its products and to ensure that the client's expectations are met in a timely manner at the lowest possible cost.

Importance of the supplier is based on business volume and joint history. From the supplier point of view the relationship has weight as well as the case company has been up to 50% of production volume currently having decreased to 25% of the volume. The supplier is not a single source and the alternative sources have been growing at the expense of the Supplier 3 instead. In general the focus of the relationship is currently at cost competitiveness.

Relationship with IPR Suppliers

The case company uses freelancer designers in its product development process to create complete product lines. The product development in fashion design business is a core process where new ideas, innovations and insight about coming fashion trends are turned into concrete products both in textiles as in other business areas. The case company has also own internal designer resources but freelancer designers are a very important resource for the case company both from resourcing point of view and also very much as a source for new fresh ideas, drive, and innovation.

Design Inc. maintains a group of approximately 20 freelancer designers. The company intends to have a balanced group of designers and also to have a long-lasting relationship with them, even if the commercial relationship is not always active.

In general Design Inc. uses two alternative ways to source IPR. Either it is based on the independent proposals made by the designers or by using a carefully developed specification, which is developed to a ready product proposal by the designer. In both of the cases the relationship is non-contractual until the products are taken into production portfolio.

Objectives of the relationships

Overall the textile and brand business can be considered as one of the most competitive businesses. In general, sources for competitive advantage such as well-recognized, attractive brand, and even iconic product are typical for the industry. In addition, the competitive advantages are closely linked to retail trade related factors and cost-quality relation of the products. In general, for the competitiveness of the case company it is critical that it is able to create an interesting product offering towards consumer and can offer that with a competitive pricing.

The most important business objectives are the company's intends to be the best design-brand in the world and one of the most interesting consumer brands in the world, and profitable growth, especially from exports.

A significant factor in business context is the rhythm in which the product assortment is managed. The assortment is renewed every three months while some products are remaining offering permanently. This rhythm is mirrored throughout the operations. Buyers know certain products that are sourcing the suppliers based on individual tacit knowledge where mainly the annual calendar is guiding the activities.

Procurement and logistics are in a key position in the fulfilment of the business objectives. One of the most important factors of interest for Design Inc. in setting the agenda in the supply base management are related to availability of competitive products, materials and designs, alternative sources of supply, new technology sourcing, and sustainability. Tangible targets for operations, logistics and procurement are

- Ensuring competitive material/product prices
- Utilization of low cost sourcing
- Actively sourcing new suppliers from cost competitive countries

The availability of competitive products, materials and design involve both the IPR suppliers as well and the more usual supplier relationships. The case company sources a significant part of its core product, new designs, products, and ideas, from freelancer designers. In this respect the core factor of interest is the availability and quality (competitiveness) of the new product ideas and designs. The focus on alternative sources of supply is especially a question about risk management. It is important for the case company to understand the overall sourcing/supplier base including supplier base management and spend. Parallel to the risk management the alternative sources of supply are used to keep the prices competitive by maintaining a competitive situation in the supply base. New technology sourcing focuses especially on factors like new materials, e.g. trend textiles. The new technology sourcing was also seen as a factor, which may enable the company to widen its product portfolio from pure textile business to furnishing side.

As a very brand-driven company, factors such as reputation and brand image are very critical for the business. This leads directly to the third factor of interest that is sustainability. Design Inc. focuses on supply base management with a clear intention to promote sustainability, ethics and corporate responsibility with its supplier base. This is done through supplier relationship management processes. Similar focus is placed on quality standards and factors like certification systems. Sustainability is a key selection criterion for the buying consumer (brand/positioning is focused on consumers who value this type of issues). For the case company these are very important factors that are still not self-explanatory when procuring from far away.

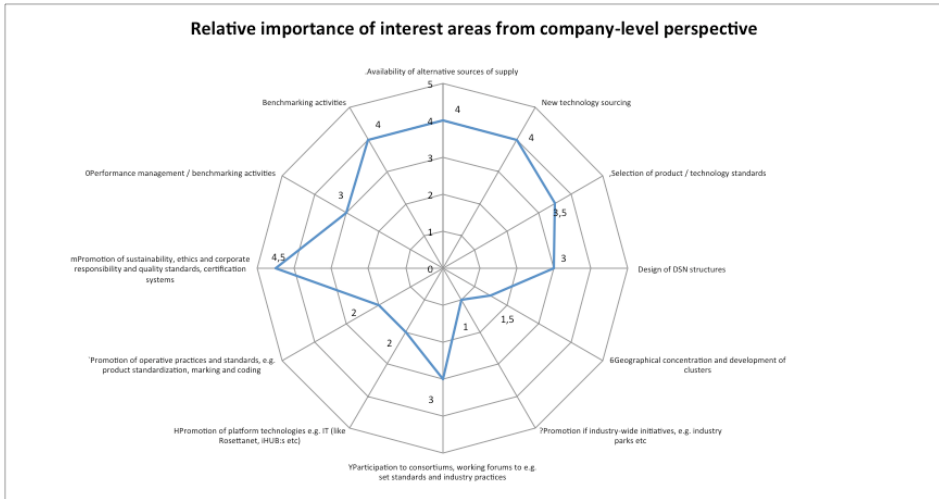


Figure 33: Overview on interest areas for Design Inc.

Practices used to manage the external resources

Like most of the case companies in this research, Design Inc. is neither participating into industry-wide activities and consortiums to manage its supplier base. It can also be observed that the case company does not systematically orchestrate its network as a whole. Based on the informants there is no specific reason for the lack systematic approach. For historical reasons, focus on the external resources has not been on top of the agenda. There have been certain common projects with the supplier base, focusing on aspects like social responsibility, certification, and quality systems.

A notable exception to the company approach is the practices applied with the IPR suppliers. There the overall approach is generally based on two factors: in-depth personal relationships and active content leadership in forms of e.g. consolidating and sharing trend information, material knowledge, and market information. The focal company personnel are also themselves actively working on design and trends to provide a benchmark and a tangible reference on brand image.

Within the frame of single buyer-supplier dyads the case company is trying to lead the suppliers in right direction with emphasis on quality and social responsibility.

The main categories of external resource management mechanisms that Design Inc. focuses on are selection of the network members, and design of end product and value proposition. This approach is based on strong ownership of the product and consumer relationship. The company sees itself as being responsible for the end product and consumer satisfaction, regardless of who has made the different parts of the products provided.

At the same time there is low overall focus on factors like governance mechanisms i.e. formal ways to contract and manage the relationships and on process management over the demand–supply network.

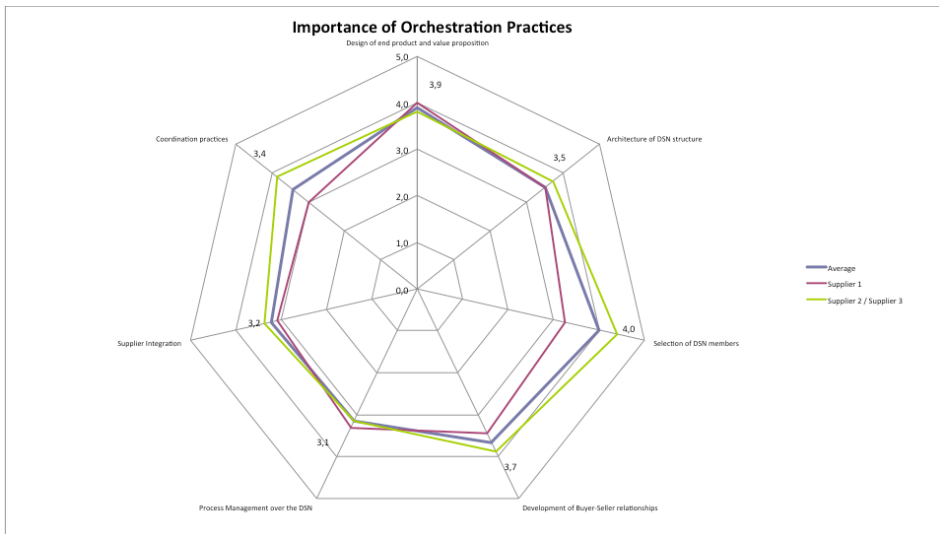


Figure 34: Overview on orchestration practices Design Inc. uses in the relationships

Value positioning

Design of end products and value proposition specification of the company overall are one of the practices that the case company considers central in management of its supplier base. This is especially recognized in the relationship with Supplier 1 where a relatively high emphasis is placed on having a dominant position in supply chain through brand and product technologies that the case company owns. The case company states that they “*own the brand and design*” and that approach is strongly highlighted in the supplier base management practices and business model towards the suppliers as the company sources broadly 3rd party manufactured products to its portfolio but always with an uncompromising focus on brand image.

With suppliers 2 and 3 there is relatively less emphasis placed on the design of end product and value proposition aspect. Knowing and understanding the end customer was regarded as a mean to have an influence on the suppliers. However the overall demand/supply network was not seen as a key practice with the suppliers.

With the IPR supplier the ownership of the brand and design and consequent product (brand) design are the key practices that the focal company applies. In practice the focal company uses tools like:

- Brand definition methods and practices, making the different aspects of the company brand tangible
- Visualization of the trends and expected seasonal hits, sharing also visions and perspectives of timely aspects that affect the consumer preferences
- “Ideaboard” which summarizes the wished “look and feel” of the coming seasonal products
- Future oriented planning and visualization tools and processes plans for coming product lines.

Product & network architecture

From the architectural point of view there is a relatively high emphasis on outsourcing all non-core activities to other, specialized companies. The demand / supply network architecture aspects were also emphasized through the focus on working with supplier to get demand/supply network design implemented. The case company representatives were having an opinion on how suppliers should be connected to demand information flow and were also working with suppliers to align their operations accordingly.

Additionally, the case company includes the supply chain structure and capacity decisions into sourcing considerations. Here as well the supply risk management is a key driver. The clear intention is to ensure that sourcing volumes are distributed in a balanced way, keeping the risk related to a single supplier under control.

Sourcing and selection of DSN members is one of the main categories of external resource management mechanisms that the Design Inc. focuses on. The company is actively sourcing and selecting new and alternative suppliers for its products and is also searching for opportunities to broaden its product portfolio through new suppliers.

As a supporting mechanisms the companies having processes and practices in place to evaluate and monitor suppliers on continuous basis, however this was done very in a person-dependent way.

Buyer-supplier relationships

Management and development of buyer-supplier relationships are a central supply base management practices for the case company Design Inc. This aspect is especially emphasized with the suppliers 2 and 3 where a high emphasis is placed on building with most important suppliers deep collaborative relationships. The company indicates also a principal readiness to invest money and resources to supplier relationships having few supplier companies that are partners. This is demonstrated e.g. with Supplier 2 through continuous collaboration focused on textile printing technology and competence development.

With the IPR suppliers the development of the personal relationships is the core of the management practice. This places significant demands on the personnel managing the supplier base at the focal company:

- Leadership towards the designer community is based on personal knowledge of the skills and style that the individual designers follow
- A lot of future-oriented communication and steering of the innovation work takes place through personal relationships
- Also performance management, which includes especially assessment of innovativeness, renewal capability of the suppliers and evaluation of fit with the focal company brand and portfolio takes place subjectively based on knowledge and experience of the supplier managers at the focal company.

In general the development of the buyer-supplier relationships, often on a level of personal relationships, is a core practice that the focal company uses to orchestrate its supplier base. At the same time the full utilization of the relationship development practices may be limited through low internal integration level at the case company. In the interviews it was also recognized that practices and methods used are fully person-dependent and for instance buyers might use own portfolio models to design supplier development strategies.

Management of daily operations

The case company generally underutilizes integration practices. Across the supplier base there is a low emphasis on setting goals jointly with suppliers as well as e.g. in involving suppliers early in design of products and processes. A notable exception to this is the approach that the case company utilizes with its design suppliers where the designers are involved in the process already at idea development phase.

More day-to-day focused coordination practices, in turn, were frequently utilized with the supplier base. This was emphasized also with Suppliers 2 and 3 where relatively high emphasis was placed on written policies and operating procedures defining how to work with the case company.

Process management over the demand/supply network is an underutilized area. One could argue that with its normal suppliers the case company is not having process integration practices in use, nor it is trying to manage the processes beyond the company borders. This can be explained with the low internal maturity of processes as the first step on the company agenda is to establish process management practices internally.

Factors affecting co-operation

The relationship situation in the three selected duos was assessed through power, dependency and attractiveness which all were perceptions by the informants.

The focal company power in relationship with its suppliers has seen to vary significantly between regions. On domestic supplier market the power over current and potential

suppliers was generally considered high, based on brand and image. The reputational factor was considered important as Design Inc. is an important customer for many suppliers and the suppliers generally want to work with the company. The focal company is also considered to be generally a long-term partner for its most important suppliers.

There is however a significant variety in the brand impact. The power of the focal company over suppliers Far East were considered to be low (grading 1-2), and over EU suppliers average (3).

Towards the IPR suppliers – freelancer designers – the case company power is high. The business area the company represents is relatively small at domestic markets and consequently the designers are highly dependent on the business opportunities that the case company can offer. The only – but notable – exception to this are the so called iconic designers who through their own name have a powerful position towards the case company and can contractually keep the ownership of their own design and also regulate the usage of the design in ready products.

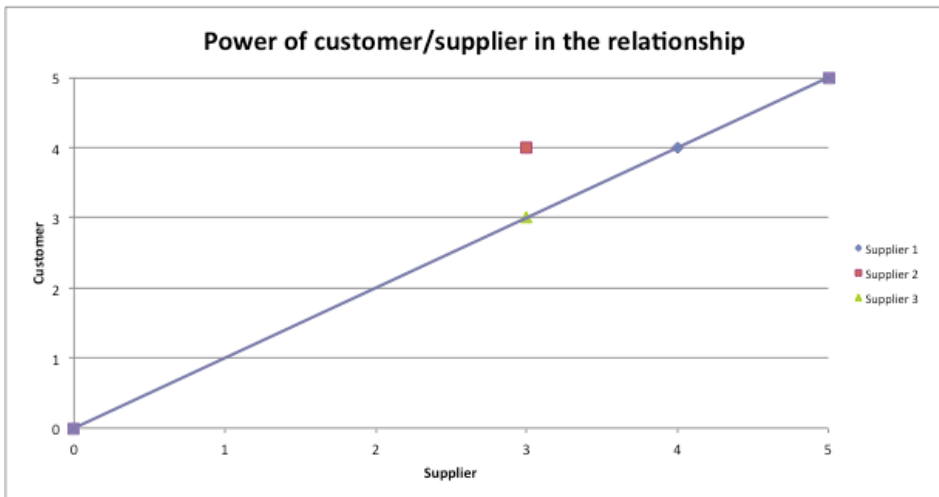


Figure 35: The power situation in the relationships

The power balance in the relationships seems to be relatively balanced except the relationship with Supplier 2 where the focal company is more powerful. In the relationship with Supplier 1 power is based on reputation as a good, large and reliable customer. Simultaneously the Supplier 1 produces a substantial part of the offering of the focal company in classic materials.

In the relationship with Supplier 2 the power of the focal company is based on purchasing volume and dedicated assets. The supplier is a strategic supplier for the focal company due to the volumes and as a consequence of the collaboration around printing technology and knowledge, which balances the power situation in the relationship.

In the relationship with Supplier 3 the power situation in the relationship emerges from the long joint history and purchasing volume. At the same time the Supplier 3 is a sole supplier for certain product lines. The power situation is considered as balanced, however generally the parties are having a more distanced relationship despite of the common history and have lower power over the counterparty in the relationship.

A large part of the products of Design Inc. comes directly from suppliers as finished products. With some selected strategic products is dual source considered, however, small purchasing volume hinders the ability to utilize an effective multiple sourcing strategy. Consequently the focal company is in general relatively dependent on its supplier base.

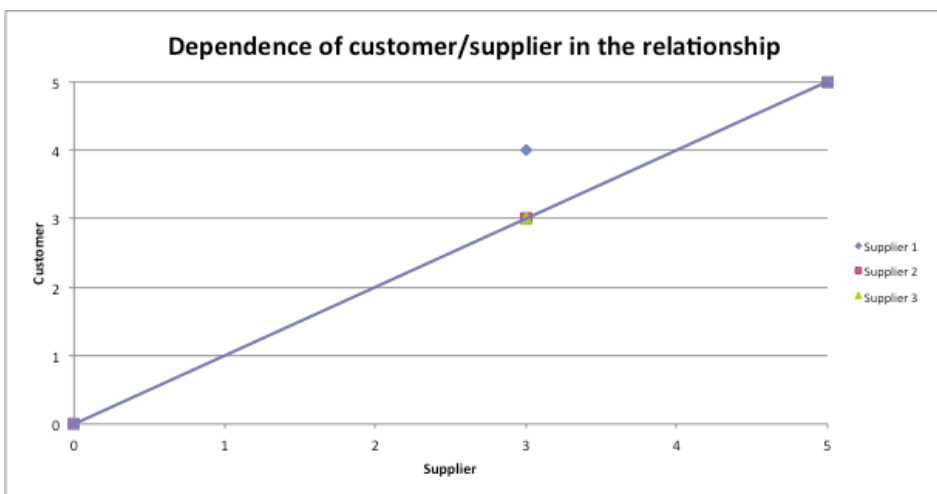


Figure 36: The dependency situation between Design Inc. and the three suppliers

On a single supplier relationship level the relationships subject to investigation are relatively balanced as both parties are dependent on each other. Main factors creating the dependence are the purchasing volumes on the supplier side where the single source situation increases the business risk and dependence at the customer.

Typical for the business, the Design Inc. is in are frequent changes in product specifications, fast schedules and unique solutions. Design Inc. is generally considered as a very attractive customer. The attractiveness is based on brand and long-term business view discussed earlier. As a textile brand the Design Inc. brand is very well known and has good profile, which brings credibility also towards suppliers.

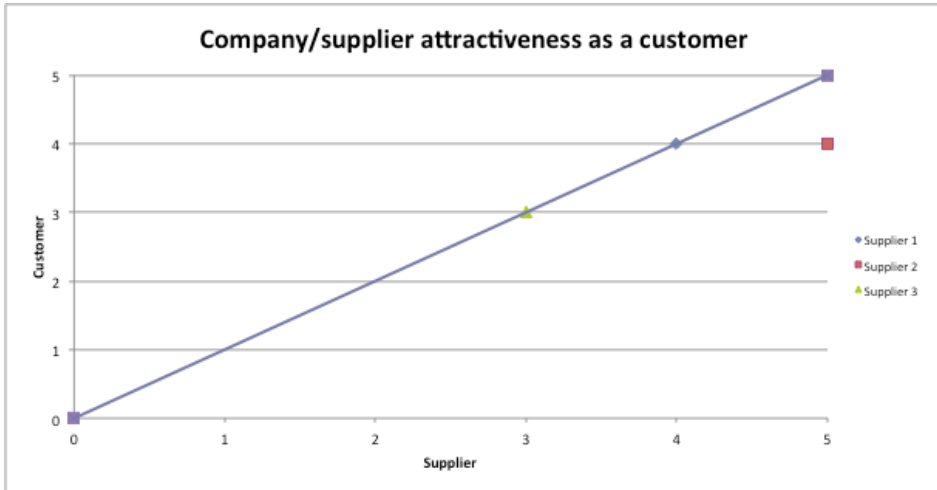


Figure 37: The perceived attractiveness between Design Inc. and the three suppliers

Based on the view of the focal company, in the relationship with Supplier 1 the focal company attractiveness is based on reliability as a customer, a long joint history and recognized easiness as business partner, which reduced the transaction cost at the supplier. Supplier attractiveness, in turn, is equally based on long successful history but is limited with the supplier focus on a narrow segment (cotton knitting).

With Supplier 2 the buyer attractiveness comes from business volume, joint history, and the significant learning effect that the parties can provide to each other through the collaboration around textile printing technology development. The technology collaboration increases equally the supplier attractiveness, especially as the supplier with certain technical terms more capable than the focal company.

Also with the Supplier 3 the focal company attractiveness is based on business volume and joint history. Supplier attractiveness has been higher. As recently the supplier is no longer very cost competitive, the value that the focal company can gain from the relationship has reduced. Consequently, also the attractiveness of the supplier is not very high anymore.

Attractiveness towards the IPR suppliers is based on a handful of factors:

- Company history and reputation: the focal company itself is an iconic brand, with an image created by successful long-lasting designs and products
- Reputation as a demanding company which is increasing the reference value for the freelancers
- The business potential, as the company products are sold world-wide, and a successful design can offer thus a relatively high revenue stream also for the designer

In general, Design Inc. is in a rather balanced situation with its suppliers when we look at power, dependence and attractiveness in relationships. The main factors affecting the attractiveness of the focal company are a well-known brand increasing the reference value, the relatively large business volume it can provide to its suppliers and its reputation as a long-term business partner.

Impact on performance

Performance in supply base management when observed from supply chain management and delivery performance perspective is quite far away from the company targets. Physical logistics is conducted as a part of normal business all the time with existing challenges. The same concerns also procurement. The case company has a good supplier network but also has large holes in its supplier base. It has undesired single source situations and cases where supply base is not utilized optimally for e.g. risk management or technology development.

From price performance point of view the situation is described as adequate. Operations are profitable and able to compete but price pressure is increasing as activities are still based on operations in Finland/Baltic where utilization of e.g. China, is new.

Performance in the new product creation using supplier knowledge and innovations can be considered a competitive advantage. By using the designer network the company has been able to establish oneself as a leading and growing brand. It has managed to improve the brand recognition in international brand business. This can indirectly be recognized as a resulting high performance from the collaboration with the independent design suppliers.

Case Summary

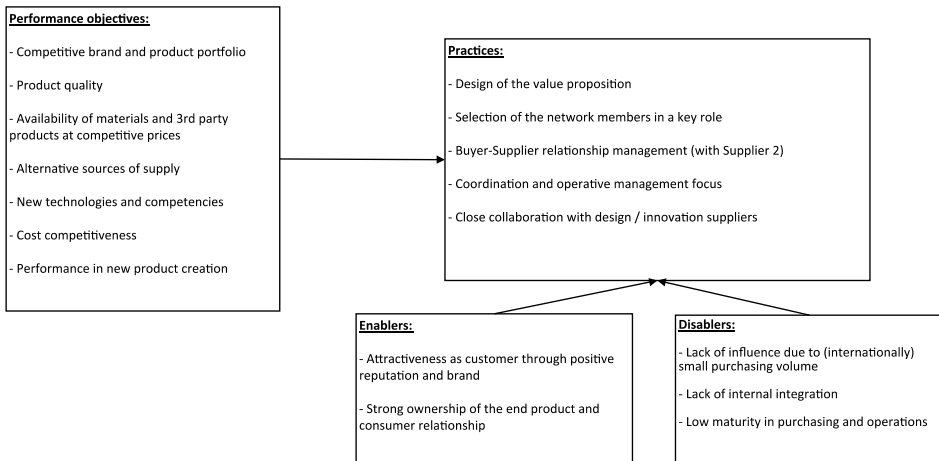


Figure 38: Summary of the case Design Inc.

5.6 Cross-case analysis

The chapter five consists of the cross-case analysis phase comparing the findings from the cases. The cross-case analysis focuses on the perspectives specified earlier:

1. Situational factors, i.e. to understand potential similarities and differences in the managerial situations that the focal company is in. The situational factors are analyzed both based on governance theory, and also based on empirical findings related to company objectives, enablers and disablers in the managerial situations.
2. Means, i.e. managerial practices that the focal company uses to orchestrate its supplier base. Purpose of the cross-case analysis is to identify potential common patterns from the empirical data.
3. Ends, i.e. objectives and performance that the focal company can achieve with its managerial activities. Performance aspect is here two-fold: What matters is business performance of the focal company and its overall value chain. However, it is not possible to gain solid evidence about a direct causal relationship between a managerial practice and business performance of the focal company with the selected research design. Consequently, focus of the performance analysis is to assess the potential relationship between managerial practices and company ability to achieve objectives it has set. This assumes that the objectives and KPI:s that the focal companies have set are correct and are yielding higher business performance.

Following an inductive case study approach, the findings of the cross-case analysis are summarized for each of the steps of the study highlighting the potential results of the study.

5.6.1 Situational factors

Situational factors specify the managerial situation that the focal company is in with its intentions to manage the external resources. Different perspectives to the situational factors are specified in detail in *Chapter 4: A priori constructs*. In the following tables x and y the empirical observations are cross-tabulated according to the main dimensions: focal company position in the value system and its ability to influence, which is analyzed from the point of view of power, dependency and attractiveness, as well as the focal company objectives and KPI:s. Furthermore, the managerial situation is analyzed in light of the chosen governance approach of the focal company to the relationships with external resources.

Focal Company	Suppliers	Focal company position	Strategic focus areas	Factors of interests	Ability to influence	Dominant objective of the relationship
TelTech Inc.	Supplier 1	Relatively balanced collaboration relationship, with strong R&D focus. Highly organized, highly resourced	<ul style="list-style-type: none"> Product and value-driven objectives 	<ul style="list-style-type: none"> Strategy, technology and product roadmaps Product architecture Operational mode Processes, tools and organization 	<ul style="list-style-type: none"> Power on the focal company side Mutual dependency; high asset specificity Mutual attractiveness 	New value creation
	Supplier 2	High volume relationship, broad range of components produced. Relatively dynamic relationship	<ul style="list-style-type: none"> Cost and efficiency, flexibility to adapt to fast-changing environment 	<ul style="list-style-type: none"> Operational mode Supply Chain integration Operative performance -related aspects 	<ul style="list-style-type: none"> Power on the focal company side Mutual dependency; high asset specificity Mutual attractiveness 	Cost competitiveness
	Supplier 3	Relationship of two giants, both intending to dominate the collaboration	<ul style="list-style-type: none"> Product/Technology-driven objectives Buyer's objective to increase open competition 	<ul style="list-style-type: none"> Technology and standards Product architecture Availability of alternative sources 	<ul style="list-style-type: none"> Power on supplier side Low mutual dependency Medium attractiveness 	Cost competitiveness
Pharma Inc.	Supplier 1	Essential supplier; single source contract manufacturing relationship. Devices produced by the supplier create end customer commitment	<ul style="list-style-type: none"> Operational efficiency 	<ul style="list-style-type: none"> Efficiency in asset utilization Capacity and flexibility of supplier Financial arrangements: price and payment terms 	<ul style="list-style-type: none"> Power on supplier side Medium mutual dependency Medium mutual attractiveness 	Cost competitiveness
	Supplier 2	Long joint history. Only one in Finland able to provide complete packaging solution needed by the focal company. Supplier is considered performing well.	<ul style="list-style-type: none"> Strategic alignment, product and process innovation, knowledge acquisition and transfer 	<ul style="list-style-type: none"> Suppliers strategy, competences and specialization Technology selections and investments Integration Capacity and flexibility 	<ul style="list-style-type: none"> Power on the focal company side Strong mutual dependency One-sided attractiveness 	New value creation
	Supplier 3	Lowest cost supplier. Quality matters are considered being acceptable despite some delivery problems. Some common development projects had been taken place, but thought to run slow.	<ul style="list-style-type: none"> Competitive price structure 	<ul style="list-style-type: none"> Price and payment terms Integration at the interface Capacity and flexibility Suppliers operative mode 	<ul style="list-style-type: none"> Power vaguely on focal company's side Low dependency One-sided attractiveness 	Cost competitiveness
	IPR suppliers	Represent an opportunity to source complementary skills and knowledge, thus increasing the coverage of the product portfolio and the probability of creating new patented drugs.	<ul style="list-style-type: none"> Joint new business Rapid development and launch of new products 	<ul style="list-style-type: none"> Strategic focus and business plan R&D investments and resource allocations Process of development and launch 	<ul style="list-style-type: none"> Power balance varies; Focal company's power is minimal as long as a collaborative relationship is formed. Dependency changes rapidly from no dependency to high dependency Attractiveness changes rapidly from no to high attractiveness 	New value creation
CommTech Inc.	Supplier 1	Has consistently grown each year with time and experience. Nowadays well positioned in the respective industries	<ul style="list-style-type: none"> Technological advancement and new competence / knowledge 	<ul style="list-style-type: none"> Strategy and scope of supply Technology and product architecture Financial aspects Capacity and flexibility 	<ul style="list-style-type: none"> Power vaguely on supplier side Low dependency Mutual, balanced attractiveness 	New value creation
	Supplier 2	Capabilities to produce high level of variation. Has modern machines and loyal employees.	<ul style="list-style-type: none"> Strategic R&D collaboration 	<ul style="list-style-type: none"> Strategy and scope of supply Financial aspects Capacity and flexibility Supplier's investments in Supply Chain 	<ul style="list-style-type: none"> Power on focal company side Medium dependency Mutual, balanced attractiveness 	New value creation
	Supplier 3	Broad global service capabilities and a wide product range. Holds a strong position as an international contract manufacturer	<ul style="list-style-type: none"> Operational efficiency 	<ul style="list-style-type: none"> Strategy of the supplier Technology selections and investments Financial aspects Vertical integration, geographical locationing Processes and KPIs 	<ul style="list-style-type: none"> Balanced power Medium dependency Mutual, balanced attractiveness 	Cost competitiveness
HeavyMetal Inc.	Supplier 1	A top three supplier globally in electric components category	<ul style="list-style-type: none"> Cost and efficiency 	<ul style="list-style-type: none"> Scope of supply Product/service design Supply Chain integration Processes and collaboration Financial aspects Capacity and flexibility 	<ul style="list-style-type: none"> Power on supplier side Medium dependency of the focal company Mutual, average level attractiveness 	Cost competitiveness
	Supplier 2	Important supplier, but not a single source. Competes with other manufacturers through quality, availability and cost	<ul style="list-style-type: none"> Cost and efficiency 	<ul style="list-style-type: none"> Strategy, technology and scope of supply Financial aspects Integration with customer Resources and organization allocated to relationship 	<ul style="list-style-type: none"> Power relatively balanced Medium mutual dependency (Supplier more dependent) 	Cost competitiveness
	Supplier 3	Largest supplier for the focal company. A single source supplier	<ul style="list-style-type: none"> Cost and efficiency Capacity flexibility 	<ul style="list-style-type: none"> Strategy, scope and technology Financial aspects Integration Capacity and flexibility Supplier's operative mode 	<ul style="list-style-type: none"> Power on supplier side Strong mutual dependency Mutual attractiveness 	Cost competitiveness
Design Inc.	Supplier 1	Strategic single source supplier. However, narrowly focused from the product portfolio point of view. In theory capable of broaden its offering for the focal company.	<ul style="list-style-type: none"> Cost and efficiency 	<ul style="list-style-type: none"> Technology selections Connection to customer Product and service design Capacity and flexibility Resources dedicated to the relationship 	<ul style="list-style-type: none"> Power relatively balanced Mutual dependency Mutual attractiveness 	Cost competitiveness
	Supplier 2	Not a single source. However, one of the largest suppliers for the focal company. Importance based on business volume, joint history and performance.	<ul style="list-style-type: none"> Cost and efficiency Also objectives for learning and development 	<ul style="list-style-type: none"> Strategy and technology selections Connection to customer Product and service design Financial aspects Capacity and flexibility Physical locations and coverage Resources dedicated to relationship 	<ul style="list-style-type: none"> Power on supplier side Mutual dependency Mutual attractiveness 	Cost competitiveness
	Supplier 3	Not a single source. In general the focus of the relationship is currently at the cost competitiveness. Importance based on business volume and joint history.	<ul style="list-style-type: none"> Cost and efficiency 	<ul style="list-style-type: none"> Product and service design Integration at the interface Capacity and flexibility Quality management 	<ul style="list-style-type: none"> Power relatively balanced Mutual dependency Mutual attractiveness 	Cost competitiveness
	IPR suppliers	Not a single source. The case company also has own internal designer resources, but freelancer designers are very important resource both from resourcing point of view, getting fresh ideas, drive and innovation	<ul style="list-style-type: none"> Creation and commercialization of successful new products and designs 	<ul style="list-style-type: none"> Final product: look and feel, features, correspondence to brand image Material selections, suitability to manufacturing and distribution channels 	<ul style="list-style-type: none"> Power clearly on the focal company side Parties relatively independent Mutual attractiveness 	New value creation

Table 14: Situational factors

The cross-case analysis reveals interesting common patterns from the objective and performance indicator point of view. The case dyads can be divided to two categories, *cost efficiency focus*, and *focus on innovation*.

The category *Cost efficiency focus* is related to overall cost efficiency orientation by the focal company, and emphasizes the following aspects in the analyzed managerial situation:

- Cost competitiveness and efficiency
- Flexibility in terms of capacity flexibility
- May also include aspects of learning and knowledge transfer related to operative efficiency
- From target and KPI point of view similar aspects are emphasized, KPI:s like cost, delivery accuracy, quality and asset efficiency are dominant

The category *Innovation focus* arises from the empirical data with its focus on developing or capturing new innovations and added value for the focal company use. The following aspects are emphasized in the innovation –oriented managerial situation:

- Objectives related to product / technology /service itself, and related innovations
- New business development aspects
- Competencies and capabilities for R&D and new product development
- From target and KPI point of view aspects like product competitiveness, qualitative targets focusing on the relationship, and success in collaboration are clearly emphasized.

The governance model approach was taken as one of the a priori constructs, based on a solid grounding to literature. Interestingly, comparison of empirical observations to different governance model theories reveals a clear pattern, with distinct differences related to questions of e.g. approach to contracting, and to configuration of the interface of companies within a dyad. Either the governance approach is focused on tight integration between the companies, or alternatively it is intentionally respecting a clear-cut interface between the two companies. The *tight integration approach* includes characteristics such as:

- Long-term frame contracting
- Investments into relations-specific assets and resources
- High level of adaptation and alignment by one or both of the parties
- Focus on process and system integration cutting across the interface between the companies.

The more clear-cut approach, where *independence* of the companies is either respected or even intentionally promoted for different reasons, has in turn characteristics as:

- Recurrent contacting, even close to market approach
- No investments into specific assets or resources, little adaptation

- Focus on low dependency and standardized interface, competition-dominant logic.

The empirical observations could be categorized in different ways; best match with the findings is with the classification introduced by Heide (1994), where he uses a division to bilateral and unilateral governance models to make a difference between governance approaches. Table 15 summarizes the findings from the governance model point of view.

Focal Company	Suppliers	Type of uncertainty	Asset specificity	Adaptation in a relationship	Type of contracting	Other safeguarding methods	Conclusion: Governance approach
TelTech Inc.	Supplier 1	Strategic uncertainty	<ul style="list-style-type: none"> Mutual investments on R&D Dedicated physical assets and personnel 	High	<ul style="list-style-type: none"> Long-term frame contract Open-books based cost management 	<ul style="list-style-type: none"> Broad multi-level communication Personal relationships 	<ul style="list-style-type: none"> Relationship-oriented Bilateral nature
	Supplier 2	Operative performance	<ul style="list-style-type: none"> Dedicated physical assets Dedicated personnel 	High	<ul style="list-style-type: none"> Long-term frame contract Open-books based cost management 	<ul style="list-style-type: none"> Broad multi-level communication Personal relationships 	<ul style="list-style-type: none"> Relationship-oriented Bilateral nature
	Supplier 3	Strategic uncertainty	<ul style="list-style-type: none"> No specific investments Dedicated personnel on buyer's side 	Low	<ul style="list-style-type: none"> Multiple contracts for different organizational parts and transactions 	<ul style="list-style-type: none"> Coordination and operative management by buyer 	<ul style="list-style-type: none"> Competition-oriented Bilateral nature: independent operations
Pharma Inc.	Supplier 1	Strategic uncertainty	<ul style="list-style-type: none"> Supplier producing buyer-specific products 	Low	<ul style="list-style-type: none"> Long-term frame contract 	<ul style="list-style-type: none"> Broad interface, medium level personal relationships Broad multi-level communication 	<ul style="list-style-type: none"> Unilateral nature: independent supplier power: dyad governance by supplier
	Supplier 2	Operative performance	<ul style="list-style-type: none"> Dedicated physical assets Dedicated personnel 	High	<ul style="list-style-type: none"> Long-term frame contract Open-books based cost management 	<ul style="list-style-type: none"> Broad multi-level communication Personal relationships 	<ul style="list-style-type: none"> Relationship-oriented Bilateral nature
	Supplier 3	Operative performance	<ul style="list-style-type: none"> No specific investments Dedicated personnel at buyer 	Low	<ul style="list-style-type: none"> Recurrent contracting 	<ul style="list-style-type: none"> Coordination and operative management by buyer 	<ul style="list-style-type: none"> Competition-oriented Bilateral nature: independent operations
	IPR Suppliers	Strategic uncertainty	<ul style="list-style-type: none"> Mutual investments on R&D projects Dedicated physical assets and personnel Exclusive contracts 	High	<ul style="list-style-type: none"> Relational contracting Progress on long-term frame contract 	<ul style="list-style-type: none"> Evaluations, due diligence Broad multi-level communication Joint temporary organization: "virtual joint venture" 	<ul style="list-style-type: none"> Relationship-oriented Bilateral nature
CommTech Inc.	Supplier 1	Strategic uncertainty	<ul style="list-style-type: none"> Mutual investments on R&D Dedicated physical assets and personnel 	High	<ul style="list-style-type: none"> Value-based 	<ul style="list-style-type: none"> Broad multi-level communication Personal relationships 	<ul style="list-style-type: none"> Relationship-oriented Bilateral nature
	Supplier 2	Strategic uncertainty	<ul style="list-style-type: none"> Mutual investments on R&D Dedicated physical assets Dedicated personnel 	High	<ul style="list-style-type: none"> Value-based 	<ul style="list-style-type: none"> Broad multi-level communication Personal relationships 	<ul style="list-style-type: none"> Relationship-oriented Bilateral nature
	Supplier 3	Operative performance	<ul style="list-style-type: none"> Dedicated physical assets and personnel 	High	<ul style="list-style-type: none"> Long-term frame contract Open-books based cost management 	<ul style="list-style-type: none"> Frequent co-operation and joint coordination 	<ul style="list-style-type: none"> Relationship-oriented Bilateral nature
HeavyMetal Inc.	Supplier 1	Operative performance	<ul style="list-style-type: none"> No specific investments 	Low	<ul style="list-style-type: none"> Recurrent contracting High emphasis on supplier independence 	<ul style="list-style-type: none"> All operative collaboration methods in use 	<ul style="list-style-type: none"> Competition-oriented Bilateral nature: independent operations
	Supplier 2	Operative performance	<ul style="list-style-type: none"> Dedicated physical assets and personnel 	High	<ul style="list-style-type: none"> Long-term frame contract 	<ul style="list-style-type: none"> Broad multi-level communication Personal relationships 	<ul style="list-style-type: none"> Relationship-oriented Bilateral nature
	Supplier 3	Operative performance	<ul style="list-style-type: none"> Dedicated physical assets and personnel 	High	<ul style="list-style-type: none"> Long-term frame contract Supplier partially owned by buyer 	<ul style="list-style-type: none"> Broad multi-level communication Personal relationships 	<ul style="list-style-type: none"> Relationship-oriented Bilateral nature
Design Inc.	Supplier 1	Operative performance	<ul style="list-style-type: none"> No specific investments 	Medium	<ul style="list-style-type: none"> Recurrent contracting 	<ul style="list-style-type: none"> Personal relationships 	<ul style="list-style-type: none"> Relationship-oriented Bilateral nature
	Supplier 2	Operative performance	<ul style="list-style-type: none"> Mutual investments on R&D Dedicated physical assets and personnel 	High	<ul style="list-style-type: none"> Value-based 	<ul style="list-style-type: none"> Broad multi-level communication Personal relationships 	<ul style="list-style-type: none"> Relationship-oriented Bilateral nature
	Supplier 3	Operative performance	<ul style="list-style-type: none"> Dedicated physical assets Dedicated personnel 	Medium	<ul style="list-style-type: none"> Recurrent contracting 	<ul style="list-style-type: none"> Frequent co-operation and joint coordination 	<ul style="list-style-type: none"> Relationship-oriented Bilateral nature
	IPR Suppliers	Strategic uncertainty	<ul style="list-style-type: none"> No specific investments 	<ul style="list-style-type: none"> High (supplier) Low (buyer) 	<ul style="list-style-type: none"> Recurrent contracting Long-term relationship 	<ul style="list-style-type: none"> Broad multi-level communication Personal relationships 	<ul style="list-style-type: none"> Competition-oriented Bilateral nature: independent operations

Table 15: Approach to governance

As a summary, based on the patterns emerging from the cross-case analysis it can be argued that from a managerial situation –point of view the investigated dyads in the cases can be arranged according to the dimensions of *relationship focus* – between cost and innovation, and *governance approach* – between bilateral and unilateral governance.

Consequently, the cross case analysis leads to identification of four different managerial situations. The dominant objective of the relationships crystallizes the overall reasoning of why the company has a particular relationship. The most typical objective overall is to acquire products and services in a cost efficient manner and with high availability. That approach is well represented both in usual classification methods, e.g. in earlier discussed portfolio models and also in the empirical data of this study. However, at the same time a second perspective, focusing on innovation, new value creation, and utilization of supplier’s knowledge and skills is emerging both in the literature as well as in the empirical data of this research. An innovation-oriented relationship is operating with focus on creating competitiveness through development of new innovations or new products. In contrast, for the efficiency –oriented relationships cost efficiency delivery accuracy as well as asset efficiency were stated as the primary objectives.

From the governance approach point of view, the companies decide as a part of their overall strategy work either implicitly or explicitly the approach the external resource base is governed with. This is governance model is applied through different aspects in the relationship, ranging from contracting methods to investment of specific assets.

The categorization of situations along the identified dimensions, and positioning of the case relationships to the respective matrix are illustrated in the Figure 39 below.

Innovation focused	TelTech Inc - Supplier 1 Pharma Inc - Supplier 2 CommTech Inc - Supplier 1 CommTech Inc - Supplier 2	Pharma Inc - IPR Suppliers Design Inc - IPR Suppliers
	TelTech Inc - Supplier 2 CommTech Inc - Supplier 3 HeavyMetal Inc - Supplier 2 HeavyMetal Inc - Supplier 3 Design Inc - Supplier 1 Design Inc - Supplier 2 Design Inc - Supplier 3	TelTech Inc - Supplier 3 Pharma Inc - Supplier 1 Pharma Inc - Supplier 3 HeavyMetal Inc - Supplier 1
Cost competitiveness focused	Bilateral governance	Unilateral governance

Figure 39: Case relationship categorized according to relationship focus and governance approach

5.6.2 Managerial practices

Managerial practices are the component of the empirical data that are observable the best, as they are the activities that the case companies actually do to manage their external resources either on network level, or in the dyads. From the contingency theory point of view, the managerial practices are the *Means* that should lead to a desired performance in a given situation.

Based on the literature review and following a priori constructs, the managerial practices are analyzed according to the specified dimensions. The identified managerial practices are cross-tabulated in the Table 16.

MANAGERIAL PRACTICES	Design of the end product and value proposition	Architecture of product and network structure	Selection of network members	Development of buyer-supplier relationships	Process management over the supply chain	Supplier integration	Coordination practices	
<i>Innovation focused - Bilateral governance</i>	TelTech Inc - Supplier 1	Business model and value creation specification	Product and technology strategy and architecture Communication of technology selections		Evaluation and feedback, Policies and KPIs, certification and evaluation	Facilitation of supply chain performance	Formal mechanisms Asset-specific investment Process and system integration	Information exchange Facilitation of operative performance
	Pharma Inc - Supplier 2	Value chain design		Sourcing and selection emphasized	Joint development projects Relational capital development Joint problem solving	Shared performance monitoring and management	Process integration, Informal integration mechanisms	Written policies and procedures Information exchange Facilitation of operative performance
	CommTech Inc - Supplier 1	Design of end product and value proposition	Design for Excellence	Value-based selection of suppliers	Informal mechanisms Personal relationships driving collaboration			Intensive information sharing
	CommTech Inc - Supplier 2	Design of end product and value proposition	Design for Excellence	Value-based selection of suppliers	Informal mechanisms Personal relationships driving collaboration			Intensive information sharing
<i>Innovation focused - Unilateral governance</i>	Pharma Inc - IPR Suppliers	Definition of value creation logic		Sourcing and selection emphasized	Marketing business potential			Management of personal relationships
	Design Inc - IPR Suppliers	Design of the value proposition			Personal relationship management efforts Relational capital development efforts	Informal mechanisms	Information exchange	
<i>Cost competitiveness focused - Bilateral governance</i>	TelTech Inc - Supplier 2	Business model and value creation specification		Strong product and supply base design focus	Supplier development resources	Facilitation of supply chain performance	Formal mechanisms Process and system integration	Information exchange Facilitation of operative performance
	CommTech Inc - Supplier 3	Design of end product and value proposition	Design for Excellence	Value-based selection of suppliers	Informal mechanisms Personal relationships driving collaboration			Intensive information sharing
	HeavyMetal Inc - Supplier 2	Definition of value creation logic	Product architecture to reduce dependency Architecture of supply base Network architecture driving supplier proximity	Clear definition of procurement strategy and category strategies	Introduction of alternative suppliers, competition			Formal mechanisms Information exchange Facilitation of operative performance
	HeavyMetal Inc - Supplier 3	Definition of value creation logic	Product architecture to reduce dependency Architecture of supply base Network architecture driving supplier proximity	Clear definition of procurement strategy and category strategies	Introduction of alternative suppliers, competition			Formal mechanisms Information exchange Facilitation of operative performance
	Design Inc - Supplier 1	Design of the value proposition	Strong ownership about the product design and image	Active sourcing and selection of alternative suppliers				Information exchange Facilitation of operative performance
	Design Inc - Supplier 2	Design of the value proposition	Strong ownership about the product design and image	Active sourcing and selection of alternative suppliers	Personal relationship management efforts		Informal mechanisms	Information exchange Facilitation of operative performance
	Design Inc - Supplier 3	Design of the value proposition	Strong ownership about the product design and image	Active sourcing and selection of alternative suppliers				Information exchange Facilitation of operative performance
<i>Cost competitiveness focused - Unilateral governance</i>	TelTech Inc - Supplier 3	Business model and value creation specification	Product and technology strategy and architecture		Supplier development resources		Formal mechanisms	Information exchange Facilitation of operative performance
	Pharma Inc - Supplier 1	Value chain design		Sourcing and selection emphasized				Written policies and procedures Information exchange Facilitation of operative performance
	Pharma Inc - Supplier 3	Value chain design		Sourcing and selection emphasized		Supplier integration and coordination, like sharing of critical information		Written policies and procedures Information exchange Facilitation of operative performance
	HeavyMetal Inc - Supplier 1	Definition of value creation logic	Product architecture to reduce dependency Architecture of supply base Network architecture driving supplier proximity	Clear definition of procurement strategy and category strategies	Introduction of alternative suppliers, competition			Formal mechanisms Information exchange Facilitation of operative performance

Table 16: Managerial practices

The cross-tabulation and analysis of the case results give two different perspectives on the managerial practices. First finding is that as such the cross-case patterns are not creating much new insight by either identifying new practices, or suggesting that certain a priori constructs would not be relevant. This is natural as the a priori constructs were based on findings from existing literature.

Identified practices focus on network design, architecture, as well as on management of the dyads. True orchestration of the value systems over more tiers is practically not identifiable, and thus we can already conclude that orchestration focusing extensively on over value networks cannot be identified in this research.

Value positioning

Common for all the cases is the emphasis on *value creation* strategy and its influence on the management of the external supplier resources. The value creation strategy is typically expressed in form of statements specifying what the value creation of a company is. Examples from the case companies are:

- *We are responsible of the end product*
- *"We've decided to be at the consumer interface"*
- *"We want to be the best solution provider and technology leader in our segment"*
- *"Our value add is in the engineering phase, not in manufacturing anymore"*
- *"We own the brand and the design"*

Unanimously these statements were seen to have a substantial influence on the external resource management and implications ranging from selection of the network members to e.g. performance targets.

Consequently, regarding value creation and its linkage to supply base orchestration, it can be concluded that definition of value creation strategy is an essential first step in orchestration of external resources.

Product & network architecture

The second central area for orchestration of external resources is architecture, also indicated in the extant literature. Surprisingly, the DfX aspects were emerging at four of the six case companies and were raised as highly relevant at all of the relationships at those cases. Interestingly however, architecture was used in the case relationships for contradictory purposes to either capture supplier's technology and innovation and thus

intentionally increasing the mutual dependency or with a clear purpose to develop independency through modularization of products and selection of non-proprietary standards. Architectural means were considered very effective. Supporting product architecture, technology selections and supply chain architecture were seen to determine the power/dependency situation and consequently define the possibilities of a focal company to influence its external resources.

In several cases, the basis for successful management of the supplier base is laid already early in the process, before any purchasing activity takes place. Through selection of product technology and architectural design of the product the focal company can enable a true competition to take place in dyads, if suitable. This is illustrated in relationships TelTech 3 and HeavyMetal 1 where in both cases the focal company has invested substantially for redesign of product architecture to follow open standards and non-proprietary technologies opening up competition. The same effect can be observed also in case Pharma Inc., where e.g. through the extensive process of product and component registration and certification a self-made dependency can easily be created if the registration is done with a supplier's brand name instead of generic chemical name.

In contrast, the cases TelTech 1 and CommTech 1 provide us examples on activities where more integral product architecture has a central role in the focal company attempt to benefit from supplier knowledge, technology and from mutual R&D investments. In both cases the focal company has aligned the product architecture to incorporate supplier technology, leading to better product performance but also to stronger dependency, less competition and consequently need to manage the supplier relationship very intensively.

Third aspect is the importance of Design for Excellence (DfX) processes in supplier selections and in design of the effective supply network. These architectural findings are consistent with e.g. the 3-DCE approach introduced by Fine (2000), highlighting the importance of concurrent design of product, process and the supply chain also for successful supplier base management. It can be argued that

- product architecture and technology selections may affect strongly the ability to develop a desired buyer-supplier relationship
- product architectures and technology selections may need to be aligned on both sides to leverage supplier's capabilities and
- DfX processes have a central role in ensuring both the supply chain efficiency and effective adoption of the selected suppliers and preferred technologies.

The architectural aspects are analyzed in the Table 17.

	Cost competitiveness / Bilateral governance	Cost competitiveness / Unilateral governance	Value orientation / Bilateral governance	Value orientation / Unilateral governance
Product architecture	Important Enabler for process optimization, supply chain optimization and customization	Important Enabler for process optimization, supply chain optimization and customization	Very important Strategic focus in product and technology architectures	Very important Strategic focus in product and technology architectures
Supply Chain architecture	Very important Central source for competitiveness. Particular focus on intercompany integration	Very important Central source for competitiveness. Particular focus on maintaining competition in supply base	Less important Supply Chain performance managed in the relationship, but with secondary focus	Less important Primary focus on products, technologies and innovations
Objective of DfX	Ensure shared Supply Chain performance: Promotion of alignment of architecture, platformization and postponement for Supply Chain performance	Ensure focal company independence: Promotion of modular architectures, standardized interfaces and non-proprietary technology	Ensure architectural alignment Effective integration of supplier technologies and innovations	Ensure architectural openness Enable integration of new technologies and innovations

Table 17: Product and network architecture

First, from product and demand/supply network architecture perspective it can be concluded that product architecture and technology selections affect firm's ability to develop a desired buyer-supplier relationship and execute strategy. In substantial terms, a product architecture that creates a supplier lock-in may prevent the focal company to execute a desired sourcing strategy. The impact of such lock- situation may lead not only to high switching cost and consequent inability to use market mechanisms but also to lack on interest in development as was demonstrated by several of the cases here.

Second, we can conclude that Design for Excellence (DfX) processes have a central role in supply base management. They may, however, be used for different, even contradictory purposes. In cases where the business strategy is biased towards technology leadership, integration and utilization of supplier innovations and technologies need to be included in the architectural as well as sourcing and supply base management considerations. In such cases the product architectures and technology selections may need to be integrated both on buyer's and on supplier's side for effective adoption of the selected suppliers and preferred technologies. This approach leads, in turn, to high mutual dependency.

Third, developing the chain of logic a step further, based on the research it can be argued that sourcing and selection of Demand/Supply Network members is a central external resource management practice and may affect firm's ability to develop a desired buyer-supplier relationship and execute strategy. In light of supply base orchestration, it becomes important to select not only a good supplier, but also a right one. As attractiveness, power balance and focal company ability to influence are central themes, it becomes increasingly important to be able to source the right partners, understand the forces that may affect later on the focal company ability to influence on the suppliers and to include those in supplier selection. This aspect was highlighted as non-successful factors in cases TelTech 3, HeavyMetal 1, and as critical but successful examples in CommTech cases.

Buyer-supplier relationship

Governance of the *Buyer-supplier relationships* emerges as the primary context in which the orchestration activities are conducted. In all of the investigated cases the orchestration practices are conducted in a relationship context where significant influence has factors

like relationship length, trust, and business potential as well as power and dependence in the relationship and attractiveness of the parties.

This result may have two explanations. First, it may be that after strategizing and supply system architecture the supplier base management activities are best executed in direct, close relationship. The topic was included in data gathering and answers are leading systematically back to influence and governance practices taking place inside dyads. Another explanation is that scoping of the research on existing strategic suppliers limits the possibilities to identify influence practices focused on those suppliers, which are not under active management.

The main differences in the management profiles are in the role of personal relationships in management of the relationships. In the bilateral governance approaches the social ties and personal relationships are actually the most critical factor of management. In the unilateral approaches the relationships appear more anonymous, institutionalized, and formal. The cross-case analysis of the relationship management aspects is summarized in the Table 18.

	Cost competitiveness / Bilateral governance	Cost competitiveness / Unilateral governance	Value orientation / Bilateral governance	Value orientation / Unilateral governance
Supplier relationship type	Long lasting and stable, "rooted" relationship	Development of competitive network of supplier relationships. Relationship may be long, but is reviewed frequently	Long lasting and stable, "rooted" relationship	Development of competitive network of supplier relationships. Relationship may be long, but is reviewed frequently
Interface with suppliers	Translation	Specified	Interactive	Translation
Key concepts in supplier relationship management	Relationships institutionalized. Shared strategy, continuous alignment and information sharing in central position.	Relationships more formal and price/performance focused. Parties see themselves independent. No involvement across the company boarder	Personal relationships drive. Level of shared values, trust and reciprocity in central position.	Relationships more formal and product performance focused. Parties see themselves independent. No involvement across the company boarder
Focus on several tiers	Yes	No	Yes	No
Sharing of expectations and targets	Fact based discussions. Explicit joint targets related to operational performance (cost, time, quality, flexibility). Supply chain KPIs in central role in relationship management. Focal company driving the supply chain performance.	Fact based discussions. Explicit targets related to operational performance (cost, time, quality, flexibility). Supply chain KPIs in central role in relationship management. Targets communicated, but performance managed independently.	Value based discussions. Also explicit targets related to new value (business). Supply chain KPIs existing but secondary.	Value based discussions. Also explicit targets related to new value (business). Supply chain KPIs existing but secondary.
Problem solving	Joint problem solving process. Problem solving mechanisms through relational mechanisms and mutual efforts.	Independent problem solving. Formal communication of deviations and corrective actions. Termination of relationship as an alternative.	Joint problem solving process. Problem solving mechanisms through relational mechanisms and mutual efforts.	Independent problem solving. Formal communication of deviations and corrective actions. Termination of relationship as an alternative.
Supplier development	Supplier development important, focusing on operational Supply Chain performance	No supplier development	May take place, but more important mutual exchange of tacit knowledge	No supplier development

Table 18: Buyer-supplier relationships

Management of daily operations

Operative supply management consists mainly of classical supply chain management perspectives: planning and forecasting, process management and performance management appearing as central themes. There are differences in the relative emphasis between the management profiles following the categorization between value focus and cost efficiency focus. In cost efficiency -focused relationships the supply chain area was generally considered much more important whereas in the other group the emphasis was clearly on relationship management area. The operative supply management is elaborated in the Table 19.

	Cost competitiveness / Bilateral governance	Cost competitiveness / Unilateral governance	Value orientation / Bilateral governance	Value orientation / Unilateral governance
Planning and forecasting	High importance. Focal company responsibility, but involving customers and suppliers potentially several tiers	High importance. Parties exchange information, but conduct independently	Done. Important, but only from operative perspective	Done. Important, but only from operative perspective
Process integration	High importance. All key processes integrated: Planning, fulfillment, performance management. Customized to maximize joint performance.	Key processes not integrated. Interface between the companies defined, standard	Done. Important, but only from operative perspective. Interface may be customized.	Key processes not integrated. Interface between the companies defined, standard
IT system integration	IT platform important in sharing operative information across supply chain	IT systems central in effective information sharing. Standardized IT interface, one-directional information flow	Done. Important, but only from operative perspective	Standardized interface, one-directional information flow
Sharing of operative information	High importance. Focal company responsibility, but involving customers and suppliers potentially several tiers	High importance. Information flow not synchronized	Done. Important, but only from operative perspective	Done. Important only from operative perspective
Operative performance management	High strategic importance. Focal company responsibility, but involving customers and suppliers potentially several tiers	High operative importance. Formal communication of deviations and corrective actions. Termination of relationship as an alternative.	Done. Important, but only from operative perspective	Done. Important only from operative perspective

Table 19: Operative supply management

Overall it can be stated that the operative supply management within buyer-supplier relationships and across a broader network contributes to orchestration by facilitating daily collaboration information flow and performance management with the supplier base. The operative supply management, however, is not sufficient to enable orchestration activities as often believed.

As a conclusion, the cross-case analysis confirms that the identified practices actually converge on higher level of aggregation to four broader clusters of practices. They are:

- value system design
- architecture
- relationship management, and
- facilitation of operative activities

First indication of the converging practices was gained from the Case 1 TelTech, where the identified practices were initially clustered on higher aggregation level as managerial perspectives. The cross-case analysis confirms the approach. The managerial perspectives are illustrated in the Figure 40.

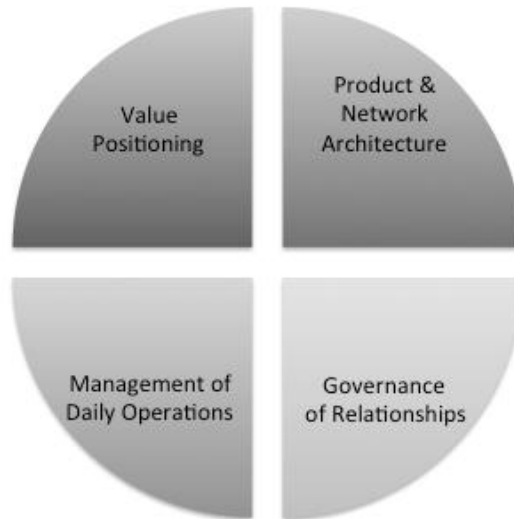


Figure 40: Managerial perspectives

The most interesting finding is the clustering of the practices according to the earlier developed situational factors. The as the managerial practices are plotted according to the managerial situations, following observations per situation can be made:

In the cases where *Cost efficiency focus – Bilateral governance approach* is the situation, managerial practices focus on tight integration between the parties. Emphasized are different formal integration and coordination mechanisms, such as process and system integration and common KPI:s. Both joint development and supplier development activities are emphasized.

In the cases of *Cost efficiency focus – Unilateral governance approach* the practices differ clearly. Instead of tight integration and mutual activities, in the situation the practices focus on establishing a loose, modular coupling between the companies. Focus is on creating and leveraging a competitive approach towards the suppliers. Selection and re-selection of suppliers is emphasized, and supplier development is less focused. Operative coordination aspects are emphasized.

In *Innovation focus – Bilateral governance approach* the managerial practices focus on managing a cross-organizational innovation process. Emphasized are different value-based, informal and personal relationship –oriented integration and coordination mechanisms, such as information sharing, joint development and problem solving.

In the situation *Innovation focus – Unilateral governance approach* the practices are closest to a network-level orchestration. The focal company has relatively low direct influence on its external resources, and the practices intend to guide the surrounding

suppliers with a relative remote approach. The connection between the focal company and suppliers is loose and integration minimal. Personal relationships, information sharing and overall facilitation of daily interaction are emphasized.

The main practices can be plotted to the managerial situation -matrix as illustrated in the Figure 41.

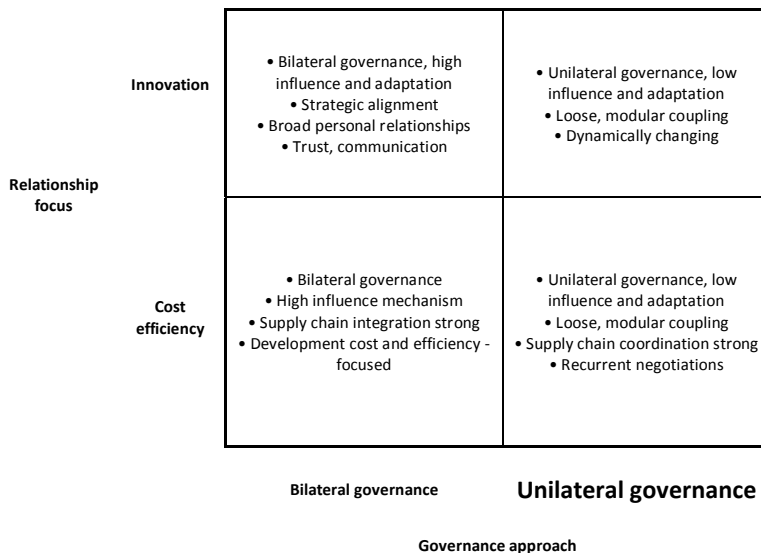


Figure 41: Managerial situations -matrix

In addition to the situation-specific practices, three broad areas of enablers emerge from the case data. They are explaining the justification of a focal company to assume an orchestrator role, or alternatively – when missing – explaining the lack of such ability. The common enablers are:

- Position-based network leadership role
- Attractiveness as a business partner
- Internal integration

Position based network leadership role

The positions that emerge as common enablers with several case companies are position at the end customer interface – ownership of the customer – and a brand, product or solution ownership position. The ownership of the customer interface emerge as a key enabler especially with case companies TelTech and CommTech and together with brand ownership also strongly in case of Design Inc.

Product/solution ownership is the second position with may contribute to a position as an orchestrator. The end product ownership, including technology knowledge was one of the main factors with all of the case companies. Brand ownership, which is closely related to both customer and product ownership, was an enabler for the Design Inc,. The product ownership, however, did appear as a strong enabler only in few cases and always combined with technology leadership or brand. At the same time there were several cases (TelTech with Supplier 3, CommTech with Supplier 2, Pharma with its Suppliers 1 and 3) where the position as end product owner and customer did not give a sufficient position to orchestrate the supplier base. Based on the results it can be argued that the product / solution ownership alone does not automatically give much influence towards the supplier base.

Attractiveness as a business partner

Attractiveness as a business partner, development partner, or customer emerges as a strong enabler for the orchestrator position. In the cases in this study attractiveness as an enabler can be boiled down to two factors: business potential and reference value.

Business potential as a factor for attractiveness and thus contributing to the focal company ability to orchestrate its external resources takes several forms in the study. In cases CommTech and Pharma the main attractiveness factor relates to commercialization of IPR through the role of focal company as a development partner for its external resources. Through co-development and sharing of technological knowledge the focal company can increase the perceived value for collaboration and may be able to maintain the necessary attractiveness towards its external resources which may enable it to orchestrate its partners. For example the overall external resource management strategy of the small but technologically advanced case company CommTech is based on this mechanism.

A slightly different mechanism relates to the attractiveness of Design Inc. towards its designers. Reference value of the case company Design Inc. is fairly high through its well-known brand, which may provide the designers business opportunities later on. In short term the case company as well as the case company Pharma Inc. can have also a role as a distribution channel for suppliers IPR. These both increase the attractiveness of the company towards the suppliers.

The third aspect of business potential relates straightforwardly to the current purchasing volume, which is leveraged by TelTech Inc. and HeavyMetal Inc. as is Pharma Inc. with the Supplier 2. This aspect is very effective short term and is practically the classical power/dependency –based influence but requires naturally continuous high volume purchases with a reasonable profit margin to be maintained successfully.

Internal integration

The internal integration theme was emerging at several case companies, especially with Design Inc. which has a history of very individual –centric organization and with TelTech Inc. which has a very strong, centrally led supply base management organization as well

as HeavyMetal Inc. which was in the middle of transition from very business line centric organization toward a centralized, integrated organization.

There are several findings in the study that highlight the importance of internal integration in orchestration of external resources.

First, consistency between the vision and strategy, objectives set for a buyer-supplier relationship and operative supply management activities appear a critical. In the study it was also possible to identify gaps in the activities at the case companies, which further emphasize the importance in the linkages between layers. For instance, quality of the category strategies was perceived to vary. This was causing unclear priorities when both overlapping activities with one supplier and at the same time slow progress with another.

Second, architectural coherence and especially alignment of the architectural decisions discussed in the previous chapter (Management practices) were a critical area where lack of internal integration typically appeared. As in an example with the case company HeavyMetal: the company has a supply base management strategy which strongly emphasizes the importance of not being dependent from the suppliers and an existing product architecture decision that practically creates a lock-in situation to supplier's proprietary software at the same time.

Third, aligned resource allocations, especially concerning resources for supplier development, supplier relationship management and joint development activities with the suppliers are a critical area of internal integration. This view emphasizes in particular the implementation of the strategy whether the targets set for a relationship can be brought to practice. Through the implementation perspective also availability and use of development resources become essential. Adaptation of the operative supply management to a relationship usually requires changes in processes and tools. This change is implemented by development resources for example in the case of TelTech by supplier development organization and supplier integration organization focusing on logistics processes and tools. Decisions related to use of these resources determine whether the operative interface in a particular buyer-supplier relationship can be advanced in practice.

A coordinated supplier management organization was not perfectly established to cover all the activities taking place in the supplier interface in many of the case companies of this study. This was typically causing inconsistency and also lowered business performance through variation on operative level in logistics terms, service levels, and prices.

5.6.3 Objectives and performance

Following the contingency theory structure, the *Means* i.e. managerial practices in a given *Situation* should preferably lead to *Ends*, which in this research are different aspects of performance of the focal company.

Performance aspects of the focal company cannot be directly connected to the company practices in a single supplier relationship, as there are different factors affecting similarly the end result. The performance is assessed in the case companies based on assumption about contribution: The cross case analysis focuses on assessing whether the set objectives and targets, and identified orchestration activities are aligned with the overall performance of the focal company. The findings are cross-tabulated in the Table 20.

PERFORMANCE OBJECTIVES	KPI's set for the relationships	Actual performance	Defined objectives for the relationships	Identified competitive factors of the focal company	
Innovation focused - Bilateral governance	TelTech Inc - Supplier 1	<ul style="list-style-type: none"> Time to market, performance, capacity 	<ul style="list-style-type: none"> Short lead times and high flexibility achieved 	<ul style="list-style-type: none"> Product and value driven objectives Performance of end product Product cost Time to market 	<ul style="list-style-type: none"> Strong supply chain and global sourcing competences Mainly achieved short lead times and high flexibility as targeted
	Pharma Inc - Supplier 2	<ul style="list-style-type: none"> Main measure transfer of ideas and knowledge Also assets utilization, cost efficiency, coordination 	<ul style="list-style-type: none"> High performance both strategic and operational 	<ul style="list-style-type: none"> Supply chain efficiency Delivery time Price Quality 	<ul style="list-style-type: none"> Generally the focal company has been very profitable and well-performing company over long period of time There is room for improvement in strategic performance: Focal company lack of influence is limiting its ability to execute strategic choices
	CommTech Inc - Supplier 1	<ul style="list-style-type: none"> No tangible targets set Qualitative indicators focusing on the relationships 	<ul style="list-style-type: none"> Technology advancement Competence / Knowledge exchange Long switching time and high switching cost 	<ul style="list-style-type: none"> Not defined 	<ul style="list-style-type: none"> Mixed business performance Global competitiveness of is on good level despite its small size related to its global competitors Good financial performance Supplier collaboration efforts successfully supporting the technology leadership strategy Supply Chain management performance not on high level
	CommTech Inc - Supplier 2	<ul style="list-style-type: none"> Total cost and component price reduction targets 	<ul style="list-style-type: none"> High experienced service level 	<ul style="list-style-type: none"> Not defined 	<ul style="list-style-type: none"> Mixed business performance Global competitiveness of is on good level despite its small size related to its global competitors Good financial performance Supplier collaboration efforts successfully supporting the technology leadership strategy Supply Chain management performance not on high level
Innovation focused - Unilateral governance	Pharma Inc - IPR Suppliers	<ul style="list-style-type: none"> Revenue and profit of the jointly created products Success in collaboration 	<ul style="list-style-type: none"> Relatively good performance in IPR sourcing and new product development 	<ul style="list-style-type: none"> Availability of complementary skills and knowledge Increasing coverage of the product portfolio 	<ul style="list-style-type: none"> Generally the focal company has been very profitable and well-performing company over long period of time There is room for improvement in strategic performance: Focal company lack of influence is limiting its ability to execute strategic choices
	Design Inc - IPR Suppliers	<ul style="list-style-type: none"> Revenue and profit of the created products Success of renewal, ability to create new ideas and designs 	<ul style="list-style-type: none"> Supplier's cost competitiveness on declining trend 	<ul style="list-style-type: none"> Availability of new fresh ideas, drive and innovation 	<ul style="list-style-type: none"> Performance in new product creation a competitive advantage Room for improvement in strategic and operative performance Cost performance adequate but increasingly under pressure
Cost competitiveness focused - Bilateral governance	TelTech Inc - Supplier 2	<ul style="list-style-type: none"> Cost, delivery accuracy, product quality 	<ul style="list-style-type: none"> Short lead times and high flexibility achieved 	<ul style="list-style-type: none"> Very cost and efficiency driven objectives; Cost, supply chain efficiency, delivery accuracy, product quality 	<ul style="list-style-type: none"> Strong supply chain and global sourcing competences Mainly achieved short lead times and high flexibility as targeted
	CommTech Inc - Supplier 3	<ul style="list-style-type: none"> Cost, delivery reliability, quality 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> Not defined 	<ul style="list-style-type: none"> Mixed business performance Global competitiveness of is on good level despite its small size related to its global competitors Good financial performance Supplier collaboration efforts successfully supporting the technology leadership strategy Supply Chain management performance not on high level
	HeavyMetal Inc - Supplier 2	<ul style="list-style-type: none"> Delivery accuracy Cost development 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> Availability Cost Delivery punctuality Quality 	<ul style="list-style-type: none"> The focal company strategy is based on leading technology and focus on efficient supply chains. It has set itself objectives related to globalization, cost competitiveness and economies of scale. The focal company is reporting increasing competitiveness in terms of operational efficiency, reporting 10% annual cost savings, significant decrease in number of suppliers, move to one global operating model, and also increasing competition among the supplier base
	HeavyMetal Inc - Supplier 3	<ul style="list-style-type: none"> Delivery accuracy Cost development 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> Cost competitiveness Product functionality and quality Flexibility on capacity 	<ul style="list-style-type: none"> The focal company strategy is based on leading technology and focus on efficient supply chains. It has set itself objectives related to globalization, cost competitiveness and economies of scale. The focal company is reporting increasing competitiveness in terms of operational efficiency, reporting 10% annual cost savings, significant decrease in number of suppliers, move to one global operating model, and also increasing competition among the supplier base
	Design Inc - Supplier 1	<ul style="list-style-type: none"> Quality, delivery accuracy Asset utilization Easiness to work with 	<ul style="list-style-type: none"> Experienced performance considered high due to long history and easiness of doing business with Low perceived transaction costs 	<ul style="list-style-type: none"> Product quality 	<ul style="list-style-type: none"> Performance in new product creation a competitive advantage Room for improvement in strategic and operative performance Cost performance adequate but increasingly under pressure
	Design Inc - Supplier 2	<ul style="list-style-type: none"> Quality, delivery accuracy Cost efficiency Asset efficiency Knowledge acquisition 	<ul style="list-style-type: none"> Technology collaboration considered valuable Learning effect 	<ul style="list-style-type: none"> Cost competitiveness Quality Flexibility 	<ul style="list-style-type: none"> Performance in new product creation a competitive advantage Room for improvement in strategic and operative performance Cost performance adequate but increasingly under pressure
	Design Inc - Supplier 3	<ul style="list-style-type: none"> Quality, cost competitiveness Delivery accuracy Easiness to do business with 	<ul style="list-style-type: none"> Adequate performance Increasing price pressure 	<ul style="list-style-type: none"> Lowest possible cost 	<ul style="list-style-type: none"> Performance in new product creation a competitive advantage Room for improvement in strategic and operative performance Cost performance adequate but increasingly under pressure
Cost competitiveness focused - Unilateral governance	TelTech Inc - Supplier 3	<ul style="list-style-type: none"> Product competitiveness Cost, quality, delivery accuracy 	<ul style="list-style-type: none"> Inflexibility and average performance 	<ul style="list-style-type: none"> Efficiency driven objectives: Cost, quality, and delivery accuracy Move to open product 	<ul style="list-style-type: none"> Strong supply chain and global sourcing competences Mainly achieved short lead times and high flexibility as targeted
	Pharma Inc - Supplier 1	<ul style="list-style-type: none"> Quality, cost, delivery accuracy 	<ul style="list-style-type: none"> Operationally well performing but inflexible relationship 	<ul style="list-style-type: none"> Targets for the relationship are quality, delivery reliability and effectiveness 	<ul style="list-style-type: none"> Generally the focal company has been very profitable and well-performing company over long period of time There is room for improvement in strategic performance: Focal company lack of influence is limiting its ability to execute strategic choices
	Pharma Inc - Supplier 3	<ul style="list-style-type: none"> Cost efficiency, quality, delivery targets 	<ul style="list-style-type: none"> Non-satisfactory performance 	<ul style="list-style-type: none"> Cost Quality Delivery capability 	<ul style="list-style-type: none"> Generally the focal company has been very profitable and well-performing company over long period of time There is room for improvement in strategic performance: Focal company lack of influence is limiting its ability to execute strategic choices
	HeavyMetal Inc - Supplier 1	<ul style="list-style-type: none"> Delivery accuracy Cost development 	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> Delivery friendliness Cost development Global relationship model 	<ul style="list-style-type: none"> The focal company strategy is based on leading technology and focus on efficient supply chains. It has set itself objectives related to globalization, cost competitiveness and economies of scale. The focal company is reporting increasing competitiveness in terms of operational efficiency, reporting 10% annual cost savings, significant decrease in number of suppliers, move to one global operating model, and also increasing competition among the supplier base

Table 20: Performance objectives

From the performance point of view it can be concluded, that case companies having emphasis on cost efficiency as relational focus, and respective managerial practices, perceive themselves being competitive terms of operational efficiency. This competitiveness is visible e.g. through KPI:s like cost saving %, asset efficiency etc. which have been considered as being on good level. Those cases, in turn, where the focus has been on innovation and capturing of new value, the case companies perceive themselves generally being leaders in product and technology –related aspects, and less in light of cost efficiency -focused aspects.

Overall the link between performance and the means leading to the performance is not very direct. Still, there appears to be a relationship between perceived an intended performance, set objectives which is in this research considered as a situational factor, and the actual performance of the focal company overall.

6 RESEARCH RESULTS

In this chapter research results of this study are presented. The result presentation is divided into four subchapters reflecting the original resource questions. The research results are drawn from the literature study and the following in-depth case analysis.

6.1 The concept of orchestration

The concept of orchestration is the starting point for this research. As a part of the original research questions the concept was challenged from various perspectives. The key question was whether it exists in the first place, what it includes, what is the definition of orchestration, and whether orchestration is dependent on situation?

First, the research demonstrates clearly that such a concept is relevant from the external resource management point of view and can be identified empirically. Consequently it can be concluded that it exists.

Second, what is included into the concept can be elaborated through the managerial practices, as they represent and categorize the activities that the case companies are doing when they intend to orchestrate their external resources. Success of the activity may vary but a converging pattern of managerial activities can be identified through the cross-case analysis.

The concept of orchestration is characterized as an activity where a company is intentionally leading and influencing its external resources beyond the set of operative activities it conducts itself.

Following the earlier developed initial definition, orchestration is defined as a result of this research as ***an intentional act where a company is creating and capturing value by building, directing and leading networks of external resources.***

Based on the research done, it can be further specified that orchestration is done through ***orchestration practices, which relate to focal company positioning in a value network, to product and design architecture, to relationship governance practices and to facilitation of operative processes and performance.***

At none of the investigated relationships the orchestration approach is self-evident or gained automatically. Instead, for each of the relationships a combination of power, dependency, attractiveness, and internal situation combined with the externally directed activities affect the company ability to actually execute the orchestration practices effectively. The concept of *enablers* emerges in the study as a central condition for orchestration. Three common enablers can be identified from the research:

- Position-based network leadership role
- Attractiveness as a business partner
- Internal integration

6.2 Classification of managerial situations

Two central aspects emerging from the data are the *dominant focus of the relationship*, and the underlying *governance approach*. The analysis on approaches of the case companies led to a conclusion that, first, to develop an appropriate strategy for external resource management a firm must identify and define its business objectives. This should be done for each of the relationships, choosing between innovation focus and cost competitiveness focus. Second, to develop an appropriate strategy for external resource management, a firm must define the intended governance approach.

The investigated buyer-supplier relationships can be arranged according to the dimensions of relationship focus – between cost and innovation, and governance approach – between bilateral and unilateral governance. The consequent four different managerial situations are named as:

- Collaborative value creation -situation
- Collaborative efficiency -situation
- Independent efficiency -situation
- Independent value creation -situation

The categorization and positioning of the case relationships are illustrated in the Figure 43 below.

Collaborative value -situation	Independent value creation -situation
Collaborative efficiency -situation	Independent efficiency -situation

Figure 42: Case relationship categorized according to relationship focus

Following the categorization with respect to the original research question, management profiles reflecting a suitable management approach in each of the quadrants is developed.

6.3 Managerial profiles in external resource management

Practices related to orchestration of external resources can be divided to four broader clusters: value positioning, product and network architecture, relationship governance practices, and operative management practices. These clusters of practices form the basis for orchestration: the case companies are conducting activities in the four areas to orchestrate the external resources.

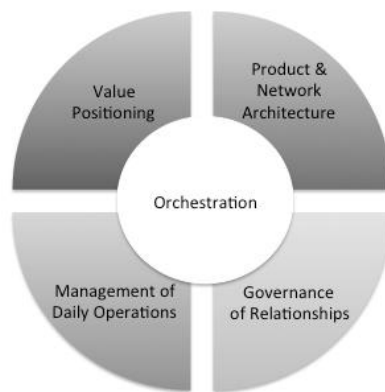


Figure 43: Orchestration of external resources is conducted through four interdependent clusters of managerial practices

However, the orchestration approach is clearly situation –dependent, and cannot be approached in a uniform manner in all cases. Instead, the suitable combination of managerial practices varies between the situations, even if the combination is containing the four broad clusters of activities.

Following the earlier developed categorization of managerial situations to the four categories along dimensions of relationship objective, and governance approach, a management profile for each of the category is developed. The managerial profiles are *R&D collaboration -profile*, *Supply Chain integration -profile*, *Competitive sourcing -profile* and *Innovation acquisition -profile*.

R & D collaboration -managerial profile	Innovation acquisition -managerial profile
Supply Chain integration -managerial profile	Competitive Sourcing -managerial profile

Figure 44: Managerial profiles

The managerial profiles are elaborated next.

Management profile 1: R&D collaboration

The first management profile combining both innovation focus and bilateral governance approach can be characterized as R&D collaboration profile. Put shortly, the primary objective in the relationship is to create an environment where new products and services with the existing long-term partners and effectively are developed and commercialized.

The central aspect of the management profile is development and governance of the close, long-term relationships, typically based on personal relationships.

Other attributes that characterize the R&D collaboration management profile:

- Selection of network members focus on aligned values and strategic alignment between the companies. The relationships are often single source relationships, which is natural due to high IPR focus. In several cases the selection of right partners involves several tiers.
- From architectural perspective characteristics is also mutual alignment of product architectures. As the main accentuation is on utilization of suppliers' knowledge and jointly developed solutions, the primary aim in architectural considerations is to enable full utilization of the results of joint initiatives. This means typically alignment of product and technology architecture potentially by both of the parties. From resource network architecture perspective the relationships include also a broad interface involving many functions and high asset specificity.
- Relationship focus is on creation of added value through development of long lasting and stabile, "rooted" relationships. The relationship is managed with a bilateral

governance approach where trust and communication are emphasized. High influence between the parties and mutual adaptation is both typical for the relationships. Typically the dyads involve also broad personal as the basis for the institutional relationships

- Operative aspects have less importance. Normal operative supply management is naturally conducted and may have importance from operative efficiency and productivity point of view. Still, when seen from the strategic perspective, it has a secondary focus from the overall orchestration perspective. IT platforms and IT integration in supply chain area are, respectively, of secondary focus.

Management profile 2: Supply chain integration

The Supply Chain integration -management profile corresponds to situation of cost competitiveness focus and bilateral governance approach targeting to cost effectiveness through integrative approach, maintaining close relationships with high influence of the focal company, balanced power and dependency and high mutual alignment.

Like the R&D collaboration profile the relationship is also based on established long-term relationships, bilateral governance approach and high influence of the focal company towards its supplier base. Here the focus is different: in this profile the R&D aspect is less emphasized and the supply chain integration is strong instead. The Supply Chain integration profile is also more institutionalized than in R&D collaboration. As the R&D collaboration profile is very personal relationship centric, the Supply Chain integration profile puts organizational integration methods, especially process and system integration, to the core.

Other attributes that characterize the Supply Chain integration management profile:

- In selection of the network members' trust, reputation and continuous high operative performance matter the most.
- From architectural perspective characteristics is also alignment of product and resource network architectures. Especially resource network architecture appears in the management profile very important practice. Focus is on Design for Manufacturing, ensuring structural effectiveness and enabling utilization of practices like postponement. Overall focus is on ensuring structural efficiency, which means in practice often strategic alignment of product, process and supply chain decision across several tiers.
- From a relationship management point of view focus is on development of long lasting and stabile, "rooted" relationships. The primary objective, however, is on operative efficiency. Various formal integration mechanisms are in use, for example cross-functional, cross-company teams, even shared development roadmaps and budgets. The organizational integration is supported by process and IT integration, and intensive performance management. The search for mutual efficiency leads also to high asset specificity as resources are dedicated and tailored to the relationship integration. The focal companies using the Supply Chain Integration management profile are driving especially supply chain performance often over several tiers. Supplier development is

essential in addition to the supply chain development and is typically cost and efficiency-focused.

- Operative supply management is in Supply Chain management profile of high importance as joint cost and asset efficiency through integration and alignment is the key source for competitiveness. The integrated processes and inventive operative management by the focal company are expected to drive performance. ICT and process platforms are of high importance as well.

Management profile 3: Competitive sourcing

The Competitive Sourcing –management profile corresponds to situation of cost competitiveness focus and unilateral governance approach and targets to cost effectiveness through a competitive approach. Its attributes are adversarial relationships, unequal power and dependency either for focal company or for supplier favor and clearly defined interface with low mutual alignment.

Characteristic for the Competitive Sourcing profile is the underlying competitive approach. Relationship between a focal company and its supplier base may last long also when the Competitive Sourcing profile is applied but have a strong underlying competition and contracting has a recurrent nature. The typical practices include e.g. regular reviews of the supply base. The interface between the focal company and its supplier base is intentionally loose, often based on a modular coupling: the focal company is having dual or multiple sourcing arrangements. Parties see themselves independent when the relationship involves low asset specificity, a limited amount of alignment and is very much oriented to operative performance.

Other attributes that characterize the Competitive Sourcing management profile:

- In selection of the network members the products and services that the suppliers can provide is of primary focus, as a core part of the management profile is availability of alternative sources of supply.
- From architectural perspective focus is on selection of right partners, also several tiers, on architecting Supply Chain structures with focus on maintaining a competitive position and on alternative sources of supply.
- The product architecture alignment appears as a vital factor also in this profile. On the contrary to the Supply Chain Integration profile, in Competitive Sourcing profile focus is on modularity and open standards, ensuring changeability. In short, the primary focus of architecture is to ensure that no dependency situation can arise between the focal company and the supply base.
- From relationship management point of view focus is on development of a competitive network of suppliers. The buyer-supplier interface is clearly defined and standardized, even transactional. Communication, even if may be rich, is formal and institutional. Parties exchange information but conduct activities independently. In case of non-satisfying performance the primary approach is not investment in supplier development but rather change of the supplier.

- Operative supply management is in Competitive Sourcing management profile of high importance as cost and asset efficiency, fostered through continuous competition, are the key source for competitiveness. Sourcing and Supply Chain management as activities are at central role. The competitive situation is managed through KPI:s and formal interaction, through operative supply management and through coordination.

Management profile 4: Innovation acquisition

The Innovation acquisition – management profile corresponds to situation of innovation focus and unilateral governance approach. It targets to creation of new products or services through utilization of sourcing and competitive approaches. The attributes of the Innovation Sourcing can be described as adversarial relationships, unequal power and dependency either for focal company or for supplier’s favor, and clearly defined interface with low mutual alignment.

The Innovation acquisition can be characterized from overall governance approach point of view as market-type or recurrent governance, focused on single ideas, products or projects. From relationship focus point of view it is solely concerned on creation of new value: new products or services, product improvements or enhancements, or specific problem solving. The relationships follow unilateral governance, include low influence and adaptation especially in the beginning of the relationship, have a loose, modular coupling and are dynamically changing. It is necessary to note that a relationship that begins as innovation sourcing relationship may evolve rapidly towards R&D collaboration relationship when the parties begin to invest in joint development projects. Examples of this were provided by the case company Pharma Inc.

Other attributes that characterize the Innovation acquisition management profile:

- In selection of the network members the products and services that the suppliers can provide is of primary focus, as a core part of the management profile. The primary purpose of the management profile is to acquire IPR which may lead to new value, either as a part of focal company product and service portfolio or as a complementary component.
- The product architecture alignment appears as a vital factor also in this profile. Like in the Competitive Sourcing -profile focus is on modularity and open standards, which are vital for the focal company as it wants to leverage the sourced IPR. In short, the primary focus of architecture is to ensure that the sources IPR can be acquired and applied either developed to a new product or utilized as component or complementary product. An example of such complementary product are 3rd party software applications on different consumer electronic devices. A second architectural target is also to ensure that no dependency situation can arise between the focal company and the supply base.
- From relationship management point of view focus is on development of a competitive, potentially broad network of suppliers. The buyer-supplier interface is clearly defined and standardized. With the Innovation acquisition -profile central differences to other profiles are the role of the focal company as distribution channel and the role as a

network enabler. For the IPR provider the main motivation to sell the IPR is the distribution channel making it possible to leverage the business potential of the IPR. This places demands for the focal company to demonstrate the business potential it can provide to its partners. Examples of that are e.g. partner marketing (as in case Pharma Inc.). At the same time the focal company has a role as enabler of the network, especially when the IPR is developed or tailored to the focal company offering. The enabler role may mean needs to facilitate the network and to provide tangible help and guidance for the IPR partner e.g. in forms of business information (as in case if the Design Inc.) or developer tools which the software companies provide. Still, despite the role of the focal company as network facilitator the primary approach is not necessarily investment in single supplier development but rather change of the supplier.

- Operative aspects have less importance with the Innovation acquisition -profile. Normal operative supply management may be conducted; alternatively such relationship may mean just acquisition of IPR and technology. Strategically it has a secondary focus from the overall orchestration perspective. IT platforms and IT integration in supply chain area are, respectively, of secondary focus.

The Table 22 summarizes the main characteristics of the management profiles.

	Supply Chain Integration profile: Cost competitiveness / Bilateral governance	Competitive Sourcing profile: Cost competitiveness / Unilateral governance	R&D Collaboration profile: Value orientation / Bilateral governance	Innovation acquisition profile: Value orientation / Unilateral governance
Value Positioning	Important	Important	Important	Important
Product and Network Architecture	Architecture enabling Supply Chain performance	Product architecture maintaining independence and competition	Product architecture integrating supplier innovation	Product architecture enabling absorption of supplier innovation
Governance of Relationship	Institutionalized, formal relationships between organizations. Information sharing central	Relationships of independent actors. Formal and price/performance focused	Personal relationships. Shared values, trust and reciprocity central	Relationships formal and product performance focused. Parties see themselves independent
Management of Daily Operations	High importance. Strong process integration	High importance. Independent operations, coordination focus	Done, relatively less important	Done, relatively less important

Table 21: Management profiles at the identified orchestration situations

7 THEORY DEVELOPMENT AND DISCUSSION

This chapter discusses the research results in comparison to the extant body of knowledge. The research results are elaborated, both in light of the literature review, as well as with reference to the recent development of the related academic discourse. The concept of orchestration is discussed and compared with other closely related concepts, in particular with concepts of integration and coordination. The applicability and validity of the research are discussed and recommendations for the further research are introduced.

7.1 Network -type of operations and business models continue to evolve

This research was motivated by fundamental assumptions about evolution of the world. It was observed that supply chains were increasingly becoming complex networks of organizations, and the underlying assumption was that the evolution was to continue. This development is connected to the fast development of new technologies and globalization of products and markets. At the same time the appearance of new forms of organizations had encouraged firms to adopt new ways to compete, for example by specialization.

The recent research highlights that the evolution has continued. For example Cheng and Johansen (2014) point out, how the discussion in global operations field has evolved from the strategic roles of plants and subsidiaries to international manufacturing network, and further, as a result of externalization, to supply network. They are building in particular on a concept of Global manufacturing virtual networks (GMVN), originally introduced by Shi & Gregory (2005). Their conclusion is that as a result of two trajectories, internationalization of value chain activities, and externalization of value chain activities, the concept of manufacturing networks needs to be broadened. They conclude as well, that the new development goes beyond the manufacturing network, creating another type of network concerning new value proposition and new strategic collaboration in the value network (Cheng and Johansen, 2014).

Slepniov and Waehrens (2010) investigate the dynamic nature of the global operations networks. They find out, that positions of actors within a network are not stable, but develop and change with associated strategic mandates. They also recognize the importance of network management capability in explaining how operations networks change over time. These findings are very similar with the results emerging in this research; networks and the roles of the network participants evolve over time, and the focal company has a key role in driving the change.

At the same time, on innovation research front, the concept of open innovation has gained a lot of attention over the last decade. Recent literature review thoroughly by Johannessen and Olsen (2010) indicates a shift from closed i.e. firm-centered innovation model to open, customer-driven and network-embedded innovations, which means that information, knowledge and competence is increasingly searched outside the boundaries of a firm. New innovation practices drawing on open and networked forms of

collaboration especially in inter-firm context have been receiving increasing attention in the literature and also among practitioners (Valkokari et al., 2009, Schiele, 2010).

A business model design perspective to value networks, and orchestration of the networks has also evolved in the recent research. Zott and Amit (2010) analyze the development from a perspective they call an Activity System perspective. They conceptualize a firm's business model as a system of interdependent activities that transcends the focal firm and spans its boundaries, pointing as well strongly towards networked systems and management of them.

7.2 External resource management exists

The first direct contribution of the research relates to the overall concept of External Resource Management. The concept was first introduced in 1990's Andrew Cox and Richard Lamming (1997) who argued that management of the competencies outside the firm but available to it in a flexible, malleable and dynamically reconfigurable manner is a new strategic challenge for companies, called "external resource management" (Cox and Lamming 1997a). In line with the other recent research, it can be identified from the cases a clear and increasing focus on management of external resources, related especially to relationship with strategic suppliers. The management focus is motivated by the need to influence on external resources – supplier and partners, which excludes the options of relying on market dynamics only.

The supplier base level has received less attention in extant literature and also in this research most of the identified external resource management activities took place inside the dyadic relationships and less at the overall supplier base or supplier network level. This research proposes that the activities that take place on supplier base management level relate to positioning of the focal company in the overall value system and on the other hand to the architecture of the product and supplier network as a whole.

7.3 External resources can be orchestrated

The second contribution of the research is relates to the concept of orchestration. The concept of orchestration is used in the extant literature in a very limited extent and it has been defined vaguely.

It can be concluded, that the first a priori assumption of the orchestration of external resources – the orchestration zone – holds. One could say, that from a managerial perspective the surrounding partner network forms a "grey zone" where the direction and control need to take place but on different terms than internally in the focal company. Inter-organizational relationships, governance of the network and the portfolio of relationships as well as integration and coordination of activities at the buyer-supplier interface have a substantial role in management of an external resource network. In relation to suppliers

orchestration takes place between markets and hierarchies where different hybrid governance models are dominant (Figure 46).

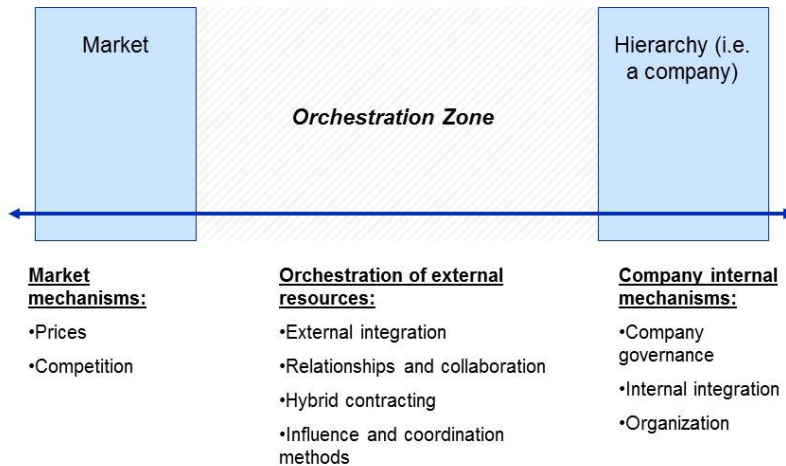


Figure 45: Orchestration of external resources takes place as between pure market approach, and company internal management

Similar direct empirical support can be found for the hybrid governance concept including also the three related management styles introduced by Williamson (2008) and for the recurrent and relational governance discussed by Ring and Van der Ven (1992). However, a central finding in this study is the emergence of the bilateral and unilateral governance approaches introduced by Heide (1994) and utilization of the approaches to structure managerial approach towards external resources, meaning strategic suppliers in this case. Both of the governance types introduced by him were observable and were explaining many of the differences in the management approaches in the case relationships.

Furthermore, this research helps to define the concept of orchestration. As one of the first contributions Vollmann et al. (2005) identify explicitly the concept of orchestration. They argue that orchestration is closely related to stage of development, integration and coordination of Supply Chains requiring cross—functional integration. Möller et al. (2005) associate the concept of orchestration to future-oriented value production and argue that orchestration as a concept refer to a focal company ability to influence on evolution of a whole new business network. Based on this research it can be concluded that the concept of orchestration includes the aspects mentioned by Vollmann, but is broader; the aspects of value creation strategy, recruitment of network members, and the architectural aspects should be included into the orchestration concept. The research highlights the aspects of structuring, coordinating and integrating activities, as identified e.g. by Hinterhuber (2002), by e.g. Choi et al. (2001), and which are also the main focus in e.g. coordination theory discourse and in Supply Chain management.

From the perspective of orchestration capability, the major questions are strategic positioning of buyer and supplier, highlighted through the dependency discussion and through different portfolio models (see e.g. Kraljic, 1983; Gelderman, 2003) and the perspective of buyer-supplier relationships, which has an extensive management literature stream of its own (e.g. Dyer et al., 1998; Bensaou, 1999). This approach, however, may not be suitable or sufficient in all situations where orchestration of external resources would otherwise be advantageous (Bates and Slack, 1998; Kraljic, 1983; Caniëls and Gelderman, 2007).

Behavioral and economic factors as trust, satisfaction, and asset specificity have been defined as important enablers for external relationships (Das et al., 2006). It is vital to understand the practices and influence mechanisms reaching beyond purchasing volume and bargaining power only. As is recognized e.g. by Hald et al. (2008) too, recent developments in industry support the growing importance of being attractive to key suppliers. This aspect puts special attention on the focal company ability to orchestrate the value creation system and on factors that either enable or disable it.

It has been noted also by Cox (2004) that very few companies are or ever will be in a position as buyers to be able to undertake effective supply chain management approach in practice. They lack the internal resources and capabilities to be able to undertake the work or to make the long-term commitments to their suppliers required.

Capabilities of an orchestrator are a strategic core question from the risk management perspective too: As more and more knowledge and activities take place outside the company, it is more vulnerable of getting copied by the other companies (Hall, 2000). On the other hand, a proprietary, distinctive asset base can give the orchestrator power to offer compelling economic incentives to partners (Hagel, 2002). From the risk management perspective the analysis on managerial situations provide an additional contribution, especially highlighted with e.g. Case TelTech, Supplier 3: When the external resource orchestration power is on the supplier side, it may be wise for the focal company not to enter to Supply Chain Intergration situation and get orchestrated. Instead, strictly defined modular interfaces with little adaptation and unilateral situation may be the best choice to avoid the influence of a dominant supplier.

7.4 Managerial situations differ and can be categorized

In the purchasing literature the supplier management situations have been extensively discussed and analyzed through different portfolio models. The portfolio models have been focusing either on supplier market or on supplier relationships.

The core of the supplier market –based classifications is the idea of supplier market, with an underlying approach that the focal company purchasing strategy should be to a large extent determined by the company-purchasing situation (e.g. Kraljic, 1983; Gelderman, 2003; Harland et al., 2001). This research confirms the importance of the supplier market analysis and understanding. The analysis is however particularly relevant for the network

design –phase of the overall external resource management. The portfolio models focused on the supplier relationships (e.g. Bensaou, 1999; Cox, 2004) are primarily concerned of the qualities of the dyadic relationship between the buyer and the supplier, and classify the purchasing situation through that lens. Like the supplier market –focused portfolio models, also the buyer-supplier relationship –focused portfolio models appear as a useful framework in this research. The correct positioning of them relate to definition of the targeted supplier relationship – which is to be determined not independently but as a logical continuum after value positioning and supplier network design.

On the other hand, several dominant theories, for instance governance theory, transaction cost theory and also integration and coordination theories take the dyad between buyer and supplier to the central role. Similar relevance of the dyadic relationship is identified in this research as well. Again, the correct positioning of the governance model consideration within a dyad, in comparison to the overall concept of external resource management, is important. Based on this research it can be argued, that the intended governance model affects the approach the focal company can and should have towards a supplier in terms of interface definition, relationship management approach and also integration and coordination methods.

Consequently, it can be concluded that a key contribution of this study is the classification of the external resource management situations according to focus i.e. value vs. cost efficiency, combined with the governance approach. This classification method builds on identified theories as discussed above, with a particular contribution to managerial applications. By classifying the managerial situations in the proposed way it becomes possible to:

- gain a view on the requirements and success criteria for effective management of external resources in the identified situations
- incorporate target orientation of the focal company to the analysis of the managerial situations
- create differentiated managerial approaches with a good fit to the managerial situation in hand, providing also managerial guidance for determining an appropriate management style, actions and resources for supplier base management.

7.5 Managerial profiles follow the situations

In the previous chapter four different types of managerial profiles were introduced. Each of them is connected to a managerial situation. The practices that the managerial profiles include are to most extent not new: in the research no new practices as such were discovered. Through the managerial profiles several contributions to the existing body of knowledge can however be identified.

What is unique and novel in relation to managerial profiles, are two aspects arising from the research:

- Consolidation of holistic, cross-disciplinary managerial profiles, incorporating practices typically related to strategic management, purchasing and supply chain management only, as well as practices arising from integration and coordination theory
- Connection of the managerial profiles to a specific managerial situation

Earlier the concern was to get various functional areas to work together to meet company goals. With the increasing portion of value being created through external resource base, the focus is moving towards integration of various partners in the value network (Frohlich and Westbrook, 2001, Das et al., 2006). The concept of orchestration of external resources contributes to this requirement. As has been showed in this study, both the integration approach and the closely related coordination approach can be seen as mechanisms, where different management profiles are executed. Supplier integration as an approach, including the mechanisms and practices involved, clearly has a role in the management profile “Supply Chain Integration”. At the same time the coordination aspects are emphasized in the managerial profiles related to “Competitive Sourcing” profile.

Some authors in the integration discourse have also argued that heavy integration is not always feasible or desirable. Rather it is necessary to find the optimal level for each case, and integration efforts should focus on relationships with key customers and suppliers, balancing the benefits with cost of coordination, cost of compromise and costs of inflexibility (Swink et al., 2007). Also outsourcing literature (e.g. Kotabe et al., 2007) discusses the cost of coordination. When independent firms operate in a network, they face two kinds of costs: coordination costs and sub-optimality costs, depending upon the level of their autonomy in the network. The core of “Supply Chain Integration” –profile is to leverage shared efficiency, thus reducing the sub-optimality cost, but potentially increasing the coordination costs. On the other hand, the “Competitive Sourcing” –profile puts emphasis on individual performance and reduced coordination costs, but potentially compromising the overall performance by allowing more sub-optimization.

Decisions affecting the complexity of the operations context from the supplier point of view are also identified to affect the performance of a relationship. Extent of control over product design, rate of new product introduction, intensity of information exchange and several other factors are found to affect the performance (Sousa and Voss, 2007), and thus contribute to positioning of a relationship at the Supply Chain Integration – Competitive Sourcing –continuum.

Based on this study it is possible to identify a group of key suppliers where heavy integration may be desirable: the strategic supplier relationships where a stable, long-lasting relationship is expected, and where at the same time the primary objective of the relationship is joint operative efficiency especially in the Supply Chain area. In this respect, there is also an analogy with the classical approach of distinguishing between arms-length and partnership approaches (Dyer and Singh, 1998), with the same intention to promote balanced utilization of both strategies.

A concept of innovation sourcing, which is arising as one of the managerial profiles, is not completely new but is very little discussed in as a part sourcing and procurement discourse.

There are several perspectives in the process of capturing external innovation and integrating it into a company offering. The first perspective is the discussion on open vs. proprietary innovation (Chesbrough, Crowther et al., 2006; Chesbrough, Vanhaverbeke et al., 2006; Chesbrough, 2006). Hansen and Birkinshaw (2007) introduce a concept of innovation value chain which present innovation as a sequential, three-phase process that involves idea generation, idea development, and the diffusion of developed concepts.

Touching the same innovation sourcing topic, Phillips et al (2006) address the need for supply relationships to generate and support discontinuous innovation. They are suggesting that for discontinuous innovation, it may in a firm's best interest to develop a broad range of non-committal supply relationships, in concurrence with its longer-term strategic partnerships. Findings from this research suggest as well, that in addition to the involvement of suppliers in innovation processes, there is room for further actions from the point of view of sourcing radically new, even discontinuous innovations. From the perspective of supplier base management especially the idea generation phase is closely related to sourcing and procurement practices and to the overall approach a company uses towards its supplier network. This refers in particular to the profile "Innovation Sourcing" and the more dynamic relationships associated to it. First of all, as Hansen and Birkinshaw (2007) argue, companies need to assess whether they are sourcing enough good ideas from external networks, in particular from current or potential suppliers.

Overall, the positioning of the innovation sourcing as a part of the overall sourcing portfolio of a focal company is novel here.

Third aspect is the importance of Design for Excellence (DfX) processes in supplier selections and in design of the effective supply network. These architectural findings are consistent with e.g. the 3-DCE approach introduced by Fine (2000), and further developed by e.g. Fixson (2005), highlighting the importance of concurrent design of product, process and the supply chain also for successful supplier base management. It can be argued that product architecture and technology selections may affect strongly the ability to develop a desired buyer-supplier relationship. Product architectures and technology selections may need to be aligned on both sides to leverage supplier's capabilities. DfX processes have a central role in ensuring both the supply chain efficiency, and effective adoption of the selected suppliers and preferred technologies.

From a certain perspective the importance of architecture in supplier base management is close to platform leadership concept (Cusumano and Gawer 2002). The type and degree of control over interfaces between various components of a product is closely linked with the company activities in management of suppliers – sometimes called complementors. Cusumano and Gawer (2002) state, "managers must determine how collaborative or competitive they want relationships to be between platform producers and complementors". Platform leaders should be industry enablers, helping others innovate in ever better ways around the platform (Cusumano & Gawer 2002).

In the similar way, several of the case companies were using the product and technology architecture closely related to sourcing strategy. The focal company must determine whether it wants to follow the R&D Collaboration managerial profile i.e. proceed with close collaboration with selected rather permanent relationship, or whether it wants to use suppliers (complementors) in more competitive way, i.e. apply the Innovation Sourcing - profile. In both cases, the technology strategy and sourcing strategy are closely intertwined.

Consequently, the results of this research can be seen also as an extension to the model developed by Fixson (2005). He analyses the role of product architecture in synchronizing and coordinating the decisions across supply chain and process domains. He identifies the coordinating role of architecture, and finds in the supply chain domain decisions that concern aspects like number and location of logistics facilities, sourcing arrangements and service levels. This research suggests that the coordinating role of architecture goes further to strategic dimension, affecting already network design, the earlier mentioned sourcing strategy, supplier selections, as well as supplier relationship management.

In this research the dynamic dimension of the managerial profiles i.e. the potential movements of dyads between different profiles were not studied. However, the different related streams of literature suggest, that the portfolio of managerial profiles is also dynamic by nature, requiring continuous balancing and optimization. For example, focusing on level of outsourcing, Kotabe et al. (2007) argue, that each firm has its own optimum level, depending on factors at the country, industry, firm, and transaction levels, which may change over time. Choi et al. (2001) see the supply network as a complex adaptive system, highlighting the dynamic nature of the overall system. It would take a longitudinal study to find the transitions of dyads from a quadrant to another over time; the literature suggests, however, that such transitions could be found.

8 APPLICABILITY OF THE RESEARCH

This research focused on management of supply networks in a manufacturing environment. Objective of the research has been to identify principles for managing an external resource network in a manufacturing environment. The specific research question was *What practices a focal company uses to direct its external resource base?*

8.1 Validation of the results

Case study –based research has been one of the most powerful research methods in operations management, particularly in the development of new theory (Voss et al, 2002). Ensuring high quality in case –based research requires, however, that enough attention is paid to reliability and validity in the research. Reliability and validity have number of dimensions (Voss et al, 2002).

Validity includes three commonly recognized dimensions: Construct validity, internal validity, and external validity. Construct validity relates to ways the research has been designed, whether correct operational measures for the concepts being studied are established. Internal validity relates to potential explanatory aspects of the case studies, whether in case of explanatory or causal studies correct relationships and connections are demonstrated. External validity refers to generalization of findings: Whether the domain to which a study’s finding can be generalized is clearly identified (Yin, 2008).

Reliability refers to quality and rigor applied in the research process itself. A study can be considered reliable, if it can be demonstrated that the operations of a study, such as the data collection procedures, can be repeated with the same results (Yin, 2008).

Yin (2008) identifies four case study –relevant tests to assess quality of a research, as well as tactics to mitigate potential problems. The tests focus on reliability and construct validity of the research, internal validity, and external validity dealing with the question of whether the findings are generalizable beyond the immediate study. These tests, including tactics followed in this research, are summarized in table 22.

Test	Case study tactic	Appearance in this study
Reliability	<ul style="list-style-type: none"> • Use case study protocol • Develop case study database 	<ul style="list-style-type: none"> • Theory-based constructs and standard case study protocols were used • Research database was used for case data
Construct validity	<ul style="list-style-type: none"> • Use multiple sources of evidence • Establish chain of evidence • Have key informants review draft case study report 	<ul style="list-style-type: none"> • Research constructs were derived from literature • A company-specific report from each case study was developed and reviewed with the case company
Internal validity	<ul style="list-style-type: none"> • Do pattern-matching • Do explanation-building 	<ul style="list-style-type: none"> • Pattern matching –approach was included into the case analysis

	<ul style="list-style-type: none"> • Address rival explanations • Use logic models 	<ul style="list-style-type: none"> • Systematic comparison to existing body of knowledge is built into research design and case analysis
External validity	<ul style="list-style-type: none"> • Use theory in single-case studies • Use replication logic in multiple-case studies 	<ul style="list-style-type: none"> • Based on findings at case 1, case study protocol was renewed • Replication logic was used with the case studies 2-5

Table 22: Case study tactics

From reliability point of view, conclusion is that the basic procedures ensuring the reliability of the results, highlighted in the table above, have been followed. In order to further improve the reliability, e.g. more systematic use of multiple investigators could be applied. This was suggested among other by Voss et al (2002), following the original suggestion from Eisenhardt (1989). Use of multiple investigators can have advantages for instance through enhancing creative potential and through team work (Voss, 2002). As so often is the case, resourcing of such research approach was only partially possible in this study.

From the point of view of validity of the research results, certain limitations arise. The research results and consequent contribution to theory arise from the case study findings. These are subject for various limitations both in internal validity and external validity. In particular they are related both to scoping of the research as well as to choices related to research design and research methods.

The overall research design, which is based on multiple case studies, brings a limitation to external validity and thus applicability of the research for theory development. Additionally, selection of cases affect the external validity of the results. In this research, the case selection is including some aspects which strengthen the external validity, but also some aspects which are more a limitation to the generalization of the results.

The basis for the identification of the possible focal companies to the research was conducted following the researchers pre-understanding about the level of influence of the focal company. This is a step which naturally may bring in a selection bias, through selection or exclusion of potential focal companies. The second level selection was also following a theoretical sampling logic with an intention to select case companies which are actively developing the supplier relationships and would provide perspectives to different industries and a broad diversity in terms of size, business area and business strategy. Theoretical sampling was followed also in the selection of the buyer-supplier dyads. The selection was made based on two simple criteria: First, the selected suppliers needed to be important for the focal company. Secondly, they should represent different commodities.

In retrospect, the case selection criteria may in fact affect the results of this research: There are relative few cases found focusing on innovation acquisition. One of the explanations may be, that the researched focal companies are all large, established companies with strong own capabilities and potentially less progressive approach towards the open

innovation phenomenon. At the same time the selected suppliers were expected to be important for the focal company. The combined result of the selection criteria may consequently be that practices related to orchestration of established, strong relationships are well represented in the data, but the emerging practices focusing on open networks and innovation acquisition may need further research to be more exhaustive.

At the same time, the relatively broad diversity of the cases, representing manufacturing companies from different industries, provided an interesting and fruitful basis to analyze the practices. One can conclude at least, that the potential bias related to practices or maturity level of a certain industry was well mitigated. The results can be considered to be valid across different industries.

The concept of orchestration

The case data provides strong evidence to the existence of the concept of orchestration. Basically at all cases the importance to extent supplier base management beyond basic supply management, or operations management, was recognized, and there were clearly observable, intentional activities taking place to orchestrate the supplier base. There were, naturally, different maturity levels observable at the case companies, and the emphasis of orchestration varied. Also the existing body of knowledge supports the conclusion, as there are a range of contributions discussing the concept as well.

At the same time, there are clear limitations in how far the results are valid. First, the main unit of analysis has been a focal company and the embedded strategic buyer-supplier dyads which represent the supplier base, "*A portion of the supply network that is actively managed by the focal company through contracts and purchasing of parts, materials, and services*", as defined by Choi (2006). Even within the supplier base as defined above, the case selection is focused on suppliers that are managed. In real life a significant portion of the supplier base is not managed at all. As the data shows, orchestration actions primarily take within the dyads between the focal company and the strategic suppliers. There are indications about orchestration of supplier network in broader scale, but this research does not provide sufficient evidence on those. Second, both the managerial situation as well as the performance of the focal company is assessed mainly based on its own perception, through research interviews. This perceptual approach is not ideal from construct validity point of view. Thus the findings should be considered as exploratory and subject for further testing.

Managerial situations and related managerial profiles

The second main contribution of the research is the orchestration practices and managerial profiles, connected to specific managerial situations.

The logical chain begins from the managerial situations. They are rooted to existing body of knowledge, having relationship to e.g. transaction cost theory, power-dependence discourse as well to procurement portfolio models. Situations could be specified through

other dimensions as well, but the now used however appeared as the most valid for analyzing the case data.

The orchestration practices and the managerial profiles they form emerge directly from the case data. Validity of the managerial profiles is limited through two factors: Through scoping of the research, and through number of cases. As discussed above, the research focuses on dyads between the focal company and the strategic suppliers. This scope prevents us from finding those possible orchestration practices which are focusing on influencing the non-managed part of supplier base. Consequently, based on this research it cannot be argued that either the classification logic or the managerial profiles would be applicable to all of the typically hundreds or thousands of smaller routine suppliers that are typically serving any larger manufacturing companies.

Second, the research is clearly scoped to manufacturing companies and their management of external resources. It is difficult to see without further research how the same approach would fit to e.g. trading companies. The aspects of R&D and e.g. architecture-related findings of the research inherently require that the focal company is a product company with R&D as a part of operational model.

Third, all cases focus on management of external resources related to tangible sourced products or components even if many of the actually are having a substantial intellectual property component. It is not known, if the results would be applicable for true sourcing of services.

Fourth, there are relatively few cases in the four managerial situations. Even when the theorizing in case study –based research should follow the analytical generalization logic (Yin, 2008), especially with managerial profiles represented through few cases only may leave related orchestration practices undiscovered. With case study research design the results from experiments are used to develop a broader contribution to theory (Yin, 2008). That means also, however, that quantitative sampling –type of logic and generalization for large populations following the survey research logic, is not applicable. The research results indicate that findings may be applicable in the given circumstances only.

Additionally, it can be argued that from the managerial relevance point of view applicability of the research is high. This research is suggesting that orchestration of external resources can be operationalized to actions and managerial profiles, which align well to the practices discussed in governance and sourcing and procurement. By categorizing managerial situations according to dominant focus of relationships and the underlying governance approach using bilateral governance approach and unilateral governance approach, managerial profiles can be developed and separate buyer-supplier relationships can be mapped to the matrix in practice. These models provide practical guidance for external resource management by specifying the areas of focus, as well as differences between the profiles. Through the categorization and creation of management profiles the research provides practical guidance on required activities and resourcing in different managerial situations.

8.2 Suggestions for further research

As an inductive case study focusing on a relatively novel area of management of external resources, this research opens several interesting opportunities for further research.

In terms of generalization, there is a clear need to test the developed classification matrix and the managerial profiles with larger population of focal companies and supplier relationships. The testing with clearly different research design, using e.g. quantitative approach and larger samples would strengthen the conclusions significantly.

From the research design point of view the focus on focal company only is not necessarily ideal. Research focusing on one side of a dyad, however arguing to have a dyadic relationship in scope, has been widely criticized recently. It has been identified also as a part of this research – to some extent against the pre-assumptions – that a dyad is having a central role also in orchestration of external resources. Consequently further research focusing on both parties and testing the managerial practices from both focal company and the supplier point of view would be highly beneficial.

On the other hand, the classification matrix and related managerial profiles may be applicable in other industries also and research focusing on them, as well as on possible applicability in orchestrating various downstream resources like distribution channel partners and even customers could provide interesting novel perspectives for further studies.

Furthermore, the research touches an emerging area of innovation management. The managerial profile *Innovation acquisition* actually identifies certain methods for capturing external innovation, a theme that is very much discussed in especially in open innovation –focused contributions (see e.g. Chesbrough, 2003). There is a clearly identifiable overlapping area between sourcing and procurement discourse and innovation management discourse, which has been very little researched so far. By developing that area further it can be seen to lead to research related to use of phenomena like crowdsourcing as a part of sourcing and procurement practices of an industrial company. As the open innovation –related approaches have been arising only recently, further research on that overlapping area provides certainly fruitful avenues for further research as well.

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ISBN 978-952-60-6525-0 (printed)
ISBN 978-952-60-6526-7 (pdf)
ISSN-L 1799-4934
ISSN 1799-4934 (printed)
ISSN 1799-4942 (pdf)

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