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LEARNING IN STRATEGIC SUPPLY NETWORKS

A multiple case study on learning environment, mechanisms and outcomes

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ABSTRACT:

The development of a theoretical approach that sees any given economy as a vast array of interconnecting bonds between participants has come to identify the existence of firms' networks. A fact that has been accompanied by the increasing importance of procurement, and supply management is the strategic function seeking to harness its full potential; to this regard the learning aspect of inter-organizational relationships should be carefully fostered when dealing with suppliers as a powerful mean to the attainment competitive advantages.

The theoretical part of this research presents supporting arguments regarding the importance of a network approach towards procurement, while bridging it with an inter-organizational learning framework to produce a standpoint attempting to demonstrate the importance of the strategic supply network in terms of inter-organizational learning. The theoretical framework produced was applied to conduct the research using a case study method in three firms in the area of Vaasa. The main purpose of the study was to analyse the learning process within the strategic supply network of the firm through the views and behaviour of a hub company towards its main suppliers.

The results indicate that learning is present in the relationship with what can be considered strategic suppliers; favourable conditions are present in the environment and the mechanisms implemented contribute to its achievement. However, learning and its outcomes seem to be diluted in the whole of the relationship, a fact that requires a deeper analysis to conclude that within strategic supply relationships two types of learning can be pointed at, learning as the overall performance of the supply relationship, and learning *per se*.

KEYWORDS: Strategic network, supply management, inter-organizational learning

1. INTRODUCTION

1.1. Introduction to the subject

The importance of procurement has grown steadily over the last years to represent not only a significant cost that must be accurately managed, but also to an increasing extent suppliers are nowadays relied upon issues as design, development, and integration in managerial practices, activities aiming to increase a firm's operations efficiency and efficacy; in addition, and as a result, today rivalry comprises not only directly competing firms, it spans to involve competing supply chains, a fact that has strengthened the strategic importance of the supply function (Gulati et al. 2000: 203; Ireland et al. 2002; Ford et al 2003: 91 – 92). Authors, such as Araujo et al. (1999) or Dyer and Singh (1998), claim that the creation and preservation of competitive advantage lies in the formation of idiosyncratic and strong relationships with suppliers, making relation-specific investments which result in the development of new assets and resources, an idea that has lead many firms into the establishment of *alliances* with key partners in the industry. A nuclear source of value among them is the *learning* opportunity, a fundamental inspiration to innovation and creativity yielding value to all parties involved.

The framework to approach this subject is found in the *relational view of the firm*, which way was prepared by the pioneering work of Thorelli (1986) and Håkansson (1989), who claimed that any whole economic system can be explained in terms of a vast arrangement of networks, formed by the relationships engaged by the economic agents to attain their objectives and aspirations. This vision has evolved throughout time gaining acceptance among scholars and practitioners and enlarged its theoretical framework, although frictions are not absent in its development. Nevertheless, the network approach

has proved a powerful explanatory tool on the subject of the strengths and weaknesses of firms, and moreover a network environment is vindicated to be a more efficient replacement of traditional arm's-length relationship or vertical integration (Achrol 1997; Dyer and Singh 1998; Ireland et al. 2002; Möller et al. 2005).

The boundaries of the strategic supply network mark stronger bonds between participants, a fruitful area for the learning process (Ghosh 2004). However, regarding its learning outcomes, it is a complex process and its fertility depends on several elements found in the relationship environment, the mechanisms implemented by the partners, and the conditions of the knowledge that is to be learnt or created (Inkpen 1998; Dyer and Nobeoka 2000). This study will delve into the learning process emerging from the strategic supply network, attempting to offer some light on the process and its characteristics.

1.2. Purpose, scope and limitations of the study

The main objective of the study is **to analyse the learning process within the strategic supply network of the firm through the views and behaviour of a hub company towards its main suppliers**. This will be examined through the following specific objectives:

1. by establishing a link between the strategic supply network and the inter-organizational learning theories, in an attempt to provide a joint theoretical approach to analyse the phenomena.
2. by drawing a distinction between minor versus strategic suppliers and their characteristics, which will serve to analyse the latter.

3. by testing the distinction (if any) between *emergent* and *sought* strategic suppliers.
4. by analysing the characteristics of the environment and the mechanisms used to attain learning in the relationship, and how they affect it.
5. by examining what are the characteristics and outcomes of learning.

These specific objectives are intended to clarify the main one through their separate and narrower approach on the subject. Despite the increasing amount of views on (strategic) supply networks, and also on inter-organizational learning, the number of studies combining both approaches is very limited despite a seemingly strong link between them. Thus, it is the intention of this study to provide a joint view on learning in strategic supply networks by reviewing and bridging the existent literature on the theoretical part, and testing its practical and empirical basis afterwards. In order to obtain a clear understanding of the process, especial attention will be given to the characteristics of the suppliers, the environment in which learning takes place and the mechanisms deliberately used in the process.

The literature used in the review and analysis by which this study commences has been retrieved through the database access provided by the University Library Tritonia. It comprises mainly specialised articles and studies, published in renowned publications. Given the novelty of the theories presented here, the time frame expands just a little more than two decades, where the pioneering propositions can be found, to snowball after that in an increasing number of views and deeper insights into both organizational networks and inter-organizational learning. The use of articles over the more structured views of books is argued to bring in a wider and fresher set of approaches, offering

complementing and opposing views that will help obtain, if not complete, a broad prospect on the issues covered.

The empirical research will follow a multiple case study using a qualitative approach and as such the flaws and limitations of this type of research will be specifically pointed out later under the subheading referring to the *trustworthiness of the study* (see 4.4 Trustworthiness of the study). Empirically the research has been constricted to the study of learning within the strategic supply network of three hub companies, which belonging to separate mature industrial markets, have in common the internationality of their scope, a significant volume of operations located in the area of Vaasa that made them reachable, and their preeminent positions on their respective markets. Thanks to this basic characteristics production and marketing operations are carried out on a global scale, processes for which procurement is likewise managed globally; this fact provides the initial appealing ground on which to analyse the relations according to which the supply network is kept together, and specifically on the strategic category of procurement and the learning aspects present in it. The research focuses on the learning aspects present in the strategic supply network of the companies as a whole; the existence of specific learning relationships (i.e. joint development activities) is acknowledged, however their analysis is combined with the rest of the procurement relationships. The number of cases utilised in the empirical part of the study falls shorter than the desired amount due to the problematic caused by the current economic situation; nonetheless, the cases subject of study are expected to provide a fruitful insight into the research questions proposed, as it will be shown in the succeeding parts of this paper.

1.3. Terminology and key concepts

Some of the terminology used in the study is introduced here:

Strategic networks are defined by Gulati et al. (2000: 203) as relationships persisting over time, and which present a certain amount of strategic importance for the firms entering them.

Strategic supply networks are defined by Gulati (1998: 293) as voluntary arrangements between firms involving exchange, sharing, or co-development of products, technologies, or services.

Alliance designates any cooperative arrangement between two or more firms to improve their competitive position and performance by sharing resources; they are stable inter-organizational ties, which are strategically important to participating firms (Ireland et al. 2002: 413; Möller et al. 2005: 59).

Organizational learning refers widely to the social production of organizational rules based on experience that leads to changes in organizational cognition and behaviour (Knight 2002; Holmqvist 2003).

Inter-organizational learning in the words of Chang and Gotcher (2007) can be defined as “a joint activity between a supplier and customer in which the two parties share information which is jointly interpreted and integrated into a shared relationship-dominate-specific memory that changes the range or likelihood of potential relationship-domain-specific behavior”.

1.4. Structure of the study

The study is divided in the following six parts (see also fig. 1):

Chapter 1 presents an introduction to the subject and the objective of the study; along with the explanation of the motives that led to this research its limitations will be acknowledged, and a brief account of the main and central terminology of the succeeding parts will be offered.

Chapter 2 introduces the network theory notions and its implications, narrowing down to its strategic value. The supply network is highlighted afterwards, explaining the duality of the approach from a network and a dyadic perspective, signalling once more its important strategic value, and deepening into the sources of it, among which learning will be highlighted as the subject of study in the subsequent part.

Chapter 3 delves into the learning process from the intra- and inter-organizational point of view, and inquiries into its interconnection. The learning process will be explored from a network perspective, making use of a dyadic standpoint, inquiring into its characteristics, mechanisms, and functioning, unveiling the potential value that it can generate for a firm, illustrated by the exemplary case of Toyota. The chapter finishes with the framework that will be used to proceed in the empirical part of the study.

Chapter 4 describes the methodology and empirical approach of the study, presenting the data collection method, its analysis, and the possible issues concerning the trustworthiness of the study.

Chapter 5 presents and discusses the empirical findings following the theoretical model proposed in the end of chapter 3, acknowledging other aspects related to the theoretical approach and the limitations of the research.

Chapter 6 summarises the study by recapitulating and offering a holistic view linking the different sections and offering lines that could be follow in future research and managerial suggestions on view of the findings.



Figure 1. Structure of the study.

2. BUSINESS NETWORKS AND STRATEGIC SUPPLY

Along with the increasing attention received by the network paradigm (e.g. Håkansson and Snehota 1997; Dyer and Singh 1998; Gulati 1998; Gulati et al. 2000; Håkansson and Ford 2002; Möller et al. 2005) the number of viewpoints, models, categorizations, descriptions and frameworks have consequently risen as well, which to some extent results in a conceptual confusion of the phenomenon itself (New and Mitropoulos 1995; Möller and Rajala 2007: 895). Hence, it is the intention of this chapter *firstly* to provide an introductory and brief outline of the evolution of the network paradigm. Presenting its major characteristics, a concise classification, and implications of the model, especially concerning its strategic importance. *Secondly*, to describe the importance of this view when applied to supply markets, portray the alliances that shape the strategic supply network, and provide a succinct summary of its beneficial outcomes pointing as well to its sources, which will serve as an introduction to the next chapter.

2.1. The economy as a Network

Thorelli (1986) presented a view that considered the market a continuum formed by different arrangements of labour division, from open market – an arm's-length relation – to complete vertical integration. According to his views within the economic realm exist other distinctions than the two extremes, which he labelled *networks*, and suggested furthermore that any entire economy could be viewed as a vast arrangement of supplementary and interlaced networks. Thorelli (ibid.) also pointed out the potential applicability and use of this notion to industrial markets and international marketing. On the same lines, as these propositions, Håkansson (1989) presented a model of interconnected entities

that would describe any given economic system as an interdependent network of relationships. The interrelatedness depends on a variety of circumstances, especially on the relationship that connects them – supplier, customer, joint research efforts, complementary goods, to even credit granters in the banking sector – as time goes by these relationships will evolve and develop, some actors will draw together while others will be driven apart.

Håkansson (1989: 17) presented his network model as a web connecting actors, activities, and resources, unified in the network thanks to the relationships that link them together. Activities are linked to resources since they either change them or make use of them, and actors ultimately are the ones who perform activities and control resources, having certain knowledge of both. This description has developed, gaining explanatory power in its descriptive potential of the economic scene, and providing a valuable approach to the key elements behind the ever-sought competitive advantage.

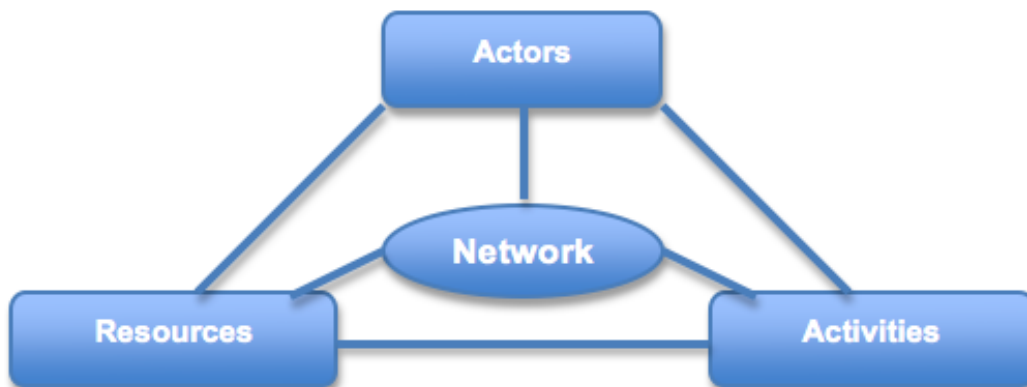


Figure 2. The network model as proposed by Håkansson (1989: 17)

2.2.1. Characteristics of the network approach

The network conception has developed over time and, what is widely regarded as the relational view of the firm today, is presented by different and also differing standpoints resulting in disparate theoretical constructions, not lacking a certain amount of conflict. Nevertheless, most of the authors agree in its basic assumptions; which Tikkanen and Halinen (2003), after reviewing the existent literature, have summarised to elaborate a succinct list describing the characteristics of the network approach. *First*, it is formed by a matrix of relationships, developed with other actors in order to gain access to their resources, and also to connect through them with broader networks of relationships. *Second*, companies are dependent on each other, what leads to a certain amount of vulnerability and loss of control. *Third*, networks evolve due to the interactions between participants, but in its most basic portrayal they are not coordinated nor managed by any of the members. *Fourth*, each actor perceives the network differently, being its own goals within the network different as well. *Fifth*, performance is interrelated within the network, thus each and every actor influences the performance of the rest.

While most of the authors and views agree on the majority of these characteristics, a great deal of controversy has grown around the third one, causing a real schism in the literature between those who believe that some actors, especially the most powerful, could influence the evolution of the network through the creation and development of relationships (e.g. Jarillo 1988; Jarillo 1993; Möller & Svahn 2003), and those who argue that such possibility would drive the network into some form of hierarchy, and thus shattering the very nature of the network approach (Håkansson and Ford 2002: 137). This is an argument that ultimately refers to the ontological perspective of the network paradigm; networks conceived as emergent and rather anarchically structured against networks as purposely designed.

Authors drawing on economic sociology, social networks, and especially the industrial network approach or IMP¹ group – represented especially by Håkansson, Ford and Snehota among others – explain and describe networks as spontaneous emergent systems, rather borderless, originated by the interaction of actors through time; whilst authors from the strategic management field and those close to the RBV², argue that there are as well networks driven by the intention of the firms entering them, means to an end, which present agreed roles and coordination between actors. (Möller and Rajala 2007: 896; Tikkanen and Halinen 2003: 4). A clarification of the standpoint taken in this paper will be produced as I will come back to this issue later.

Continuing with the attributes presented by the network theory from a managerial perspective, Ford et al. (2003: 42 - 60) distinguished three major dimensions when evaluating a network, which they named *facets*. *First*, relationships can be understood as an enhancing device to the firm's efficiency, and an inspiration for innovation, which can be used furthermore to influence other parties, interrelating the internal structure of the firm with external important counterparts. *Second*, relationships can be seen as assets, and remarkably important ones since it is through them that resources and supplies are acquired, and ultimately customer problems solved, which is in the end the basic process to generate revenue. The *third* facet represents the taxing side, because, after all, relationships entail also problems to be faced, factual or potential, and have been described as unruly, undetermined, demanding, exclusive, and sticky.

¹ The Industrial Marketing and Purchasing Group

² Resource-based view

2.2.2. Network classification

However the burgeoning amount of literature concerning the network approach, the attempts to present a classified categorization are not abundant (Möller and Rajala 2007: 896). Noteworthy exceptions are the work of de Man (2004), and especially Achrol (1997), who suggested to delve deeper into the matter, analyzing and measuring “density, multiplicity, and reciprocity of ties and a shared value system defining membership roles and responsibilities“ in order to present a classification. Möller and Rajala (2007: 898) followed this line of thought to present a series of recurrent dimensions and features, which help elaborating a categorization. *First*, attending to the structure of the network, vertical, horizontal or diagonal; *second*, the goal pursued; *third*, whether the network draws value by integrating specialized resources or seeks benefits from combining them; *fourth*, and last, whether the network operates in a pre-market competition or not. Even though there are not straightforward and distinct categorizations and the margins are vague, Möller and Rajala (2007: 897) pointed out a goal-orientation classification as the most comprehensive.

Quasi integration Networks	Supply and demand networks	Technology-oriented networks
- Horizontal networks	- Vertical networks - Solution networks	- R&D networks - Standardization networks

Table 1. Network classification (Adapted from Möller and Rajala 2007: 897)

According to the authors there are five categories, divided according to three major groups. The *first group*, quasi-integration networks, consist basically on horizontal agreements that seek market power (e.g. airline alliances). The *second group*, supply and demand, or customer-oriented networks, can be either vertical networks organized along the supply chain (e.g. Toyota), or solution networks between producers of complementary goods and services (e.g. IT-offerings). The *third group* consists on technology oriented networks,

split into R&D networks of companies participating in common projects and therefore sharing costs and risks (e.g. semiconductor research), and standardization networks, horizontal or diagonal arrangements intending to set a dominant technology (e.g. Symbyan coalition). (ibid.).

Attending to more than a classificatory presentation the groups above and their characteristics signal the noteworthy nature of some sets of relationships, which can only be understood from the standpoint that recognizes the network as a structure to enhance the competencies of the firms involved, and thus understanding the network as sets of relationships organized and objective-driven. Firms operate in the network due to a distinctly clear and specific ambition, which invests them with a remarkable strategic significance and acknowledges the value of the network as a creator of competitive advantage.

2.2.3. The network as a source of competitive advantage

Scholars have sought the sources of competitive advantage in different contexts and under diverse circumstances, and that is why different assumptions have evolved or have been replaced through time, in sought of the most explanatory hypothesis. The *industry structure view*, proposed by Porter (1980), kept these valuable sources within the boundaries of the industry where a firm operates; a proposition replaced by the *resource-based view*, which switched the attention from the industry to the collection of tangible and intangible resources possessed by the firm (see: Wernerfelt 1984; Barney 1991; Rumelt 1991).

Although Ireland et al. (2002: 427) considered the *resource-based view* a promising approach to study dyadic exchanges they argued that these propositions tended to constrict the centre of attention on the company's

internal resources. On the contrary, to an increasing extent the focal point has taken a spatial step back, to consider the issues that affect a company externally. The source of competitive advantage is not only in a firm's resources, but also to a great extent in those controlled by other parties with whom a company maintains relationships. This is the reason why more and more the focus is turning towards the environs where the firm operates in, towards the firm's network. (Dyer and Singh 1998; Gulati et al. 2000; Tikkanen and Halinen 2003).

Dimensions	Industry Structure View	Resource-Based View	Relational View
Unit of analysis	Industry	Firm	Pair or network firms
Primary sources of supernormal profit returns	- Relative bargaining power - Collusion	- Scarce physical resources - Human resources/ know-how - Technological resources - Intangible resources	- Relation specific investments - Interfirm knowledge sharing routines - Complementary resource endowments Effective governance
Mechanisms that preserve profits	Industry entry barriers to entry • Government regulations • Production economies/ sunk costs	Firm level barriers to imitation • Resource scarcity/ property rights • Causal ambiguity • Time compression diseconomies • Asset stock interconnectedness	Dyadic/network barriers • Causal ambiguity • Time compression diseconomies • Interorganizational asset stock interconnectedness • Partner scarcity • Resource indivisibility • Institutional environment
Ownership/control of rent-generating process/resources	Collective (with competitors)	(with Individual firm)	Collective (with trading partners)

Table 2. Comparing the Industry structure, RBV and Relational views of competitive advantage (Dyer and Singh 1998: 674)

Nowadays an increasing number of voices consider the relational view and the network environment as an efficient replacement of traditional markets and vertically integrated companies due to its better fit on today's economic environment (e.g. Achrol 1997; Ireland et al. 2002; Möller et al. 2005).

Håkansson (1989: 15 - 16) described the setting as firms "linked together by the fact that they either produce or use complementary or competitive products", thus, within the environment, collaboration and discord are present. Companies are, therefore, neither free nor independent, instead they are nodes of a web, a complex setting where each interaction cannot be comprehended without the network itself (Ford et al. 2003: 18). As a result, the strategic standpoint has accordingly shifted its interest to a relational view of the company, as described by Dyer and Singh (1998: 660), where the advantages – and disadvantages – of a single company are frequently intertwined with those of the network of relationships it operates in.

Gulati et al. (2000: 205 - 211) examined carefully the locus of value creation within a firm's network by approaching the subject from five traditional sources, to which they applied a network lens. *First*, looking at the industry structure, the authors alleged the usefulness of understanding participants as embedded in networks of resources and information that influence greatly the competition and therefore profitability within the industry. *Second*, from the intra-industry structure point of view the network approach offers the possibility to delineate its arrangement; strategic groups could be identified, and more interesting *cliques* – groups locked and isolated from the rest – who may obtain a different profitability rate. *Third*, inimitable resources and capabilities could be traced within networks (e.g. information, capital, goods, or services). *Fourth*, contracting and coordination costs are higher from a network approach since opportunistic behaviour is comparatively more harmful; a firm's act of opportunism will spread immediately, and a damaged reputation will influence

the rest of its relationships negatively. *Fifth*, the structure of any given network is shaped by endogenous forces – the formation or disband of an alliance has an effect on others – while exogenous environmental pressures influence its development as well. The sum of both may have important consequences for the participants due to *lock-in and lock-out effects* – ties with one actor place constraints with other – and *learning races* – firms engaged in an alliance race to squeeze the possible benefits of it, and afterwards dissolve it – it is noticeable how in the latter case confronted characteristics coexist, cooperative and competitive. By means of this five different sources Gulati et al. (2000) affirmed that the rents accruing to firms derive partly from their own resource endowment, but to a large extent from the structure and dynamics of the network to which they belong.

2.3. Supply networks

The importance of procurement has grown to an increasing extent in recent times due to a number of reasons. *First*, the percentage of cost represented by purchased goods and services has increased to account for a major share in the cost structure of most companies; Cousins and Spekman (2003: 19) considered on average a 65% of a firm's sales. *Second*, companies rely and count on suppliers to design, develop, and produce substantial components of what will be their final product. Lastly, the *third* motive is the application of management techniques such as JIT³ or TQM⁴, which require to their full development the integration of suppliers. Supply has become thus an increasingly resource-demanding area and consequently the number of suppliers has been dramatically reduced while its weight in the firm's environment is remarkably substantial. (Ford et al. 2003: 91 – 92).

³ Just In Time

⁴ Total Quality Management

Similar circumstances have been described as well by Trent (2005), who noticed how currently supply markets are tightening and as a result power is shifting towards a narrower tier of suppliers. Nevertheless, he considered that this narrow supply base is a crucial requirement to develop edge-cutting practices in supplier involvement and collaboration. Today there is a constant pressure to offer improvements, which falls ultimately in the firm's suppliers – the reputation of a given industry lies in the quality and reliability of their external suppliers (ibid: 56) – therefore purchasing has evolved to become a strategic function that relies ever more in partnering-like practices, leading to increasingly competitive, flexible, and efficient production systems. Cousins and Spekman (2003: 20) have noted also that in the search of highly developed procurement systems, a global benchmarking has emerged, and the increasing competition is led by those able to build a worldwide sourcing net. Furthermore, firms do not longer compete one-to-one, but supply chain to supply chain, and since any given company is just as strong as its weakest supplier, managing supply strategically has become a very important task (Ireland et al. 2002: 414). These assumptions directly indicate that as competition intensifies, a firm's network assumes increased strategic importance (Gulati et al 2000: 203.).

In any case it is as well important to bear in mind that suppliers vary greatly in their skills and thus in the value they can generate for a firm. Araujo et al. (1999) alleged that their potential contributions might depend on how close their relationships are, and linked the future source of competitive advantage dependant on the type of relationship between a company and its suppliers. That is why in words of the same authors, arm's-length is no longer a judicious decision, the emphasis and the priority lies in the pace from a transactional to a relational strategy, where partnering is becoming of the greatest importance. Dyer and Singh (1998: 661) argued, pointing at previous studies, that productivity gains in the value chain appear when the actors involved are willing to make relation-specific investments, merging individual resources that

materialize as inimitable idiosyncratic assets. Today companies not prominent in the past for their collaborative relationships acknowledge the boosting capacity of close involvement with suppliers to acquire, create, or make use of new resources (Araujo et al. 1999: 498).

2.3.1. The strategic importance of supply networks

Gulati et al. (2000: 203) define strategic networks as relationships persisting over time and which present a certain amount of strategic importance for the firms entering them; according to them such type of relationships are the fuel to develop new crucial capabilities. Thorelli (1986: 37, 46) foresaw the strategic implications of the network structure, not only as a substitute to vertical integration and diversification but also as an extension of the firm; he pointed the attention for future research on how strategic issues were linked to a firm's network.

It is a widely discussed fact that individual companies cannot longer master all the activities needed in the value chain of their respective industries (e.g. Achrol 1997; Dyer and Singh 1998; Araujo et al. 1999; Ireland et al. 2002; Möller et al. 2005). Firms are hollowing out and focusing on core competencies while relying on an array of other parties to provide the different goods and services on which, likewise, they have specialized (Ford et al. 2003: 91). From this account the strategic significance of suppliers and the supply network emerges naturally. The foundations of competitive advantage are located not only in those assets controlled by the firm and within its boundaries, but to a great extent in the access to others' resources, and also in the interfaces developed with other parties (Håkansson and Snehota 1995; Dyer and Singh 1998). Thus a strategic supply network encompasses those relationships with suppliers where a significant degree of involvement is found, in a manner that Gulati (1998: 293) described as a "voluntary arrangement between firms involving exchange,

sharing, or co-development of products, technologies, or services". New and Mitropoulos (1995) assented to the importance of the strategic supply network view because it represents an alternative to the market-hierarchy dichotomy, underlining the stable but not static nature of inter-firm relationships, and also because it provides a framework to comprehend technological diffusion. However, they do not agree on the usefulness of the model after conducting a research, where they found out that its usefulness crumbles when taken into the real world; firms working as a single operational entity is not only a setting extremely hard to represent, but additionally constituted a conception too complex for managers to base their decision-making process on. Nonetheless, and although critical, they (*ibid.*) did not discard the applicability of the model but its ubiquity as it has been proposed.

Another line of reasoning upon manageability and practical utilization of the network paradigm is provided by Möller and Rajala (207: 896), who argued that networks as an emergent construction of a firm's relationships are rather unmanageable and thus the same applies to their strategic importance. However, strategic networks as purposely created – presenting agreed roles and objectives – must be manageable in order to be as efficient their primary intention states, otherwise, without that clear purpose, they would cease to be such and become mere relationships.

Despite the clash of opinions, a third view has emerged, which in a roundabout manner avoids the latter argument and approaches the issue by looking at strategic supply networks from an atomistic point of view. This standpoint bears in mind that the network as a grid of relationships can be explained in terms of dyadic exchange simultaneously; as such, a strategic network can be viewed in terms of the strategic partnerships that form them, commonly referred to as alliances. (Anderson et al. 1994).

2.3.2. Alliances

The literature⁵ has widely referred to relationships with a distinctive strategic importance as alliances, “cooperative arrangements between two or more firms to improve their competitive position and performance by sharing resources”, in words of Ireland et al. (2002: 413). A definition complemented by Möller et al. (2005: 59) as “stable inter-organizational ties, which are strategically important to participating firms”.

Over the last years the interest towards the alliance phenomenon has grown significantly; the phenomenon itself has altered notably the economic scene, and therefore, neglecting the proliferation of alliances and the network in which firms are embedded leads to an insufficient appreciation and comprehension of firms’ functioning and performance (Gulati et al. 2000). Networks and alliances are shaped by their interdependence, as Gulati (1998: 293) observed how alliances are often found through or within the existing network of the firm, to revert on it, transforming the appearance and conditions of the latter, and once more strengthening its importance.

Dacin et al. (2007: 169) gathered within the existing literature a plethora of the advantageous reasons sought by companies when establishing alliances, as entry into new markets, increase market power, acquisition and exchange of skills, strategic renewal, risk and investment sharing, economies of scale and scope, reductions in liabilities of foreignness, government and trade barriers, and the acquisition of institutional legitimacy. Furthermore, companies see in alliances a potential value-creating tool that lacks the risk of the M&A⁶ market (Ireland et al. 2002: 414), however, it should be noted that just as much as in the M&A cases, effective alliance management is a must in order to get hold of

⁵ For a literature review see Ireland et al. (2002: 416 – 426).

⁶ Mergers and acquisitions.

its potential benefits and avoid difficulties or failure. Different types of relationships require differing needs and conditions, and likewise benefits and difficulties are associated with certain types of alliances (Trent 2005). In any case, the network perspective should not be forgotten and, thus, not only individual alliances should be optimized, but the whole network, unbolting its full potential (Gulati et al. 2000).

Counterproductive (Lose-Lose)	Antagonistic relationships	Work actively against each other's needs	Neither party takes responsibility for what happens in a relationship	Destructive conflict occurs
Competitive (Win-Lose)	Adversarial or distributive relationships	Engage in a competitive struggle to divide a fixed amount of value	Attempt to maximize value for each side	Minimal sharing of information
Cooperative (Win-Win)	Integrative relationships	Longer-term relationships result from mutual goals	Supplier involvement during product development increases	Open sharing of information occurs, including sharing of cost data
Collaborative (Win-Win)	Creative relationships	Congruence of goals and codestiny exists	Jointly identify new market opportunities	Jointly identify creative solutions to problems

Table 3. The four C's of supply relationships (Trent 2005: 54)

Trent (2005) differentiated four different types of relationships between a firm and its suppliers, each one with specific characteristics, and not all of them beneficial, existing the possibility of harming both parties; anyhow, he highlighted the need for collaboration, advising that firms pursuing conflictive relationships with their major suppliers will soon find them increasing prices, allocating capacity and even sharing innovative ideas with others, who may be the firm's direct competition.

2.3.3. The value of alliances

Möller and Rajala (2007: 895) observed that a key change in the economy of the 21st century is the pace from a dyadic exchange to a network standpoint regarding value creation. Yet drawing on the foregoing discussion, the dual point of view, strategic supply network and the alliances forming them are present in the sought of an explanation for the higher returns obtained by a networked environment. The authors (ibid.) argued that the amount and quality of the assets controlled by the members of the net influence directly the value generated and its capacity of renewal.

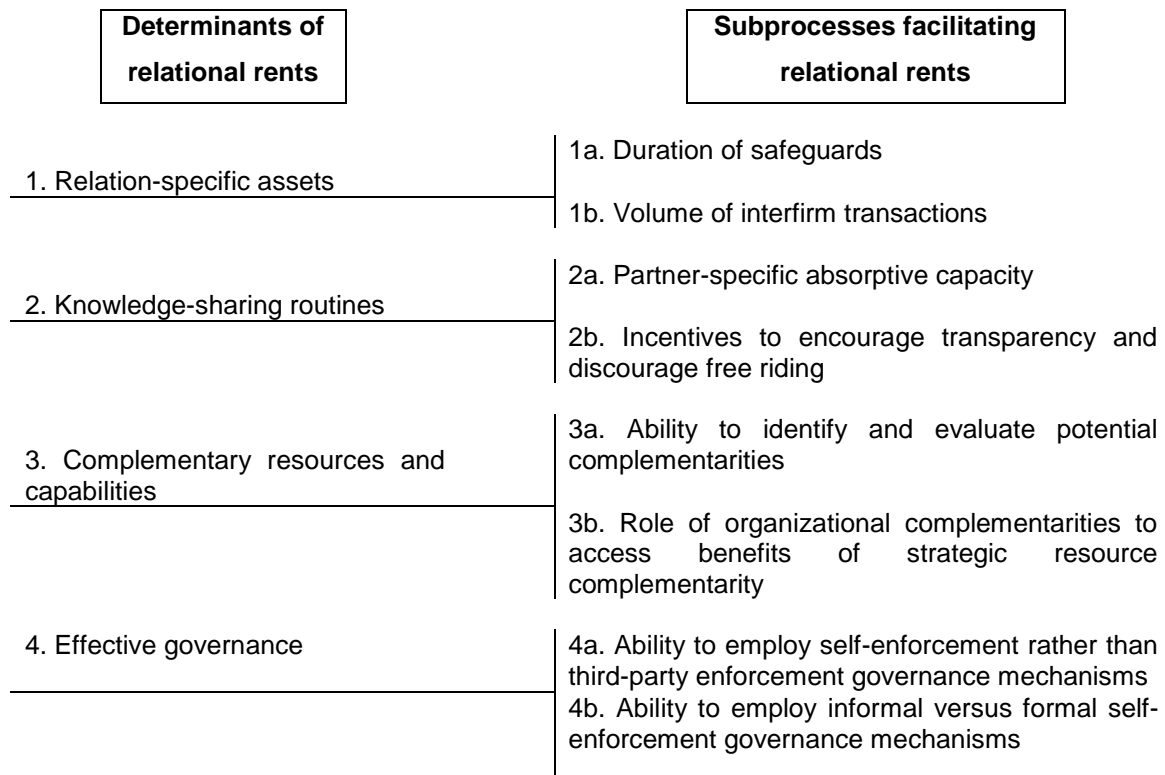


Figure 3. Determinants of inter-organizational competitive advantage (Adapted from Dyer and Singh 1998: 663)

The diagram above (fig. 3) introduces the characteristics used by Dyer and Singh (1998), who made use of a comparative analysis to prove the better fit of

an alliance due to its higher competitive aptitudes against the open market. A traditional arm's-length relationship is characterized by non-specific investments, minimal information exchange, low interdependence, and low transaction costs. There is nothing idiosyncratic in such type of exchange and thus whichever combination of buyer-supplier will not generate above normal results due to their easily imitable configuration. The opposite characteristics can be found in an alliance, that is why, in words of the authors, the relational rents created outperform the traditional market-type arrangements, and furthermore relational rents once generated are preserved by mechanisms explained by the RBV theory – causal ambiguity and time compression diseconomies – and others added by the network framework, namely inter-organizational asset interconnectedness, partner scarcity, resource indivisibility, and the network institutional environment.

Ireland et al. (2002: 428 – 431) put forward an explanation of the possible strengths of an alliance approach, arguing that although the costs of strategic alliances are significant, their potential benefits overcome them. According to them, firms enter alliances for one or several of the following reasons. *First*, the access to others' resources – Das and Teng (1998) distinguish financial, technological, physical and managerial – and the joint development of new ones; thanks to both the resource base of the firm is extended. *Second*, social capital resulting from the development of the relationship and thus being unique for every alliance, which serves to reach network's resources and is found to be a great stimulus in the creation of breakthrough innovations. *Third*, the access to complementary resources; if similar resources build up current skills and economies of scale, dissimilar ones instead offer the possibility to develop new competitive advantages to face the ever-changing competitive scene, as it has been proved in the M&A market (Harrison et al. 1991). *Fourth*, the latter (ibid.) call also the attention towards the opportunity to learn new capabilities and take advantage of knowledge transfers between firms, making use of both to create new knowledge and boost innovation.

Summarising the work of Ireland et al. (2002) and Dyer and Singh (1998) the nuclear sources of value that emerge from a network perspective are especially two: *resources* widely understood, from fixed assets to social capital, goods or knowledge, and *learning opportunity*. On the one hand, resources could be split into independent ones, to which the firm has access thanks to the alliance and thus used as complementary to its own, and furthermore, and more important, due to its high specificity, ambiguous, and inimitable creation process, relational assets which have originated due to the interaction of firms. On the other hand, the learning opportunity emerging from the tight interaction on the alliance environment can be regarded as a fundamental inspiration to innovation and creativity. However, it is necessary to bear in mind that in order to successfully exploit these resources and learning opportunities, an alliance-focused management function must take good care of its development and governance.

Summarising, this chapter has introduced the network approach, described its major characteristics, and discussed its validity, presenting contrasting views in order to provide a whole understanding of the issue. The network strategic significance has been advanced prior to narrowing the focus on procurement, and reassured by demonstrating the importance of the network approach regarding the growing importance of the supply function. Alliances have been presented as a basic constituent of the network, providing a nuclear, and somewhat easier, empirical approach on the subject. Therefore, the value of the strategic supply network has been demonstrated, advancing to some extent the forthcoming review on the subject of inter-organizational learning, which substantially contributes to the strategic importance of the supply network through the outcomes produced by the learning process.

3. LEARNING IN NETWORKS

As it has been presented in the foregoing discussion, among the many beneficial outcomes in the development of supplier relationships, an outstanding result is the learning process engaged by the partners, and its repercussions throughout both companies and the relationship itself. For that reason, in order to deepen into this matter this chapter will introduce *first*, the basics of organizational learning, establishing the locus of learning, how it can be found in infra- and supra-organizational levels, and accordingly introduce the notion of inter-organizational learning. *Second*, it will be explained how the strategic network acts as a very efficient learning catalyst through a dyadic perspective, the explorative and exploitative approaches of learning, and what the problems are concerning inter-organizational learning. *Third*, the process of inter-organizational learning will be explained according to different views, inquiring into the factors and mechanism that makes it possible, illustrated by the leading example of Toyota. *Fourth* and lastly, a summary and the research framework for the succeeding part of the study will be introduced.

3.1. Organizational learning

It is interesting to notice that none of the theories concerning learning at any of the supra-individual levels are actually based on the observation of an organization's behaviour (Ghosh 2004: 303). Organizational learning takes place when an individual makes discoveries, inventions, and evaluations, which influence the organization and modifies its patterns of behaviour and its basic premises of action; in brief, individuals learn on behalf of the organization (Holmqvist 2003: 98). Nevertheless, a vast amount of literature has addressed inter-organizational learning from a great variety of approaches: inter-firm

learning (Dyer and Singh 1998), learning networks (Knight 2002), learning in alliances (Larsson et al. 1998), or supply chain learning (Bessant et al. 2003). Holmqvist (2003: 96 - 98) examined the views on the subject to present a summary addressing the four main and widely most referred attributes in the inter-organizational learning arena. *First*, learning is experiential, and as such is permanently evolving. *Second*, learning is a process shaping continuously and rather permanently the organizational behaviour. Changes in beliefs and preferences seem to occur simultaneously, and thus they appear to be the cause as much as the result of behavioural change. *Third*, learning takes place at the individual level, which at the same time is embedded in a social context. Groups of individuals strive to make sense of the reality and context that surrounds them; by and by inferences are drawn, ideas bargained with the rest, and finally recorded and stored in the organizational memory. *Fourth*, learning is regulated by the rules of the organization, and thus filtered through the subjective views of the organization.

Attending to these four facets the author defined organizational learning as “the social production of organizational rules based on experience that leads to a changed organizational behaviour” (ibid.). However, in view of the arguments presented by Crossan et al. (1995) further clarification is required concerning what is meant by a changed organizational behaviour. The latter put forward a model in which learning is explained as the outcome of two elements, behavioural and cognitive change. It is the combination of these two what generates learning, as the figure shows (fig.4). Attending to this conception, the existence of behavioural change must be accompanied by cognitive change; if any of the two is absent then learning is either blocked or forced, which ultimately results in no learning whatsoever. To this respect it is important to keep in mind that even though learning is an independent process, and as such takes place within the individual, the organizational context influences the same individuals whose learning processes together will reshape the organization itself.

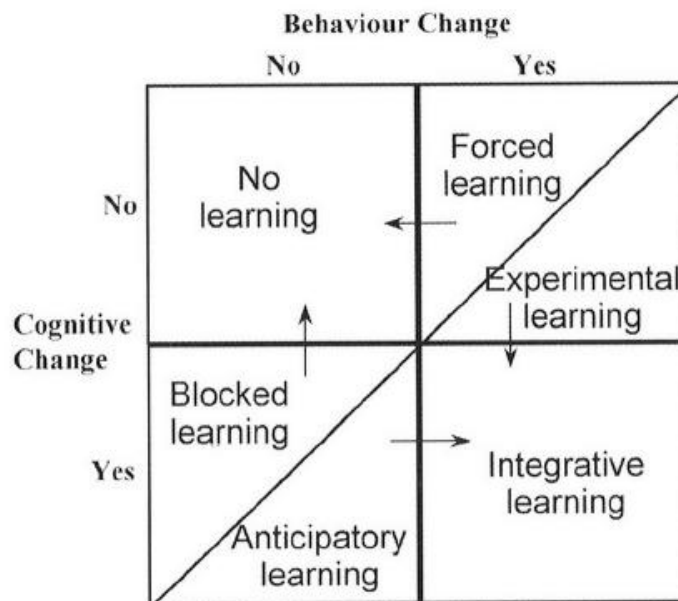


Figure 4. An integrative model of learning outcomes (Crossan et al. 1995: 351)

Knight (2002: 432) proposed that in order to identify organizational learning that could be taken as such, behavioural and cognitive changes must also endure despite the turnover of personnel. It is important to note, nevertheless, that these persisting changes do not necessarily have to affect the whole organization; given complex organizational structures the process of knowledge transfer is assisted (and hindered) by other factors.

Taken these supplementary assessments into account, the previous definition of organizational learning can be revised and extended as: the social production of organizational rules based on experience that leads to changes in organizational cognition and behaviour. However, given the purpose of this study it is necessary to complement it with the views of Chang and Gotcher (2007: 479), who defined inter-organizational learning as “a joint activity between a supplier and customer in which the two parties share information which is jointly interpreted and integrated into a shared relationship-dominant-specific memory that changes the range or likelihood of potential relationship-domain-specific behavior”.

3.1.1. The locus of learning

Prior to delve deeper into the inter-organizational learning perspective it is necessary also to differentiate the learning process by learner and learning context, an issue raised by Knight (2002: 437 – 440), who introduced the following matrix (fig. 5) to analyse the learning subject and the locus of learning.

		Context of learning				
		Individual (I)	Group (G)	Organizational (O)	Dyadic (D)	Inter-organizational (I-O)
Level of learner	Individual (I)					
	Group (G)					
	Organization (O)					
	Dyad (D)					
	Network (N)					

Figure 5. Cross-tabulation of level of learner and context of learning (Knight 2002: 438)

This model despite its simplicity proves to be a valuable tool to draw a distinction, establish and distinguish forms of learning. However, it does not lack deficiencies and flaws as the author (ibid.) has acknowledged. *First* related to the atomized vision present in the cells forming the diagonal, especially in the case of a single individual learning alone, which does not hold since learning takes place in a social environment. *Second*, the learning context as stated for the columns proves correct for the cells above the diagonal (e.g. an individual learning in an organization), but context turns into catalyst below the diagonal (e.g. an organization's learning is influenced by an individual). Nevertheless, the

model serves its purpose of graphical explanation to determine which levels of learning are being discussed, and who is learning thanks to which environment. For the purpose of this paper, following Knight (2002: 439), inter-organizational learning will be analysed as learning occurring in a dyadic or in an inter-organizational setting, where the learner could be an individual, a group, an organization, the dyad or the network itself (fig. 6).

		Context of learning				
		I	G	O	D	I-O
Level of learner	I					
	G					
	O					
	D					
	N					

Figure 6. Locus of inter-organizational learning (Knight 2004: 439)

3.2. Learning in the network

The benefits of integration and collaboration with other firms have been widely acknowledged, a reasoning that Noteboom (1992) used to propose that it not only renders purely economic outcomes, but the combination of assets between organizations and their social interconnecting laces may lead to a prosperous blossom of learning capabilities and knowledge outcomes. “Unlike most assets, organizational knowledge can actually grow when shared”, claimed Inkpen (1998: 75). Therefore, the same rationale used by the relational view – as seen in the preceding chapter – can be applied also to a learning perspective. Bångens and Araujo (2002) posed that just as firms do not develop new capabilities in isolation but by making use of the resources available within their network, the authors claimed the nonexistence of independent learning by a firm based solely in its own skills. Learning is highly dependent on the talent

and aptitudes of the firms with which relationships are maintained; moreover, a firm left to its own will soon find out that the development of new abilities is costly, slow and ultimately very difficult (ibid.). This is consistent with the *Vygotskian* perspective of learning presented by Ghosh (2004: 306), who considered that learning occurs first at a social level and therefore it is an outcome of social interaction. Based on the social embedment of the learning process organizational learning is thus argued to be dependent on the organization's network (Inkpen 1996; Bångens and Araujo 2002; Holmqvist 2003).

Following the same atomising reasoning applied in the previous section concerning network manageability, Holmqvist (2003: 101) constructed its views concerning learning in networks using the alliance as the cornerstone of the inter-organizational learning phenomenon, stressing that inter-organizational collaboration occurring in the inter-firm level is in itself a distinctive and remarkable learning entity. Due to their nature, alliances promote an environment that encourages the sharing and transfer of knowledge, which acts as a mechanism creating competitive advantage by synthesising each partner's skills, and yielding value by the establishment of joint learning, stimulating the creation of new products, technologies, and competencies (Dyer and Singh 1998; Ghosh 2004).

Alliances have become necessary in a great number of markets and industries, markedly in the high-technology sector, and strategic management is aware of the value that knowledge transfers can bring to the company (Parise and Henderson 2001: 908). Huber (1991: 97) put it forward simply by advising that inter-organizational learning is "faster than acquisition through experience and more complete than acquisition through imitation".

Following the research of Hagerdoon (1993), Inkpen (1996) noted how the leading motives to enter an alliance fall to a large extent in the learning area; along with the prospective gains in market access and market influence, two learning-related stimulus are present, namely technology complementarities and innovation time-span reduction. Ghosh (2004: 304) has also noticed how firms enter an alliance only after evaluating the potential of the other party. Using his metaphor, alliances act as a window to reach over the capabilities of the partner, through which learning is facilitated, providing opportunities for partners to transfer and acquire knowledge. Thus, the examination of alliances proves to be an important tool to understand inter-organizational learning. Furthermore, it could be argued that the formation of an alliance is an intrinsic recognition of a partner's skills and usefulness by the focal firm (Inkpen 1998).

3.2.1. Learning strata – Exploitation & exploration

Holmqvist (2003: 99) argued that if any organization would learn exclusively from experience, it would certainly contribute to its current activities; this is indeed the way firms gain productivity and refine their production and routines. However, through the *exploitation* process eventually a firm may become skilfully incompetent in the long run by not pursuing other sources of knowledge. On the other hand, *exploration* on search of other sources of inspiration requires experimenting, innovating, and ultimately taking risks. These two processes are rather contradictory in nature, and thus the dilemma of counterbalancing their effects. Organizations need to explore new paths while exploiting what they already know; generally exploitation relates to intra-organizational learning, whereas exploration is associated with inter-organizational learning. A major reason is the absence of a formal chain of authority, allowing for explorative views to flourish according to a wider range of deviations available, provided by a more democratic organization.

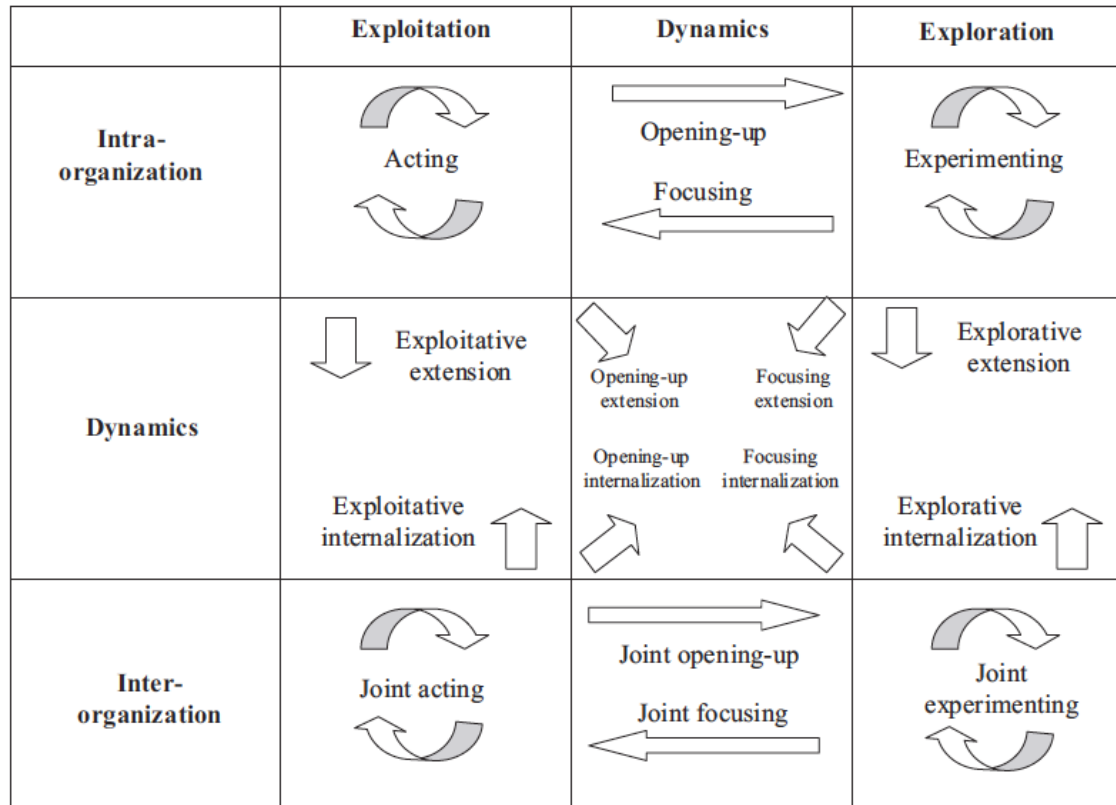


Figure 7. A dynamic model of intra- and inter-organizational learning (Holmqvist 2003: 114).

Holmqvist (2003: 107) argued that there is a relationship linking exploitation and exploration to the processes of intra- and inter-organizational learning (fig. 7). Learning involves a transformation occurring within and between organizations, namely, *acting*, *opening-up*, *experimenting* and *focusing*. The transitions between these phases are rather abrupt and depend on the similarities between partners. *Exploitative extension* and *internalization* are due to similar experiences, while *explorative extension* and *internalization* are ascribed to diversity in experience. Through this framework Holmqvist (ibid.) argued that a complete understanding of organizational learning requires an inter-level analysis of intra- and inter-organizational learning, asserting that their interactions play a fundamental role in the study of learning processes.

3.2.2. Inter-organizational learning drawbacks

Drawing into the problems related with learning in an alliance and the network, Inkpen (1998: 76) described the following, and highlighted especially the first two. *First*, it always exists the risk of knowledge spillover; a firm's partner might get access to vital information on technology, systems, or procedures and flee with it. However, the chances on the contrary to happen are just as likely and therefore it would be possible to capitalize the spillover produced by a partner. *Second*, engaging in an alliance as a substitution to knowledge that a firm could generate on its own creates a harmful dependency, the alliance will break if the partner does not find it fruitful and the focal firm will most likely perceive how its competitive advantage has been eroded. *Third*, paradoxically it is logical to think that the more a firm learns in an alliance, the less remains to be learned; therefore, it exists the possibility of firms seeking alliances to suck its possibilities and disengage immediately afterwards. A contrasting view is that an alliance should bring in challenging issues and thus nurturing the path for continuous evolution. *Fourth*, from a strictly economic point of view, Inkpen (1996) also advised to look for a cost efficient balance; a firm engaging in knowledge creation must compare beforehand the profitability and costs of an alliance attempt. It should be noted that it includes keeping in mind not only the overall assessment of an alliance, but each of the mechanisms enforced in order to transfer knowledge and thus for learning to occur.

3.3. The process of inter-organizational learning

Inkpen (1998: 71) noted that even though the learning process and knowledge acquisition may seem rather random and unplanned it is not a haphazard process; an organization can create structures and mechanisms to facilitate it.

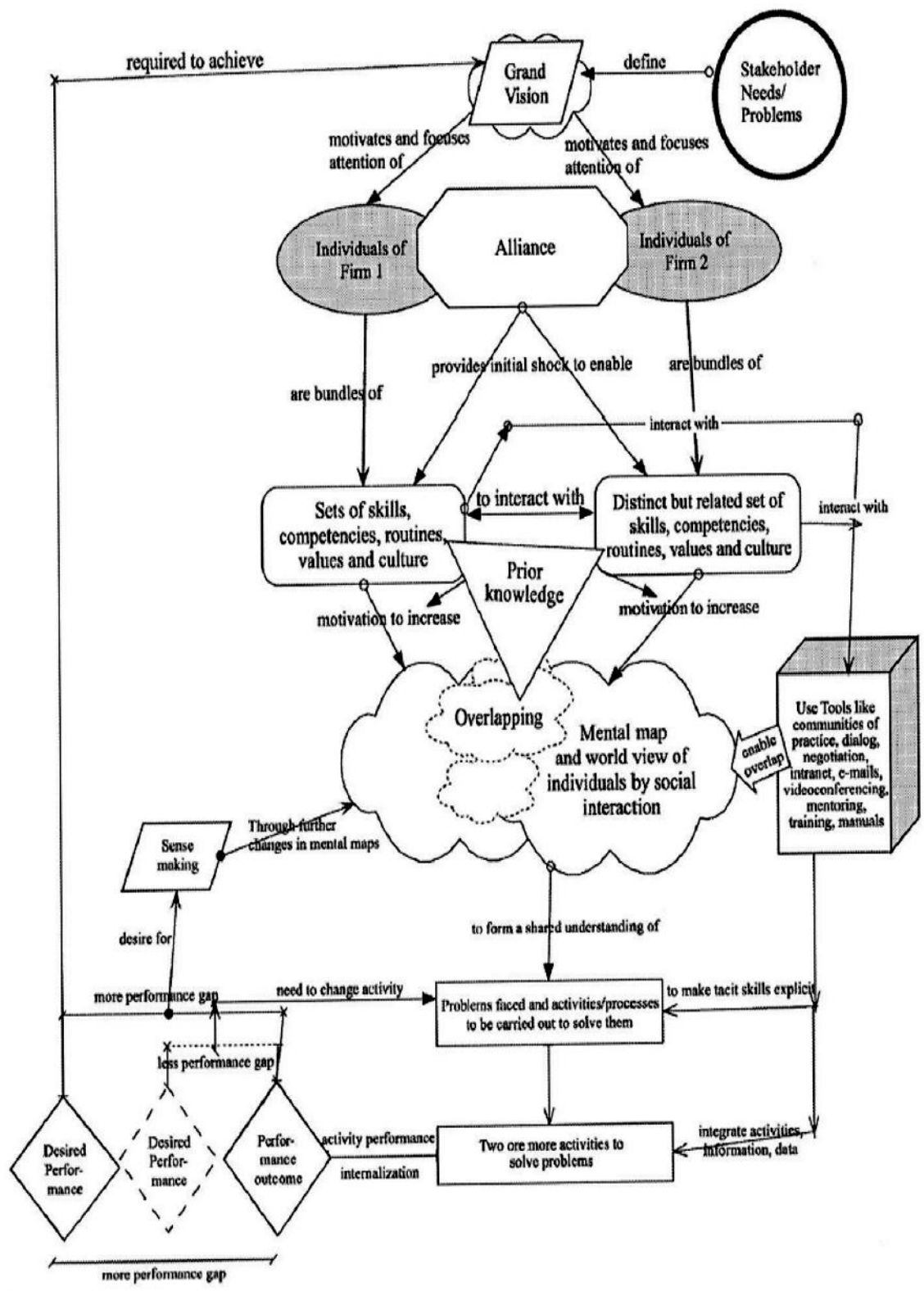


Figure 8. Capturing the dynamics of Vygotskian inter-organization learning in alliances (Ghosh 2004: 308).

Ghosh (2004: 308) put forward a concept map (fig.8) in which he explained how learning takes place. It all starts in the individual level, and through the socialization process, alliance partners assimilate each other's points of view and gain knowledge of the problem. Afterwards, individuals must turn the tacit information into explicit in an attempt to find solutions to the problem. Resources and activities will be combined, monitored, coached if needed, and the final expected performance will be compared with the actual result. The gap between the performance expected and the real outcome will set the process in motion again, after introducing modifications, and so on until the outcome turns out as it is desired, thus the learning process is continuously reinforced and reshaped each time.

Although the concept map above offers a good explanation on how the process works, several pieces are missing, as the actual mechanisms used and the characteristics that the environment should comply with in order for learning to take place. Exploring the ideas of Inkpen (1996; 1998) another model can be submitted (fig. 9), and although simpler it explains plainly and straightforwardly the environment and the mechanisms needed for learning to occur.

3.3.1. Learning mechanisms, setting and conditions

Inkpen (1996) argued about the existence of six factors that provide the right environment, easing and encouraging inter-organizational learning. *Flexible learning objectives*; a common and clear goal is imperative for the alliance to exist, however, learning objectives should not be rigid. Management must be flexible to adjust them if problems arise, otherwise the endeavour will be fruitless. *Leadership commitment*; top management must be committed to knowledge creation, guiding the process and making it happen. *A climate of trust*; trust has been regarded elsewhere as a critical catalyst in the free exchange of information between two different parties. *Tolerance for*

redundancy; the overlap of information, activities and management responsibilities should be dealt with in terms that encourage dialogue and understanding, very valuable elements in the learning process. *Creative chaos*; confusion is likely to arise due to the disruption of normal routines, increasing tension; chaos should be turned to a constructive way, to solve the problems. *Performance myopia*; especially managerial levels should learn how to deal with this issue since poor figures concerning short-term results or financial performance should not be discouraging, it does not mean that learning is not happening and that it will not yield value.

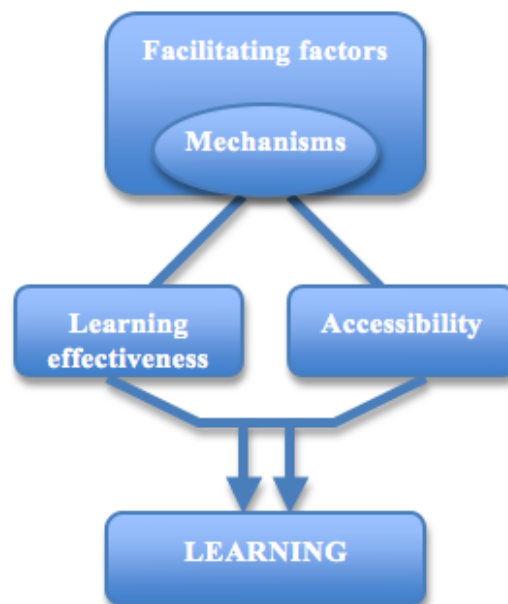


Figure 9. Environment, mechanisms and conditioning factors in the process of inter-organizational learning (Adapted from Inkpen 1996 and Inkpen 1998)

Through the usage of case studies Inkpen (ibid.) inquired as well into the mechanisms needed to attain learning in an alliance, finding four critical ones. *Technology sharing*; firms put in place different systems to acquire and share the information needed with the partner, from the traditional meetings to cutting-

edge IT⁷ systems. *Interaction*; cooperation between partners helps the creation of communities of practice; members of both parties acquire the other's point of view, creating a beneficial link between firms. *Personnel transfers*; staff rotation is a very efficient measure to set knowledge in motion; those mobilised will be aware of different perspectives and spread the knowledge acquired along their path, making the learning process more fluid and easier. *Linkages between strategies*; if the goal of the alliance is seen as secondary by the focal organization it will lessen the likelihood of learning opportunities to take place. The goals of both organisations must be aligned and the learning opportunity should receive sufficient attention to maximize its profitability.

To summarise the ideas of Inkpen (1996), effective knowledge creation in an alliance depends on the utilization of two elements, mechanisms to access and transform knowledge, and an adequate climate facilitating those processes. However, later on the author added two additional conditions that firms must be able to overcome (Inkpen 1998: 73 – 77), *accessibility* and *learning effectiveness*. The *accessibility* of knowledge is dependent on two separate components, *protectiveness* and *tacitness*. The *protectiveness* of a partner over its own knowledge will depend on the competitive overlap existing between firms in the alliance; along with the development of the relationship trust will increase and also mutual understanding, thus protectiveness will be reduced. Apart from this, a firm engaged in a learning process will try to make sense of a combination of explicit and tacit knowledge, the latter is harder to understand given its invisibility and intangibility, being embedded in personal beliefs, experiences, and values. Trying to understand tacit knowledge is hard, but the more tacit the more likely it is that the knowledge is valuable. Unfortunately there are no clear mechanisms to deal with tacit information, except for a full immersion that will help understand it.

⁷ Information Technology

Regarding *learning effectiveness* especially three factors need to be taken care of. *First*, the establishment of *knowledge connections*; knowledge transfers require connections for the information to be conveyed, through formal and informal relationships linking individuals and groups. *Second*, the *relatedness* of knowledge, if new knowledge overlaps with the existent it is easier to understand, and viceversa. But it should be taken into account that dissimilar knowledge powers the learning opportunity, and although more difficult to generate, the outcome is likely to be much more valuable. *Third*, *cultural alignment* is necessary; although expectations are likely to be the same, different assumptions by the parties and different corporate cultures generate frustration about objectives, performance, and the alliance and relationship itself.

Ghosh (2004: 305) remarked that overall it is the initial “divergence in convergence” that sets the process in motion, what Holmqvist (2003: 103) regarded as the confrontation and combination of individual organizational experiences. Two organizations with different histories, structures, and processes are indeed likely to be different but nevertheless sharing the same vision provides the motivation needed. Individuals will construct a novel perception of reality by overlapping and combining their individual standpoints, finding gaps and reframing their mental maps. The interaction between two established bodies of knowledge often result in new developments (Håkansson 1989: 36). Ghosh (2004: 307) referred to it as the collective *zone of proximal development*⁸ – ZPD – to differentiate the level at which a learner can function unassisted and the level to which a learner could be taken with assistance. Learning takes place in the collective ZPD due to the interaction of individuals, which awakens internal processes, and in the same manner firms enhance their performance and development assisted by other organizations.

⁸ The *zone of proximal development (ZPD)* was first introduced by Vygotsky (1978).

3.3.2. The Toyota case

Toyota has become a leading light in managerial approaches, and the way it has managed its supply and production network is one of the brightest examples, which illustrates the elements described in the precedent subheading. In Toyota they have understood that the cost and quality of its vehicles depend on the network of firms working with them, and also that the same network is a crucial element when it comes to learning, a key to competitive success (Dyer and Nobeoka 2000: 346). The authors explain Toyota's success thanks to the development of bilateral and multilateral knowledge-sharing routines with suppliers, which result in a superior learning ability, overcoming the three major dilemmas associated with knowledge sharing (ibid. 348). *First*, motivating self-interested network members to participate and openly share their valuable knowledge. *Second*, the issue known as the "collective action" or the "free rider" problem. *Third*, maximizing the efficiency of knowledge transfers among a large group.

Toyota's solutions		
Network identity	Knowledge protection and value appropriation	Multiple knowledge-sharing processes and sub-networks
<ul style="list-style-type: none"> • Supplier association • Consulting teams / problem solving teams • Voluntary learning teams • Inter-firm employee transfers 	<ul style="list-style-type: none"> • There is no proprietary knowledge. • Production know-how is openly shared. 	<ul style="list-style-type: none"> • Bilateral and multilateral knowledge-sharing processes.

Table 4. Toyota's solutions to knowledge-sharing, based on Dyer and Nobeoka (2000).

Toyota has promoted a philosophy encouraging the creation of a shared network identity – *kyoson kyoei* – by setting in motion a network-based knowledge acquisition, storage, and diffusion. The basic and more important tools to achieve it have been the creation of a supplier association, a network-level consulting division, a sub-network of voluntary learning teams among its suppliers, and the development of a system of inter-firm job rotation. These have created a real identity and a sense of belonging among its suppliers. The protection of valuable knowledge and also the “free riding” problem have been solved simply by eliminating the notion of “own knowledge” – at least within certain domains – and by openly sharing all production know-how. Any knowledge possessed by Toyota or any of its suppliers is accessible to any other member of the network, and the owner is in fact the network itself. Finally, the last implementation was the creation of multiple knowledge-sharing processes and sub-networks within the network; some serve the purpose of knowledge creation while others are designed for its diffusion, constituting very effective generators and efficient conveyors of tacit and explicit knowledge. (Dyer and Nobeoka 2000: 351 – 360; Dyer and Hatch 2004).

In summary, the authors argued and proved, using the exemplifying case of Toyota, how a network can be more effective than an independent firm regarding generation, transfer, and recombination of knowledge to boost its learning capabilities and collecting its full potential while all the parties benefit from it. The drawback, as acknowledged by the authors (*ibid.* 365) is the possibility, as time goes by, of a diminishing diversity within the network – the recurrent interaction will reshape all participants to present homogenous characteristics over a period of time – and thus a decreasing ability to produce new knowledge, and also the risk of the network becoming so inwardly focused over time that it will be unable to produce innovations, or even adopt them from the outside. Nevertheless, Toyota has identified these potential issues as well and established mechanisms to prevent them through scanning groups that will detect “best practices” outside the network.

3.4. Conclusions and theoretical framework of the study

The increasing relevance of the network paradigm and its strategic value has been related to the growing importance of the supply chain along with its potential benefits in the second chapter. The third one has presented the learning aspects present in the network environment, the influencing factors and mechanisms needed for learning to take place. The intention of this summary is to introduce the theoretical framework that will be used in this study by bringing together the strategic supply network and the learning processes taking place at the inter-organizational level.

The study will follow a deepening pace to draw a distinction within the supplier network between minor and strategic suppliers, and furthermore a distinguishing attempt on how they are related to the focal company, whether they were *emergent* from the existent set of relationships, or expressly *sought* within or through it. The figure below (fig. 10) will be used to portray the supply network on each case; taking into account the amount suppliers, these will be divided between peripheral minor suppliers, and the more nuclear strategic ones, which will be likewise divided into emergent and sought suppliers.



Figure 10. The supplier network strata used for the study.

Once these preliminary distinctions have been drawn, those belonging to the strategic network will be analysed in terms of the key aspects determining the environment, the mechanisms used, and the influence of conditioning factors, as described by Inkpen (1996; 1998), and illustrated on the next diagram (fig. 11).

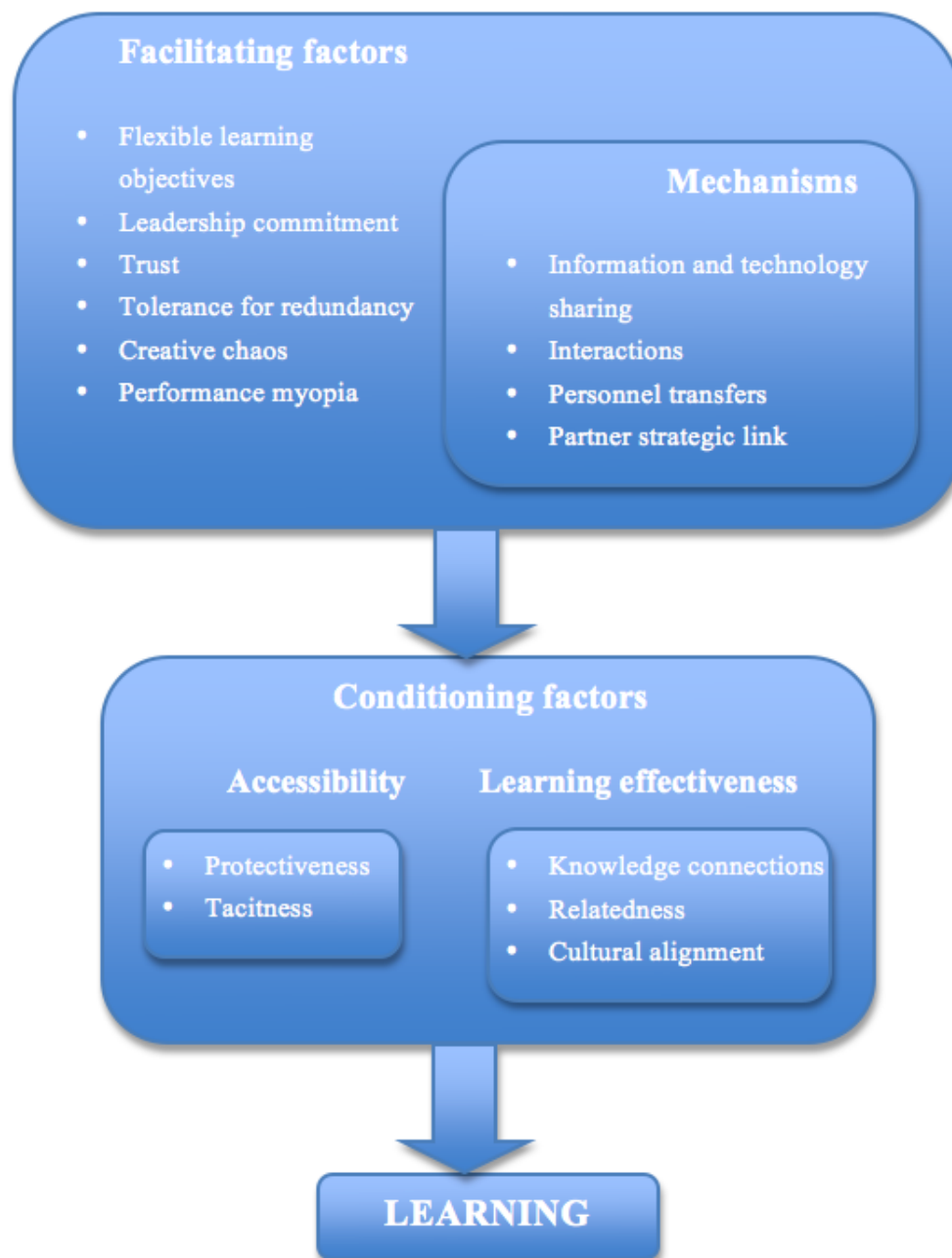


Figure 11. Theoretical framework of the study.

As it can be observed each major aspect will be investigated through an in-depth analysis of their respective components, an evaluation that will help to provide a clearer evaluation of learning in strategic supply networks. The *facilitating factors* will be accounted for by the examination of flexible learning objectives, leadership commitment, trust, tolerance for redundancy, creative chaos, and performance myopia. The *mechanisms* will be appraised by analyzing the information and technology sharing between firms, their interactions, personnel transfers among participants, and the partner strategic link. The conditioning factors present a twofold division, *accessibility*, which will be evaluated considering the protectiveness and tacitness of the knowledge subject of transfers between firms, and *learning effectiveness*, whose analysis focuses on the knowledge connections between firms, the relatedness of that knowledge, and the cultural alignment of the participants. It is expected that this analysis will offer valuable insights of the learning process, and moreover its interconnection and interdependence with a firm's network.

To sum up, the functioning of learning has been described along this chapter following a logical path that introduced first the foundations of what is understood as organizational learning, followed by a description of inter-organizational learning, and the determination of its locus. Learning in the strategic supply network is accordingly described as inter-organizational learning in a networked environment, stressing the distinction, as much as the relationship, between the exploitative and explorative aspects of learning, and also providing an account of the possible drawbacks of inter-organizational learning. Toyota's example represents a firsthand empirical examination of a successful learning process between a firm and its suppliers. The conclusion of the chapter provides a description of the process of inter-organizational learning, whose major and minor constituents will be the subject of study in the following empirical investigation.

4. RESEARCH METHODOLOGY

This chapter will *first* introduce the methodology used on this research, justifying the approach chosen and acknowledging also its limitations. *Second*, the data collection method will be described. *Third*, an account will be provided on the system followed to analyse the data. *Fourth*, an exposition of the study's trustworthiness will be presented, attending to its credibility, transferability, dependability, and confirmability; to what they refer and how they are achieved.

4.1. Research approach

The literature has traditionally drawn a borderline that separates research into quantitative and qualitative methods and studies, which refer to the means used in order to collect and analyse data. Quantitative methods make use of standardized proceedings that fit large amounts of responses into predetermined categories, facilitating comparison and statistical analysis, being its formalized and well-structured results its main advantage (Patton 1988: 9).

On the other hand, qualitative data provides in-depth, rich and detailed information, allowing the researcher a higher degree of freedom since data collection is not constrained by a preset sorting (ibid.). As Denzin and Lincoln (1994: 6) posed it, each tradition is governed by its own genres, classics, representations, interpretations, and evaluations methods, owing to their differing epistemology towards the use of positivism, acceptance of postmodern sensibilities, capturing the individual's point of view, examining the constraints of everyday life, and securing rich descriptions.

Quantitative research emphasises mathematical models, statistical tables and graphs, while qualitative analysis uses ethnographic prose, historical narratives and first-person accounts (ibid.); both have their strengths and weaknesses, and thus the best method is the one best suited to the research purpose and its questions (Yin 2003: 7).

The research purpose of this study will be fulfilled using a qualitative case study approach. According to Yin (2003: 13) a case study is an empirical analysis that “investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident”; the qualitative approach is also argued by Yin (2003: 6) to suit most often case studies.

Given the rather abstract nature of the “learning” process, and ,furthermore, its high dependency on the environment in which it is embedded, a qualitative case study approach is most convenient to offer a deep insight on the environment, mechanisms and factors that best strengthen the processes and outcomes of learning in the strategic supply network. Yin (2003: 2) claimed that case studies allow retaining the holistic and meaningful characteristics of real-life events, and moreover that they are distinctly useful when the subject is broad and complex in nature, and therefore better studied within its specific context.

The literature review has followed a deductive approach in order to create a theoretical framework, which will guide the empirical part of the study; however, an inductive standpoint will be taken into account as well to describe the phenomena emerging from the different cases. Additionally an exploratory stance will be followed regarding what are the mechanisms and conditions needed for learning to take place, and a more explanatory one to describe how

the strategic supply network is related to learning outcomes; as argued by Yin (2003: 5) each strategy has its characteristics, existing large overlaps and no hierarchy to arrange them.

4.2. Data collection

Data can be classified following a basic twofold criterion; primary data, which is collected ad hoc to answer a particular question by the researcher, and secondary data, which is existent data previously gathered for other purposes. This study makes use of both types; *firstly*, the use of secondary data has been key to arrange a theoretical framework that guides the empirical part of the study, with which the empirical part proceeds; *secondly*, primary data has been gathered following the schedule marked by the theoretical framework to tackle the questions posed in the purpose of this study.

The methodology followed is what Denzin and Lincoln (1994: 237) labelled *the instrumental case study*, in which “*a particular case is examined to provide insight into an issue or refinement of theory. The case is of secondary interest; it plays a supportive role, facilitating our understanding of something else*”. In this study, three instrumental case studies were conducted, what the authors (ibid.) consider a *collective case study*. The intention is to test the validity of the theoretical framework constructed and answer the purpose of this study. This is consistent with the views of Yin (2003: 97), who suggest the use of multiple sources when conducting case studies, a notion known as *triangulation* that benefits from the use of various sources to inquire into the same facts of the phenomenon subject of study.

The secondary data constituting the first part of this paper has been collected from relevant literature, particularly from the work of Inkpen (1996; 1998) as it has been observed earlier on (see 1.2. Purpose, scope and limitations of the study). As for the primary data, Patton (1990: 10) indicates three methods to collect primary data, open-ended interviews, direct observation, and written documents; whilst Yin (2003: 85) suggests the use of documentation, archival records, interviews, direct observations, participant observation, and physical artefacts. In the case of this study primary data collection was obtained by open-ended interviews carried out between May and June 2009 conducted with knowledgeable and experienced members on each of the organisations studied (see appendix 1), who in two of cases produced additional information by written and computerised documentation. The questions for the interviews were posed according and following the theoretical framework (see appendix 2).

Given the elusive and at times intangible nature of the factors subject to study, interviews were considered the best option to gain a rich insight the issue; to facilitate a deeper understanding of the research problem interviews were open-ended, thus providing the opportunity to discuss on a much more free manner each of the aspects subject of study. General information regarding the company was obtained via their respective corporate websites; these basic facts and figures provide a background that helps understanding the environment to which each of the companies belongs, and the history behind each case.

The interview questions, broken down under major subjects – characteristics of the supply network, learning facilitating factors, learning mechanisms, conditioning factors, and learning itself – were sent beforehand, and all the interviewees had had the time to have a look at them prior to the interview. The questions were written in English and the same language was used in the interviews, given the fact that it was the only common language and they were

all proficient users. The interviews were maintained face-to-face, using a recorder to obtain a complete register of the meeting to be transcribed later on, and lasting each one of them approximately one hour. The interviewees, except in one of the cases, were rather unobservant of the time and unmolested throughout the interview, a fact that provided a relaxed atmosphere were to discuss the questions.

4.3. Data analysis

The goal of analysing data is to investigate and present impartial evidence, which will be able to provide compelling conclusions, ruling out alternative explanations; as such it involves transforming the information gathered into descriptive statements by means of examining, categorizing, tabulating and testing the collected information to tackle the purpose of the study (Yin 1994: 103; Yin 2003: 109). Following the work of Miles and Huberman (1994), data analysis comprises three separate proceedings. *First*, data reduction; it produces sharper and more focused information by sorting, discarding, and organizing the existent information. *Second*, data display; in this stage the information is presented, organised and compressed in a manner that will help the elaboration of conclusions. *Third*, conclusion drawing and verification; the researcher confers a meaning to the findings while taking into account the existent irregularities, patterns, and seeks possible configurations.

The current research follows the suggestions of Miles and Huberman (1994) explained above. The first step carried out was the verbatim transcription of the interviews; these were reviewed highlighting key sections to identify and later on sort them according to the theoretical construct. At this point the three separate analysis were assessed collectively to provide a holistic view on the issue regardless of the case where the information was taken, although acknowledging

to some extent their provenance in order to obtain a clearer picture of the issue. At last conclusions were drawn attending to the joint analysis and by means of a comparison with the theoretical construct.

4.4. Trustworthiness of the study

There are many views on the construction of qualitative research to ensure a rigorous outcome, most of them attending to the issues of validity and reliability (e.g. Kvale 1989; Yin 1994; Ritchie and Lewis 2003; Saunders et al. 2007), used to define the strength and correctness of the data. However, in this study the concept of trustworthiness will determine the quality of the study following the work of Lincoln and Guba (1985: 290); trustworthiness can be defined as a variable composed by the *truth value* of the findings, its *applicability* to other contexts, the *consistency* of its findings if the experiment is to be repeated, and the *neutrality* of the inquirer when approaching the subject.

These are the four factors that condition the elaboration of a successful qualitative research and therefore should be used as foundations to build a study upon; hence these are the factors that will be taken into account to evaluate the present study according to the criteria proposed to measure them by the same authors (Lincoln and Guba 1985: 287 - 331), namely *credibility*, *transferability*, *dependability*, and *confirmability*, which are the equivalent to the “*conventional terms*” internal and external validity, reliability and objectivity. These will be explained together with an account of their usage in the present study.

Credibility is the operational term that demonstrates *truth value*. The researcher must demonstrate how the findings that have been arrived at, are credible. This

as the authors suggest (ibid. 296) poses a twofold task; conduct the research in a way that secures as much as possible the veracity of the findings, while at the same time those findings are approved by the *constructors* of the reality subject of study. To attain credibility three main techniques could be used, prolonged engagement, persistent observation and triangulation; peer debriefing provides an external check on the inquiry process, and also negative case analysis could be applied to refine the working hypotheses. Given the time restriction for the elaboration of this paper both prolonged engagement and persistent observation were dismissed; triangulation is present by the usage of various sources to tackle the same issues, and thus provide a clearer view on the validity of the framework used. A triangulation procedure for each case was intended, via a comparison with the views of the suppliers against those of the hub companies; however, it was dismissed due to the difficulties encountered in order to obtain the interviews where from to collect the data. Peer debriefing is present under the suggestions obtained from the guidance of a supervising professor, and also from the common discussions with other students who acted as an informal and perhaps naive supervising mechanism on the development of this paper. The last technique, negative case analysis was introduced throughout the data collection stage, via an inquiry on the assumptions of the model on the opposite case (i.e. inquiring into the characteristics of the environment when dealing with minor suppliers, the mechanisms used in the relationship, and testing the existence of learning in that case as well).

Transferability refers to the extent to which working assumptions may be abstracted elsewhere, a function of the degree of similarity between sending and receiving contexts. However, to this issue the authors (ibid.) argue that “*if there is to be transferability, the burden of proof lies less with the original investigator than with the person seeking to make an application elsewhere*”. Therefore, only working hypotheses can be made, together with the time and context in which they were examined; the task to validate their transferability is

an empirical issue that depends on the similarity of the contexts where they are tested. To this regard it could be argued that the theoretical framework used on this study belongs to the context in which it was primarily assessed; hence, the purpose of this paper is partly to test the transferability and validity outside of the context described by Inkpen, since it is from his studies – Inkpen 1996 and Inkpen 1998 – that the current theoretical construct has been developed. In any case, the transferability of the study will be provided along with the conclusions found after analysing the data.

Dependability refers, in words of the authors (ibid.), to the attribute of reliability, but taking a broader approach, which takes into account factors related to instability and also those associated with phenomenal or design induced change. The techniques suggested to test the dependability of the research are essentially the method of triangulation, already commented on above, *stepwise replication*, and *inquiry audit*. Stepwise replication follows a repetition approach on which a team is split to conduct the same research separately; a possibility out of reach in this case, given the fact that the research is to be carried out individually. The latter technique, inquiry audit, follows the same approach as the fiscal audit; an inspection to verify the accuracy and faithfulness of the data and the processes by which it was analysed and inferences were drawn, a task that it is in hand of the supervising methods that will be applied to review the present research.

Confirmability is related primarily to objectivity and thus to the neutrality of the analysis, a difficult and troublesome criterion; the issue at stake is the objectivity or subjectivity of the data and the conclusions drawn. However, according to the authors (ibid.) “*the issue is no longer the investigator’s characteristics but the characteristics of the data: Are they or are they not confirmable?*”. Again in this case the main technique is to follow an audit that will prove the confirmability of the research. In this case, in addition to the discussion above concerning the

audit of the research, the complete raw data has been kept safe in paperback form and electronic register, as much as every step of the following processes and analysis carried out that lead to the conclusions drawn in this paper. Thus, the data used on every stage of the current paper can be traced and it is available in order to examine and to determine its confirmability.

In summary, this chapter has presented the research approach of the study, providing arguments to support the choices taken regarding the type of study conducted, the data collection, and its analysis. Along has been provided, as well, an account of the limitations encountered, and thus the potential flaws of the study have been acknowledged. Furthermore, the issue of trustworthiness has been proposed, and its elements described, as the instrument to ensure the rigorous and accurate outcome of the study as a whole, especially on its empirical part – from the methodology followed, to the evaluation of the data gathered, and finally to the conclusions drawn – as it will be observed in the following sections.

5. STUDY FINDINGS AND LIMITATIONS

This chapter will put forward the findings revealed by the empirical investigation following the framework presented earlier, attempting to provide answers to the questions purpose of this study. *First*, a brief introduction to each of the companies in the study will be provided, together with a succinct portrayal of their supply network. *Second*, the findings concerning learning environment, mechanisms, conditioning factors, and learning itself in the strategic supply network will be offered separately. *Third*, other findings and considerations will be offered concerning the differentiation between *emergent* and *sought* suppliers and other more general issues regarding learning and the strategic supply network. *Fourth*, the limitations encountered on the empirical part of the study will be presented and discussed.

5.1. Supplier network

Given the differences between the companies through which the empirical research of the study has been carried out, and although the results concerning the learning aspect will be offered through a holistic view on the cases, it seems necessary to provide an introductory and clarifying brief description of each of the cases regarding procurement; describing at the same time the environment in which the company operates.

All the cases studied shared, nonetheless, the same view concerning procurement, and that is the avoidance of single sourcing. An approach too risky due to the dependent bond binding the firm to a single supplier; although keeping certain suppliers very close to the company it is necessary to keep a

distance that will provide leverage in case of need, as it is the case bearing in mind the current economic situation, acknowledged by all interviewees as well. The conditions created by the current economic downturn have introduced an unavoidable bias in supply management and thus affected the results of this study to a certain extent; therefore, they should be borne in mind especially throughout the succeeding empirical analysis of this paper.

“If you are very close, then you are dependant, and it is very difficult to change and to get that advantages based on economical situation.” ABB's interviewee.

5.1.1. KWH Pipe

KWH Pipe is part of the KWH group, which resulted from the acquisition in 1984 of *Wiik & Höglund*, a timber company that had divested its operations in the plastic industry in the fifties, by *Keppo*, a highly prosperous and profitable fur producer. With its headquarters in Vaasa, *Wiik & Höglund* had already become the largest plastic producer in Finland during the sixties, and successfully internationalised its operations during the next decade. Plastics were maintained as the core activity of the group and KWH Pipe stands today as one of the world leaders in plastic pipes production and development, counting with production plants in Europe, Southeast Asia and North America.

The information gathered concerning the supply network of the firm in the interview with its Production Coordination Manager refers only to its operations in Europe, production and procurement, and it is schematically described by the following figure (fig. 12).



Figure 12. KWH Pipe European supplier network.

Given the substantial weight of the procurement of raw materials, around 80% of all purchases, an advantageous approach is the obtainment of economies of scale by purchasing high volumes, which benefits both parties, creating a win-win situation. Thus, the strategy followed has been to shrink the number of suppliers to currently three, which although are treated differently, they are nevertheless considered strategic suppliers. Spot lots are purchased occasionally, but due to very high switching costs because of the specific requirements of the production, the relationship with the strategic suppliers is reinforced. Hence, the relation with suppliers has been built over a long period of time, and therefore can be labelled as emergent suppliers. Such development favours an environment where discussions are open, even informal at times, and the level of trust and familiarity are high, reaching the personal level of the employees involved.

KWH Pipe has a significant record on innovation that has maintained throughout its history to the present. Through joint efforts with suppliers the company introduced the largest pipe diameter ever back in 1976 with the production of 1600mm diameter solid wall pipe; this efforts have continued by continuously engaging in joint-development projects with suppliers and other companies in the industry.

5.1.2. Wärtsilä – Power Plants Division

Wärtsilä started as a sawmill and iron works company back in the middle of the nineteenth century. It started showing interests in the ship industry through various acquisitions along the thirties, while continuing with its steel operations. In 1942 by a license agreement with *Friedrich Krupp Germania Werft AG* in Germany, the first diesel engine was produced, and thanks to the acquisition of *NOHAB*, a Swedish engine business, started its international career. After a turbulent decade in which merged with *Lohja*, the name Wärtsilä would reappear in 2000, rapidly boosting by a series of worldwide acquisitions, to stand today as a global leader with operations in one hundred and sixty locations spread across seventy countries.

The firm presents three major divisions, Ship Power, Power Plants, focused in the marine and energy markets respectively, and the Service division supporting both operations. The case studied through the interview was its Power Plants division; nevertheless, as it will be shown the operations of the group are highly interrelated.

The diagram below (fig. 13) offers a succinct view of Wärtsilä Power Plants supply network. Suppliers are divided according to the needs in all of Wärtsilä's operations or just one of the divisions, *category equipment* and *non-category equipment* respectively. Due to its higher importance for the firm, the former is taken care by Corporate Supply Management, and the latter by the correspondent division, in this case Power Plants. While unfortunately not being able to produce the sharpest figures, approximately Power Plants makes use of about four hundred suppliers of a wider net of thousands used by the company as a whole. Of those, approximately two hundred could be considered strategic, or at least closer to the company, due to the reflections gathered in the interview with its Director of Supply Market Management. Despite the lack of a

clear definition or number of what are regarded by the company as key suppliers, about two hundred of them are invited every year and half to a *supplier's day*, a fact that signals their importance for the firm.



Figure 13. Wärtsilä Power Plants supplier network.

The supply network is managed by the overlapping efforts of Corporate Supply Management, in charge of the establishment of annual agreements, especially for *category equipment*, and the Power Plants division. Their whole production is project wise, making use of the engines built by the Ship Power division, which account for about 20% to 25% of the value, the rest is purchased by Power Plants to external suppliers. Supply is globally obtained, 60% of it is purchased to suppliers with whom an annual agreement exists; the rest is a mixed amount of spot purchases and purchases to suppliers with whom an annual agreement has not yet been settled. Nevertheless, although explicit partnership agreements do not exist, there are joint-developments with suppliers.

Suppliers are both emergent and sought. Those considered as key suppliers have been present for a long time, they know what it is expected, requirements are fulfilled while less supervision is enforced, and there is a lot of information shared back and forth; however, it seems that there is not any explicit alliance or partnership agreement, although with some companies collaboration is very close. That is a situation contrasting with newer suppliers, as the interviewee acknowledged: *“If you compare that to a new supplier [...] then it is a lot of work before you have that supplier to the same status”*. In any case, a continuous scan is done at the same time on a global scale: *“we have to continue looking for better solutions and cheaper solutions as well, since competition is getting stronger all the time”*.

5.1.3. ABB Finland

ABB is the result of the merger in 1988 of the Swedish *Asea* with the Swiss *BBC*, both leading companies in the power technology industry, and with a background expanding for over a century on transformers, generators, automation, to even nuclear power. Furthermore, both of them had a remarkable innovative approach in the industry, which has been inherited by the resulting ABB. The firm grew fast after the merger by acquiring around forty companies in the first years, and along the last two decades its growth has continued while divesting activities, like oil, gas and petrochemicals, in order to focus on its core business, power and automation, where today it stands among the industry global leaders. The ABB group is divided in five major divisions – power products, power systems, automation products, process automation, and robotics – with operations spread over one hundred countries.

Suppliers are divided following a twofold classification, first according to their production into *direct*, the vast majority, and *indirect*; *direct* materials are likewise subdivided into *raw materials* and *value added products*. Second, a

sharp differentiation regarding the policy to follow is provided by the use of Kraljic's matrix (Kraljic 1983: 111 – see appendix 3). Strategic suppliers are those whose the importance is high due to characteristics like cost or value added, and at the same time the complexity of the supply market is high as well. Thus, from a supply network of almost eight thousand companies, the strategic relationships are narrowed down to about three hundred of them; as can be observed in the figure below (fig. 13); those three hundred suppliers represent 80% of the total volume purchased and are considered close partnerships. It was observed also that the company can trace through its records every supplier ever used, an figure that amounts to about thirty thousand suppliers along its history.



Figure 14. ABB supplier network.

Procurement is managed globally, making use of the ABB's advantageous position thanks to its volume scale and scope; a continuous scan is used to locate new supply opportunities. Therefore, new suppliers are sought continuously following the firm's global needs but nevertheless, and at the same

time emergent relationships are present via a long shared history with an external company or former ABB activities, also companies owning specific technology with limited access in the market are kept closer. There are as well partnership agreements with some of them, in terms that can be reflected as the alliances referred in the literature, and there are joint-development projects with suppliers in seek of new solutions and developments.

5.2. Findings and discussion

Following mainly the work of Inkpen (1996; 1998), the conceptual framework of this study has proven to be a valuable tool to guide the empirical part of the research. The following will present separately the findings concerning the environment, mechanisms, conditioning factors, and learning itself in the strategic supply network. Each of the points will be accordingly discussed and critically reviewed.

5.2.1. Facilitating factors

The environment surrounding the strategic supply network is similar in all cases. Due to the fact that in the majority of the cases the supply relationship is measured and assessed in terms of price, quality, delivery times, and service, the learning approach is subdued to those to some extent. Nevertheless, *flexible learning objectives* are present guiding the seek of continuous improvements in all aspects of the relationship, from the product and processes themselves to logistics and the development of innovative approaches from which both parties can benefit, in many cases cost-based.

Leadership commitment is high within the strategic supply network; however, its learning facet appears to be blurred. Even though in some cases the commitment towards suppliers is demonstratively high, the learning aspect does not seem to be the driver of the sentiment, but the satisfactory history of the relationship itself, whether the reasons have been a mutually beneficial cost evolution, delivery times, payment conditions or an innovative approach towards product development that would enhance any or even all of the previous it is difficult to prove, owing probably mixed reasons and even reaching personal levels. “*Companies don’t do business, only people make business*”, remarked KWH Pipe interviewee.

Trust encompasses the whole of the environment; however, it is tightly controlled by contracts used as clockwork mechanisms to regulate the relationship with suppliers. Even though trust must be the foundation and starting point on which to build a close relationship, in today’s world additional covenants are enforced. “*If you go a lot of years back, it was more like trusting, but today there are agreements for everything*”, commented Wärtsilä’s interviewee. Supervision mechanisms are present, although they are not heavily enforced on the strategic suppliers as they are usually on the rest of the supply companies. Towards the former a calmer behaviour is applied, signalling the trust deposited in them, in all the cases strategic suppliers are always regarded as trustworthy and responsible, they have proved that they can be relied upon.

Through the empirical research no evidences have been found to neither confirm nor deny the existence of *tolerance for redundancy* or *creative chaos*. Both of them could be observed only in a setting where interdependency is so high that the interconnecting efforts of participant firms would overlap, creating an environment where no clear hierarchy is followed and therefore both of the aspects mentioned could emerge. Such environment could be found in close joint-development projects or joint ventures where the learning aspect is the

driving force and the efforts of the participants overlap in the common ground provided by the joint operation. As Inkpen (1996) argued, these factors could fuel the development of learning capabilities to a great extent, but not lacking disadvantages, unless engaging in a learning-driven joint operation it is just as good to avoid the problems that it could raise.

As it was mentioned, performance is measured in terms that do not relate directly to a learning aspect, as such *performance myopia* – as defined by Inkpen (1996) – could be present to some extent. Given the current economic situation it is difficult to assess the learning aspect when pure market-based assessments, especially costs, have become a major issue. Nevertheless, it was mentioned along the interviews how sometimes the product itself is the goal of the supply relationship, which signals the importance of an inherent learning aspect built-in the relationship; a specific product to serve a purpose has to be jointly developed subject to certain constraints. As such, it seems on the one hand that if not stated otherwise market-based assessments rule the performance measurement of suppliers. On the other hand, it was acknowledged in all cases that suppliers play an important role in the performance of the company, and the developments suggested or provided by their efforts are of great importance. Therefore, the learning aspect is diluted in the whole performance assessment instead of being accounted as such.

All in all, the environment found within the strategic supply network is a fruitful setting where learning is acknowledged and promoted, but at the same time the learning approach is diluted in the whole of the relationship. As such the learning aspect is evasive and apparently an indirect component of the relationship. The strategic supply network is managed on different terms than the rest of the supply network, kept closer due to its strategic importance for the firm, but except in the cases of joint-development operations the learning

aspect is not considered as such, instead it seems to be reviewed more as the reflection and outcome of a successful relationship than the cause of it.

5.2.2. Mechanisms

Regarding the mechanisms used to power the learning capabilities of a supplier relationship, *information and technology sharing* systems are used widely and on different levels in all cases. They are used basically to share information on issues such as cost, delivery times or quality, but transcend to provide a continuous communication with suppliers, through which the problems and difficulties are turned into beneficial feedback that is observed to yield the desired improvements. The larger companies – ABB and Wärtsilä – have established internet-based links with their suppliers, where information on general requirements can be retrieved, claims risen, and feedback provided in all levels. Suppliers are kept informed throughout the year so they are aware of the market situation, the actions taken by their client, and the needs for the succeeding period. This mechanism apart from linking both operations and easing the production process is a tie connecting the strategy of the firms involved, creating the strategic link that will be discussed below.

The *interactions* are highly interrelated with the *information and technology sharing* as it can be seen above. In all cases it was clear that a continuous interaction is a must in order to obtain the expected results and to provide the base for mutual comprehension. Technical discussions are held continuously in order to enhance the current production, manufacture it cheaper or easier, and also concerning new developments. This requires the exchange of a great deal of information, sometimes reaching close to the core technology, information that is exchanged up and downstream along with the necessary feedback and under secrecy agreements. Feedback is expected and encouraged from suppliers especially from R&D departments, due to the fact that suppliers are

closer to the “real” issues and possess the expertise to know if certain designs are manageable or not, the cost needed for its production, and in many cases providing alternative solutions. In some cases the parties involved perform separate tests and jointly compare results.

Personal meetings are arranged about once a year with strategic suppliers – an event called *supplier's day* in the case of ABB and Wärtislä – to discuss the ongoing issues. It represents, as it was observed, a very good occasion that serves as a fruitful forum of ideas where to discuss the current trends of the market, share experiences with new materials, and analyse the upcoming designs and solutions in the industry. Along the year other meetings will be arranged in order to assess the performance, and if needed action plans will be set to correct the current issues in the quest for continuous improvements.

The *personnel transfers* found in the empirical research are not more than company visits in the vast majority of the cases; staff rotation was not found, at least in the manner proposed in the model. Only in the case of ABB employees spend a few time with a supplier occasionally in order to gain an insight into the way of working. As in the case of *tolerance for redundancy* and *creative chaos* this seems to be a situation that could be found on a higher level of interdependency between firms, and only when the learning facet of the relationship is the major force, requiring then that resourceful employees could gather and disseminate the knowledge and information needed in order to inspire the learning needed in the relationship.

In the same line of thought, the *partner strategic link* cannot be found in the terms reflected by Inkpen (1996), as the common goal of an alliance between firms, but nevertheless is present regarding the learning aspect in all cases by the exchange of ideas, usually on the mentioned yearly meetings. On these discussions to a varying degree the strategic plans are presented and discussed by all parties; an attempt that stretching the limits of the independent

organizations provides a common goal to the relationship and encourages its achievement.

Through the mechanisms used in the relationship between the hub company and its strategic supplier network, it becomes clear that the learning approach is highly estimated and encouraged. In order to develop in all aspects different tools are used and the continuous interaction provides the ground to exchange ideas, solve the current problems, and develop the solutions to sort the challenges ahead.

5.2.3. Conditioning factors

Regardless of the overlap existing between the hub companies studied and their suppliers, the level of *protectiveness* in all cases can be considered high, although not really impenetrable. On the one hand core technology is kept apart and allegedly there is no will to share it with suppliers. On the other hand, especially in the cases of joint development where it is needed to offer information closer to the core knowledge and technology used, secrecy agreements are put forward to enable a closer association and exchange of valuable information, and furthermore to avoid any kind of leakage out to third parties, especially knowledge spillovers from the supplier to other of its clients, possible competitors of the hub company. This shows that if needed sensible and valuable information is shared with suppliers under strict secrecy conditions, trying to keep a balance between the right to protect their core technology – in-house developed knowledge core of their market competitiveness – and the necessity to share it in order to develop it further with the additional assistance of competent and skilful suppliers in the field.

In all cases it was mentioned the fact that through the company visits organised for suppliers, certain production designs were kept apart. The reasons in all cases point to their position among other competitors, and the need to keep certain things only for themselves since it would be too risky if certain information would leak outside, threatening their market position. Likewise it was believed in all cases that suppliers do not share all their knowledge and capabilities for the same reasons. Even so, and regardless of binding agreements or contracts, within the strategic supplier network all information that could be sensible to other parties is managed with great care.

Regarding *tacitness* it has been unfeasible to obtain any significant data to that respect. It was acknowledged that problems arise sometimes when trying to understand each other's points of view, but those situations are minimized as much as possible by a continuous flow of information and in all cases by the use of technical data that constitutes a shared language understood by all parties involved. Therefore, the level of tacitness in the cases studied should be low thanks to the shared technical language used, and given the fact that their knowledge overlaps to some extent all participants are aware of the type, meaning, and goal of the information exchanged, despite its differing complexity. However, a specific study to tackle the issue should be carried out focusing expressly on the knowledge subject of exchange by the different parties.

Grouping *protectiveness* and *tacitness* into the *accessibility* factor, as the research frameworks indicates, it could be said that information is made accessible only if needed and subject to secrecy agreements to prevent any kind of leakage to outsider. As such *accessibility* is possible and it is provided only in order to expand knowledge further; the closer it gets to the core knowledge the harder it is to get access to it and the stronger the controls enforced. This proves that even though information is seemingly not given away

easily, it is actually shared in the cases where it is most needed. When it comes to new developments and the learning capabilities can be used and enhanced by the knowledge of others, *accessibility* is provided and reasonable barriers are enforced to constrain the benefits of the learning capabilities only the parties involved on its development.

Concerning *knowledge connections*, as it has been reported and commented on above, through the *information and technology sharing* systems and the *interactions* conveyed by them, the opportune *knowledge connections* are established. These connections apply to all levels of the relationship guiding the conveyance of the more technical information, and easing the discussions over it; marketing and sales department are interconnected as well, and furthermore to some extent – although not fully – the strategic functions of the companies are aware of the future prospects that can be expected from the relationship.

Considering the fact that all companies belong to the same industry, and constitute different but immediately successive links in the industry chain, the *relatedness of knowledge* overlaps to different extents, depending on the supplier. Nevertheless, suppliers and hub companies interact on a shared knowledge base. The amount of *relatedness* existent in the interaction allows for a continuous feedback; the developments provided by the R&D function are discussed with the relevant supplier who considers the feasibility and offers suggestions that pass unnoticed to R&D due to the expertise and experience of the supplier. As the ABB interviewee reflected “*our R&D engineers, they are not experts in the manufacturing capabilities of suppliers [...] suppliers many times know better what products and techniques you should use*”. This evidences at the same time the fact that *knowledge relatedness* is adequate to work together, and not sufficient enough to successfully advance alone, a situation that provides a fertile joint learning opportunity.

The *cultural alignment* described by Inkpen (1998) as learning-oriented expectations has not been clearly obtained. The will to cooperate with strategic suppliers is a clear need and beneficial requirement to their own progress, and this feature is developed within the relationship with strategic suppliers thanks to the already mentioned *facilitating factors* and *mechanisms*; however, the *cultural alignment* learning perspective is not clear as much as the commitment to continuously improve and work in the relationship with suppliers in order to steadily obtain improvements, chiefly considering economic and competitive aspects. Nevertheless, it was mentioned in all cases that the easiness of the relation with suppliers improved thanks to a culture wise factor; it is easier to deal with culturally closer counterparts, a characteristics that far from the learning perspective relate to purely cultural similarities in all aspects that ultimately are related to geographical distance.

The above *knowledge connections*, *relatedness*, and *cultural alignment* can be grouped together following the framework into *learning effectiveness*; however, as such not much can be said about it as a group, neither a figure or amount can be established. Nevertheless, all in all, learning can be attained especially attending to the existent *knowledge connections* and *knowledge relatedness*, which represent a fruitful and advantageous common ground, where to develop the relationship to the obtainment of its beneficial outcomes.

5.2.4. Learning

In all the cases studied, a learning approach is promoted in the relationship with strategic suppliers; progress in all aspects is encouraged in the pursuit of a mutually beneficial situation for the parties involved. In all of the cases the companies have been involved in joint development projects and other closer collaboration endeavours with strategic suppliers, although it was difficult for the interviewees to pinpoint the exact developments obtained as a result. This is

due to the fact that development as much as the learning process is reflected continuously in all the company processes; a fact noted by the Wärtsilä interviewee: *“we don’t have this kind like in the car industry, they have year makes [...] we have more continuous development”*. Nevertheless, he was also able to discern a higher level in that continuous process; *“the major changes are of course when we do the agreements, then we collect the feedback [...] and give it to the suppliers [...] then you get steps [...] at that time I think is a little bit more, but it’s not stopped, it’s more continuous”*. Due to the type of production in all cases learning is an ongoing continuous process from which developments follow the same pace.

However, not all the cases are the same, depending on the complexity and the integration needed with the final product the level of interaction differs; when those are high the level of interaction and interrelation grows accordingly. In this manner both firms are bond to work together, else their separate efforts will not result in the outcome needed, collaboration is then a must to stay ahead. Another issue in the yield and fertility of interlinked efforts in development is given by the collaboration with suppliers who count with their own R&D departments; it was mentioned how in that case the productivity and the value of the outcome expected is usually higher according to the efforts and resources that have been put at work. Whichever is the case, milestones such as patents and cutting-edge innovative designs have been registered unceasingly along their history, proving their innovative approach and providing the competitive advantage needed to remain ahead of the competition in their respective markets worldwide.

Stepping back from the details to get a broader and clearer view on learning, it seems that the outcomes of learning and the process itself is regarded following a twofold perspective, through which learning in the relationship with strategic suppliers is reckoned as the historic development in performance, and learning

outcomes *per se*. On the one hand, following the first view – the historic development in performance – the outcomes of the relationship with strategic suppliers that account as learning in the relationship are diluted in a broader picture that is measured by the performance used in assessing the same suppliers. Among them one can point out especially costs reductions, accuracy in delivery times, improvements in services, and refinements in quality, which can be considered perhaps subtler learning outcomes, but learning nonetheless. These are the result of a continuous effort by all parties and a constant exchange of feedback towards the amelioration of the relationship, products and processes that links the companies together. However, due to the fact that these outcomes are found spread throughout many aspects of the relationship, they are diluted in the whole relationship and packed together in the increasing performance that any relationship requires to be maintained in the future, their learning facet blurred after being mixed with purely economic performance results.

On the other hand there is learning *per se*, a division where only the latest innovations, patents, designs, and working procedures can be found, and due to their significance and visibility are usually regarded as *THE learning outcomes*. According to this, learning is in many occasions understood rather narrowly as the edge-cutting accomplishments, those that act as signalling flares marking the path of the company throughout its life and thus highlighted and remarked by management as the milestones of the firm's approach to business. In any case these are to differing extents joint efforts on which the knowledge and expertise of suppliers is critical to the success of the final output, as it was indicated by the interviewees.

From the recollection above it can be argued that learning is present in everyday situations just as much as it is in R&D premises, but most of the learning processes and outcomes are elusive because their functioning runs on

the background in ways that are widely regarded as supplier and company performance. Therefore, especially within the strategic supply network on which the level of interconnection is high, all sorts of interactions should be taken into account, just as much as the R&D projects or costly joint developments, for suppliers can play a major role in the latest state-of-the-art outcomes just as much as they ease, soothe, and improve the firm's production and processes as a whole.

In relation with the *ad hoc* division between learning as general developments in performance and learning *per se*, it could be argued that they relate to a certain extent, respectively, to the exploitative and explorative approaches of learning. Exploitative would be the learning understood as performance; the goal is to implement the whole of the relationship, enhancing all the intermediate processes, which will result in an improved final product. This process is characterised by the reinforcement of the current mechanisms by the experience acquired after using them constantly, looking for deficiencies to correct and the improvements that could be applied. However, as it was explained along the theoretical review above (see 3.2.1. Learning strata – Exploitation & exploration), an exclusive focus on exploitation leads to incompetency in the long run due to the lack of new ideas and the development of new knowledge; that is the use of the explorative facet of learning. In this case what has been regarded as learning *per se*, accounts partly for an exploitative approach, but it is as well the most important source of new ideas, which fuel the creation of the knowledge that provides new capabilities in production, expanding possibilities for the parties involved.

As it has been shown the strategic supply network plays a fundamental role in both exploitation and exploration, and thus in the learning capabilities of the firm by making use of the knowledge and potential of its strategic supply network. Strategic suppliers are to some extent the source of competitive advantage via

the contributions they can provide to enhance production as a whole – characterised by cost, quality, delivery times and service – and furthermore through their involvement in the seek of newer solutions. Learning is subtly embedded in the relationship with strategic suppliers as a whole, and it blooms distinctly thanks to its most innovative side in joint developments and other forms of close collaboration, by which the latest products, solutions, patents and other forms of knowledge come to be.

5.3. Other reflections

There is a distinction between emergent and sought strategic suppliers, the former are suppliers who develop a valuable strategic facet due to their importance as a supplier and the constant relations maintained with a hub company; while the latter consist of outstanding players in the industry with whom the hub company has started its operations after performing a wide benchmark looking for suppliers whose importance and remarkable record suggests a profitable outcome from the relationship. As described in the analysis on the supply network of Wärsilä and ABB, a constant scan is maintained to locate those outstanding suppliers; however, despite what their record and pre-assessment might suggest, the fact that prior to a closer cooperation and inclusion in the sphere of strategic suppliers, they are subject as well to a close examination and follow up. Hence, before considered fully as strategic suppliers, the assessment to which they are subject works as an integration process; the mechanisms presented and used as the framework of this study are established first to provide the development of the environment described above as well. Without the existence of the appropriate mechanisms to tie up the laces between companies, the suitable environment will not flourish, thus the relationship will not be upgraded to strategic, and collaboration will not be as close to allow its full potential. Ergo, learning is hindered by the

lack of the appropriate mechanisms and environment first, and then influenced by other conditioning factors, present as well in the model.

Following the framework together with the observations from the interviews, the position of emergent suppliers is more favourable towards a learning approach due to the existence of the pertinent mechanisms and environment; a sought supplier requires a development through time to evolve, and thus by the time it is upgraded to the same level as existent strategic supplier the relationship has developed and the borders between sought and emergent are not clear anymore. This situation seems consistent in the case of pure supplier relationships but not in the case of other operations where learning is the goal by definition (e.g. joint developments aimed at the production of new technology), as it has been acknowledged in the limitations of the research (see 1.2. Purpose, scope and limitations of the study).

Regarding other impressions provided by the information gathered throughout the research it should be noticed, following the research and views of New and Mitropoulos (1995) that although a useful theoretical approach, the network vision proposed by this study clashes with empirical observations; as the research indicated, managers find the notion of a network environment hard to operate with in reality, being replaced by individual relationships with different strategic suppliers. In most of the cases although collective meetings and other events were organised, the necessity – accentuated by the current economic downturn – of maintaining separate strategies for each supplier, obliged the hub firm to keep and provide certain information individually to each one of its suppliers. This behaviour is far from the networked management approach that would be ideal, as the Toyota case exemplifies (see 3.3.2. The Toyota case). However, the Toyota case provided as an example of a rather perfectly managed networked environment is probably one of the best examples and far from that, not all companies share the same views towards close collaboration

and free information flow to boost the learning possibilities; each industry is determined by a different set of characteristics and thus each company within its own industry is affected by different issues, and chooses its own way of action to make the best out of it.

On a more theoretical approach it seems evident that looking at the broad picture, although formed by independent entities, the strategic supply network acts guided by the requirements of the hub company and thus proceeds as a whole towards a set of objectives. Despite the level of awareness or manageability of this motion, powered primarily by economic ambitions such as cost reductions, improvements in delivery times, or refinements in quality, the underlying fuel is in all cases learning applied jointly to a proposed set of goals, and that movement drives the strategic network together towards continuously updated aspirations, reinforcing constantly as well the network significance.

Finally, it should be highlighted the fact that all the interviews were carried in Vaasa, where all the companies have placed a significant volume of operations, and in two of the three cases a certain amount of strategic suppliers were located as well in the vicinity, a factor that points in the direction of what have been regarded as clusters thanks to their geographical proximity. Strategic suppliers have emerged along in the surroundings of a developing hub company, and which were adduced in both cases to have been engaged in fruitful learning relationships. Although on smaller scale it nevertheless makes one think of learning and innovation clusters, such as the widely known Silicon Valley located in California, or the much closer Kista, in the suburbs of Stockholm.

5.4. Limitations

A major shortcoming in the study has been the absence of the suppliers' view on the relationship with each of the hub companies. The information provided by the hub companies presents to some extent a bias, which could be balanced by the equally biased view of the relationship offered by some of the strategic suppliers. In addition to the problematic encountered in order to obtain data through interviews, another issue is the lack of a supplier stereotype, being necessary to contrast the views of several to obtain a consistent view of the supply side. To this regard it should be pointed out the impossibility by the interviewees – excepting KWH Pipe given the size of its strategic supply network – to pinpoint their most significant relationships with which learning is expressly developed. Each one of their supply relationships is viewed separately and differently, each supplier provides different inputs and the learning perspective is differently encouraged and developed. A deeper study on the matter should be utilised in order to obtain what could be regarded as a stereotype strategic supply relationship from a learning perspective.

Another unavoidable drawback has been the current economic situation on which many companies are striving to survive, and consequently the opportunities to obtain respondents available for interviews has acutely diminished. The companies whose assistance has made possible the conduct of the present study are facing as well the economic downturn and such environment was commented on by all interviewees; thus, it should be noted that the present circumstances have a severe influence on the management of supplier relationships, strategic or not; affecting the firm and respondents behaviour towards procurement, it pervades to some extent the information provided in the interviews, and that it has, as well, permeated to the analysis and conclusions. Nevertheless, the analysis has tried to leave aside as much as possible the somehow unconventional perspective towards supply relationships induced by the unconventional present circumstances.

6. SUMMARY AND CONCLUSIONS

This final chapter is intended to present *first* a summary of the study and its conclusions, offering an account of the findings reached to, and explained from a holistic point of view; *second*, the practical implications of the findings will be commented on, to finish with the *third* part in which suggestions for future research will be proposed.

6.1. Summary of the study

It was the intention of this study to examine the learning process within the strategic supply network of the firm through the views and behaviour of a hub company towards its main suppliers, an objective that was researched through a set of five narrower questions inquiring into the classification of suppliers, the development needed to become strategic for the hub firm, the characteristics of the environment in which the relationship is developed, the mechanisms used to attain learning, the conditions of knowledge for learning to take place, and the outcome generated.

Prior to exploring these issues, a basic and guiding ground has been provided by delving into the literature existent on the supply network of the firm, and on inter-organizational learning, attempting furthermore to establish a consistent link between what seems to be separate approaches. The pioneering work on the network hypothesis is followed by the intertwined developments on its theoretical and empirical approaches; the literature review offers also the current views on the subject, contrasting at times, what provides a middle ground that can satisfy both arguments simultaneously and which will help the

study carried out on the empirical part. The strategic value of the supply network is thus established.

Likewise, the basics of organizational learning were presented, and the locus of inter-organizational learning was determined to follow with what is considered learning in a network. The current division between learning as exploitation and exploration was introduced, also providing as well the drawbacks of inter-organizational learning. Finally, following the work of Inkpen (1996; 1998) a theoretical framework was developed, which took into account the ideas of the latter to study the environment, mechanisms and characteristics of knowledge and the learning outcome obtained. Furthermore, an exemplifying precedent was provided, the Toyota case, a leading paradigm on the field of inter-organizational learning that brought the theoretical approach to a real case.

The study was carried out on three global leaders on their respective industries with a significant volume of operations in the area of Vaasa. The analysis of the data was done based on the theoretical framework constructed, isolating different strata in the process; thus, the environment, mechanisms, conditioning factors and ultimate outcomes of learning have been examined.

The results indicate that a common environment is present in the relationship with what can be regarded as strategic suppliers. Although, as it has been noted, there are legal agreements to which the relationship is subject, the level of trust is rather high, an essential quality in the development of a successful relation. There is a significant level of commitment in the high hierarchical positions accompanied by flexible objectives, and an essentially market based performance system. As it has been discussed already the learning aspect seems to be diluted in the relationship as a whole. There was no worthwhile findings relating to tolerance for redundancy nor to creative chaos, attributes

that seem to suit more situations of the highest interdependence, such as close joint-developments and joint-ventures.

The information channels between the hub company and strategic suppliers are constantly open, and information is continuously exchanged regarding problems encountered, upcoming needs, technical feedback, and future development issues that should be tackled. This is partly done via telematic tools such as internet based communication systems that run together with the purchasing and operations systems or solely intended for communication and feedback. Information from all levels is exchanged and especially concerning technical developments. Personnel transfers are rather inexistent in the terms described by the theoretical framework. There are also constant meetings with strategic suppliers on which future issues are discussed, from production volumes to improvements in all areas of production and the final product as well; forecasts are made available for suppliers, although usually provided individually to each supplier. All in all, a partner strategic link exists linking the strategies of the companies involved towards a common goal, usually produced by the hub company, given its central role and closer position to the market, on which it has a better view and understanding.

Information is highly protected but nevertheless made accessible if required, and although core technology is not intended to be shared with suppliers on certain joint developments, they might get quite close to it, reason why secrecy agreements are always enforced. The knowledge connections are established rather successfully by the mechanisms implemented, providing a constant exchange of information to the adequate personnel, where it can be discussed, a fact that also signals the quite high level of relatedness between the knowledge of the companies; they are nonetheless connected links in the chain from raw materials to final production and market. There is no definite information on which to claim a strict cultural alignment between the parties; in

most of the cases the geographical proximity nurtures a successful relationship given their similar approach and behaviour. Lastly, concerning the tacit aspect of the knowledge involved in the relationship there is no data available on which to base an analysis; a specific research on the topic would be required.

Regarding learning itself and its outcomes, it seems that although the learning aspect is diluted within the supply relationship and its overall performance, its results are quite visible. In all cases the performance of the hub company has admittedly improved thanks to the efforts provided by the supplying parties regarded as strategic for the company. In the line discussed on the analysis, learning is found to take the mentioned exploitative and explorative approaches – learning as a historic development in performance and learning *per se*, respectively – thus, through the former improvements in product and processes are attained, while the latter pursues an innovative approach that will enable new developments and designs to face the evolution of the market providing constantly newer solutions.

Throughout the analysis of the data, additional conclusions have been arrived at. *First*, the difference between emergent and sought supplier does not pose a major distinction regarding the learning potential of the relationship; the latter is required to pass a probing period after which it will be considered a valuable strategic supplier – or dismissed otherwise – therefore after the probing period a sought supplier will be tinted with emergent characteristics, making it hard to discern a separate outcome in the learning process since that sought supplier has to a great extent grown emergent into the strategic level.

Second, as argued by New and Mitropoulos (1995), the network paradigm is not thus observed by the management interviewed. While its theoretical approach seems perfectly valid, management regards the supply network of the firm in terms of dyadic exchange in most of the cases. Although the Toyota case poses an empirical example of networked procurement practices, this

outstanding case might be so due to its remarkably uniqueness. It is clear that a network approach to procurement is not a widespread practice.

Third, it should be reckoned, in opposition to the reflection above, that although perhaps not managed as a network, strategic suppliers move as a whole entity towards the objectives marked by the leading hub company in terms of performance expected, developments and improvements needed. The hub company by its closer feel of the market sets, and discusses too, the objectives needed to succeed, acting as a beacon for the strategic suppliers, and thus the network proceeds as a whole.

6.2. Empirical implications

The findings show that there is a significant space for improvements in the management of supplier networks, and especially regarding its learning aspect. Learning is an outcome that results in progress all the time but there is the need of guidance to exploit the process and harness profitably its results. The responsibility falls on the supply management function of the firm, who are aware of the whole array of suppliers available, their characteristics and importance. From a learning perspective it would be advisable to highlight the importance of suppliers in terms of the potential developments, and although they are highly interconnected with market-based assessments, separate them as much as possible in order to obtain a clearer view on the prospect of learning attainable by the supply network.

In views of the success obtained by the Toyota network system, it would be as well advisable to follow a high performing approach towards procurement in a similar manner. Suppliers are tightly connected to the hub company and likewise among themselves, providing a strong interconnection, a highly responsive working method, and most important a highly efficient and effective

learning network supporting the obtainment of innovative products and enhancing the firm's processes, pillars to the development of competitive advantage.

6.3. Suggestions for further research

The research concluding here arises several facets that would be worth inquiring into. First of all, given the limitations encountered in the present research, additional investigations could provide a wider understanding in terms of the differences between industries concerning learning within the strategic supply network. The results could determine the importance of the strategic supply network in terms of learning outcomes depending on the industry, and thus the significance of the strategic supply network and its perhaps differing usefulness.

Regarding the innovative approach of learning it would be interesting to obtain richer as well as deeper information on the locus of learning and its innovation outcomes. Whether it is the network, the alliance, or the firm on its own who produce learning and innovation would provide a definite insight into the strategic value of the network, the alliance, or none of them. It could provide as well an understanding on the conveyance or "transfusion" of innovation throughout clients and suppliers, a novel approach that can provide a new insight in the learning process and innovation development, and the paper played by the strategic supply network in this process.

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Appendix 1

Interview details

Date	Location	Company – Interviewee's position
07.05.2009	Vaasa	KWH Pipe – Manager of production coordination
19.05.2009	Vaasa	Wärtsilä – Director of Supply market management (Power plants)
03.06.2009	Vaasa	ABB – Vice President Local SCM services

Appendix 2

Semi-structured interview questionnaire

<p>General questions</p> <ul style="list-style-type: none"> • What do you buy from your suppliers? How many suppliers do you have? • Are you responsible for the whole supply network or is your focus a specific segment or number? • Is there a classification or grouping between the suppliers? According to what factors (added value, production complexity...)? • Are they all treated the same way or there are different levels of familiarity, trust and understanding? • Are they treated following an “arm’s-length” approach or are there interdependencies and a strong relationship with any of them? • Among the suppliers is there any formal “alliance” agreement? Would you say there is a similar tacit agreement with any of them? • How were the most important suppliers chosen?
<p>Environment</p> <ul style="list-style-type: none"> • How do you see the relationship with your suppliers? • What do you expect from them? • Are there any supervision mechanisms to meet expectations? • What are the problems?
<p>Learning Mechanisms</p> <ul style="list-style-type: none"> • How does information sharing takes place? • Do you hold regular meetings, seminars, training sessions, company

visits etc. with your suppliers? Vice versa?

- Do you update your suppliers with information about what you need and expect from them?
- Is technology transferred between you and your suppliers?
- Is personnel being sent or transferred to acquire knowledge and information from the supplier's side?
- Are strategic future plans shared with suppliers?

Determinants

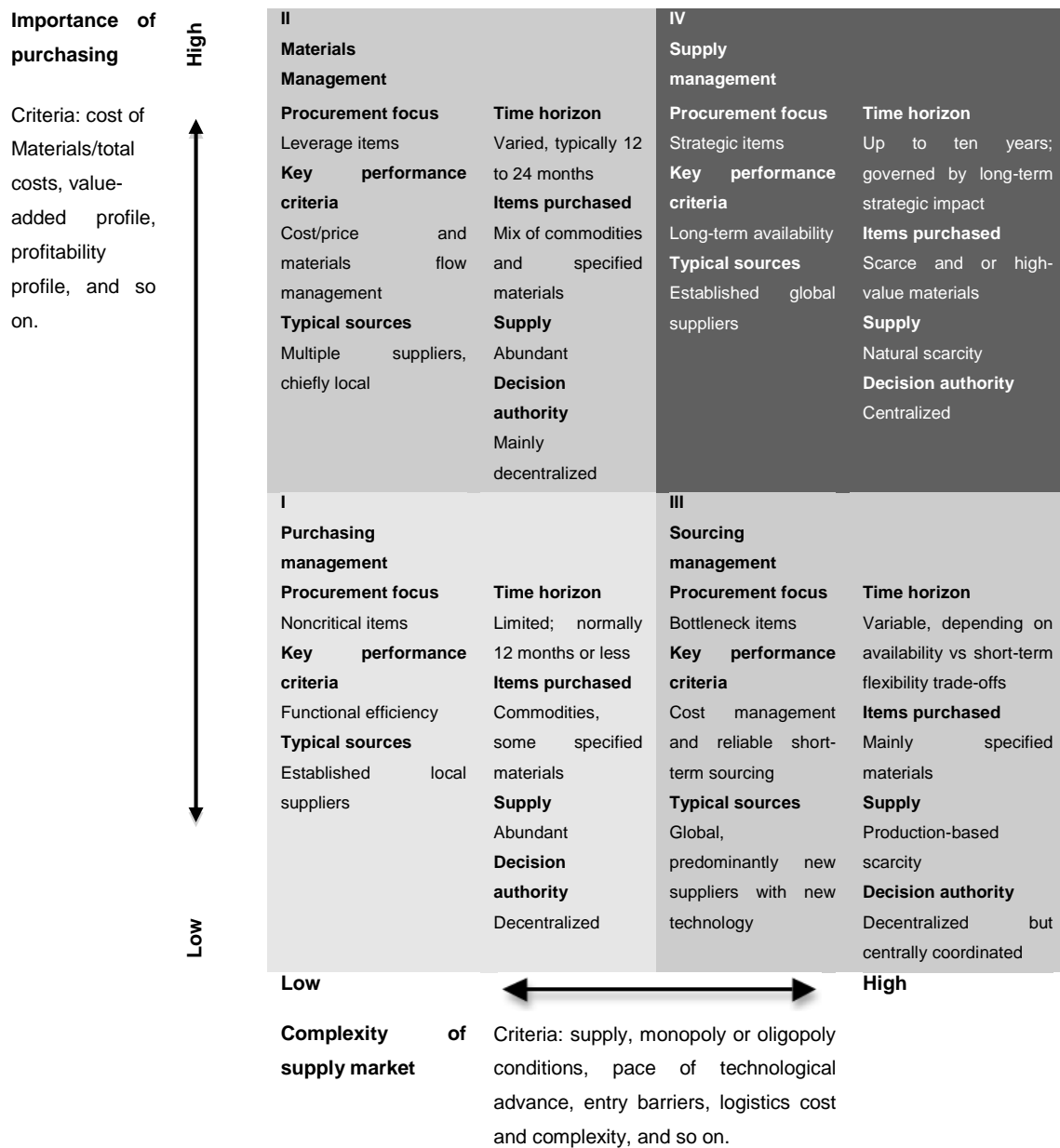
- Are you willing to share core technologies with your suppliers if needed? Are they willing to do the same?
- Are there comprehension difficulties when sharing information with the suppliers?
- Is there a connection between the values held by this company and those of the suppliers?

Learning

- Has the learning aspect been promoted in the relationship with suppliers?
- Has the relationship with the strategic suppliers materialized in any kind of innovative mechanism or procedure?
- Do the supplies collaborate with new ideas to enhance the processes or production and in problem solving activities?
- Has the relationship with suppliers affected in any way the efficiency or performance of the company? And the relationship itself?

Appendix 3

Kraljic's matrix



Stages of purchasing sophistication (adapted from Kraljic 1983: 111).