

THESIS FOR THE DEGREE OF LICENTIATE OF ENGINEERING

Initiating and developing a supplier base in a new context

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## **Abstract**

The aim of this thesis is to explore the initiation and development of a supplier base in a new context from the perspective of a firm. An abductive approach was used to make a case study of the development of a supplier base in China by a Swedish firm, FlexLink. Prior to the development of this supplier base, FlexLink was active in a network of suppliers responsible for all of FlexLink's production and most of its assembly operations. Most of that supply network was located in Europe; but this began to change as FlexLink took the initiative to expansion to China. In this study, the development of the supplier base in China is thoroughly investigated. The framework has three major building blocks: involvement in buyer/supplier relationships, activity interdependencies, and collaboration types. These building blocks were used as tools to elaborate and understand the main research issue: How do economies emerge when a firm initiates and develops its supplier base in a new context?

The analysis shows that when firms develop their supplier bases, economies of scale and scope, integration and innovation emerge to different extents and in different situations. Economies may take place simultaneously to varying extents in different parts of the supplier base. The framework contributes to understanding the development of a supplier base. It provides tools and concepts for analyzing the details of a case of supplier base development in a new context that can help to identify the economies that emerge or can be expected to emerge in each state of the network development.

The study primarily contributes to the field of purchasing and supply management by providing a conceptualization of the three generic forms of economies. The study suggests that there is interplay among economies, as exploiting one provides opportunities for developing the others. Furthermore, with regard to the context of the study, it is concluded that the practice of emerging country sourcing, rather than focusing on inexpensive product acquisition, would benefit from taking a supplier base development approach. Research in this field can also gain from a holistic view and from studying these developments from a supplier base or supply network perspective. Future research doing a network-level analysis of this phenomenon requires a focus on the perspectives of multiple actors in the network to identify the effects of the interaction among them on the opportunities and challenges throughout the development of supply networks.

**Keywords:** supplier base, supply network, supplier base development, economies, involvement, interdependencies, collaboration, emerging country sourcing, global sourcing, China sourcing.



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# Table of Contents

- ABSTRACT ..... I**
- ACKNOWLEDGEMENTS..... III**
- TABLE OF CONTENTS ..... V**
- LIST OF FIGURES..... VII**
- LIST OF TABLES..... IX**
- 1 INTRODUCTION.....1**
- 2 FRAME OF REFERENCE .....7**
  - 2.1 DEVELOPMENTS IN PURCHASING.....7
  - 2.2 GLOBAL SOURCING AND EMERGING COUNTRY SOURCING.....10
    - 2.2.1 *Drivers and barriers* .....10
    - 2.2.2 *Considerations for sourcing globally*.....12
  - 2.3 SUPPLY NETWORK DEVELOPMENT .....14
    - 2.3.1 *Dimensions of involvement*.....18
    - 2.3.2 *Interdependencies and adjustments*.....20
    - 2.3.3 *Collaboration types and economies*.....22
  - 2.4 PROBLEM DISCUSSION AND RESEARCH ISSUES .....24
- 3 METHOD .....29**
  - 3.1 QUALITATIVE CASE DESIGN .....31
  - 3.2 ABDUCTIVE RESEARCH APPROACH .....32
  - 3.3 ANALYTICAL BOUNDARIES.....36
  - 3.4 DATA COLLECTION.....37
  - 3.5 QUALITY OF THE STUDY .....40
- 4 FLEXLINK’S SUPPLY NETWORK DEVELOPMENT IN CHINA.....47**
  - 4.1 FLEXLINK ON THE WAY TO CHINA SOURCING.....48
    - 4.1.1 *Beginning to source directly in China* .....49
    - 4.1.2 *Development of the first supplier relationship: Gamma*.....51
    - 4.1.3 *New product development and expansion in China sourcing* .....53
    - 4.1.4 *Expansion of an old relationship: Mu from Sweden to China* .....55
    - 4.1.5 *Extending the network: Kappa and its sub-suppliers* .....56
    - 4.1.6 *Broadening the scope: Establishing a relationship with Xi*.....59
    - 4.1.7 *Accessing a new technology: Developing Lambda*.....59
    - 4.1.8 *Other parties* .....61
  - 4.2 FLEXLINK’S SUPPLIER BASE AND ITS RELATEDNESS TO THE REST OF THE NETWORK .....61
    - 4.2.1 *Connected relationships*.....63
    - 4.2.2 *FlexLink’s global operations*.....65
    - 4.2.3 *Flows of goods, information and ownership*.....66
    - 4.2.4 *The existing relationships during the transition to China*.....70
    - 4.2.5 *Example: mapping of the production of a phone bracket* .....71
    - 4.2.6 *Example: mapping of the production of Idler end 1* .....73
    - 4.2.7 *Example: mapping of the production of Idler end 2* .....75
  - 4.3 THE GRADUAL ONGOING TRANSITION TO CHINA.....75
    - 4.3.1 *The procurement savings goal*.....76

4.3.2	<i>Calculating the annual procurement savings</i> .....	77
4.3.3	<i>The list of candidate items for transfer</i> .....	78
4.3.4	<i>Finding suppliers in China</i> .....	79
4.4	STRATEGIES AND PLANS FOR THE FUTURE.....	80
<b>5</b>	<b>CASE ANALYSIS</b> .....	<b>81</b>
5.1	FROM 2002 TO 2004.....	82
5.2	FROM 2004 TO 2005.....	83
5.3	THE YEAR 2006.....	84
5.4	FROM 2007 TO 2008.....	86
5.5	FROM 2009 TO 2011.....	87
5.6	FROM 2011 TO 2012.....	89
5.7	DEVELOPMENT OF INVOLVEMENT LEVELS, INTERDEPENDENCIES, AND COLLABORATION TYPES.....	91
<b>6</b>	<b>DISCUSSION</b> .....	<b>97</b>
6.1	UNDERSTANDING THE EMERGENCE OF ECONOMIES WHEN INITIATING AND DEVELOPING A SUPPLIER BASE... 97	
6.1.1	<i>Levels of involvement and emergence of economies</i> .....	97
6.1.2	<i>Interdependencies and emergence of economies</i> .....	99
6.1.3	<i>Collaboration types and emergence of economies</i> .....	101
6.2	EMERGENCE OF ECONOMIES: A WAY TO DESCRIBE SUPPLIER BASE INITIATION AND DEVELOPMENT.....	102
<b>7</b>	<b>CONCLUSIONS AND FURTHER RESEARCH</b> .....	<b>107</b>
7.1	MANAGERIAL IMPLICATIONS .....	109
7.2	IMPLICATIONS FOR FUTURE RESEARCH.....	112
	<b>REFERENCES</b> .....	<b>117</b>
	<b>APPENDICES</b> .....	<b>125</b>
	LIST OF INTERVIEWS .....	125
	LIST OF OBSERVATIONS .....	127
	PRE-STUDY DATA COLLECTION.....	128



# List of Figures

- FIGURE 1 - ASPECTS OF INVOLVEMENT .....20
- FIGURE 2 - THE INTERPLAY BETWEEN THE DIMENSIONS OF RESEARCH (DUBOIS & GIBBERT, 2010).....41
- FIGURE 3 - REPORTING IN FLEXLINK’S CHINA SOURCING: BEFORE 2009.....50
- FIGURE 4 - REPORTING IN FLEXLINK’S CHINA SOURCING: SINCE 2009.....50
- FIGURE 5 - FLEXLINK'S CONNECTED RELATIONSHIPS ON THE DEMAND SIDE .....65
- FIGURE 6 - CHINA-GERMANY: PHYSICAL FLOWS .....68
- FIGURE 7 - CHINA-GERMANY: INFORMATION FLOWS.....68
- FIGURE 8 - CHINA-GERMANY: FINANCIAL FLOWS .....68
- FIGURE 9 - CHINA-MALAYSIA-GERMANY: PHYSICAL FLOWS.....69
- FIGURE 10 - CHINA-GERMANY: INFORMATION FLOWS.....70
- FIGURE 11 - CHINA-GERMANY: FINANCIAL FLOWS.....70
- FIGURE 12 - PHONE BRACKET (AN EXAMPLE OF CONNECTED RELATIONSHIPS).....72
- FIGURE 13 - SUPPLY NETWORK FOR IDLER END MODEL 1.....74
- FIGURE 14 - IDLER END MODEL 2.....75
- FIGURE 15 - TIMELINE: FLEXLINK INITIATING AND DEVELOPING ITS SUPPLIER BASE IN CHINA BETWEEN 2002 AND 2012 .....81
- FIGURE 16 - LEGEND FOR ALL FIGURES IN THE SUB-SECTIONS OF THE ANALYSIS.....82
- FIGURE 17 - 2002-2004: PURCHASING THROUGH THE SOURCING AGENT .....83
- FIGURE 18 - 2004-2005: ESTABLISHING THE CHINA SOURCING UNIT AND FINDING GAMMA .....84
- FIGURE 19 - 2006: EXPANDING WITH GAMMA, PREPARATIONS WITH MU AND KAPPA .....85
- FIGURE 20 - 2007-2008: EXPANDING WITH GAMMA AND KAPPA, AND STARTING WITH MU .....86
- FIGURE 21 - 2009-2011: EXPANDING WITH GAMMA AND KAPPA, FINDING XI AND LAMBDA, AND CONTINUING WITH MU.....88
- FIGURE 22 - 2011-2012: EXPANDING WITH GAMMA, KAPPA, XI AND LAMBDA, AND CONTINUING WITH MU.....90
- FIGURE 23 - ECONOMIES OF INNOVATION IN A BUYER-SUPPLIER RELATIONSHIP.....102
- FIGURE 24 - ECONOMIES OF INTEGRATION IN A BUYER-SUPPLIER RELATIONSHIP .....103
- FIGURE 25 - ECONOMIES OF SCALE AND SCOPE IN A BUYER-SUPPLIER RELATIONSHIP .....103
- FIGURE 26 - THE INTERPLAY BETWEEN THE EMERGENCE OF ECONOMIES AND SUPPLIER BASE DEVELOPMENT..... 105



# List of Tables

TABLE 1 - ECONOMY, COLLABORATION AND RELATIONSHIP TYPES (GADDE, ET AL., 2010) .....17

TABLE 2 - THE RIs OF THIS STUDY AND THEIR EMPIRICAL NEEDS .....30

TABLE 3 - SOURCES FOR DATA COLLECTION .....38

TABLE 4 - FLEXLINK’S DUAL SOURCING STRATEGY ON THE TECHNOLOGY LEVEL.....71

TABLE 5 - DEVELOPMENT OF FL'S SUPPLIER RELATIONSHIPS IN CHINA.....94



# 1 Introduction

During the global hype of offshoring in 2002 FlexLink, a Swedish manufacturer of production logistics solutions, started to source from China. At the time, China was not a new source for multinational enterprises, nor was FlexLink a naïve in-house manufacturer. FlexLink was at the core of a supply network, most of which was in or near Sweden. All of FlexLink's products were produced by its suppliers, and the suppliers were responsible for almost all of the assembly. Warehousing and distribution were also outsourced to third parties, and FlexLink's headquarters in Gothenburg mainly coordinated the activities of these actors.

At the same time, China was at the peak of attracting foreign investments for production, assembly, marketing and distribution. This had created, as Stalk Jr. (2006) puts it, a '*China riptide*' among corporations in different industries around the world. In this industrial environment in 2002 FlexLink decided to start cutting costs by finding a sourcing agent who could deliver a couple of simple products from China. This successful attempt gave FlexLink enough confidence to establish a sourcing unit in Shanghai in 2005 and initiate a supplier base in China.

Over the years, the sourcing unit, run by Chinese engineers, managed to establish relationships with eight suppliers. Some of these suppliers were gradually dropped from the supplier base, and replaced by others, and as time passed suppliers with different capabilities have been found to widen the scope of FlexLink's China-sourced products. As this side of FlexLink's supply network developed, various members were connected in different ways to suppliers of FlexLink in the Europe-based side of the network. Since 2002, FlexLink's small agent-based Chinese supplier base has been progressively developing and expanding in terms not only of scale and scope, but also the extent of relationships. Starting with low volumes of a simple product manufactured by Gamma<sup>1</sup> in 2004, more complex products with higher volumes and a more important coordination role for Gamma were introduced in later years. One of FlexLink's Swedish suppliers' move of production to China attracted FlexLink to expand their business with them in that part of the world, and FlexLink also went on to find and link two other suppliers in China for machining, stamping, and nitro carburizing. After 2004, FlexLink has not only found more suppliers with different technologies, but has also developed new products together with its Chinese suppliers, some of which require technologies none of FlexLink's European suppliers possess.

The above is an illustration of how a firm initiates and develops a supplier base in a new context, which is extensively described and analyzed in this thesis. This phenomenon is a result of various developments in the field of purchasing over many years. In today's business world, with the accepted role of purchasing in the success of its players supplier base initiation and

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<sup>1</sup> One of the first members of FlexLink's supply network in China

development is a topic of great interest. In recent decades, purchasing has gained increasing attention from both practitioners and academia, for a number of reasons. First, purchasing has become responsible for a large share of the total expenditure of firms, which, second, indirectly affects the internal costs of firms (owing to the interrelatedness of what is purchased and what is carried out at the firm). Third, suppliers have become more important, as they have gradually become responsible for providing firms with various types of resources (Gadde, et al., 2010).

Meanwhile, specialization has become increasingly important among practitioners as the importance of suppliers has increased over the years. With purchasing gaining a more strategic role, and with benefits of closer relationships with suppliers becoming more evident, firms have become able to rely more on the suppliers to perform what they previously did in-house. This has caused major changes to the arrangement of activities around the world. Firms have consequently become more specialized in a certain set of activities and let their suppliers do the job that they know best (Gadde & Persson, 2004).

As specialization was overtaking the business world, manufacturers were searching for suppliers with suitable capabilities to do some of their jobs. It soon became evident that outsourcing has to pay off, and researchers began to theorize about that (such as TCE<sup>2</sup>). The importance of the costs of outsourcing became clearer and clearer, and firms started to look for the least expensive suppliers.

The trend toward specialization became an important facilitator of another major trend in the supply side of firms; the global sourcing trend (Feenstra, 1998; Quintens, et al., 2006). The heterogeneity of the earth, and the variety of resources and capabilities in different parts of the world gradually drove firms to exploit what suppliers in other parts of the world could do for them. At the heart of this trend of purchasing globalization, countries with generally lower costs and cheaper labor managed to attract a variety of industries from the West; not only for offshore production, but also for offshore sourcing (Schenherr, 2009; Nassimbeni & Sartor, 2007). Over the years, the practice of shifting production or sourcing to emerging countries has faced difficulties, and many studies have reported major failures in such endeavors, resulting in backshoring<sup>3</sup> (Kinkel & Maloca, 2009; Smyrlis, 2006; Lau & Zhang, 2006). All in all, the trends toward specialization, outsourcing, global sourcing and backshoring can be seen as important antecedents of and, at the same time, consequences of the historical changes that have shaped today's position of purchasing as a powerful business function.

Since the early twentieth century, a classical view of purchasing has been prevalent. Each purchasing decision was seen as a single isolated event, for which the related individual transaction would be evaluated and awarded to the supplier with the best offer. In recent decades this view has changed considerably, taking on a broader perspective. Gadde et al. (2010) address a number of reasons for this change. Firstly, the increasing importance of purchasing has raised

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<sup>2</sup> Transaction-Cost Economics

<sup>3</sup> Moving production or sourcing back to the firm's home country

purchasing decisions in organizational hierarchies. So they are now taken with a broader set of considerations in mind, than only aiming at optimizing single transactions. A second reason is that single industrial purchases are often repeated in the future, or the same supplier is asked about another item (or other items within the same purchase). What is purchased in one transaction is also most likely related in one way or another to what is purchased in other transactions taking place at more or less the same time.

Therefore, single purchasing transactions cannot be seen in isolation. In the expanded view of purchasing, what is purchased in a single purchasing transaction is no longer of importance. Instead, all the business between the firm and the supplier is taken into account. In other words, the relationship with the suppliers is handled, rather than individual transactions. Furthermore, as each purchasing transaction, and each supplier relationship has an important impact on the rest of the firm's business, it is of great significance to see what goes on within one supplier relationship affects whatever else goes on in the firm and with the rest of its suppliers. In essence, understanding how each supplier relationship is related to the other relationships of the firm (with its suppliers and customers) is of crucial importance.

This signals the importance of taking a network perspective on the supply side of firms. This means that the set of suppliers that provide technologies, knowledge, and other types of resources to the firm should be seen as members of a network, each of which has a relationship with the focal firm, and these relationships are interrelated. There is also a dynamic aspect: as time passes, the extent of the dealings with the suppliers change, the people who work with each other in the involved firms may be replaced by others, the amount and type of investments firms make in these relationships may vary, the extent to which the involved firms would like to be involved with the others may alter, and suppliers may be added to or removed from the network (Dubois, et al., 2003). Holmen et al. (2007) suggest that the most important factor when supply network management is in focus is the interrelatedness of the relationships within it, and that it is important for researchers to explain and theorize about time-bound changes in supply networks. When it comes to development of the supply side of firms, interrelatedness and dynamism are central.

The supply network of a firm is broader than what each member considers when making decisions about its supply side. From a firm's perspective, there is a set of suppliers to which the firm is directly related, and other actors to which those suppliers are directly or indirectly connected. Today suppliers' contributions to a firm define the success and failure of the firm in achieving efficiencies. Consequently, how firms manage their supplier relationships is crucial. By making the best of these supplier relationships, firms can perform their operations successfully (Gadde & Persson, 2004).

The supplier base of a firm consists of a set of direct relationships with its suppliers. As discussed above, supplier relationships are interrelated and dynamic. Management of the supplier base, according to Gadde and Håkansson (1994), deals not only with the number of suppliers in

the base, but also how these suppliers should relate to each other. Drawing on Holmen et al. (2007) and Gadde and Håkansson (1994), the supplier base of a firm is defined in this study as the relationships between the firm and a number of suppliers that are not only in direct relationship with the firm, but are also directly or indirectly related to one another. In a supply network, there are more actors, and hence more relationships, than those in the supplier base. Supplier bases can be conceptualized as subsets of supplier networks from a firm's perspective, and so the development of supplier bases must be seen with a holistic perspective that can capture these two main characteristics (i.e. interrelatedness and dynamism).

Holmen et al. (2007) state that little is known about the early developments of supply networks and supplier bases, and call for further empirical research into supply network initiatives and their changes over time. One way of studying the development of a supplier base in its early stages is to study a firm establishing a supplier base in an emerging country. As discussed above, many difficulties with sourcing in emerging countries have been reported and many attempts at emerging country sourcing have failed with considerable financial and social consequences. The case of FlexLink is an illustration of a firm initiating and developing a supplier base in a new context. Since 2002, FlexLink has managed to establish a new supplier base in China. This has involved initiating and developing relationships with various suppliers, linking them to one another and linking them to the rest of their supply network. Therefore, studying these developments from the start to the today's situation provides a good illustration of how a firm initiates and develops a supplier base in a new context.

The aim of this thesis is to explore the initiation and development of a supplier base in a new context from the perspective of a firm. This is done by investigating a case of supplier base initiation and development by a Swedish firm (FlexLink) in China. The empirical investigation concentrates on the initial phases of development of the supplier base in China, examining the development of individual relationships, together with other aspects of the development of this supplier base. A number of examples of arrangements for manufacturing different products are also presented and their developments over time described. Various aspects of the relatedness of the China-based supplier base of FlexLink to the rest of their network (mostly located in Europe) are also demonstrated, although only to a limited extent.

In the next chapter the frame of reference is presented. It begins with an overview of the developments of purchasing over the decades, and continues with a review of previous studies of global and emerging country sourcing. Previous studies on the development of supply network and supplier base are then provided, followed by a presentation of the theoretical concepts that are central to the analysis. This leads to a problem discussion, pointing out one main research issue and three sub-research issues. In chapter 3, the method of the study is discussed with a focus on the research process, and in chapter 4 the case of FlexLink's supplier base development in China is presented. In the fifth chapter this case is analyzed using the concepts provided in the frame of reference. A discussion focusing on responding to the three sub-research issues and the



main research issue is provided in chapter 6, and chapter 7 concludes by going back to the aim and discussing future research opportunities and managerial implications.



## 2 Frame of reference

In this chapter a literature review of the key theoretical dimensions of this thesis is presented, beginning with a historical review of how the field of purchasing has developed theoretically and empirically. Emerging country sourcing as the empirical context in which this investigation is performed is then portrayed. Different opinions are presented on why firms expand their sourcing in the global dimension, what they are pursuing by taking up these challenges and how they follow upon their objectives in such contexts. In the third section, the empirical phenomenon of this study, supplier base initiation and development is described briefly, and its importance and different aspects are discussed. The key analytical tools of the study are also presented, leading to a discussion of the problem in the last section of this chapter.

### 2.1 DEVELOPMENTS IN PURCHASING

The past century has witnessed major developments in the organization of the supply side of firms. During this time, purchasing has not only become responsible for a much larger share of companies' business, but also (and in line with that) has gained a much more important role (Gadde & Persson, 2004; Gadde, et al., 2010). In the early twentieth century, purchasing was mainly a clerical function. No major purchasing decisions were taken by the purchasers, as they were thought of as 'agents', who only reactively performed the administrative work concerning the deals between their firms and their suppliers. Over the years, for a number of economic, political and social reasons<sup>4</sup>, purchasing faced new challenges. In the 1910s it became the purchasers' job to avoid stock-outs, while later in that decade they had to also purchase more cautiously. In the 1920s purchasing became involved in the hands-on task of inventory control, and in the 1930s top management began to rely on purchasers as supply discount enforcers (Morgan, 1999).

In the 1940s, scientific purchasing, supplier negotiations and value engineering became popular among purchasers, as they became involved in making more strategic decisions, including capital investment and 'make or buy' decisions. By the 1950s purchasers had gained an important cost-saving role in organizations, which was why they started to forecast prices, analyze competitions, and perform systems purchasing. Then in the 1960s purchasing became very important in internal (and to some extent, external) integration of firms, as it became a function of the newly-emerging area of materials management. Various techniques such as MRP, MRP II and JIT were applied by purchasers in the 1970s, as purchasing was becoming a much more interdisciplinary field and collaboration with suppliers was becoming more important (ibid).

During the 1980s, purchasing emerged into supply and supply chain management, and Kraljic's (1983) seminal portfolio model moved the practice of purchasing into a new world of opportunities. In the 1990s, vast amounts of re-engineering in organizations paved the way for outsourcing and contract management to flourish, and as a result supply chain management

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<sup>4</sup> Massive increases in demand during the two World Wars, and recessions and inflation in the world economy.

started to be dealt with as a source of competitive advantage. The blossoming of IT facilitated not only global competitiveness for firms, but also the practice of multidisciplinary purchasing (Morgan, 1999).

In the recent decades purchasing has considerably changed again. As purchasing complexity has increased for different political, social and economic reasons, purchasing has become more and more important. According to Gadde et al. (2010), in today's business world no purchasing transaction can be dealt with in isolation, rather, a total cost approach where the unit price is not the only decision-making factor makes more sense; it is the job of purchasing to help and affect innovation and development in firms and hence the supply side of the companies needs to be considered using a holistic perspective. Today, the products exchanged are not the only important thing, the processes in which they are produced and transported are also very significant, which is another reason for the emerging strategic importance of the purchasing function.

Research on purchasing and supply management has not followed practice exactly because every marketing activity achieves its objectives when a relevant purchasing decision is made, purchasing can be seen as the flip side of marketing activities, and so to understand buying behaviors, marketing researchers initiated research on purchasing. Such studies use basic behavioral and economic assumptions, where buyers act passively and easily change suppliers if they get a better offer. One of the first studies to recognize the differences between industrial and consumer buying was Sheth (1973). This initiated a great deal of research on the 'buying center' and how purchasing decisions are made. This thread of purchasing research remained loyal to many consumer marketing (or purchasing) assumptions, such as atomistic and passive markets as well as single purchasing transaction management (Ellram & Carr, 1994).

Since the 1980s purchasing practice had been proving the importance of its inter-organizational (I/O) aspect. The emergence of I/O research created a new path for purchasing among researchers. Economists (such as Porter (1980) and Williamson (1975; 1981)) were the leaders of this line of research. Williamson's (1981) transaction cost approach suggested comparing market and hierarchy governance structures when evaluating a make/buy decision with a transaction perspective. This seminal work, resulting in the establishment of the Transaction Cost Economics (TCE), greatly influenced research in the field of purchasing in the 1990s, and after. But, as collaboration and business relationships became more important in the practice of purchasing after the millennium, the growth of TCE-based research began to slow down (Giunipero, et al., 2008).

As collaboration in business relationships was starting to play an important role in the world's business, research also started to recognize and theorize in relation to this change. Findings of a PhD thesis by Johanson (1966) made a major impact on later studies that focused on theorization for collaboration in buyer-supplier relationships. That thesis identified a gap in the marketing literature for explaining the type of dealings he had observed between his studied buyers and

suppliers: *long-lasting relationships*. Triggered by that study, it was later shown that purchasing needs to be considered beyond the scope of single transactions. For a purchase to be made, a number of individuals are involved. Customers are less interested in changing their suppliers and mostly favor cooperating with their existing ones, rather than exercising their power over them. Besides, for long-term relationships to develop, adaptations and adjustments of products and processes of both sides are necessary.

During the 60s and 70s a number of research projects were initiated. Based on different aspects of organization theory (March & Simon, 1958; Cyert & March, 1963; Thompson, 1967) and inter-organizational studies (Blau, 1964; Aiken & Hage, 1968), these projects explored the nature of dependencies and adaptations, the development of relationships and the social dimension of such arrangements. The interaction approach (Håkansson, 1982) was one of the major later outcomes of those projects. Later related studies suggested that the once-underestimated business relationships needed to be reconsidered (Gadde & Snehota, 2000; Ford, et al., 1998; Håkansson, 1982). Arm's length supplier relationships, the ultimate prescription for the industry in the past, are being replaced today by relationships where interaction and different levels of involvement are present (Gadde & Persson, 2004; Gadde & Snehota, 2000). This was the early phases of the development of the IMP (Industrial Marketing and Purchasing) tradition, which has grown and attracted researchers from various areas over the years.

The focus of this thread of research was not limited to individual inter-organizational relationships. It also recognized the interdependencies among them. This led to developing the concept of '*network*' as a form of business markets. (Håkansson & Snehota, 1995; Johansson & Matsson, 1991; Håkansson, 1987). In a network, whatever takes place within any given firm is dependent on and impacts on what goes on in the other firms, including suppliers. A network perspective, and consideration of the interdependencies among different relationships of the firm, has become crucial to an understanding of the supply side (Gadde, et al., 2010). Influenced by this thread of research, various studies have analyzed the developments on the supply side of firms using network models (for instance Gadde and Håkansson (1994), Harland (1996), Johnsen et al. (2000), Dubois et al. (2003), Harland et al. (2004) and Pedersen et al. (2008)).

This thread has been strengthened by the development of the *ARA model*, which suggests that networks should be analyzed according to the three layers (or dimensions) of *Activities*, *Resources*, and *Actors* (Håkansson, 1987). Based on this model, the *links* among activities, *ties* among resources, and *bonds* among actors are seen as constituting the substance of business relationships, which form network-like structures. These three dimensions are interdependent. Actors perform activities and activate resources, activities use resources and are a result of the development of the actors, resources are the boundaries restricting actors from the unlimited undertaking of activities, and the bonds, ties, and links between them are interconnected. This interplay is the source of change and dynamism in business relationships and networks (Håkansson & Snehota, 1995). The ARA model and its central role in this study are elaborated in section 2.3 below.

## **2.2 GLOBAL SOURCING AND EMERGING COUNTRY SOURCING**

Quintens et al. (2006) suggest a definition of global purchasing as an activity that involves “*searching for*” and “*obtaining*” goods, services and other resources on a “*global scale*”. Kotabe (1998) calls these activities “*global sourcing*” and suggests that they consist of not only the logistics of relating different sources to different production units and them to different markets, but also the interfaces between different global functions of the organization, including R&D, manufacturing and marketing. In this study, global sourcing is used as a general term for all global activities on the firm’s supply side that are undertaken by the firm in relation to the other actors in the network, and that activate and utilize the different actors’ global resources.

Kotabe and Murray (2004) suggest that the firm’s global sourcing strategy is a key to successful development and production of the firm’s major products and components. They define global sourcing as “*logistical management of the interfaces of R&D, manufacturing and marketing activities on a global basis*”. This involves maintaining internal capabilities of the firm, while accessing suppliers’ capabilities. For a global sourcing strategy to work well, different parts of the organization, located in geographically distant locations, need to be closely coordinated.

Situations in which companies move their activities to emerging countries are manifold. One situation can be when a company *offshores* by “*locating [an] activity to a wholly owned company or independent service provider in another country*” (Lewin & Peeters, 2006, p. 221). When the firm is “*taking an operation or function traditionally performed in-house and jobbing it out to a contract manufacturer or a third-party service provider*” it is *outsourcing* that activity (Morgan, 1999, p. 90). A special case of offshoring and outsourcing is the situation where activities are moved to emerging countries. In this situation outsourcing or moving an already outsourced activity occurs, and the supplier is located in a country associated with low wages, i.e. *emerging country sourcing*. Performing operations in emerging countries (e.g. offshore production) also entails sourcing locally, which indirectly involves emerging country sourcing. This is called ‘*low-cost country sourcing*’ in many studies, but the term ‘*emerging country sourcing*’ is used throughout this study, to emphasize the fact that it is about more than cheaper product acquisition costs.

Despite the attractiveness of emerging country sourcing for managers in recent years, it has not been completely straightforward; companies have faced challenges on their way to emerging countries. Many cases of underestimation of the real costs of offshoring have been reported in different studies (Smyrlis, 2006; Hogan, 2004), and it is found that in most cases not only a post-change evaluation is lacking, but the pre-decision cost/benefit assessment systems are also inadequate (Lau & Zhang, 2006). A study of 1,663 German firms showed the failure of almost 21% of all of their offshore activities between 2000 and 2006 (Kinkel & Maloca, 2009).

### **2.2.1 DRIVERS AND BARRIERS**

One open question that has been widely tackled in various studies is: “Why do (or should) companies engage in global sourcing?” Many studies have argued that firms engage in

international sourcing in pursuit of efficiencies. Such researchers mainly suggest that the justification is usually that global sourcing is directly or indirectly economically beneficial. In the trend of global sourcing, the ambition to cut product acquisition costs and to gain access to emerging markets have driven a vast number of companies from the Western world towards China and other emerging countries in at least the three latest decades (Giuliani, et al., 2005; Vestring, et al., 2005; Peng, 2006; Fang & Axelsson, 2005). A survey of 104 large and small US companies shows cost reduction as the main reason for almost all (97%) participating companies that undertook the challenge of offshoring (Lewin & Peeters, 2006). Most (73%) of those companies also indicated that offshoring was in line with their companies' growth strategies.

Monczka and Giunipero's (1984) study of 26 large American companies suggests that price and international orientation are of greatest significance in determining why companies choose to have a foreign supplier rather than a domestic one. They argue that firms decide to start purchasing abroad mainly in pursuit of lower prices of purchased items or to follow the corporate strategy of increased internationalization. Overby and Servais' (2005) review of a number of previous studies shows that quality and price are the dominant factors. Research prior to their work pointed out foreign suppliers as being targeted by firms either because they provide or promise to provide better quality and prices than those firms would have been able to achieve in their own countries. Product availability is also high on this list.

Trent and Roberts (2009), in contrast, argue that in practice this has not always been the case when sourcing from low-cost countries. They suggest, based on a number of studies, that inconsistent quality of sourced products, and increased total costs of sourcing compared with in-house production or sourcing nearby have been repeatedly observed by practitioners aiming at sourcing in low-cost countries. Among the top problem areas when sourcing in low-cost countries, Trent and Roberts (2009) also mention lead time instability, longer logistics work, supplier inflexibility and unresponsiveness, all of which concern the availability of products. Their study shows that what Overby and Servais (2005) found to be the dominant reason for firms to source abroad is not necessarily true in practice when low-cost country sourcing is the context.

Various studies suggest that an important reason for global sourcing is to gain competitive advantages (Agndal, 2006; Neureiter & Nunnenkamp, 2009; Kotabe & Murray, 2004). Neureiter and Nunnenkamp (2009), who analyzed European survey data of 8,300 companies, showed that access to markets by international sourcing is more likely to be the most effective way of increasing the competitiveness of the firm rather than the potential cost reductions. Kotabe and Murray (2004) suggest that a global sourcing strategy today is a result of "*the interplay between the firm's competitive advantages, and the comparative advantages of various sourcing locations*". This not only involves the specific characteristics of the region that hosts the product, but also the capabilities and circumstances of the suppliers located in those regions. Fang and Axelsson's (2005) study of Ericsson's development in China shows that China is shifting from low-end product sourcing to becoming an innovation center, which streamlines the path for

offshoring companies to gain competitiveness by enabling brain sourcing in the early stages of the supply chain.

Efficiency seeking was not the only reason motivating companies to go abroad. According to Araujo and Gadde (2009), the vast influence on companies all around the world of, on the one hand, offshoring and outsourcing to low-cost countries and, on the other, backshoring and in-sourcing has made these strategies a well-followed fashion during recent years. Their study suggests that the early outsourcing trends which were mainly in pursuit of efficiency, and later cost-cutting (resulting in offshoring trends), were later widely expanded in terms of both scale and scope. This initiated the outsourcing and offshoring business recipes many managers began to follow, but with less attention to performing thorough and rigorous analysis of whether or not these efforts would pay off in terms of efficiency. The motivation for engaging in global sourcing can be seen as resulting from both the managers' "*efficiency-seeking*" ambitions and their "*recipe-following*" behavior.

Agndal (2006) believes that firms do not follow any single pattern for expanding in international purchasing, although a few factors can be used to analyze their actions. *Motives, triggers, and attitudes* are the most important of these factors. Mintzberg and Waters (1985) name emergence and deliberation as two extremes of strategic decision-making. A perfectly deliberate decision is a decision for which the intentions are precise and concretely formulated, shared among all actors in the organization, and completely realized with no interference of the external environment. A purely emergent decision, on the other hand, would be a set of consistent actions over time with no pre-determined intentions. In real life, though, neither of these two extremes exists. Each strategy is taken with a certain tendency towards one of the two extremes. In line with the recipe-following discussion above, Agndal (2006) advocates emergence rather than deliberation when it comes to the SMEs' internationalization processes. Being reactive, SMEs tend to redirect their internationalization processes based on chance and uncontrollable events, although they might also involve proactive initiatives. Thus, *emergence* is a better explanation for the nature of SMEs' internationalization processes than *deliberation*; i.e. "*they follow unplanned rather than planned paths*". As a result, a highly influential factor in making a path for such processes is the individual managers' interests, ambitions and personal networks; *opportunistic expansion* on a global basis is very much practiced by SME managers using the business opportunities that turn up in their networks (ibid.).

### **2.2.2 CONSIDERATIONS FOR SOURCING GLOBALLY**

Another set of studies tries to find reasonable explanations of how companies organize their global sourcing strategies, and provide suggestions for making them more efficient. For example, Handfield & Nichols Jr. (2004) suggest that if suppliers are to be selected or assigned new products, buying firms must consider the type of product in order to be able to make a good judgment. In case of commodity purchases, reverse auctions would suffice, although this method can be a barrier to establishing close relationships with suppliers; especially when one takes into account the cultural issues of the host country. If the hosting culture embraces close interpersonal



ties, then reverse auctions may not be a suitable tool for selecting suppliers or assigning new products to them if the items have less of a commodity nature and more of a technology character. Using this reasoning, Salmi (2006) analyzed how seven Finland-based firms involved in China sourcing started and maintained their supplier relationships, showing that in most cases companies source components and standard products from China owing to the level of involvement supplier relationships containing more complex products requires.

China, as one of the most important hosts for the Western companies' global sourcing initiatives, plays a key role in today's global economy; knowing how business works there is an important factor when discussing global supply network development. Salmi (2006) believes that the Chinese culture embraces a long-term approach to business and through commitment Western companies can earn the trust of their Chinese counterparts. She suggests a long-term perspective when it comes to sourcing from China. In order to succeed in China, Western firms need to focus on their information exchange and communication with their suppliers. Interpersonal relationships can help in discussing problems and creating a more efficient environment for the relationship.

Handfield and Nichols Jr. (2004) emphasize 11 key issues to consider when making a decision regarding a firm's global supply base. Like Salmi (2006), they highlight the importance of communication and personal relationships in successful global supply base management, and defend the idea that buyers and suppliers must support each other in difficult economic times, rather than pushing for increased benefits of only one party. "Joint cost reduction opportunities" are only achievable if both parties are willing to help, fair processes are applied for biddings and negotiations, confidentiality of each other's information is maintained, problems are dealt with in a just manner, all demands are made reasonably, and open communication is ensured in a professional and cooperative business environment.

Handfield and Nichols Jr. (2004) also suggest that having the different functions of the organization spread globally increases the need for parallel relationships among different functional groups on the demand and supply sides. The buyers' dependence on the suppliers' resources increases, which makes it even more vital for the buying firms to be able to analyze supplier performance. They emphasize the importance of trust in buyer-supplier relationships. Citing Peterson, et al. (2003), they claim that in order for a new product development initiative to be successful, a "*detailed formal evaluation and selection of potential suppliers*" is required before any supplier can be considered for involvement. In addition to being thorough in selecting the suppliers with whom to become highly involved, sharing the project objectives and involving the suppliers in project teams are pointed out as important considerations for having successful buyer-supplier relationships based on trust.

High involvement in international supplier relationships is suggested in various studies. Salmi (2006), for instance, suggests that with sufficient involvement different types of distances can be reduced. Personal visits are key here; in order to ensure a cooperative environment, firms need to

pay frequent visits to their Chinese counterparts. This not only improves mutual trust, it also facilitates information exchanges and supervisory activities. After describing data inconsistency problems in a global context, Handfield and Nichols Jr. (2004) suggest face-to-face meetings before entering the automatic data transfer phase. Fang and Axelsson (2005) suggest that in order to succeed in the Chinese business environment, one should “*let the Chinese do business with the Chinese*”.

Among the benefits of close and cooperative relationships with foreign suppliers, Overby and Servais’ (2005) survey suggests that word of mouth is important for exporters in working with SMEs in other countries. This is especially true in businesses with high levels of global interaction. They also suggest the importance of adaptations in different fields, such as product and after-sales services, in order for exporters to be successful in establishing and maintaining good international relationships with their customers. Fang and Axelsson (2005) believe that success in sourcing and production in China is not only achieved through low-cost labor, but also by means of establishing strategic relationships with the Chinese suppliers, performing R&D activities there, and making significant moves towards their domestic markets. Their study of the case of Ericsson shows that having a more strategic view of sourcing from China has enabled Ericsson to take advantage of possibilities of working with both Chinese and other present international suppliers and has given them better access to the Chinese market.

The discussion above points out the importance of considering business relationships and the actors in one’s network who are directly or indirectly involved in relation to the firm’s global sourcing. Global sourcing initiatives of firms can be analyzed by investigating the development of relationships and business networks internationally. A firm’s relationships with its suppliers and how those relationships are interconnected to form supplier bases is a promising way of obtaining an understanding of how firms develop their global sourcing initiatives. In this study, initiating and developing a supplier base is studied in the context of emerging country sourcing. The next section elaborates on the phenomenon and presents a number of conceptual tools for analyzing the empirical findings of this study.

### **2.3 SUPPLY NETWORK DEVELOPMENT**

The previously-discussed extension of focus of purchasing from supply relationship management to supply network management has been observed by both academics and practitioners (Holmen, et al., 2007; Albani, et al., 2004; Srai & Gregory, 2008; Mussignmann & Albani, 2006; McGinnis & McCarty, 1998; Harland, et al., 2004). Holmen et al.’s (2007) review of the literature in this field makes a distinction between the two concepts of *supply base management* and *supply network management*. In supply network management a network perspective is mainly used. The interrelatedness of buyer-supplier relationships and linking suppliers in the network to one another is the most explicit aspect of such discussions. The supply network structure and the initiation, creation, management and change processes within supply networks are also highly relevant in supply network management dialogue (Holmen, et al., 2007).

Supply network development is approached from different viewpoints. Some studies use a strategic perspective (such as Holmen et al. (2007), Srai and Gregory (2008)), while some others have a more operational approach (e.g. Ebers and Grandori (1997) and Albani et al. (2004)). Many studies focus on the development of individual buyer-supplier relationships (Gadde & Snehota, 2000; Araujo, et al., 1999), while others have centered on supply networks and studied their overall development (Harland, et al., 2004; Holmen, et al., 2007). Nor is the problem of supply network development limited to the purchasing and supply management area. Today it has become a multidisciplinary field with contributions from (and to) different fields, such as computer engineering (e.g. Mussignmann and Albani (2006) and Albani et al. (2004)) and production management (e.g. Srai and Gregory (2008)).

According to Holmen et al. (2007), when the management of the supplier base is in focus, decreasing the number of suppliers in the base is important. Supply performance management, structure (organization) of suppliers, the extent of buyer-supplier relationships, and changes in these relationships are also among the most popular topics when discussing supplier base management. Gadde et al. (2010) identify three categories of issues in relation to supplier base management, and emphasize the role of purchasing in dealing with these problems. The first set is *variety*. The goods and services a firm may purchase are diverse and provided by various suppliers, they need to be purchased in different batch sizes, they are made available from many geographical locations, they require dissimilar types of technical expertise, and so on. In addition, the management of supplier bases needs to deal with issues related to *complexity*. Complexities arise for instance when the demand for a limited group of certain purchased items is much higher than others, i.e. the Pareto distribution of suppliers and volumes, when the number of suppliers and the volumes associated with each are of importance for the management of supplier bases. *Heterogeneity* issues are related to the inability of each firm to possess all of its needed resources and the consequent need of access to the resources of their suppliers, which requires investments in collaboration and close involvement. The challenge is that these collaborations are resource-intensive, but their positive results are achieved in the long run.

According to Holmen et al. (2007), many studies of supply base management focus on a tier-logic, where the focal firm has close relationships with a few suppliers and those suppliers are then responsible for ensuring that other suppliers needed to fulfill the demand of the focal firm are appropriately organized (Gadde & Håkansson, 2001). In supply network management the role of the focal firm in connecting the suppliers within the network is generally more emphasized (Srai & Gregory, 2008). Supplier base management is central to any discussion regarding supply network management; as all modifications and changes to (i.e. the development of) the supply network at any point in time is based on the existing structure and characteristics of the supplier base at that time (Gadde, et al., 2010).

Supply networks are made up of various inter-organizational relationships. However, a supply network cannot be viewed only from one firm's perspective, because all firms are members of the network and operate within it. From one firm's perspective, though, it is possible to define a

supplier base or multiple supplier bases. In a supplier base, the relationships of the focal firm with its suppliers are central, as their links to each other and to the other actors in the network are also of concern. Supplier bases are subsets of supply networks, viewed from the perspective of different members of the network. As change is a characteristic of any supply network, it is vital to understand how such change can be handled and initiated in order to understand the development of the supplier base of a firm.

The supplier base of a firm is the firm's relationships with a set of actors on its supply side that are connected both to the focal firm and to one another. This connectedness and relatedness can either be direct, i.e. a dyadic relationship, or indirect, i.e. connectedness through other relationships. Supplier bases are made up of individual relationships between the focal firm and its suppliers, and among those suppliers and their own suppliers, as well as between those suppliers and their other customers. In this study it is claimed that developing a supplier base implies more than only developing a number of relationships individually. In fact, such development of individual relationships is not possible without the development of other relationships. The framework provides for the analysis of how a firm initiates and develops its supplier base.

During the process of supplier base development the base changes states, leaving one state and entering a new one as it develops. Holmen et al. (2007) suggest using '*states*' rather than '*stages*' to specify the characteristics of a network at any given point in time during its development, because when a development process is described using stages, it is forced to fit within a set of "*predetermined, necessary sequences*", while using states for such description allows for relaxing this constraint.

In order to understand how supplier bases develop over time, the transition from one state to another can be characterized in terms of what potential outcomes it can provide for its members, i.e. what economies are related to each state. When a supplier base enters a state, its involved firms may economize in different ways, and the development of that state into a new one may provide for the exploitation of different types of economies. Hence, investigating supplier base development is very much dependent on gaining a thorough understanding of how different economies emerge as supplier bases develop.

Economies are not necessarily the intended consequences of what actors do in a network during the supplier base development process. Rather, they are implications, in terms of outcomes of how firms relate to one another in the supplier base as it develops. In order to empirically understand this interrelatedness among firms and the dynamic nature of the phenomenon, the framework put forward here consists of three building blocks; key concepts that help direct the empirical investigation as well as the analysis of the case: dimensions of involvement, interdependencies, and collaboration types. An elaborate description of these concepts and how they relate to one another to shape this framework is presented in the sub-sections below. In

section 2.4 the relatedness of these concepts to the aim of the study is more thoroughly discussed.

Gadde et al. (2010) present three types of economies that can be pursued by buyers in relationships with their suppliers: economies of scale and scope, economies of integration, and economies of innovation. Aiming for a certain type of economy requires a certain type of collaboration in a certain type of relationship among the involved actors. Table 1 briefly shows this relatedness, while an extensive discussion on the economies and collaboration types is provided in section 2.3.3, where all of the core concepts are connected. Below, a brief description of the three building blocks of the framework is presented.

**Table 1 - Economy, collaboration and relationship types (Gadde, et al., 2010)**

<b>Type of economy</b>	<b>Collaboration category</b>	<b>Type of relationship and main concern</b>
<b>Scale and scope</b>	Distributive	Mediating
<b>Integration</b>	Functional	Linked
<b>Innovation</b>	Systemic	Problem-solving

The first building block deals with the concept of involvement in buyer-supplier relationships and expands it to the supplier base level. According to Gadde and Snehota (2000), every relationship experiences different levels of involvement of the two sides of the dyad over time. As different situations arise<sup>5</sup>, various opportunities start to arise for the firms and the conditions in which they can pursue those opportunities change. Thus, at different times firms see the need to change the way they deal with their counterparts in different ways. As a result, the extent to which firms intend to become involved with each other is affected by and affects the economies that emerge in each state. The first building block of this framework focuses on the involvement levels as a tool to identify the emergence of economies during the initiation and development of a supplier base.

The second building block deals with interdependencies and adjustments. Thompson (1967) found that activities can be interdependent in three ways: sequential, pooled and reciprocal. Activities, besides being interdependent, are subject to adjustments by actors over time (Håkansson, et al., 2009). According to Bankvall (2011), these interdependencies and adjustments are results of each other. The supplier base in each state consists of various activities that are not only interdependent in different ways, but also are being adjusted in diverse ways and for various purposes. Therefore, to gain an understanding of the emergence of economies when developing supplier bases, activities in different states should be analyzed for interdependencies and adjustments.

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<sup>5</sup> See section 2.3.1

The third building block deals with types of collaboration in buyer-supplier relationships. According to Gadde et al. (2010), business relationships can be of three types when it comes to collaboration. In mediating relationships, there is distributive collaboration; linked relationships are characterized by functional collaboration; and in problem-solving relationships actors tend to collaborate in a systemic manner. Each of these types of relationships and collaborations imply different types of outcomes. Therefore, another helpful tool for understanding how economies emerge when supply networks develop is to analyze the development of relationships within a supply network in a number of states with regard to what types of collaboration there are between the sides of the dyads.

### **2.3.1 DIMENSIONS OF INVOLVEMENT**

Relationships can have varying degrees of closeness. Ford et al. (1998) define closeness using the amount of specific investments the two firms make in the relationship between them. When two firms invest vast amounts of tangible or intangible resources on the relationship, their relationship is close, while when this amount is low, the relationship is more distant. Bensaou's (1999) study of 500 firms showed that the investments made by the buyer in relationships can be lower or higher than the ones made by the seller.

As discussed above, the ARA model developed in early IMP research (Håkansson & Snehota, 1995) has facilitated further network research (Axelsson, 2010). Gadde and Snehota (2000) introduce the *'involvement'* concept in order to address both positive and negative aspects of closeness in buyer-supplier relationships. Relying on the ARA model, they characterize involvement using the three dimensions of activity coordination, resource adaptations and actors interactions. A high involvement relationship consists of a high extent of activity links, resource ties and actor bonds, while a low-involvement relationship is characterized by the opposite. This definition of involvement implies that a relationship can involve a high level of involvement in one dimension, but not necessarily a high level in the other two.

The first layer of the ARA model, the *activity links*, is defined as *"technical, administrative, commercial and other activities of a company that can be connected in different ways to those of another company as a relationship develops"* (Håkansson & Snehota, 1995, p. 26). When a relationship between two companies is established, the activities that are the focus of the relationship play a role as do the other activities of the firm, which affect and are affected by the relationship. This has to do with the links that exist among activities in a network. According to Gadde and Snehota (2000), *activity coordination* is the alignment and arrangement of activities in order to improve the harmony in what the involved organizations do in relation to each other. Activities may be coordinated within a single relationship or across a number of indirectly-related ones. Arrangements for Just-In-Time deliveries, coordination of the schedules between two production plants, and arranging deliveries of low-volume commodities are examples of different extents of activity coordination.

The second layer of the ARA model deals with the *resource ties*, which are the connections between the different resource elements of the two sides of a dyadic relationship. The development of a relationship defines how different resources are tied to each other. Through the combination of the resources of the two sides of the dyad, both parties can enable what would not have been possible without access to the other's resources. As a result, the relationships (and the resource ties) of a firm are also important resources to the firm. On the network level, this means that gathering different resources from different actors results in a resource constellation, i.e. a structure made up of an aggregation of the different resources (Håkansson & Snehota, 1995). *Resource adaptation* concerns the adaptations made to the resources of the firms involved in order to make them better conform or correspond to each other, such as when inputs and outputs of the resources of the involved firms are interrelated. For instance, when a product is produced by a supplier using a certain machine, the machine, as a resource, needs to be adapted to the next machine at the customer's factory that is going to perform additional operations on the product. Another example is when the design of a product, as a resource, is adapted to the capabilities of the supplier in order to produce it, or make the production more efficient (Gadde & Snehota, 2000).

The supplier relationships of a firm are not identical. Gadde and Håkansson (1993, p. 69) explain the differences in terms of adaptations: "*the greater the differences the greater reason to make specific adaptations, and these may be seen as the means available to a firm to take advantage of the unique attributes of its supplier*". They present five types of adaptation, the first three of which are the most relevant to the framework of this study. Firstly, '*technical adaptations*' concern adaptation of materials, products, production processes and equipment in their technological aspects. Secondly, '*knowledge-based adaptations*' are about exchange of knowledge. This type of adaptation is applied when the buyer and seller learn about each other's technologies of use and production. Gadde and Håkansson suggest that this is an important development issue in buyer-supplier relationships. The third type of adaptation is '*administrative*', meaning alignment, matching and adaptation of planning and supply systems. For this type of adaptation, individuals from the buyer and the supplier sides may also need to adapt their communication systems to each other's, so that they can plan for their activities in a coordinated way. The other two types of adaptations, not directly addressed in this thesis, are '*economic*' and '*legal*'.

The third dimension of the ARA model concerns the *actor bonds*. Håkansson and Snehota (1995, pp. 26-7) define them as what "*connect actors and influence how they perceive each other and form their identities in relation to each other. Bonds become established in interaction and reflect the interaction process*". The way companies deal with each other may be different from the way the interpersonal relationships among the employees of the firm are established. Creating and strengthening the bonds among actors gives rise to commitment and changes the attitudes of the parties to each other, which results in establishing identities, i.e. what companies know about each other and how they can share and cooperate. Every interaction between the

actors is based on these identities. Moreover, every relationship of a company affects its other relationships with the other actors on the network. Thus, the generation of actor bonds in a network emerges a ‘web of actors’.

According to Gadde and Snehota (2000), *actor interactions* refer to the mutual or reciprocal actions or influences between the actors on different levels that are involved in the relationships. Actors may interact within a direct relationship that connects two firms that have direct dealings with one another, or across connected relationships, in which their firms are connected through other parties. Interactions can be as minor as a phone call between two individuals in two organizations, or as major as frequent meetings and group discussions for the purpose of joint problem-solving.

Gadde and Snehota (2000) position relationships with regard to the level of involvement of the buyer and supplier, and three factors: volume of business between the two firms (major or minor), continuity of the relationship (long term or short term), and the sourcing policy of the buying firm (single or multiple). Their analysis of these situations shows that both high and low involvement relationships can be justified and bring economies for the firm in different situations concerning business volume, continuity and sourcing policy. It can be concluded from their study that it is important to choose the right level of involvement for each situation with regard to what the firm needs to exploit in the relationship. The aspects of involvement that are discussed in the above-mentioned studies are summarized in Figure 1.

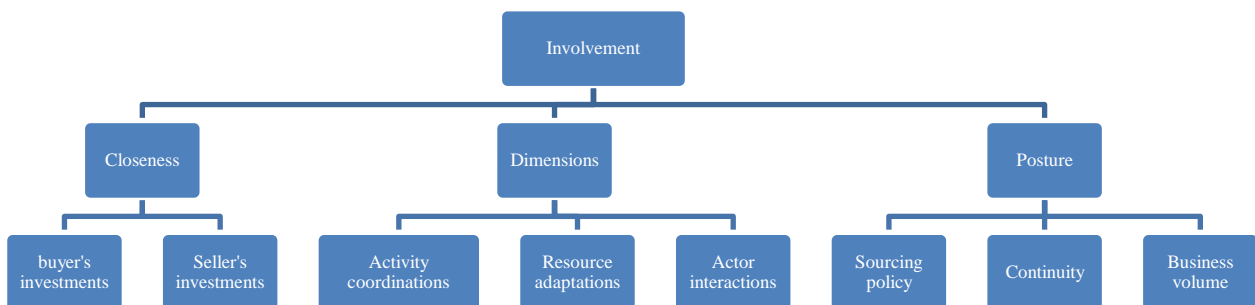


Figure 1 - Aspects of involvement

### 2.3.2 INTERDEPENDENCIES AND ADJUSTMENTS

According to Håkansson et al. (2009), in the industrial world every activity is interdependent with every other activity. These interdependencies are in some cases direct and easy to understand, e.g. between two consecutive production activities within a firm, or indirect, e.g. between two separate activities in two firms. Dubois (1998) suggests two types of interdependencies between activities. ‘*Vertical interdependence*’ is the interdependence among complementary activities. These are individual activities that form activity chains (complementary and closely complementary activities in Richardson’s (1972) terms). Activities can also be ‘*horizontally interdependent*’ when similar activities, i.e. those activating the same resources to some extent, of various end product related activity structures are in focus.



Thompson (1967) determines three forms of interdependence. *'Pooled'* interdependence, similar to Dubois' (1998) horizontal interdependence, exists between two activities that either share a common resource or are both related to a common activity. *'Sequential (or serial)'* interdependence is present when the input to one of them is the output of the other. *'Reciprocal'* interdependence between two activities is when not only the output of one is the input of the other, but also the input to the first activity is somehow dependent on the output of the second.

Based on this categorization, Dubois et al. (2004) provide an analysis of interdependence in supply chains, which shows a contradiction with the common suggestion of control inside and competition outside supply chains. Owing to the presence of interdependence between activities of firms present in multiple *'supply chains'*, there can be no absolute controlling and competing. Because all activities are interdependent, it is impossible to specify boundaries for optimization. No activity, product or resource can be individually optimized. When improving the activities, design of products or utilization of resources, efficiencies can be achieved by taking into consideration how different activities are interrelated.

Accordingly, interdependence is always present and can be strengthened as a result of adjustments. Interdependence cannot be seen as something to be avoided; instead, the focus should be on 'how to deal with it'. Performance measurement in supply networks may need several boundaries to be defined for analytical purposes. As Håkansson and Ford (2002) suggest, the view implying managing *of* networks must be replaced with managing *in* them, since interdependence is an underlying factor of all control and competition across the boundaries of firms (Dubois, et al., 2004). The question is how these interdependencies can be handled when managing in networks.

To operate and manage in networks, Richardson (1972) shows that firms undertake specific types of coordination for specific types of interdependencies (i.e. similarity, complementarity, and close complementarity). Firms try to specialize in activities for which their capabilities provide comparative advantages, and similar activities are coordinated by 'direction'. Direction occurs when several activities require the same resource for control and planning and need to be consolidated in a single organization.

Complementary activities, in contrast, require both qualitative and quantitative coordination. This can be done by direction, 'cooperation' or 'market transactions'. Owing to the fact that complementary activities are not necessarily similar, and that economies of scale are important in motivating consolidation, direction is not the best way of coordination of complementary activities. Cooperation takes place by matching the related plans of different parties, while market transactions occur in reaction to the changes in profit opportunities. 'Closely complementary' activities are those in which matching of particular activities is required. Consolidation of these activities within an individual firm, and close cooperation between those firms that carry out these activities are two ways of coordinating closely complementary activities.

Richardson (1972) connects the types of cooperation between firms to the already discussed modes of coordination of activities. Cooperation, in his opinion, usually involves the exchange of technology. Developing new products with suppliers entails the involved parties' cooperation to gain access to each other's various capabilities. As a result, management would be concerned with a specific type of coordination, which is between technology development and exploitation. This type of coordination may occur both within the cooperation context, and through market transactions. When it comes to technology development and exploitation through markets there is still some degree of cooperation between parties. In addition to activities such as licensing, which transfer the right to make use of a process between firms, the transfer of knowledge concerns the exchange of experience, skills, drawings, technical assistance, designs and tools. This again entails a great deal of cooperation in between firms.

Richardson (1972) uses the definition of and distinction between the types of interdependencies to explain the rationale behind the existence of relationships. To understand how economies emerge as supply networks develop, interdependencies can be a valuable tool. It is important not only to investigate how the focal activities are interdependent, but also to analyze how these interdependencies change as firms develop their supply networks. Bankvall (2011) puts the concepts of interdependencies and adjustments at the core of his analysis of '*activity linking*'. He defines adjustments in terms of changes in the links between activities: "*whereas interdependencies specify activity links, adjustments target their change*" (Bankvall, 2011, p. 25). Activity interdependencies are both formed through activity adjustments and result in further adjustments (Håkansson, et al., 2009; Bankvall, 2011). According to Håkansson et al. (2009), analyzing activity adjustments makes it possible to gain an understanding of how activities within a network are interdependent and interrelated.

The analysis in this study primarily uses the definitions of Thompson (1967), Richardson (1972) and Håkansson et al. (2009) to understand the interdependencies between activities. Richardson's (1972) conceptualization of the forms of coordination of activities in relation to the types of interdependencies also helps us to understand how activities relate to one another. Based on the understanding gained through the concepts, by analyzing the development of the supplier base from one state to another, the changes of these interdependencies are scrutinized to understand activity adjustments in the initiation and development of the supplier base.

### **2.3.3 COLLABORATION TYPES AND ECONOMIES**

As mentioned above, three main categories of economies are addressed by Gadde et al. (2010). Table 1 shows these types of economies, the types of collaboration that match each economy, and how the context of the relationships between the actors involved in each of these collaboration types can be characterized. Economies of *scale and scope* are achieved either through similarities in activity configurations (scale), or through providing a product range that is valued by the buyer (scope). In order to ensure these economies for the firm, the buyer may make use of intermediaries who enable the buying firm to be indirectly connected to suppliers whose resources the buying firm needs, i.e. *distributive* collaboration.

Pooled interdependencies among activities (Thompson, 1967) are the basis for distributive collaboration. In a relationship that standardization, similarities and specialization are intended to be achieved, economies of scale and scope are the aim (Håkansson & Persson, 2004). Horizontal interdependence (Dubois, 1998) among activities mainly motivates this type of collaboration, and these economies. Activities with similarities (Richardson, 1972) utilize the same type of resources and thus provide economies of scale and scope. Better utilization of a supplier's resources can then be achieved by performing more activities based on the same set of resources. Thus, when a supplier has access to the resources the buyer needs to perform a certain activity, distributive collaboration between them can bring about economies of scale and scope. As the resource utilizations, materials, product ranges, and production processes need to be adapted in order to enable the exploitation of economies of scale and scope, technical adaptations (Gadde & Håkansson, 1993) are the dominant type of adaptations when this type of economies emerges.

The second type of economy concerns coordination of interdependent activities. Economies of *integration* are achieved by engaging in *functional* collaboration such that the activities of the buyer and the seller are linked and jointly planned (Gadde, et al., 2010). When the aim of a relationship is to achieve economies of integration, actors interact directly. Each of the two firms in the relationship gains deeper knowledge of the other side and the individuals in each firm interact directly and more frequently, resulting in various cost-saving potentials. Better planning of activities regarding inventories and production planning, as well as higher capacity utilization and stability are among the advantages for the supplier side. These are achieved by facilitating decoupling and postponement<sup>6</sup> for the supplier (Piller & Moeslein, 2002).

According to Håkansson and Persson (2004) such alignment of activities is achievable through emphasizing the coordination and adaptations among serially-linked activities (Thompson, 1967). Functional collaboration is thus enabled through increased direct actor interactions, focusing on coordination of activities, among which outputs of one are inputs to the other (i.e. vertically interdependent activities (Dubois, 1998)). Administrative adaptation (Gadde & Håkansson, 1993) becomes important in this respect, because the planning for performing activities and the use of resources by both sides of the dyad (and across relationships) need to be coordinated and aligned in order to take advantage of economies of integration. Facilitated information sharing in functional collaboration provides both actors with access to 'sticky information' related to the other party. This helps both gain a better understanding of the network surrounding them, and enables them to develop and organize better processes for waste elimination. More stable relationships can be expected from situations where economies of integration are in focus (Piller & Moeslein, 2002). Adjusting and coordinating interdependencies of this kind, economies of integration bring about cost-saving opportunities, such as technological and administrative costs and time (Håkansson & Persson, 2004). Such adjustments can be identified as functional collaboration.

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<sup>6</sup> To postpone changes in form and identity and inventory location to the latest possible points in the marketing flow and time (Alderson, 1957; Bucklin, 1965).

The third type of economies that require the highest level of interaction among the buyer's and the supplier's individual actors concern economies of *innovation*. The aim is to share knowledge, teach, learn and collaborate to achieve innovative solutions as a result of the cooperation between the buyer and the seller. This indicates *systemic* collaboration in relationships, where problem-solving is central and resources and activities of the two firms are adapted to each other (Gadde, et al., 2010).

In order to have systemic collaboration, reciprocal interdependencies (Thompson, 1967) between activities of the involved firms are required. Collaboration between individuals is required in order to achieve innovative solutions and solve industrial problems. Knowledge-based adaptations (Gadde & Håkansson, 1993) play the key role here, as economies of innovation are primarily based on the exchange of knowledge and cooperation between actors for the purpose of solving problems and developing new opportunities. Håkansson and Persson (2004) show that apart from problem solving, when structural changes are required to achieve more effective use of the resources in a relationship are required, reciprocal interdependencies come into play. In order to deal with such interdependencies, mutual adjustments and a systemic approach to change is required. This can be termed systemic collaboration. The outcome of this collaboration type, involving either higher efficiency in the use of existing resources or new resource constellations, would be economies of innovation.

It is worth mentioning that the three categories of economies are not mutually exclusive, but coexist in any given relationship. This can be concluded from Håkansson and Persson (2004), who show the economic significance of Thompson's (1967) interdependencies and argue that "*it is never a question of either/or in relation to the interdependencies but rather that improvement strategies always are based on combinations*" (Håkansson & Persson, 2004, p. 25).

#### **2.4 PROBLEM DISCUSSION AND RESEARCH ISSUES**

The aim of this study is to explore a firm's initiation and development of a supplier base. This is done by investigating a supplier base in different states and analyzing its development over time from one state to another. In this analysis, at each state, the supplier base is described and characterized using the economies that emerge. Economies are the implications of the development of the supplier base in terms of potential outcomes, regardless of whether or not the firms involved actually intended to achieve them. Thus the problem of supplier base initiation and development in this study is tackled from the viewpoint of different economies that emerge during the process of these developments. The Main Research Issue (MRI) is:

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*MRI: How do economies emerge when a firm initiates and develops its supplier base in a new context?*

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In order to investigate this research issue empirically and analyze it in relation to the aim of this study, it is broken down into three Sub-Research Issues (SRIs). Each SRI is based on one of the

key building blocks of the proposed analytical framework. The SRIs are used as tools that together contribute to an understanding of the emergence of economies when initiating and developing supplier bases in new contexts. These issues become the backbone for the analysis of the study, and are addressed more specifically in section 6.1.

Supplier bases are made up of multiple buyer-supplier relationships that constantly change over time. In these changes, the two sides of the dyad may choose to become involved with each other to different extents at different points in time, and these varying extents of involvement impact on what the relationship can accomplish. Therefore, any attempt to understand the development of supplier bases requires an investigation of how firms engage in different levels of involvement and how these involvement levels change over time as supplier bases develop. The first SRI of this study is therefore formulated as:

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*SRI1: How do the dimensions of involvement in a buyer-supplier relationship affect the emergence of economies in the supplier base?*

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Activities within a supplier base are interdependent in different ways. As supplier bases develop, these interdependencies also change, i.e. activity adjustments take place. Adjusting activities in the process of developing supplier bases creates new interdependencies among activities and changes how activities are interdependent. In each given state of the supplier base development, the way activities are positioned in relation to one another, and the way these interdependencies change across states imply different potential outcomes for the supplier base; and may lead to the emergence of different economies. As a result, the second SRI for this study is formulated as:

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*SRI2: How do the interdependencies between activities in a supplier base relate to the economies that emerge when the supplier base is developing?*

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Firms collaborate with each other in different ways and have different types of relationships. Each relationship, in order to fulfill its purpose, is equipped with certain types of collaboration. Thus, it is the purpose<sup>7</sup> underlying each relationship that defines the type of collaboration within that relationship. When developing supplier bases, the emergence of economies is related to how firms within the relationships in those supplier bases collaborate. Accordingly, the third SRI of this study aims at understanding this relatedness:

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*SRI3: How do the types of collaboration in the business relationships affect the emergence of economies in the supplier base?*

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<sup>7</sup> This does not refer to the intended purpose of the involved firms, but concerns what the type of the relationship and its characteristics imply as outcomes.

The MRI of this study takes the supplier base as its unit of analysis, to analyze the development of the supplier base with regard to the emergence of economies as the supplier base enters new states over time. In contrast, the unit of analysis for the SRIs of the study is the individual supplier relationships as components of the supplier base. Each supplier relationship is thoroughly investigated and analyzed, and its relatedness to the rest of the network is brought into the analysis.

Developing a supplier base consists of developing a number of individual supplier relationships, which involves coordination of activities, adaptation of resources and interaction of different actors between the two involved firms. In addition, within a supplier base various activity links, resource ties and actor bonds exist across different relationships. Activities of one supplier might need to be coordinated with the activities of another, resources of one supplier might need to be adapted to the resources of a customer of the buying firm, and actors in different firms that are not directly involved in a business relationship might need to interact. Development of a supplier base is not simply a multiplied version of the development of a supplier relationship, and so a broader view than a relationship view is needed in order to explain how supplier bases develop.

Different parts of a supply network are interrelated and changes in one have consequences for the others. As discussed above, it is in pursuit of certain economies that specific types of collaboration are formed between companies, and in relation to this firms establish certain levels of involvement with each other. Taking the supplier base as the unit of analysis requires also viewing these concepts from a supplier base perspective. This study is an attempt to analyze a case of developing a supplier base in a new context (an emerging country) based on the economies that emerge in line with this development through the three dimensions of levels of involvement, interdependencies, and collaboration types.

As development is central here, the analysis has to be made with regard to the dynamic aspects of each of these concepts. During the initiation and development of a supplier base, various aspects of the base gradually change and develop. The levels of involvement of the concerned firms, for example, change between low and high. Given the three dimensions of levels of involvement (coordination, adaptation and interaction), the activities that are coordinated at the start might be fewer or more than those which need to be coordinated in the future. As time passes, more (or fewer) resources might need to be adapted to each other, and the number of individual actors that interact with each other and how often they interact may also change during the development of the supplier base. The analytical framework of this thesis expresses the dynamic aspects of its building blocks.

Economies are outcome implications of the way supplier bases take shape when developing into new states. This is not necessarily the same as knowing what the firms involved in the development of the supplier base actually intend to achieve by their actions. It is not possible to understand the emergence of different economies by asking about the opinions of the actors involved, as this would only result in identifying what they intend to achieve by engaging in

different actions. In a supplier base there are multiple actors, each of which will be in pursuit of their own specific outcomes. This makes intentions an unsuitable object of study. Instead, characterizing the development of a supplier base in terms of the different ways firms economize provides valuable insight. Each relationship is made up of the collaboration types the two parties decide to engage in. In a supplier base the type of collaboration in one relationship affects the other, because relationships are also directly or indirectly interlinked and their activities are interdependent. In addition, in a supplier base, one firm may be involved to a certain extent of activity coordination, resource adaptations and actor interactions in one relationship and to a different extent in another. The extent to which firms are involved also depends on what can be expected from the relationship, and on the ways they decide to collaborate. The three concepts of involvement levels, interdependencies, and collaboration types, taken together, can therefore lead to an understanding of how economies emerge when firms develop their supplier bases, and can describe how firms develop these supplier bases.





### 3 Method

This research aims at exploring the initiation and development of a supplier base of a firm in a new context by investigating a case of supplier base development by a Swedish firm (called FlexLink) in China. FlexLink is a production logistics solutions producer, active in a globally-spread supply network. The phenomenon under study is *supplier base development in a new context*, and the particular context in which I study this phenomenon is *emerging country sourcing*.

Theoretically, the concept of economies (Gadde, et al., 2010) is used as the backbone for approaching this aim. The main research issue (MRI) of this thesis aims to understand how economies emerge when firms develop their supplier bases in new contexts. This research issue, however, is relatively broad and difficult to approach directly for empirical investigation, so it is broken down into three sub-research issues (SRIs). The first is how levels of involvement (Gadde & Snehota, 2000; Gadde & Håkansson, 1993) affect the emergence of economies as firms develop their supplier bases. The second is how interdependencies and adjustments (Thompson, 1967; Richardson, 1972; Bankvall, 2011) between the activities in a supplier base affect the economies that emerge when firms develop those supplier bases. The third is an attempt to investigate how the types of collaboration (Gadde, et al., 2010) undertaken by firms when developing supplier bases affect the economies that emerge during supplier base development. Table 2 shows these research issues and how they are approached empirically.

Exploration is about trying to make sense of a phenomenon by digging deep into it for in-depth understanding. Exploration starts with a rationale and direction, although these may alter as the research proceeds (Yin, 2003). This study has taken a path moving iteratively between theory and empirics in order to find its phenomenon. During this process, the study has had different phenomena and different directions, the end result of which is the current form of it. At each point in time, the set of collected data was used to find potentials of the case for theoretical direction, framework building and analysis. The analysis at each stage, then, resulted in new opportunities for the empirical investigation. The chosen phenomenon and focus of the study are, hence, results of this process. A detailed description of the process can be found in section 3.2.

The study has a qualitative single case design. The idea was to gain as much depth as possible, in order to draw a comprehensive picture of how one firm develops its supplier base in China in relation to the rest of the supply network it is involved in. The MRI of this study, as described in section 2.4, cannot be approached directly, but it can be answered by answering the three SRIs first. As shown In Table 2 or each of my SRIs I look into specific aspects of the case and view the relevant details in order to understand the development of the supplier base from the viewpoint of that SRI. Hence, the analysis for each of these SRIs is different. Still, the answers to the SRIs were developed together, as findings regarding each of them have implications for the analysis of the rest.

**Table 2 - The RIs of this study and their empirical needs**

<b>RI</b>	<b>Empirical Evidence</b>
How do economies emerge during the development of supplier bases?	This is the main research issue. It is answered by first answering the three sub-research issues. Through analyzing how the three following concepts relate to the emergence of economies, this research issue is also answered.
How does the level of involvement in a buyer-supplier relationship affect the emergence of economies in the supplier base?	<p>Focus on interactions between actors in the network (e.g. between FlexLink engineers and the suppliers', between FlexLink's quality manager and the suppliers' operations managers, between FlexLink headquarters in Sweden and the FlexLink China Sourcing unit, and so on). These interactions were investigated over the time period of development of the supplier base to understand the dynamics.</p> <p>Various examples of starting up new production, solving specific problems, and how the production of specific products are arranged were also investigated to understand how activities were coordinated during the development, and how resources are adapted to be used in relation to one another between the actors.</p>
How does the interplay between interdependencies and adjustments of activities in a supplier base relate to the emergence of economies when the supplier base is developing?	Investigates the way activities in the supplier base relate to one another (e.g. activities required for the production of a certain product performed by multiple actors from the raw material sub-supplier in China to the supplier in China to FlexLink's international distribution center in Sweden to the Swedish supplier and back to the distribution center for customer delivery). This includes looking into the inputs and outputs of the machinery used for FlexLink and discussing with the interviewees what happens to the items after (as well as before) each stage.
How does the type of collaboration in the business relationships affect the emergence of economies in the supplier base?	Each relationship is investigated at different points in time to determine what is actually done in the relationship and the focus of the relationship in achieving specific goals. To approach this sub-research issue, the purposes of what was going on in each relationship at each point in time, what was achieved by those actions and the problems the relationships have dealt with were investigated.

The first SRI deals with involvement levels. The analysis related to this SRI is primarily based on Gadde and Snehota's (2000) conceptualization of involvement in buyer-supplier relationships in terms of activity coordination, resource adaptations and actor interactions. I looked into the details explained in the table and analyzed how these factors look in the supplier base in the different states. The main focus of this analysis was on the activities, resources and actors related to FlexLink and its suppliers in China. I also looked into the collected data regarding the other relationships wherever investigation and analysis showed potential in this respect.

The analysis for the second SRI was mainly based on the concepts of activity interdependencies and adjustments. The empirical details in the table above were my main focus for the analysis. At each state in the development of the supplier base, I looked into the activities of FlexLink and its suppliers in China (and at some points of the other actors). Using the concepts developed by Thompson (1967), Richardson (1972) and Bankvall (2011) I investigated how these activities relate to each other. I also made use of the analysis from the first SRI to better understand the activities and their interdependencies. Moreover, based on Bankvall's (2011) and Håkansson et al.'s (2009) discussions on adjustments, I analyzed the changes in these interdependencies over time as the supplier base developed and grew from one state to the next.

The third SRI was the most complicated one to analyze, and would not have been possible without first analyzing the case for the other two SRIs. This SRI aims at understanding the collaboration types within each relationship. My main reference for this analysis was Supply Network Strategies by Gadde et al. (2010), which presents the concept of collaboration types and links it to economies. Using those analytical tools was a challenge. In order to apply them to my empirical findings I used other studies, and found links between the other aspects of this framework and the concepts of collaboration types and economies. I benefited greatly from the conceptualizations of Håkansson and Persson (2004), Dubois (1998), Piller and Moeslein (2002), and others.

### **3.1 QUALITATIVE CASE DESIGN**

Flick (2006, pp. 11-12) points out the "*pluralization of life worlds*" that is a feature of life today as a reason for the relevance of qualitative research for studying social relations. The diversity of lifestyles and subcultures as a result of the growth of individualization of ways of living and biographical patterns (Beck, 1992) have led to the post-modern argument that instead of general narratives and generic theories, we should focus on narratives that are restricted in terms of location, time and situation (Flick, 2006). In such a world, qualitative research is necessary to fight for knowledge on the battlefield of unfamiliarity with the undertaken research area (Blumer, 1969).

My research is of the same nature. There are countless quantitative studies trying to identify patterns in different aspects of the development of global supply and theorize about them (Gelderman & Smeijn, 2006). Despite these developments, this field of research can be considered more of a *nascent* theory, for which not enough firm constructs exist to address 'how'

and 'why' questions (Edmondson & McManus, 2007). The existing studies in this field are mostly statistical, and aim at providing "big narratives" (Flick, 2006) about this research area (Duanmu & Fai, 2004). There is a need for research that digs deep into the cases of emerging country sourcing, to identify how firms develop a position in such contexts (c.f. Najafi et al. (2013)).

Working with a nascent theory requires defining more open-ended research issues (Edmondson & McManus, 2007). The research issues in this study emerged as a result of the research process and were formulated in a relatively open-ended way. I selected a qualitative design to provide the strength (ibid.) required in the empirical investigation. This methodological choice was made to explore the field and to open up opportunities for more deductive approaches, as well as to build theories. Karlsson (2009) suggests case research for exploration, and Easton (2010) believes that case study research is most appropriate for answering 'how' and 'why' questions, rather than 'who', 'what' and 'where'. This is in line with Yin's (2003) argument that answering such questions requires following up of operational links over time, rather than frequency.

The study relies on the main theoretical assumptions of the IMP research tradition (Håkansson, 1982; Håkansson & Snehota, 1995; Håkansson, et al., 2009). The IMP tradition owes much of its theoretical development to case studies focusing on inter-organizational relationships, interaction and industrial networks (Dubois & Araujo, 2004). This is because a case study makes it possible for existing theories to evolve along with empirical findings, by directing and redirecting the empirical investigation based on the theoretical framework (Dubois & Araujo, 2007). It has been argued by Quintens and Matthyssens (2010) that conceptualizations in the field of industrial marketing lack consideration of the role of time in and the dynamics of the phenomena under study. They, like Halinen and Törnroos (2005), suggest the importance of consideration of time in such studies. When it comes to supplier base development, quantitative studies, such as cross-sectional surveys, do not have the potential to contribute to the field. This is because such research designs do not allow for analysis of the local, temporal and situational specificities of each case of supplier base development. Holmen et al. (2007) point out this problem and call for *processual case studies* that rely on retrospective and real-time logic.

This study has a qualitative single case design. The idea is to gain as much empirical depth as possible, in order to draw a comprehensive picture of how one firm develops its supplier base in China. This includes a focus on the dynamics of this development. A case of *a firm initiating and developing a supplier base in a new context* is studied. The case company chosen for this study is FlexLink, a Swedish production logistics solutions producer.

### **3.2 ABDUCTIVE RESEARCH APPROACH**

The use of theory in this study is based neither on a clearly inductive, nor on a completely deductive approach, but is structured using an abductive approach, moving back and forth between theory and empirical phenomena referred by Dubois and Gadde (2002) as systematic combining. The study strikes a balance between induction and deduction, where the empirical

data, the method and the choice of theoretical foundations have been iteratively matched and adjusted for the purpose of theory building.

In 2009, the study began with a literature review on emerging country sourcing and offshoring, using the snowballing technique to gain an initial understanding of the phenomenon of *emerging country sourcing*. Three cases of Swedish firms that sourced from emerging countries were then chosen. The first one was IMI Indoor Climate Group, a Swedish producer of temperature control systems, chosen based on previous contacts. One of their Swedish suppliers had moved to Estonia and this had provided the basis for their expansion of business and increased collaboration. The second case was chosen based on the potential I found when I read a master's thesis about it. This company was FlexLink, which had started to source from China and developed a small supplier base there a few years before the study. The third case was Volvo Car Corporation's offshoring in China. I found this case through an industrial contact at the university and studied how, when they were owned by the Ford Motor Company, they began producing cars in China.

Studying the three cases and finding theories that could help me analyze them initially showed me different ways in which firms start their activities in emerging countries. Further investigation of the cases and new theories I found to match with the empirical findings helped me view the cases in new ways. In all three cases, the focal firms had made various monetary and non-monetary investments in their relationships with their suppliers, who were located abroad. These investments and how they can pay off were among the highlights of most of my interviews at the case companies, and so the phenomenon became *investments in international supplier relationships*. At that time, the idea was to understand how development of relationships with suppliers located in foreign countries can be considered as investments. Using that initial understanding more interviews were performed and supplementary data was collected. This data collection and analysis provided a general understanding of the firms' investments in those supplier relationships.

Later, as more data about the basics and the general picture was collected, the focus of the interviews and observations was redirected towards specific aspects of the cases. In 2010 I finished my master's thesis based on the study presented above. By then, the concepts I used for analyzing the collected data and for directing my empirical investigation was mainly related to considerations about the investment<sup>8</sup>, investment analysis<sup>9</sup>, as well as supply chain and network issues<sup>10</sup>. The study at that stage resulted in two conference papers, one<sup>11</sup> presenting the three cases as illustrations of how firms approach emerging country sourcing, and another discussing

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<sup>8</sup> Such as strategic, ethical, sustainability, logistic, transition-related considerations and risk management.

<sup>9</sup> Such as visible and hidden costs of sourcing in emerging countries versus its benefits, and investment evaluation.

<sup>10</sup> Such as the network context, buyer-supplier relationships, and managing *in* supply networks.

<sup>11</sup> Together with Anna Dubois and Kajsa Hulthén, at the IPSERA conference 2010 in Lappeenranta. A developed version of the paper is forthcoming in the Journal of Purchasing and Supply Management.

the case of IMI Indoor Climate Group and its approach to considering expansion of their business in an emerging country as an investment<sup>12</sup>.

By 2010, of the three cases, the case of FlexLink was showing the greatest potential for continuing the study. The case of Volvo Car Corporation was too complex to study and was not yet showing potential for a proper focus. More detailed information regarding the case of IMI Indoor Climate Group seemed to be difficult to access, while the case of FlexLink not only seemed promising content-wise, but my contact person in FlexLink also showed more interest in taking part in this study. Therefore, I chose to focus only on the case of FlexLink.

Based on further data collection about this case and initial analysis of that data, the study changed focus to the moving of activities between activity structures. Learning played an important role in this redirection of focus. The case of FlexLink included information about activities that are interrelated, and when the production of an item is moved from Sweden to China many of these activities are affected in different ways. Thus, the study was redirected to concentrate on *activities that change context between developed and emerging countries*, trying to understand what causes such changes and what such changes lead to in the contexts surrounding them both before and after the move.

At this stage the theoretical basis of the study turned more towards IMP research. The theoretical concepts I found to match the latest type of empirical findings, after a few rounds of redirecting, included activity structures (Håkansson & Snehota, 1995), activity interdependencies (Richardson, 1972; Dubois, 1998) and firm boundaries (Håkansson, 1982; Araujo, et al., 2003). The concept of boundaries interested me mainly because a discussion of activities changing context required an understanding of the boundaries those activities cross when they change contexts. These three concepts also helped me better understand the core ideas of business networks; that businesses are not islands and they collaborate with each other in a business world where boundaries are blurred, activities are interdependent, resources are interrelated, and actors interact with each other at different organizational levels.

Based on this new framework, a large amount of data was collected regarding the activity and resource dimensions of the case, since by then the object of the study was activities that were changing context. However, the collection of more empirical data and the analysis at that stage showed great potential for investigating a case of *developing a supply network in China*. This was possible thanks to having a relatively large amount of detailed data on how FlexLink had started its purchasing business in China and in what way it is continuing to develop its supply network there. A data collection trip to China and visiting three suppliers there made it possible to draw on this ambition and create an even more detailed set of empirical data that required better theoretical support.

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<sup>12</sup> Together with Anna Dubois, for the IMP conference 2010 in Budapest.

This led to the submission of a paper to a special issue of the IMP Journal (Najafi, 2013), examining the framework developed in this thesis with the help of other IMP researchers. That paper, which is now almost ready for publication, has gone through a comprehensive review process. That process provided me with an opportunity to learn, and to improve my thesis considerably. Making the framework more consistent and richer, refining the details of the case to make them more relevant, extending my methodological discussions, as well as enhancing the case analysis by better utilization of the framework and its links to the case were among the improvements that were made possible through this review process.

The paper provides a general level understanding of the development of supply networks. For the thesis I needed to make a more detailed analysis of the phenomenon using the analytical tools I had found and developed. Finalizing the analysis of the thesis at the same time as working on the paper provided important redirection of the phenomenon. Studying supply network development at the analytical levels presented in this thesis requires a wider scope of data collection and analysis in terms of the involved actors, resources and activities, as well as the consideration of aspects of the developments<sup>13</sup>. This new insight made it possible to elaborate on the distinction between supply networks and supplier bases<sup>14</sup>. As a result, the elaborated analysis in the thesis concerns supplier bases, and the phenomenon under study became *initiating and developing a supplier base in a new context*.

Writing the paper and the thesis provided me with another important opportunity for learning. The new phenomenon was very complex and difficult to approach using what I managed to find in my literature searches. Thus, I needed to develop concepts that were used in other contexts for other purposes and that could match the way I wanted to use them for describing my phenomenon. In order to define the word “*how*” in the aim of the study<sup>15</sup>, a number of different concepts were examined. Dynamism in the development of supply networks was chosen to be in focus owing to the dynamic nature of development. Economies were found to have the potential to be the key to describing this “*how*”, because economies motivate why certain events have taken place and what can be expected from them. Therefore, finding out how different economies emerge and are pursued when supply networks (or supplier bases) are developed by firms was found to have promising potential as the framework and for analyzing the empirical data. So my study was redirected again in terms of how it would deal with emerging country sourcing; from being central to the empirical phenomenon to merely a context in which *supply network development* or *supplier base initiation and development* is studied as the phenomenon.

Although describing the development of supplier bases using the concept of economies made sense to me, it was difficult to derive and conclude the existence of economies in different states of the development of the supplier base. Therefore, I added a number of building blocks to the

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<sup>13</sup> This issue is expanded in section 7.2.

<sup>14</sup> This issue is also presented in section 7.2.

<sup>15</sup> i.e. “*how firms initiate and develop their supplier bases*” in the thesis, and “*how supply networks are developed*” in the paper.

framework in order not only to be able to analyze the case for the emergence of economies, but also to enrich my conceptualization of economies as a way of describing supplier base development. These building blocks include involvement levels (Gadde & Snehota, 2000; Håkansson, et al., 2009), interdependencies and adjustments (Thompson, 1967; Richardson, 1972; Bankvall, 2011), and collaboration types (Gadde, et al., 2010; Håkansson & Persson, 2004).

The analysis therefore not only uses a number of existing key literatures in the fields of involvement, economies, collaboration types and interdependencies, but also links bits and pieces of the case together based on the theoretical foundation described above. The current design of the case and the order of presentation of its aspects is a result of the process of development of the study. It is now designed so that it begins by presenting the process of development of FlexLink's supplier base, after which various aspects of this supplier base and its development are presented and discussed with more focus on the structure than the process.

### **3.3 ANALYTICAL BOUNDARIES**

Piekkari et al. (2010) argue that case studies are fundamentally different across disciplines. These differences are limited to the way a case is defined in each study, and the processes of case studies across disciplines also differ. With its different view of the industrial world, the IMP tradition thus inspires its own way of defining what a case is and how a case study should be approached. This raises an important discussion on how the boundaries of a case should be defined when an Industrial Networks Approach (INA) is undertaken.

Within the IMP tradition, rather than being considered to be operating as islands, companies are assumed to be parts of a wider network, and defined by their interdependencies with the other parts of the network (Håkansson & Ford, 2002); these networks cannot be limited by any natural boundaries. The assumption of the non-existence of clear natural boundaries (Håkansson, 1982; Araujo, et al., 2003) has resulted in various notions of analytical boundaries in order to identify what a firm is and what it is not (Snehota, 1990). Halinen and Törnroos (2005) also presented the '*problem of network boundaries*' as one of the challenges in case research in network studies. According to them everything in the industrial network is interconnected, and no actual boundary can be distinguished between any of its parts; all actors, all activities and all resources relate to each other in one way or another. However, for the purpose of analysis the researcher needs to draw arbitrary boundaries in order to limit the study so that it can be analyzed.

As Sorter et al. (2002) describe, referring to Snehota (1990) and Anderson et al. (1994), three concepts can be identified in IMP research to address this issue: *network context*, *network horizon*, and *environment*. Network context is what the firm takes as its perspective. This means that what firms consider when making decisions in networks is their perspective regarding the network, and thus forms their network context. This means that there is more to the network that the firms know about, and which they do not consider when making decisions. This forms their network horizon; meaning what firms are aware of as the network surrounding them. The



environment, however, is made up of the rest of the network; what the firm neither considers when making decisions, nor is aware of, but which exists and is related to the firm's network context and horizon (Storer, et al., 2002).

The aim of this study can therefore be pursued by answering the following research issue: *How do economies emerge when firms initiate and develop their supplier bases in new contexts?* To answer this question be answered the collaboration types relevant to those economies are traced in the case, and the levels of involvement of the firms with each other are probed to gain a comprehensive picture of how firms develop their supplier bases.

In order to deal with the analytical boundary issue, FlexLink's supplier base in China is studied, since FlexLink's supplier base development in China can be viewed as a contained environment, which provides for traceability. This is because it has a clear start that was not too distant in time and the analytical boundaries that can be drawn around it make a lot of practical sense in terms of taking advantage of the inherent boundary that can be recognized around FlexLink's suppliers in China. This analytical boundary is provided to separate them from the rest of FlexLink's supply network, while still recognizing the relatedness between them. In terms of network scopes, this study focuses on the network context from the viewpoint of FlexLink's headquarters in Gothenburg and their sourcing unit in Shanghai. The network horizon from the same viewpoint also includes the connected relationships within the supplier base and the network, which are also dealt with in the study, although to a lesser extent. The connectedness among the relationships in FlexLink's supplier base in China is investigated from the viewpoint of FlexLink and, in some cases, the suppliers. Additionally, the relatedness of FlexLink's supplier relationships in China with their relationships in Europe is also investigated, but it is not the focus of the analysis.

### **3.4 DATA COLLECTION**

FlexLink's purchasing decisions are mainly made at their headquarters in Gothenburg, Sweden. They also own a sourcing unit, which is co-located with its sales unit in Shanghai. That unit communicates with and supports five main suppliers and a number of other suppliers in China. For the purpose of this study, these suppliers are referred to using Greek letters. Gamma is an aluminum and zinc die-casting company, Mu is a machining and assembly factory in Shanghai that belongs to a Swedish company, Kappa is a sheet metal stamping and machining company, Xi is a plastic injection molder, Lambda is a stainless steel die-caster, Theta is a German-owned machining factory, and Nu and Sigma are bearing producers. The other suppliers with which FlexLink has less frequent interactions or a small share of business are not directly referred to in this thesis. Below, how the empirical investigation in this study was carried out and the data was collected is discussed. Table 3 summarizes this discussion. In the Appendices the data collection activities are presented in tables in greater detail.

Table 3 - Sources for data collection

Target		Data collection technique	Comments
<b>FlexLink headquarters in Gothenburg, Sweden</b>	Supply chain manager	6 semi-structured interviews 1 phone interview Over 30 follow-up emails Various occasions of interaction	1 face-to-face and 1 phone interview during the pre-study
	Logistician for China sourcing	1 semi-structured interview	
	Product quality manager	1 semi-structured interview	
<b>FlexLink China sourcing unit in Shanghai, China</b>	Manager for China sourcing	2 semi-structured interviews 2 follow-up emails Various occasions of interaction	1 interview with FlexLink's supply chain manager present
	Logistician and administrator	1 semi-structured interview A few occasions of interaction during the visit	
	Assembly shop floor	1 observation visit	
<b>Gamma, Shanghai, China</b>	Assistant general manager, Senior sales and logistics officer	1 semi-structured interview 1 follow-up email A few additional occasions of interaction during the visit	
	Manufacturing shop floor	1 observation visit	
<b>Kappa, Shanghai, China</b>	General manager, Sales responsible	1 semi-structured interview 1 follow-up email Few additional occasions of interaction during the visit	
	Manufacturing shop floor	1 observation visit	
<b>Mu, Shanghai, China</b>	Project manager and technical engineer, Commercial manager	1 semi-structured interview 1 follow-up email Few additional occasions of interaction during the visit	
	Manufacturing shop floor	1 observation visit	

Bryman and Bell (2007) discuss three forms of interviews: structured, semi-structured, and unstructured. Structured interviews are the most appropriate for quantitative research designs, while semi-structured and unstructured interviews should be used for studies with a qualitative design. In a semi-structured interview the interviewer prepares an interview guide, which is a list of topics or questions that need to be covered during the interview. However, the discussions in a semi-structured interview do not necessarily follow any specific sequence and are not necessarily

limited to the interview guide. Based on what the interviewer picks up from the answers of the interviewee new questions may arise and new topics may be discussed (ibid.). This study relies on 13 face-to-face semi-structured interviews. Ten of these interviews were with employees of FlexLink, while three were with employees from FlexLink's suppliers in China. All of the interviews have been recorded, and most of them have been transcribed. The interviews that have not been transcribed are recorded using an integrated audio-text technique provided by application software, called AudioNote. The interviewees in China had different levels of English language expertise, and I needed the help of interpreters to interview some of them. In such situations, the manager of FlexLink's China sourcing unit and their logistician helped me with the interpretation.

During each interview, in my capacity as interviewer, I opened the discussion with background information about the study and a presentation of the key issues to be discussed in the interview. Then the interviewee took the lead in bringing up the topics and issues that seemed relevant to the interview guidelines. Occasionally, the interviewees were guided by the interviewer to focus on the most relevant issues being brought up. The data collected in each interview round was initially analyzed and used to update the case description. At each stage, new information led to new leads and questions for follow-up and further investigation. This way, the focus of each interview was also directed by the findings of previous interviews.

The data from all the interviews were followed up and checked with the interviewees not only for the accuracy of their content but also for clarifications on the most important aspects identified in each round of interviews. Follow-up emails in many cases also included further questions for the interviewees, either in order to obtain direct and fast answers or to prepare for future interview rounds.

Bryman and Bell (2007) discuss the use of organizational documents in qualitative research, including memos, internal reports, photographs, and so on. In this study in many cases the interviewees provided such supplementary documents; sometimes to complement the discussions during interviews, and sometimes to follow up on the previously-discussed issues. The most important of these documents for this study were internal reports, product catalogues, annual reports and product drawings. Annual and internal reports of the interviewed firms were used on several occasions for collecting general information. The use of product catalogues and drawings was more specific. In cases when specific products were in focus and arrangements for their production and distribution were important for data collection and analysis, those drawings and some basic technical information about them from the catalogues were used.

The visit to Shanghai made it possible to perform four observation visits on shop floors. Bryman and Bell (2007) discuss various merits of participant observation, including seeing through others' eyes, learning the native language, opportunities to grasp what is taken for granted (as compared with interviews), sensitivity to context, opportunities to encounter unexpected situations, and naturalistic emphasis. Karlsson (2009) suggests shop floor observations for

validation and verification of findings from interviews, as well as giving the researcher an opportunity to get a feel for the overall working environment and systems. Visiting the shop floors of FlexLink and three of their suppliers in Shanghai made it possible to exploit a number of these opportunities. First, I became familiar with their manufacturing systems and viewed how some of the discussed points during interviews were actually dealt with in practice. Second, having the chance to be on the shop floors and see how the daily manufacturing, inventory keeping, and logistics work is done provided me with a better understanding of the technical language, which was more difficult to grasp by relying on interviews. Third, and most important of all, it became an opportunity to realize new aspects to continue my empirical investigation. For instance, during the visit at Kappa my discussions with their general manager led to an interesting discussion on the important role of Kappa's relationship with FlexLink in the procurement of their raw material and making deals with their raw material suppliers. I went on to collect data regarding this issue in the other interviews and follow-up emails.

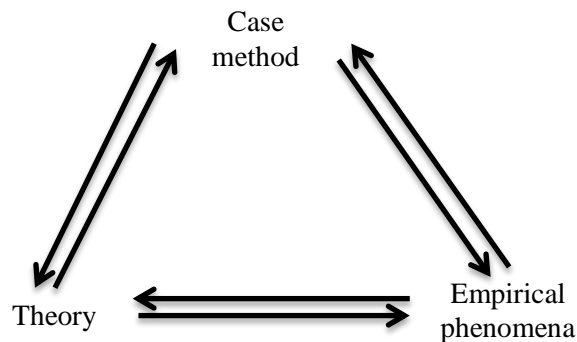
In addition to the semi-structured interviews and observation visits, I have also interacted on various occasions with the interviewees in order to better familiarize myself with their situations. Over lunches, afternoon breaks, and long transportation times I have had the chance to talk with the interviewees and prepare both them and myself for the interviews. On many of these occasions, I have had the chance to obtain new information and add new aspects to my empirical investigation. Such occasions can be categorized as close to what Bryman and Bell (2007) present as unstructured interviews. In an unstructured interview, discussions take place around general topics proposed by the interviewers, or the interviewee freely answers a single question asked by the interviewer. "*Unstructured interviewing tends to be very similar in character to a conversation*" (ibid., p. 474). In this study although those occasions were not arranged in the form of what is conventionally known as interviews, the discussions contributed to the empirical investigation. In Table 3 such occasions are presented as *occasions of interaction*.

As described in section 3.2, this study is based on an almost one-year-long pre-study. The data collected in that phase contributed considerably to the study. Although two of the three cases that were being studied in that phase were not continued, findings from them facilitated the path of development of the study. In line with my abductive approach, it was by studying those cases that I first approached this field of research. Based on the early findings from that phase, I managed to find a direction to continue this study. In that phase, most of the data was collected using face-to-face semi-structured interviews, with a few follow-up emails, and supplementary documents. One relatively short phone interview was also made with the supply chain manager of FlexLink to get more details. A list of these data collection activities is presented in the Appendices.

### **3.5 QUALITY OF THE STUDY**

Dubois and Gadde (2012), in a review of the systematic combining approach to case research (Dubois & Gadde, 2002), suggest the main requirements for and consequences of this approach, and state that case research performed with a systematic combining approach is *non-positivistic*,

*non-linear* and *not based on replication logic*. Every case study is made up of the three dimensions of method, empirical phenomena and theory. To ensure the quality of one's research, it is vital to consider the interplay (see Figure 2) between these dimensions and maintain the fit throughout the study (Dubois & Gibbert, 2010). As explained above, this research has been performed using an abductive approach.



**Figure 2 - The interplay between the dimensions of research (Dubois & Gibbert, 2010)**

One key difference between an abductive approach and a deductive (or an inductive) approach lies in the interplay between their key elements, i.e. theory and empirical observations. In the latter, either one element succeeds the other, or the empirical findings are ‘*sandwiched*’ between theoretical notions. In an abductive approach theory and empirical findings develop and evolve at the same time and reciprocally. According to Dubois and Gibbert (2010), most of the existing methods for evaluating the quality of case research are deductive in nature. Yin’s (2003) validity and reliability and Lincoln and Guba’s (1985) trustworthiness criteria are frequently used criteria in this group of research quality assessment methods. Dubois and Araujo (2007) suggest that the quality of case research should be viewed in relation to its theoretical contributions and success in convincing the reader about the findings of the study.

*We argue that the best way to help readers evaluate a case is the presentation of the empirical material informed by the conceptual contribution, rather than to break the case up in discrete chunks for the purposes of compliance with quality standards on data collection and analysis. Thus, the case itself and a description of the process the authors went through to develop the conceptual contribution might be of greater interest to the reader than the demonstration of exhaustive method checks. (Dubois & Araujo, 2007, p. 178)*

Dubois and Gibbert (2010) suggest that in abductive studies the quality of the study should be demonstrated by convincing the reader that the fit between the three dimensions of research are ensured by simultaneously developing theory and redirecting the empirical investigation in a process of learning. Showing the different steps of iteration that the study passes through

transparently, in order to develop the theory and define the case boundaries is very difficult, but at the same time vital to ensuring the quality of the study.

*... the view on case method as one methodological category need be replaced by descriptions of the unique choices and iterations that are made in particular studies and the way in which the combination of concerns regarding method, theory and empirical phenomenon evolves in the process. (Dubois & Gibbert, 2010, p. 135)*

Because of the abductive nature of my research, it has passed through various theoretical and empirical directions and redirections to reach its current theoretical focus and empirical boundaries. As addressed in section 3.2, theoretically I began with a focus on emerging country sourcing as a preliminary empirical phenomenon and, after various changes, ended up with supplier base development. The boundaries of my empirical investigation were also modified several times. I began by studying three cases of sourcing in emerging countries, and ended up with focusing only on FlexLink and its global operations. Over time, the focus of my empirical investigation of FlexLink's case also changed. Based on the development of my framework (as explained above) I extended my investigation to a wide network of activities, resources and actors around Europe, China and Malaysia, all surrounding FlexLink.

Later, and after various other changes, I ended up limiting the focus to the activities of FlexLink's supply division in their headquarters in Sweden regarding their China-based suppliers, as well as their sourcing unit activities and the development of their relationships with the China-based suppliers. My empirical investigation also included suppliers that were not directly in relationships with FlexLink, while considering the existence of the rest of the Europe-based and Asia-based parts of the network wherever the traces of such relationships were identified when tracking different products in the network. As a result of the changes, the research issues, the empirical phenomena under study and the context in which the case was being studied have changed recurrently. This has also changed the way 'the case' has been defined in each phase of the study. All of the above, taken together, have formed the path for the evolution of my framework, empirical focus, and case method simultaneously, in a process of constant adjusting and matching.

A number of issues also arose regarding the collection of data. These were dealt with by other means to avoid heavily affecting the quality of the collected data. Researching industrial networks forces the researcher to make difficult decisions regarding the research boundaries. The vast interconnectedness of industrial networks and taking this assumption as the theoretical backbone of the study creates great potential for falling into the trap of '*increased complexity of the phenomenon*' (Dubois & Gibbert, 2010). If this happens, the researcher finds no end to the empirical investigation, as investigating one part of the network shows links to other

uninvestigated parts, and this cycle goes on *ad infinitum*. In this study, using an abductive approach made it easier to draw analytical boundaries, as described in section 3.3.

Another set of important issues concerns the data collection tools. Semi-structured interviews, the most important tool for this study, have a number of limitations. According to Flick (2006), semi-structured interviews are conducted based on interview guides, meaning that the interviewer is the one who decides on how far from the guide the discussions can go, and when to stop the interviewee. Flick suggests that this is a complicated decision: letting the discussions deviate too much from the guide may leave little time for addressing all the questions, but sticking rigidly to the interview guide may prevent the interview from leading to unexpected but interesting and relevant findings regarding contextual information. In creating a balance here, the interviewer may mistakenly interrupt the interviewee when the discussion is leading in a good direction. Training and experience are important factors in helping interviewers in such situations. This problem can also be recognized in this study, although conducting ten semi-structured interviews during the pre-study period helped me practice my interview skills and prepare for such situations.

Flick (2006) also shows how an interview procedure may cause irritation and annoyance if the interviewer insists on formalizing the findings and having them confirmed by the interviewee. This problem arises when the interviewer spots contradictions in the empirical findings or is explicitly following up a matter that is not only usually dealt with implicitly by the interviewee, but is also a sensitive matter. It is difficult to know in advance which issues are sensitive. This challenge is aggravated when the interviewer is not familiar with the working terminology in the industry or firm. In this study, having the opportunities of socializing with the interviewees was helpful. Interacting with the interviewees and asking general questions about their work, together with the observation visits, helped me familiarize myself with the terminology and sensitive aspects of information. Besides, in several interviews, the interviewees had brought prototypes and drawings of items that helped me better understand the terminology.

Inter-organizational studies always face the problem of different viewpoints when business relationships are being investigated. The viewpoint of the two sides of a relationship may be different. This may even vary among different members of the same side. In this study, the element of geographical and psychic distance between the different sides of the relationships under study made it even more difficult. The field for empirical investigation of this study was spread over a number of countries, from Europe to Asia. Therefore, the quality of data from different parts of the case description is not necessarily the same. As the generality and specificity of the data during the relatively long data collection period was different, different types of data were collected.

When the data concerns the specific aspects of the relationships with Gamma, Mu and Kappa, the wealth of information and quality of data is relatively higher than regarding Xi and its relationship with FlexLink. This is mainly because triangulation was made possible by

discussing the same aspects of the relationship development with both sides of each relationship. Viewing those relationships and their developments from the suppliers' perspective also provided for richer empirical data in terms of details that might have been neglected from the viewpoint of FlexLink.

The description of Lambda's relationship with FlexLink is also less detailed than the first three; however, as all interviewees participated actively in the development of the relationship between FlexLink and Lambda, acceptable quality of data is achieved there. In order to enhance the quality of data regarding FlexLink's relationship with Xi, specific aspects of it were investigated during the data collection, for instance concerning cases of developing products of which Xi was a part. In addition, various aspects of these relationship developments and the formation of the focal supply network were investigated by interviewing people with different viewpoints about it: people from the management of the supply division to quality management to administrative operators, people from FlexLink's headquarters in Sweden to their China sourcing unit in Shanghai, and finally people with different perspectives from each of FlexLink's suppliers in China.

The interviews conducted in China raised a number of important points to consider regarding the quality of the study. Firstly, the cultural differences were important to prepare for. The importance of hierarchies, the significance of inter-personal relationships, and other specific characteristics of the Chinese business culture were considered to some extent during the visits. As FlexLink was my host in China, I needed to be attentive to such considerations in order not to jeopardize their relationships with their suppliers. I discussed the matter with FlexLink's supply chain director in Sweden, the manager of their sourcing unit in China, and a professional researcher in empirical investigations in China<sup>16</sup> before the interviews with the suppliers.

Secondly, language was a major challenge. The biggest problem in this regard was that some of the interviewees and I did not have a common language. Bryman and Bell (2007) refer to language as a resource for business research, rather than just a medium. In China, I was accompanied by three FlexLink employees to every interview, and two of them helped me with the interpretation. One challenge in conducting those interviews via interpreters was that some pieces of information may have been lost. Sometimes the interpreters also answered some of my questions that I was posing to the suppliers. To deal with this problem, I had prepared a number of alternative questions that would tackle the same issue, only using different words. Also, I had phrased most of the questions so as to emphasize the importance of the viewpoint of the suppliers' representatives. In situations where these solutions would not solve the problem simply, I left the questions unanswered and returned to them in other situations, such as further along the interviews, in social interaction after the interviews or during the shop floor visits.

Although social interaction gave special opportunities, relying on it also has various problems. First, these occasions were not recorded and no notes were taken during them. Second, there

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<sup>16</sup> A professor in Gothenburg University, Business School.



were no specific structures or pre-defined topics. Third, and as a result of the first two, they were full of personal opinions and discussions about other topics that would not have been dealt with if they had been brought up with the right people with a well-thought interview guide. However, this study does not rely on the data collected through these social encounters. They were only been used as situations in which to establish suitable relationships with the interviewees, for learning about general issues, and to become acquainted with the terminology and the context. The lack of formality in these occasions can therefore be seen as an advantage.



## 4 FlexLink's supply network development in China

FlexLink is a Swedish production logistics solutions provider established at SKF<sup>17</sup> in 1980 to enhance the efficiency of manufacturing within the company. Between 1982 and 1987 the organization of FlexLink was formed and until it was spun off in 1997 (when it was acquired by EQT<sup>18</sup>), FlexLink managed to develop a vast market all around the world and to establish a number of distribution centers in Europe, the Americas, and Japan. From 2005 when a few ownership changes took place, and until the present, FlexLink has acquired and established a number of companies and opened several sales offices around the globe.

FlexLink's products include a variety of conveyor systems for different industries. They have two types of sales; either a customer provides FlexLink with the specifications and asks FlexLink to design a customized conveyor system for a factory or workshop, or the customer designs the system on its own or has a designer in place and only orders a number of different components. In the second case, sometimes the designers are the customers. The decoupling point in FlexLink's manufacturing planning has an important role in facilitating this method of sales. All of FlexLink's products are like 'Lego-block components' that can be used with high flexibility and ease in different situations. This makes it possible to produce them anywhere in the world, and have the final user assemble and operate them based on their customized needs.

FlexLink is active in three sales areas, including the Americas, Asia/Pacific, and EMEA. Northern EMEA is their biggest market, while the business in the Americas and the Southern EMEA is equally important to FlexLink. When it comes to market segment, FMCG<sup>19</sup> is their most profitable industry, followed by the automotive, health care, and electronics industries. Approximately two-thirds of FlexLink's total sales are component sales, and one-third is system sales. However, this ratio is moving towards 50%-50%, as customers are becoming more interested in system purchases due to the fact that customers of FlexLink's component sales need resources to design and implement production logistics systems, using FlexLink items. As companies have less and less of such resources, system sales become more popular.

The majority of FlexLink's supplies, 60% to 70%, are sourced from Swedish suppliers, while 5% are supplied in China and the rest procured in the US and other European countries. US suppliers, contributing a very small share of FlexLink's supplies, are responsible for supporting the needs of FlexLink's business in the US. Dual sourcing is FlexLink's sourcing strategy in a number of its relationships for different reasons. For the American suppliers, where the distances are long and delivery certainty matters, transportation and lead time issues are the drivers of this strategy. In order to ensure competition among the European suppliers, the dual sourcing strategy is also part of a small number of their European relationships.

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<sup>17</sup> Svenska Kullagerfabriken AB, the world's leading manufacturer of bearing systems, founded in 1907.

<sup>18</sup> A group of leading private equity funds, active in the US, Asia, Northern and Eastern Europe.

<sup>19</sup> Fast-moving consumer goods

FlexLink normally procures components through the decisions made at their headquarters in Sweden. However, some items have to be purchased locally. For instance in a full system order, when a labeling machine (not one of their normal components) is needed, a local purchase is made. In such cases, local purchasers are responsible for the supplies.

In the division of supply chain, product and supply, the main focus is on the price and availability of the items. In this division in Sweden, two employees work with supplier evaluation and strategic procurement and three perform the daily call-offs. Three other employees in the product quality group are responsible for the technical issues of suppliers. Moreover, the procurement organization in China includes two product engineers for technical and quality issues; one responsible for quality assurance and support for engineers; and one logistics coordinator (responsible for transportation and customs administration).

This chapter contains various details regarding the development of the Chinese part of FlexLink's supply network. It is, thus, structured in seven sections. First, how the Chinese part of this network has shaped and grown along the years between 2002 and 2012 is described in the form of a timeline, where each supplier relationship is individually dealt with. From the second section to the sixth, less of dynamism and more of today's situation of the network is depicted, while different events and major changes during the history of this development are recalled wherever required. These sections start with the assembly unit in Asia-Pacific; continue with the different flows in the network and three examples of FlexLink's products that include components from different suppliers. Then the transition of different items from Europe to China, as well as those items that are newly developed in China is presented. That section is followed by a description of FlexLink's global operations which are not directly the focus of this case study, but important to know when analyzing the development of the network. Finally, the seventh section presents FlexLink's plans for the future of this supply network, especially its Chinese part.

#### **4.1 FLEXLINK ON THE WAY TO CHINA SOURCING**

FlexLink's first purchases in Asia were made in the 1990s, when they bought a number of injection molding tools in Taiwan. This was mainly attributable to the interest of the company's board in making a purchase in Asia. In 2002, FlexLink decided to try sourcing from China. However, owing to the difficulties of coping with the local regulations and lack of business know-how, they decided to source their desired items via a Swedish import/export company (SA) active in China sourcing. They started with connecting strips and later added more items such as square nuts to the total China business. Until 2005, FlexLink's business in China did not experience very much expansion, neither in business volumes, nor in the technological complexity of the products involved.

In 2004, when FlexLink were considering cost-cutting activities, their business in China became an opportunity for them. The landed cost of an item being produced in China is much lower than when it is made in Europe, mainly for products requiring manual labor. However, energy is not

cheaper in China, thus sourcing energy-intensive production activities such as injection molding in China is not cost-efficient. Moreover, due to the lack of competition, which is an effect of the government's direct control over the market, the raw material prices are increasing in China, and so FlexLink has remained fairly conservative in its China sourcing.

At that time, there were multiple reasons and motives for FlexLink to expand their sourcing business in China. Financial reasons and FlexLink's major interest in lowering their costs of procurement were the main incentives, but not the only ones; since the company is owned by an investment company, it was important that as part of the brand they always look for new ways of cutting costs. The director of supply chain; product and supply division explains it as:

*"... because it's sort of trendy; companies should do it. [...] because it looks good!"*

China was not a completely new area for FlexLink. Since a few years before, they had not only been involved with China in terms of sourcing (although through a middleman), but also their sales office had a presence in China, which saved the product and supply division from taking pioneering risks. No starting from scratch was required, which was a stimulating factor for this offshoring effort. At the same time, having a middleman in their sourcing business in China was not a situation that FlexLink's managers wanted to remain in for long, mainly because they felt the need to be closer to their suppliers, and this was not possible with a middleman.

In addition, since FlexLink is the market and price leader, they are under price pressure and they have therefore raised their prices at a slower pace than their competitors. Their strategy is to remain more expensive than their competitors, but to make the price gap gradually smaller. This requires FlexLink to find ways to ensure its gross margins, one of which is China sourcing. Besides, sourcing in China in today's business seems to be *"the right thing to do"*, according to the supply chain director. This also affects potential buyers; if one does not source in China they think that *"there is something wrong with you"*.

#### **4.1.1 BEGINNING TO SOURCE DIRECTLY IN CHINA**

In 2004, FlexLink's Malaysian unit recruited a Mandarin-speaking Malaysian man, called "TM". The instruction from the headquarters in Sweden was to start up the first sourcing activities in China. Before that time, FlexLink's only activity in China was sourcing through an agent since 2002, and sales through an office established in 2001, before which FlexLink's Chinese sales were taken care of by sales agents. FlexLink China is registered in a free trade zone in Shanghai in order to be able to do business in US Dollars and take advantage of some tax incentives. However, it is physically located in downtown Shanghai.

TM started a small sourcing office at the same location as the sales office. As early as in 2004 FlexLink's first China sourcing task was aluminum die-casting of angle brackets in order to make sure that suppliers with the right capabilities for FlexLink could be found in China. *"Zeta"*

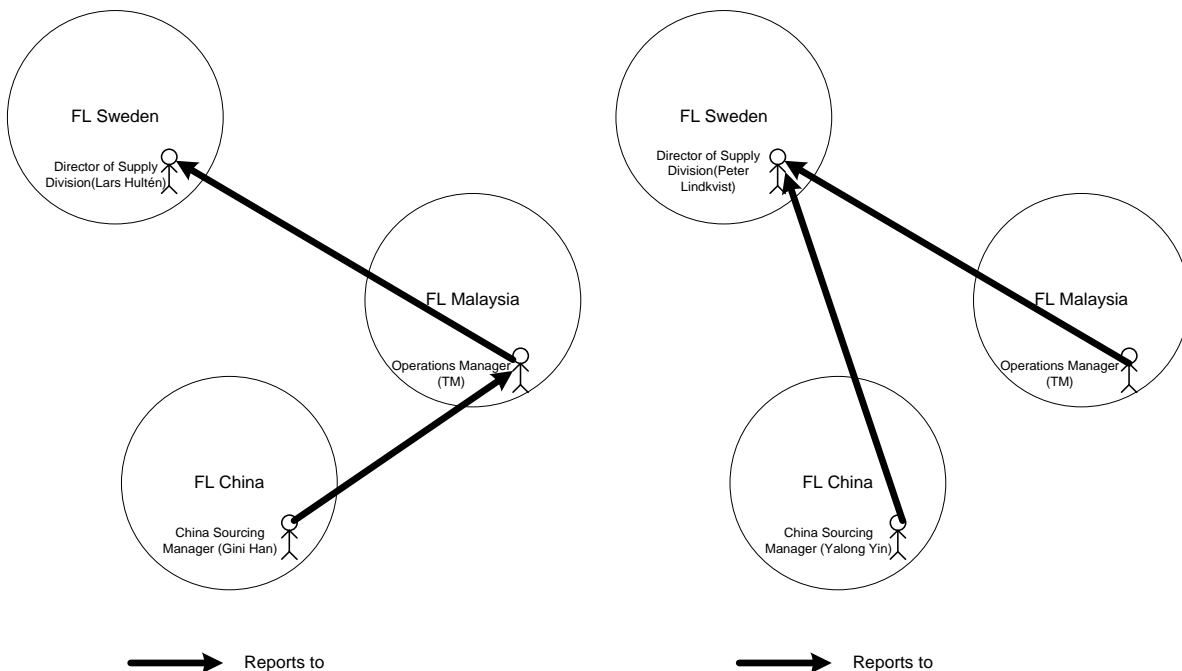
was the supplier who took care of this task. That project was later followed by injection, stamping and die-casting projects.

In 2005, owing to the increasing number of China sourcing projects, TM recruited four new employees; two project engineers, one logistics officer and one inspector, all of whom worked with all suppliers.

In 2007, TM’s contract expired and a Chinese sales employee of FlexLink, Gini Han, became the manager of FlexLink’s Asia sourcing. TM returned to Malaysia and kept the responsibility for operations, reporting to the supply chain director in Sweden, Lars Hultén (see Figure 3).

In spring 2009, Peter Lindkvist became FlexLink’s director of the supply chain, product and supply division and reorganized the Asia sourcing structure. The Asia sourcing unit was renamed to “China sourcing” and its manager was set to report directly to Sweden (see Figure 4). All items are designed in Sweden, but FlexLink’s China sourcing unit (located in Shanghai) has full responsibility for the suppliers. The director of the supply chain, product and supply division explained the reasons behind these changes as:

*“Our geographical spread is China. We have no intention to go anywhere else from there. Today we have various opportunities inside China, and our sourcing office has complete responsibility for the suppliers.”*



**Figure 3 - Reporting in FlexLink’s China sourcing: before 2009**

**Figure 4 - Reporting in FlexLink’s China sourcing: since 2009**

In autumn 2009, Ms. Han became operations manager at FlexLink's Chinese sales unit, and Yalong Yin was promoted to manager of China sourcing at the same time as he worked as an engineer, supporting a number of suppliers. The supply chain director said that this did not harm the supplier relationships, because:

*“Some of them are quite mature now; they do not require so much attention nowadays. So I think it works.”*

Today, FlexLink's China sourcing office is run by four people: one manager (and engineer responsible for die-casting, stamping and machining items), one production engineer (responsible for plastic and special items), one logistician and one quality inspector.

#### **4.1.2 DEVELOPMENT OF THE FIRST SUPPLIER RELATIONSHIP: GAMMA**

FlexLink's first steps towards China sourcing were initiated by a combination of product development and low-cost country sourcing strategy. A simple product called an 'angle bracket', used to connect two beams, is the key to this story. The simplicity of the product made it possible for FlexLink's managers to try it for evaluating China as a source. The director of the supply division explained it:

*“It is a very simple finished product; you die-cast it, you take away the burrs (the sharp edges), put it in a package and ship it, done!”*

Gamma was the supplier found for this item. This supplier's good performance made FlexLink expand their business with them by adding another simple product; the 'connecting strips'.

Before Gamma, FlexLink's aluminum die-cast items in China were supplied (through the import/export agent) by another die-casting supplier. That supplier was located far from Shanghai. In 2004, FlexLink China Sourcing started the search for a new aluminum die-casting supplier within Shanghai, and they found Gamma. At the beginning, various managers and engineers from FlexLink paid visits to Gamma. Gamma was a small company then, with approximately 100 employees and only a few die-casting machines.

After Gamma's success in satisfying FlexLink's quality requirements with angle brackets, FlexLink decided to source 2 other types of angle brackets from Gamma as well. These new brackets were parts of the new product series FlexLink was introducing. From that point on, every year more and more products have been added to the exchanges between FlexLink and Gamma. FlexLink's director of the supply chain explains the reason for this initial expansion of the relationship as:

*“We found that we get good quality and low cost, so we continued.”*

Still, not only quality and the price tag matter to FlexLink and Gamma, when it comes to the closeness of the two firms in this relationship. The manager of FlexLink China Sourcing believes

that Gamma is a good supplier because they successfully supply to large actors in the automotive and furniture industries. Since Gamma is one of the first suppliers FlexLink has used in China, and at that time they were a relatively small supplier, “*having grown together*” is considered by FlexLink’s supply chain director as an advantage to the relationship:

*“I think we have a very good relationship with them, we are an important customer for them, and they know that we are there to stay, because I think many Western companies are quite opportunistic when they go to China to source. But I think we get very good service from Gamma and Kappa<sup>20</sup> because they know we’ll come back year after year, and our purchase orders are steady, and they know they can rely on our business, as long as they perform. It has been working very well.”*

As mentioned before, FlexLink has not only moved the production of some existing products to their customers in China, but also in many cases of new product development, they phase in new products with the help of their suppliers in China. Gamma is one of the suppliers involved in such developments. When developing new products, FlexLink first sends the drawings to Gamma. Then, Gamma normally gives feedback to FlexLink regarding their designs, and FlexLink, using Gamma’s feedback, redesigns the product. This process may be repeated a number of times before Gamma are able to start the mass production of FlexLink’s orders on new products. The manager of FlexLink’s China sourcing finds this an opportunity:

*“Many times they come back to us and help us if we had missed something in the drawing or if there is a misunderstanding. They give us good suggestions for our products because they know our products and their functionalities.”*

For example, once when FlexLink introduced a new product family, Gamma, the supplier of the guiderail brackets for the previous family, was also assigned to produce the guiderails for this new family. The new rails were shorter than the previous ones. Gamma realized that they could use the old items (longer rails) and machine them to achieve the new (shorter) ones. Otherwise, the design of the two products was completely identical. Therefore, they came back to FlexLink with this feedback, and FlexLink redesigned the rails in a way that enabled Gamma to produce them by machining the old rails.

Gamma’s main production includes aluminum and zinc die-casting. It was established in China in 1997, funded by Taiwanese-American investors. Their parent company is located in Taiwan, and was established in 1970. They have two factories, one in Shanghai and the other in Taiwan, and most of their customers are located in Japan, Taiwan and China. Gamma has approximately 400 employees and 32 die-casting machines. Twenty-three of these machines are cold chamber,

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<sup>20</sup> Kappa is a machining supplier of FlexLink in China described below.



which are used for aluminum die-casting, while the remaining nine are hot chamber, and used for zinc. They also own drilling, pressure, trimming, sand blasting, lathing, milling and multi-head tapping machines for other activities than die-casting.

Gamma's production consumed between 150 to 200 tons of aluminum and 80 to 100 tons of zinc in 2010. This sums up to a monthly production value of approximately 11 MRMB<sup>21</sup> worth monthly production. The company's annual turnover in 2010 was 120 MRMB, 40 MRMB over budget. This has been achieved through 3 MRMB of sales; an amount that increased to 3.7 MRMB in the first 9 months of 2011. For 2011, the goal was 120 MRMB in turnover.

Gamma produces die-cast aluminum and zinc items for FlexLink. Today, Gamma is FlexLink's most important and experienced supplier in China. In the past couple of years, FlexLink has gradually increased its business volumes with Gamma. However, FlexLink is not yet Gamma's most important customer; they only contributed to 4% of Gamma's turnover in 2011.

Most of Gamma's customers are in automotive industries. Gamma produces a number of car components, including the car light holders and others. Their biggest customers are mostly suppliers to large car manufacturers. Today, FlexLink is considered Gamma's eighth most important customer in terms of contribution to their turnover. Their biggest share of business is with a customer who contributes around 31% of their turnover.

#### **4.1.3 NEW PRODUCT DEVELOPMENT AND EXPANSION IN CHINA SOURCING**

"Drive units" and "idler ends" were two of FlexLink's most important products used in almost all production systems designed by them or by their customers. At the time, they were only produced in one size, large. For many years FlexLink had received demands for more compact versions of these items in order to work with lower speeds and lighter loads. A lighter drive unit and idler end would also use less raw materials and lighter-duty bearings, making them cheaper and more suitable for customers who were not willing to pay for an unnecessarily expensive product.

For this purpose, smaller versions of idler ends and drive units were designed with different spacer and shaft sizes, and a new "side plate" was designed that could fit all three different sizes: two new types of idler end and 16 new variants of the drive unit.

There was a challenging decision to make: where should the new items be produced? This took place at the same time as FlexLink's first attempts at China sourcing. Despite some resistance in FlexLink Sweden, a decision was made to start production of these new items all at the same time, in China.

The director of the supply division said when interviewed that it was a more risky decision to start with those new items in China than if they had decided to move production of a 10-15 year old item there. In the second case, they could have taken their experience and clearly defined

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<sup>21</sup> More than 11.5 MSEK

product specifications to the new suppliers “*and just tell them do it!*”, while keeping parallel production in Europe to avoid the risks. These were both important products to the performance of the conveyor systems, and there was a fixed launch deadline. All these issues increased the complexity and risk of taking this new product development step in China rather than in Europe. However, despite these complications, FlexLink made this decision not only owing to the lower cost incentive, but also to the strategic considerations for expanding sourcing activities in China. The director of the supply division explained this issue as:

*“Now we have a strategy to source in China, we have established a unit for it, so now we have to use it; if we never dare [to] use it we might as well close it.”*

FlexLink moved a number of production tools to China and bought a number of new tools (for side plates and injection molded parts) there in order to be able to produce all the required items in the new product package in China. This way they managed to avoid extra shipments from Europe to China. At the same time, FlexLink set up an assembly workshop in Shanghai. The director of the supply division said that that was the right time for this major expansion in China, because

*“...with only one item it didn’t make sense, because then you would have to buy one tool, and produce only one variant. Since you have tool-bound production, it was quite a big threshold; it was a package design, and it was a new product!”*

Avoiding the purchase of new tools in Europe made it easier for FlexLink to make this move. One reason for this decision was the possibility of making this large investment in purchasing new tools in China, rather than Europe, in order to take advantage of lower prices of the tools. “*I mean we need to buy new tools, so let’s do it all in China*”, the director of supply division argued. His opinion was that it was easier for FlexLink to enter China with new products, than to move the production of existing products (from Europe), since the investment in tools for the existing products in Europe would have had to be paid off before any profit could be realized from the difference between the cost of finished goods in China and Europe, a process that might take some 5 years.

*“So, in this case it was more like starting from scratch; the design was made based on that the customers wanted it, and then we did everything in China, including the production of the components and the assembly”, said the director of the supply division.*

This also applies to other existing products for which the production tools at the European suppliers are worn out. In some cases, when a tool that is being used to produce an item in Europe is worn out and needs to be replaced, FlexLink considers whether or not they should buy

a new one for the same supplier or for one of their Chinese suppliers, thus fostering the expansion of their China sourcing.

#### **4.1.4 EXPANSION OF AN OLD RELATIONSHIP: MU FROM SWEDEN TO CHINA**

Mu is a Sweden-based company that has 8 factories in Sweden and 1 in Shanghai, China. Before 2005 FlexLink had limited experience of working with Mu in Sweden for only a few items. In 2005, FlexLink contacted Mu regarding the possibility of ordering pins from them in China. At that time Mu's activities in China were limited to a sales office. Sometime later, when Mu started up its factory in Shanghai in 2006, FlexLink China Sourcing and Mu in Shanghai started the development of pins together. At the end of 2006 these products were approved by FlexLink Components and in early 2007 Mu started mass production of pins for FlexLink.

Between 2004 and 2006 FlexLink had a supplier in China for shafts, located far from Shanghai. As the relationship with Mu was being developed in China, FlexLink realized that there were potential benefits in replacing that shaft supplier with Mu. Among these benefits were that Mu's factory was very close to the FlexLink warehouse in Shanghai (located in the *Waigaoqiao* industrial area) and that importing to Waigaoqiao is very difficult. This way, FlexLink China Sourcing was able to purchase the necessary shafts in Waigaoqiao, and save money there. And so, in 2006 Mu began to produce shafts for FlexLink, who abandoned their other shafts supplier in China.

Machining operations carried out in the Mu factory in Shanghai include milling, turning, drilling, cutting, etc., as well as assembly. Mu produces nine different types of shafts and six types of pins for FlexLink. For these items, turning, drilling, milling and cutting operations are carried out by Mu. All shafts are ordered by FlexLink Engineering in Malaysia, and sent to FlexLink's consolidation point in China, from which FlexLink China Sourcing handles the transportation to Malaysia. However for the pins, FlexLink Components in Sweden orders them from Mu AB in Sweden, and then Mu AB orders the pins from their subsidiary in China. The transportation of the pins to Europe is Mu's responsibility.

At the beginning of the pins project, FlexLink China Sourcing assisted Mu in developing the product, and acted as a facilitator between the FlexLink Components engineers (in Sweden) and Mu's production personnel in China. After getting the confirmation on the design from FlexLink Components, the daily interactions were shifted to the European side of this relationship; FlexLink Components in Sweden now contacts Mu AB in Sweden directly to order the pins.

FlexLink's relationship with Mu involves both the Swedish and the Chinese Mu companies. In this relationship, all strategic negotiations take place in Sweden (between people at the FlexLink and Mu headquarters), while all day to day business is done between FlexLink China Sourcing and the Mu Chinese subsidiary. The financial transactions in this relationship officially take place between FlexLink China Sourcing and Mu in Shanghai. This is mainly because alloy prices are flexible in China, while in Sweden they are defined by the market. Therefore, it is more

financially secure to make the monetary arrangements based on the raw material market prices in China.

Mu is active in three main business areas, of which *'packaging'* constitutes the main share of their business, while the *'components'* and *'industry'* business areas are smaller in terms of turnover and number of employees. Mu headquarters in Huskvarna, Sweden manages the business in all of the factories in Sweden and China. Each of their factories only deals with one of the business areas, except for the one in China; the Mu Shanghai factory performs activities for both component and packaging business areas.

The Mu *components* business area comprises producing components for their customers, while the *packaging* business area consists of producing complete packaging machines. This involves the production of a number of components in-house and ordering the production of many of them from their suppliers, after which they assemble the complete machines based on their customers' designs. Their *industry* business area includes support functions for the industrial assembly. Different Mu factories carry out different activities, including surface treatment, injection molding, welding, machining, sheet metal processing, assembly, testing and packaging. The focus of the Mu China business is on bringing quality and competence from Sweden in order to deliver the same quality at their China factory as their Swedish ones.

Mu only has international customers, mainly large Western companies. Their biggest customer by far is Tetrapak, for whom they are suppliers in both the component and packaging areas. Tetrapak is also the biggest customer of the Mu factory in China. Their second largest customer is ABB, in relation to whom Mu uses a Kanban system to connect to their warehouse in Västerås. ABB is also the biggest customer of the Mu component business area in China. Atlas Copco is another of the biggest customers of Mu. Compared with these customers, FlexLink's business with Mu comprises only a small part of Mu's business.

Tetrapak's cooperation with Mu goes beyond daily call offs and regular technical assistance. One of Tetrapak's engineers has an office at the Mu Shanghai factory in order to provide ongoing support to the production and assembly teams, since Mu produces packaging machinery for Tetrapak's customers, using Tetrapak's designs.

#### **4.1.5 EXTENDING THE NETWORK: KAPPA AND ITS SUB-SUPPLIERS**

Kappa is a Chinese-owned company founded in 2005, with an annual turnover of about 30 MRMB. It has 2 sister companies, one in Beijing and one in Xian. The factory that supplies FlexLink is located 50 kilometers from Shanghai, or one hour's drive from the FlexLink office in Shanghai. Available technologies at the Kappa Shanghai factory allow for machining turned products, welding, assembly, punching, and copper contact, as well as the manufacturing of flexible parts, insulation parts and laminated busbars. Their machinery includes CNC machines, shearing, benders, punches, busbars, and high pressure water-cutting equipment.

In late 2006, a former employee of FlexLink who was also a former employee of ABB (one of Kappa's main customers) suggested that FlexLink China Sourcing investigate the possibilities of using Kappa as a stamping supplier. They found information via the Internet regarding Kappa's capabilities in stamping thick items. So they visited Kappa, sent RFQs to them and received quotations from them. Then Kappa began to manufacture connecting strips, protection plates and washers for FlexLink. Since then, this relationship has continued to expand in terms of part varieties: a new model of connecting strips and adjusting blocks have been manufactured since 2008, spacers were introduced in 2009 and since 2010 FlexLink have been working on sourcing transfer calendars from Kappa.

At the beginning of the relationship, FlexLink employees paid frequent visits (once every 2 weeks) to Kappa. Today these visits are limited to delivery checks (by the quality inspector of FlexLink China Sourcing) that take place on every delivery occasion, production problem solving (by the quality inspector), and new product development (by the manager and support engineer of FlexLink China Sourcing). Quality inspections take place at Kappa after production is finished and before final packaging; and include checking the dimensions, the physical characteristics, packaging and quantities.

FlexLink is one of Kappa's most important customers. Contributing 14% of Kappa's annual turnover has put FlexLink in second place among Kappa's customers, after Emborio which accounts for almost 50% for Kappa's turnover. Since Emborio orders more items from Kappa and updates its designs more frequently than FlexLink, the Kappa factory general manager stated that there are more conflicts in their relationship with Emborio, than with FlexLink. Other major customers of Kappa include Siemens, Elektroskandia, Ormazabal, and ABB. To date, FlexLink have helped Kappa make various small improvements. They have provided basic technical training for Kappa's staff regarding how to satisfy their quality requirements, and helped them with their tooling and production processes.

Kappa uses steel and aluminum when producing for FlexLink. Their steel production for FlexLink includes connecting strips, protection plates, steel top plates, stainless steel feet, adjusting blocks, adapter plates, and a number of small items such as washers, inner fittings and square nuts. Kappa also uses aluminum to produce spacers and connecting strips. This involves stamping, machining, assembly, and surface treatment for aluminum anodizing and steel nitro-carburizing, zinc coating and sandblasting.

All production activities except the surface treatments are performed in-house by Kappa. The products are then sent out for surface treatment. Kappa uses one supplier for each of the surface treatment technology, three in all, to finish the FlexLink products. Owing to Chinese government policies, in order for a company to be able to perform surface treatment, they need to have a certificate to ensure different aspects, especially environmental considerations. The products are inspected twice, once before they are sent out for surface treatment, and again after they are returned.

Sandblasting takes place at the end of production before zinc coating. In the beginning of this relationship, sandblasting was also outsourced, but this meant long lead times for the FlexLink products because of the two-step external processing. In 2009 Kappa purchased a sandblasting machine to be able to perform this activity in-house and reduce the lead times for the FlexLink products.

In 2006, at the beginning of product development with Kappa, FlexLink found the nitro-carburizing sub-supplier (called *Beta*) for Kappa on the Internet. Nitro-carburizing is a technology that is widely used in the armaments industry, and there are not many suppliers with this technology in China. Beta has a lot of experience in the armaments industry, but since a couple of years ago in order to attract other types of customers and make better use of their assets, they have started to work with other industries.

FlexLink paid several visits to them, sending engineers from FlexLink China Sourcing and FlexLink Components (in Sweden) at the same time as they were establishing their relationship with Kappa. FlexLink first had Beta treat the surface of an XL steel top plate prototype produced in Europe, and found the quality acceptable. Then they ordered sample items from Kappa and sent them to Beta for nitro-carburizing, after which they received quality confirmation from FlexLink Components, and began to source this product and XM, XK and XH top plates as well, from Kappa and Beta. In the beginning, FlexLink and Kappa engineers paid several visits to Beta, but today only Kappa are involved with and purchase the surface treatment service from Beta.

For the raw material, Kappa uses two suppliers for aluminum and two suppliers for steel, dual suppliers for each raw material in order to be able to deal with delivery uncertainties. This was explained by the general manager of Kappa's Shanghai factory:

*“... because sometimes one has a lead time that is too long and the other one can deliver faster”.*

Kappa uses aluminum and steel from the same suppliers for their other customers. Some of the purchased aluminum is only used for producing the FlexLink connecting strips, while the same aluminum extruders supply other aluminum bars to Kappa for their other customers' products. When ordering from aluminum extrusion suppliers, detailed specifications about the shape and other characteristics of the raw material specific to the product that needs to be produced with them are given.

This procedure is less strict when it comes to steel. The steel Kappa purchases from its suppliers is often used for a number of its customers. For example, for FlexLink's steel top plates, 1.5 mm stainless steel bars are used. These are also used for products for Emborio and Elektroskandia.

#### **4.1.6 BROADENING THE SCOPE: ESTABLISHING A RELATIONSHIP WITH XI**

Xi is a plastic injection molding supplier for FlexLink. Most of their customers have bigger transactions with them; FlexLink is considered a small customer. The factory is located outside Shanghai, a few hours from the FlexLink office. This makes them the least accessible supplier to FlexLink in China. A former employee of FlexLink in China sourcing recommended Xi as a supplier for FlexLink. He had been an engineer, working with injection molded items and when FlexLink was searching for a new injection molding supplier, he recommended Xi to his former colleagues.

#### **4.1.7 ACCESSING A NEW TECHNOLOGY: DEVELOPING LAMBDA**

Lambda is a unique supplier among the whole global supplier base of FlexLink, being the only one with stainless die-casting technology and solely responsible for all stainless die-cast products for FlexLink. Prior to this relationship, FlexLink did not have any stainless die-cast products. FlexLink's supply chain director is very satisfied with this relationship, especially given the price tag:

*“We don't have a Swedish stainless steel die-casting supplier, since this is a new item [...]. We would rather have two Chinese ones [instead of adding a European supplier with the same technology], because it is so much cheaper.”*

Stainless steel die-casting is hugely labor and energy-intensive. To reduce the energy costs, Lambda performs these tasks at nights when energy prices are lower. This project took around 9 months to develop, before the first items could be produced by Lambda.

The process in this technology is very similar to the die-casting technology used by the other suppliers to FlexLink, but with a few key differences. In stainless die-casting a wax mold is initially made and used for building wax copies. Then the wax mold is dipped into clay to create a shell around it. This process is repeated with drying breaks in between, until the shell is thick enough to let the wax mold melt away using heat. Then the emptied clay structure is filled with melted steel. After cooling, the shell is cracked and the product is ready. The surface quality of such a process is usually lower than of a machined item, but this process is an inexpensive way of making complicated shapes using stainless steel. Machining such complicated items is much more costly and difficult. At the same time, for this type of product the surface quality is not important to the customers, as the products are not used in a way that is visible. Therefore, paying for better surface quality is unnecessarily expensive.

All of FlexLink's stainless steel die-cast items have the same functionality as the other similar FlexLink items that are die-cast, except for the raw material and its characteristics. For instance, stainless steel die-cast items are more rigid and hygienic; since the whole platform is made from stainless steel, it is suitable for the food or pharmaceutical industries.

The designs of the stainless die-cast items are also different from their die-cast counterparts. For instance, aluminum die-cast spacers are cylindrical, while stainless steel spacers are threaded. Stainless steel side plates are much thinner than aluminum die-cast ones, owing to the difference in the strengths of the materials. Because these side plates are thinner, die-casting is the best way to overcome the complications in the geometries of the design. This also entails differences in the designs of all related items.

In late 2010 FlexLink designed stainless steel die-cast items. FlexLink China Sourcing received the drawings and manufacturing process specifications from the FlexLink headquarters in Sweden and was asked to find a suitable supplier to manufacture them. Besides, the supply chain director also specified to the Chinese team that the supplier that would be selected should preferably have some export experience. The China sourcing unit of FlexLink made a search on the Internet and found some 50 suppliers with this technology in China. The manager of China sourcing visited four of them and checked their capabilities. During these visits, by checking sample products for their other customers, it became clear that Lambda has the required capabilities.

Afterwards, the RFQ and quotations procedure was followed for these suppliers, and two suppliers were initially selected; Lambda was ranked first, because of their very low prices, but was very small and had an old-fashioned dark, and not very clean factory, while the other supplier was cleaner and more modern but with significantly higher prices and located farther away than Lambda (in Jiangsu province). Lambda was not completely inexperienced in exports, but since they did not have an export license, they used an agent to take care of their exports.

At this point, FlexLink's supply chain director, product manager and the project manager for this specific product selected Lambda together. The supply chain manager explained it as:

*“... so together we said let's go for Lambda, we know it's slightly higher risk, we know that we most probably need to invest more time in training them and communicating with them and making sure we have a strong presence, and being there when they produce, making sure that we get the quality we want. But it's worth it, because the price difference is so significant.”*

The decision to choose Lambda was made centrally in Gothenburg, with the agreement of FlexLink China Sourcing manager. The importance of price differences for FlexLink was also motivated by the significant price challenge they were facing for this new product line. The supply chain director expressed it as:

*“It was the cost reduction project, we were reducing some products and replacing them with some new ones, and the challenge was to significantly lower the costs, because they were not selling, since they were too expensive.”*



FlexLink started with an urgent order, and Lambda successfully fulfilled the quantities on time with more or less satisfactory quality. FlexLink's director of supply division said he believed that although the quality still needed minor improvements, getting the signal from the China sourcing manager that the supplier had a positive attitude, listened to FlexLink's feedback and was willing to improve were all important in deciding to maintain the relationship with them:

*“And that I think is the most important thing when you feel that you have their attention, and some flexibility, and there is a willingness to improve. ... at least we are on this okay level and we can improve step by step from there. It would have been different if we were not happy at all, and then we would have needed to do a lot of work just to get up to the okay level.”*

#### **4.1.8 OTHER PARTIES**

In addition to the supplier relationships described above, FlexLink China Sourcing purchases a few cosmetic items such as signs, screws and labels in China, accounting for just below 2% of FlexLink's China purchasing. The main motivation for purchasing these items in China is not only lower cost, but also in some cases they need to be used in the FlexLink items that are produced in China, so it makes more financial sense to buy them directly there.

FlexLink tries to handle everything related to their China sourcing by themselves, rather than using middlemen. FlexLink's sales were initially through agents, after which FlexLink established a sales office in Shanghai. For sourcing they began with a sourcing agent and later set up their own sourcing unit next to the sales unit in China. Initially assembly operations in China were also done by a consultant's employees, while today they have mainly been moved to FlexLink's own unit in Malaysia. So although both sales and sourcing in China originally used middlemen, today FlexLink tries to avoid all middlemen in offshore activities. Their strategy is to deal directly with the suppliers. The supply chain director's reasons for this are:

*“partly because it costs money and if there is someone they should earn money. We also want to get into direct dialogue with the suppliers about the quality and exactly how we want the product. We don't want someone in between whispering or relaying information; that just poses problems”.*

The only activities where FlexLink welcomes middlemen are logistics and transportation. FlexLink's IDC in Germany is owned and run by a third party, and all transportation from China to Malaysia and Germany is taken care of by a shipping company in China.

#### **4.2 FLEXLINK'S SUPPLIER BASE AND ITS RELATEDNESS TO THE REST OF THE NETWORK**

FlexLink's supply network is spread in Europe, US and China. Almost all FlexLink items are produced by their suppliers, and in most cases also assembled and packaged by them.

Financially, the Chinese part of this network only makes up a small share of FlexLink's total supply business. However, this part of the network is strategically important for other reasons.

First, if the same items were sourced in Europe, their cost would have made up a much larger share of FlexLink's sourcing business. Being able to ensure the availability of these items at such low cost makes the Chinese part of this supply network very important to FlexLink.

The products that are sourced in China are in most cases also generic: they are components of a number of different product platforms. Most are also essential components to FlexLink, purchased in very large volumes. *"90% of those items are bread and butter components"*, said the supply chain director at FlexLink.

Producing many of those items requires large initial investments, not only in terms of tools, but also of manpower and time, and there are no dual sources for producing them in Europe. Having to bring them to Europe for production would be too difficult for FlexLink. Therefore, what FlexLink's suppliers do for them has a major impact on the success of the rest of FlexLink's supply network.

At the beginning of this supply network development, FlexLink moved the production of a number of its items previously produced in Europe, to China. Today the strategy is to minimize such moves and maximize new product development in China. As described in section 4.3, when a new product is going to be developed by FlexLink, the different parts are analyzed in terms of the possibilities of producing them in China, and in most cases the required capabilities are met by FlexLink's Chinese suppliers. As a result, as FlexLink's sales expand, their China sourcing is also expanding in almost linear proportion.

The products produced in China are distributed to the rest of the FlexLink network in three different ways. Some are produced and packaged in China, sent to FlexLink's International Distribution Center (IDC), and from there sold directly to customers. Others, such as certain models of side plates and steel tops, are produced in China in a generic way, so that they can be later adjusted by FlexLink's European suppliers and used in different platforms. Those items, after being produced in China, are sent to the IDC, then to the European suppliers for machining and adjustment, and then assembled into other products or packaged and sent back to the IDC for shipment to customers. The third group of items produced in China is sent to FlexLink Malaysian assembly unit and assembled into other products. These items are finalized and even painted in China before being sent to Malaysia, and no machining or adjustments take place there.

Internally, the organization of FlexLink's supply network in China is divided between their Swedish headquarters and their sourcing unit in China. All strategic decisions are taken either at the FlexLink headquarters in Sweden, or together with the head of the China sourcing unit, while the China sourcing unit is responsible for all daily business. For instance, priorities and major decisions are discussed between the supply chain director and the China sourcing manager, while

the day-to-day visits and work with the Chinese suppliers is done by the China sourcing unit. All designs and specifications are drawn up at the FlexLink headquarters in Sweden, and then realized in cooperation with the China sourcing unit and Chinese suppliers.

FlexLink's interactions with the suppliers are not, however, limited to the daily business between FlexLink China Sourcing unit and them. During the visits of FlexLink's managers (e.g. the supply chain director, or the quality manager), they sometimes also visit the managers of the suppliers to strengthen the relationships, and solve issues that the China sourcing unit requires their assistance to handle, such as business problems and major quality issues. The supply chain director explained this as follows:

*"In China they pay a great deal of attention to what it says on your business card and the hierarchies. So, when the quality manager or I am in China, and the China sourcing manager feels that there is something they are not getting through to the supplier, then normally we try to schedule a visit there. It is usually easier to get to talk to the right people if you have a manager's title on your business card. [...] But, it's a matter of the magnitude of the problem."*

#### **4.2.1 CONNECTED RELATIONSHIPS**

Many of FlexLink's products include components, each of which are produced by one of their suppliers. Usually assembly of these components takes place in one of FlexLink's assembly workshops, either in Poland or in Malaysia. However, in many cases FlexLink's products are assembled at one of the suppliers that produce one of the components required for it. It is a part of FlexLink's strategy to have their suppliers produce ready kits or products, and that is why this is very much the case in FlexLink's established supply network in Europe.

However, in China only a few cases of this exist so far. The only Chinese supplier that is used for assembly, in addition to production, is Gamma, the Aluminum and Zink die-caster. For different items, Gamma purchases items from other suppliers of FlexLink in China, such as Xi and Kappa, assembles and/or packages the items, and sells them to FlexLink.

These connected relationships in China are not highly under FlexLink's influence. Normally, those items that are produced for FlexLink by its Chinese suppliers are uniquely produced for FlexLink, using FlexLink's tools. In the cases of the connected relationships FlexLink, for instance, informs Xi that Gamma is also allowed to make a purchase of a specific item from them with the agreed price between FlexLink and Xi. Then, Gamma regularly makes purchases from Xi and assembles them to the items they have die-casted for FlexLink, and sells the complete product to FlexLink. For pricing for such items, FlexLink agrees to pay for the additional purchased items, the assembly workers time, and an additional margin in order to

make it beneficial for the suppliers to do this for FlexLink. In case that Xi increases the price of the item (after negotiating with FL), FlexLink compensates the extra cost for Gamma.

However, for the commodity items that are purchased by FlexLink's suppliers for FlexLink's products, FlexLink only specifies the technical characteristics and leaves the supplier free to make their own choice of supply source. The specified technical characteristics include the material, the physical dimensions, the tolerance, the different strength characteristics and so forth. The supply chain director explains this as

*“so we take the responsibility and sort of guarantee the price level for Gamma. Because since they are not free to change the supplier, we take the risk and responsibility for that. But if Gamma is buying screws, a commodity, we would say that buy it from wherever you want, it has to conform to these quality standards, but buy it from whoever you want with your own risk. [...] we do not specify from whom they should buy the material or exactly how they should produce it. As long as the end product fulfills our specifications, we are OK.”* A few examples of such settings are listed in sub-sections 4.2.5 to 4.2.7.

Relationships of FlexLink are also interconnected on the demand side. Two examples of this are illustrated in Figure 5. One of FlexLink's major customers is a multinational robotics manufacturer. They use conveyor systems that are designed and produced by FlexLink in their production. One of their customers in the robotics business is a bearings manufacturer, which is a supplier of bearings to FlexLink. FlexLink uses their bearings in a number of their products, such as some idler end models. Another example of this kind regards FlexLink's biggest (in terms of purchase volumes) injection molding suppliers in Sweden. This supplier also produces injection molded items for a Swedish filter manufacturer, which is also a FlexLink customer of conveyor systems.

The extent to which the start of these arrangements has been intentional needs to be further investigated; however, it is unlikely that FlexLink is – at least yet – making any specific use of or influencing such opportunities on its demand side. The director of supply chain explains this as

*“But that's pure coincidence. There are no synergies from it. So, I can say on the customer side, there is no strategy behind it”.*

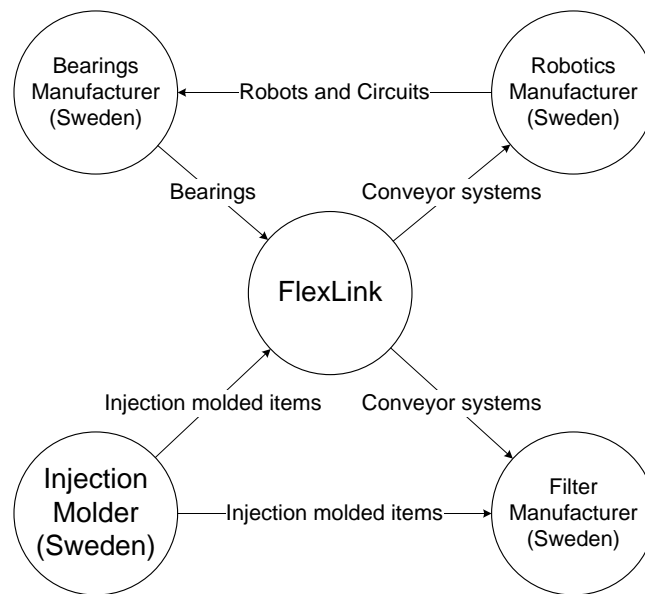


Figure 5 - FlexLink's connected relationships on the demand side

#### 4.2.2 FLEXLINK'S GLOBAL OPERATIONS

FlexLink has suppliers in Sweden, China, US, Germany, Hungary, Poland and Italy<sup>22</sup>. The majority of FlexLink's supplies are sourced in Sweden. After Sweden, China has FlexLink's biggest group of suppliers, followed by two American suppliers that feed FlexLink's warehouse in the US for the market there. As FlexLink's ambition is to expand their sourcing business in China, and as more products are moved to China, the more difficult it becomes to gain simply from changing the source to a low-cost country. The director of supply division stated that they would eventually reach a level where they would need to improve their production processes in order to make greater procurement savings by continuing to expand in China.

In 2006, FlexLink began assembly in a rented workshop with their own equipment, in the same free trade zone where the company is registered, *Waigaoqiao*. The assembly was for those items that were produced by their Chinese suppliers. In autumn 2009, a Chinese consultant company was hired to replace FlexLink's workers by their own workers in the assembly workshop. In 2011, all of FlexLink's assembly operations in China were moved to the assembly unit in Malaysia, mainly to enable better utilization of their resources in Malaysia to cover all assembly operations needed in the Asia-Pacific region.

At FlexLink, everything is *built-to-order*. Today, assembly units in Poland and Malaysia do all of FlexLink's assembly, except that their distribution center in the US is responsible for some basic assembly operations for the local market. Some of the FlexLink sales units around the world do some final operations before deliveries to customers. At the FlexLink Polish unit, modules are functionally assembled as are FlexLink's systems. In some cases, a small part of sourcing (e.g. beams) is insourced to the Polish unit in order to cut costs, reduce lead times and increase flexibility in design and production.

<sup>22</sup> A couple of German suppliers, two American ones, one Hungarian, one Polish and one Italian.

At the time of each delivery from a FlexLink Chinese supplier, FlexLink's quality inspector in China pays them a visit, in order to ensure the quality of the deliveries. He inspects various aspects of each product. For some products he inspects every single item, while for some only a few samples are examined. In the latter case, the supplier is responsible for checking the quality of every single deliverable item. In some cases, the fixtures on the suppliers' machines, the packaging and other aspects of production are also inspected by FlexLink.

Before 2001, FlexLink's sales of equipment and chains in China were taken care of by an agent. In 2001, Qio started up a small sales unit in Shanghai with a few (6-8) employees. Since then, he has been the managing director of this unit, with 35 white collar employees, and 10-15 blue collars for assembly. Their plan is to open two more sales offices in China, one in 2012 and one in 2015. This is expected to facilitate FlexLink's access to local market information. One Swedish salesperson works at FlexLink's sales unit in China, and deals with some of the European customers.

Most of FlexLink's market in China is made of European and multinational companies that buy in China at lower prices than in the West, and take the items out of the country. FlexLink has followed most of these customers from Europe and the US to China. Now Chinese companies are becoming less resistant and more interested in FlexLink's products, thanks to their high quality, according to the director of supply chain. As a result, the Chinese market for FlexLink products is expanding rapidly, and FlexLink has raised the price of its products as it has become more established in China.

#### **4.2.3 FLOWS OF GOODS, INFORMATION AND OWNERSHIP**

At the start of FlexLink's direct sourcing in China, it was the *FlexLink China Sourcing* unit that invoiced FlexLink's suppliers in China; officially the unit purchased from the Chinese suppliers and sold to *FlexLink Components AB* in Sweden or *FlexLink Engineering* in Malaysia. This intermediary role of FlexLink China Sourcing was later removed and today *FlexLink China Sourcing* is only responsible for dealing with the suppliers, handling purchase orders and invoices, solving production issues, and supporting the suppliers in different ways. FlexLink's Chinese suppliers now sell directly either to FlexLink Engineering in Malaysia, or to FlexLink Components AB in Sweden and there are no financial transactions between FlexLink China Sourcing and their suppliers in China. Most of the supplier negotiations are handled by FlexLink's headquarters in Sweden, i.e. FlexLink Components AB.

A large number of mainly strategic components for FlexLink products are still sourced from the European suppliers. So all of the items produced in China and Malaysia have to be sent to Germany to be sold together with them. This is why everything produced in China is either sent to Germany or first to Malaysia and then to Germany to be placed in the FlexLink warehouse. These two sets of flows (China-Germany and China-Malaysia-Germany) are described below.

The physical, information, and financial flows for all items produced in China and sent directly to the FlexLink distribution center in Germany are illustrated in the figures below. As shown in the figures, a logistician at the FlexLink headquarters in Gothenburg, Sweden monitors inventory levels and receives orders from the ERP system. She plans the inventories and issues Purchase Orders (PO) to the Chinese suppliers. A logistics administrator at FlexLink China Sourcing (in Shanghai, China) receives the POs and faxes them to the Chinese suppliers. The suppliers then invoice FlexLink components (Sweden). The administrative work related to this invoice is handled by FlexLink China Sourcing in Shanghai. When the ordered items are ready, they are shipped by the suppliers to FlexLink's consolidation point in Shanghai, the freight terminal of the transportation company that handles all FlexLink's sea transports from China (Figure 6). Once in approximately every two weeks, the accumulated items delivered by FlexLink's Chinese suppliers are shipped by the transportation company to the FlexLink warehouse in Hamburg, Germany. All of the suppliers of FlexLink in China are supported by FlexLink China Sourcing, and this unit takes care of all emergency shipments, quality issues and production problems of the suppliers.

For some items, as discussed earlier, information, money and goods are exchanged among some of FlexLink's suppliers in China. Generally speaking, as described in the figures and text, two of FlexLink's suppliers in China not only sell their products to FlexLink Components and FlexLink Engineering, and send them to the consolidation point in China, they also sell some of their products to one of FlexLink's suppliers in China, to be assembled or packaged together with other items for FlexLink.

The communication between these three parties (the logistician at FlexLink's HQ in Sweden, the administrator at FlexLink China Sourcing, and the suppliers) mainly involves the exchange of POs and invoices, and discussions regarding special requirements on an order (e.g. earlier delivery than usual).

FlexLink's engineers in China are also in contact with the suppliers for different reasons. At the beginning of introducing a new product in the relationship between FlexLink and one of its existing suppliers in China, FlexLink's engineers spend a lot of time solving production startup issues; helping the suppliers set up their machinery and acquire the right tools for manufacturing and carrying out quality assessment for the new products. After this phase, the suppliers use FlexLink's tools to produce the ordered items, and the communication is again limited to PO/invoice exchange and delivery discussions. The reason behind having the flows arranged as above was explained by the director of supply chain as:

*"... so, in a way China Sourcing is always in between, because these guys do not speak English and we are not in the same time zone. So, it's just the documents (POs and invoices) that say [for example] 'FlexLink components and Xi'. But in daily work, our China Sourcing is always the intermediary."*

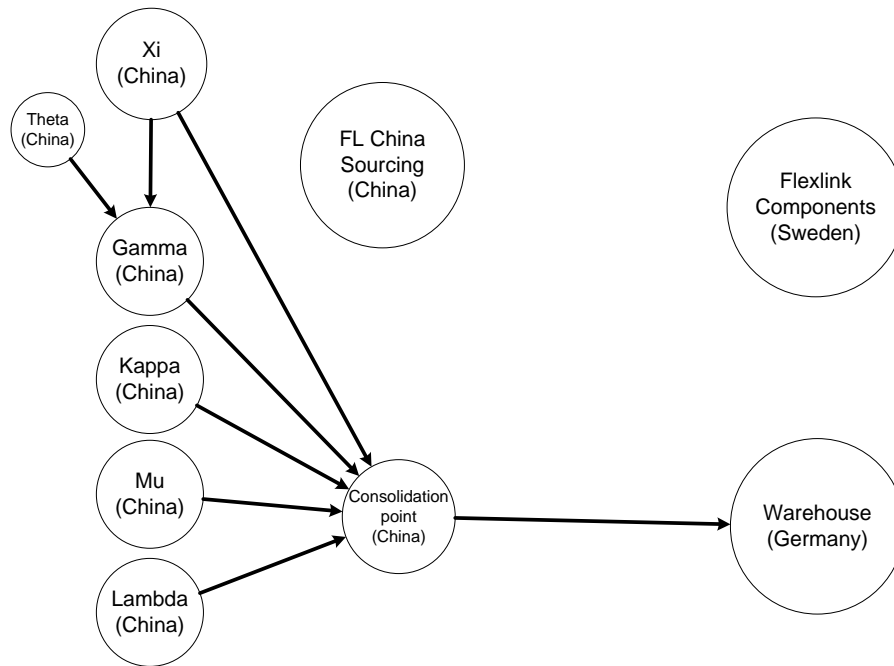


Figure 6 - China-Germany: Physical flows

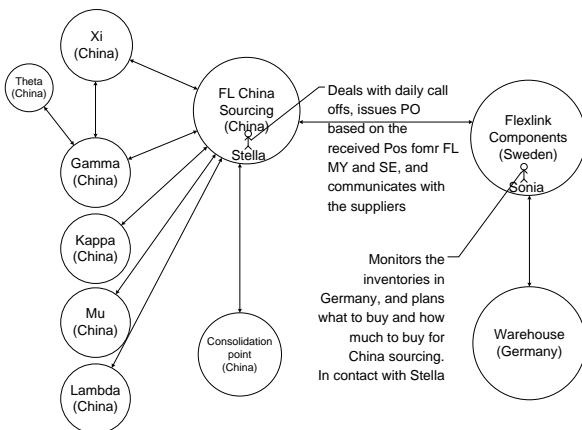


Figure 7 - China-Germany: Information flows

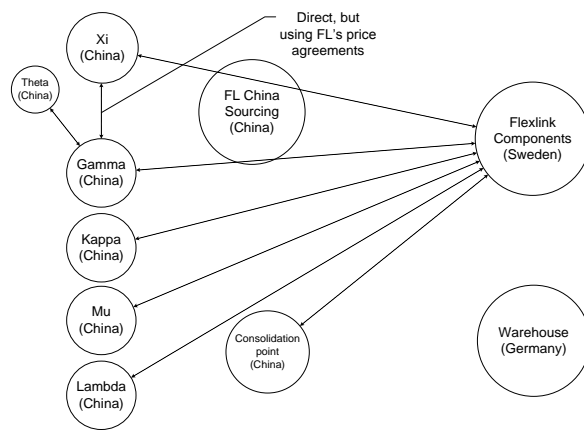


Figure 8 - China-Germany: Financial flows

Regularly, all FlexLink items produced in China are transported to Germany by ship under the responsibility of a Chinese transportation company. All the Chinese suppliers deliver their products to the terminal of the transportation company in Shanghai, and that company ships them to Germany. FlexLink has an agreement with the freight company that as long as they are being used for FlexLink’s transportations, they will hold FlexLink’s stock at their terminal free of charge.

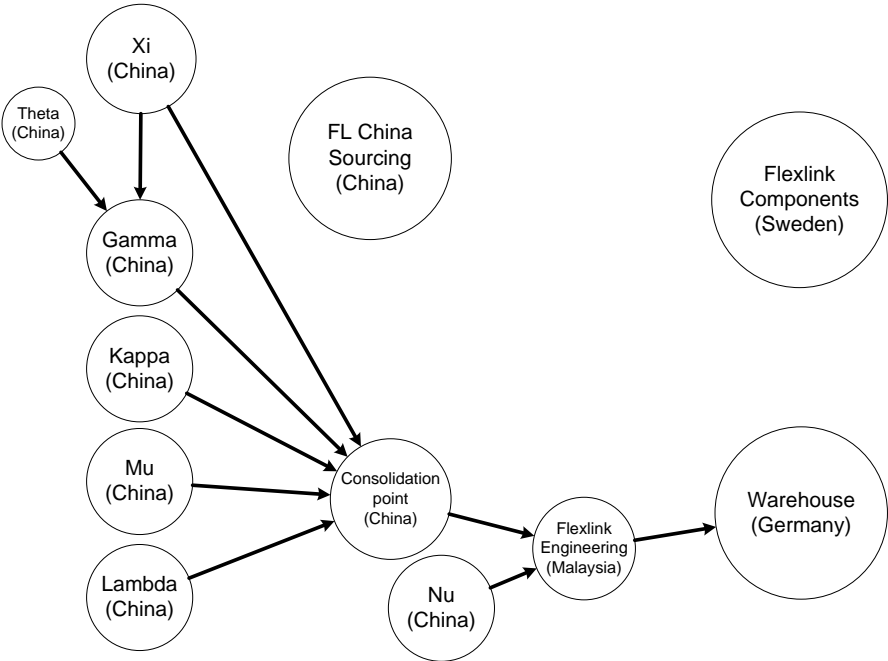
*“And we also have a gentlemen’s agreement that things should not be sitting there for more than 3 weeks, or they will need to charge us rent. But since we more or less ship every second week, it only sits there for less than two weeks”, according to the FlexLink director of the supply division.*



Whenever an order needs to be shipped faster than this route allows for, air freight is used. This happens at least once a month, which is far too often, according to the director of the supply division:

*“Too often! I mean it could be all right when we sell more than anticipated. Then it’s a pleasant problem. [... we do this] just to make sure we don’t create too many problems with stock outs.”*

A number of FlexLink’s products are assembled at FlexLink Engineering in Malaysia. This assembly unit plans its own production and inventories, and orders from the FlexLink Chinese suppliers through FlexLink China Sourcing. They buy from the suppliers in China and some others, both within China (that FlexLink China Sourcing is not in contact with) and elsewhere, and ship the assembled items to the FlexLink distribution center in Germany. All of communication and logistics are the same as the China-Germany flow; except that the Malaysian unit and a number of other suppliers are added to the big picture (Figures below).



**Figure 9 - China-Malaysia-Germany: Physical flows**

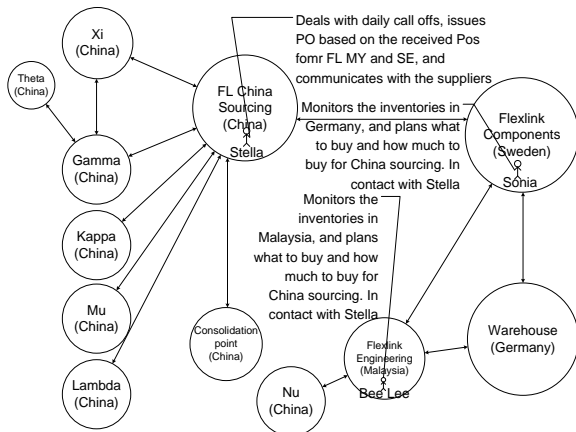


Figure 10 - China-Germany: Information flows

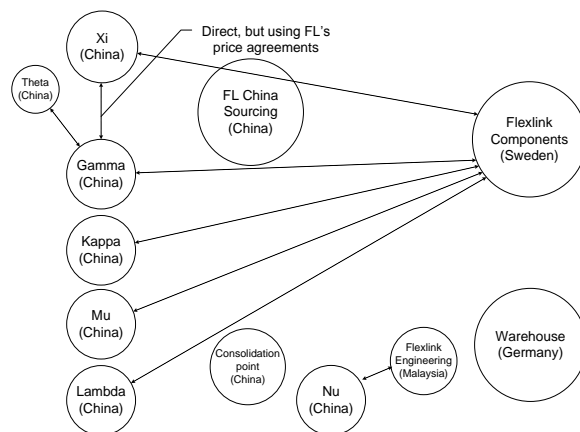


Figure 11 - China-Germany: Financial flows

#### 4.2.4 THE EXISTING RELATIONSHIPS DURING THE TRANSITION TO CHINA

FlexLink's sourcing in China has created difficulties in a number of their existing supplier relationships. One of their suppliers in Europe is a die-caster. During the transition to China, some of FlexLink's tools were moved from this European die-caster to their new suppliers in China while others were left with the European supplier so that they could go on producing for FlexLink in case of unexpected problems.

Another FlexLink European supplier subject to gradual replacement by Chinese suppliers is an injection molder. The move of activities of FlexLink to China was making them feel insecure, and therefore they offered their Estonian subsidiary to FlexLink in order to keep FlexLink as a customer.

FlexLink's director of supply chain said he believed that their suppliers should realize what products are strategic for FlexLink, and try to focus on them, in order not to lose their business with FlexLink. For instance, since electricity and plastic raw materials are not cheaper in China, this is an opportunity for FlexLink's European suppliers to develop their relationships with FlexLink, he suggested.

Currently, none of the items that are produced in China for FlexLink are subject to a dual sourcing strategy. FlexLink had a dual sourcing strategy for the first items that they moved to China, temporarily producing them in Europe at the same time. However, as time passed and FlexLink established stronger roots in China, this strategy has been replaced by a technology-based dual sourcing strategy, meaning that while their European suppliers have the same technology as the Chinese suppliers their European and Chinese suppliers do not produce the same items. But if a problem should occur for either supplier, the FlexLink tools can be moved from one supplier to the other and manufacturing can continue. However, doing this in reality is complicated. FlexLink's supply chain director described these difficulties as:

*"It's not a piece of cake; but it's possible. [...] it's always difficult to start something up. If you have constructed a tool yourself, it fits*

*your production process. But die-casting machines are not identical. They are different brands, and they are different [in various aspects].”*

Lambda is an exception to FlexLink’s technology-based dual sourcing strategy. Lambda’s production technology is stainless die-casting (see Table 4), and none of FlexLink’s European suppliers owns this technology. The items that Lambda is producing today are technologically modified versions of a previously die-cast item. FlexLink’s supply chain director stated that:

*“since this is a new item, we have not started up a Swedish one as well. We would rather have two Chinese options, because it is so much cheaper”.*

One reason for FlexLink not to have a dual sourcing strategy is that their purchasing in China is mainly labor-intensive and tooled items that require pre-designed and manufactured tools to be produced. With a single sourcing strategy, FlexLink manages to reduce their costs in terms of tools investments. Also, it is not easy to start production of an item at a supplier for the first time, with existing tools (that were used by another supplier before). The tools need to be adjusted to the new suppliers’ machinery, which normally takes two to three weeks.

**Table 4 - FlexLink’s dual sourcing strategy on the technology level**

<b>Chinese supplier</b>	<b>Production technology</b>	<b>Possible dual sources</b>
<b>Gamma</b>	Die-casting Al and Zn	1 supplier in Sweden
<b>Mu</b>	Machining of pins and shafts	1 supplier in Sweden
<b>Kappa</b>	Machining, stamping	2-3 Machining suppliers in Sweden. No stamping, but, can be found easily in Sweden
<b>Xi</b>	Injection molding	2 suppliers in Sweden, 1 in Hungary
<b>Lambda</b>	Stainless steel die-casting	None

An example of FlexLink’s gradual leaving of a European supplier for a Chinese one follows. For a certain set of die-cast products, FlexLink used to have two suppliers in Sweden, each of which used to produce a number of these items. After Gamma joined the FlexLink supplier base, the total count of suppliers capable of doing such production was three. FlexLink continued to gradually move more of the items produced by the European die-casters to Gamma. In 2011, FlexLink suddenly realized that all of their dealings with one of the two Swedish die-casting suppliers were down to ten parts and so they decided to abandon this supplier and transfer their tasks to the two other suppliers in the supplier base. So Gamma was asked to produce four of these items, and the remaining six were consolidated with the other European supplier.

**4.2.5 EXAMPLE: MAPPING OF THE PRODUCTION OF A PHONE BRACKET**

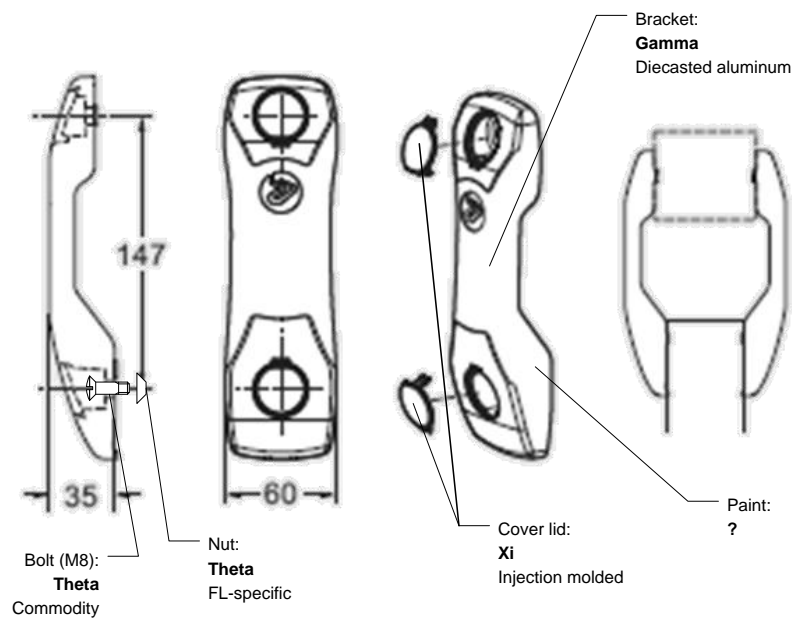
A phone bracket consists of a die-cast bracket body and 2 plastic injection molded cover lids. The bracket is produced by Gamma, while the lids are molded by Xi (Figure 12). The lids do not

affect the performance of the product; they are cosmetic items that add to the bracket’s safety and appearance.

The big process picture can be described as follows: Gamma die-casts the bracket body, removes all the burrs (the sharp edges), and sends it out for painting. After receiving the painted brackets, Gamma pre-assembles the nut and bolt (purchased from Theta<sup>23</sup>) and the covers (purchased from Xi) on it, puts the product in plastic bags, seals the bags and sends them to the consolidation point in China.

When FlexLink were going to decide on which of the two suppliers should be responsible for assembling the items, they realized that it was preferable for them if Gamma or Kappa, rather than Xi do it, because, as the supply chain director put it:

*“they are the most experienced ones; they know our requirements very well, so we are more comfortable with them buying from Xi than the other way round”.*



**Figure 12 - Phone bracket (an example of connected relationships)**

The plastic lids are also lighter and cheaper than the die-cast brackets. Therefore, it makes more sense for Gamma to buy from Xi, than to transport all of the heavier and more expensive items to Xi for assembly. Gamma makes infrequent large batch size purchases (two to three times a year) from Xi, and stores the plastic lids until they are needed. These sales constitute a small share of FlexLink’s business with Xi. The supply chain director explained this as:

*“It is something that Xi does because it is like a package. We buy other more expensive items from them, and then we say you also*

<sup>23</sup> Another supplier of FlexLink in China, not directly in contact with FlexLink China Sourcing.

*have to make the lids. So, for them it's a necessary evil to get the remainder of our business."*

Regarding the painting supplier, FlexLink visited them a few times, but does not actively take part in the relationship between them and Gamma. FlexLink gives the painting specifications to Gamma and has made Gamma responsible for ensuring it. Gamma pays this supplier, and can change supplier if they realize that the expected quality is not being met. The same goes for the bolts. Gamma is responsible for finding a supplier that provides bolts with proper quality at a reasonable price.

However, the situation is different for the nuts, which are uniquely made for FlexLink in order to fit in their products. The material used in making these nuts is conventional, but the dimensions and design of the nut are unique to FlexLink and Theta only produces them for FlexLink. However, Theta does not use any of FlexLink's tools. FlexLink has not designed this product, but has only defined its specifications.

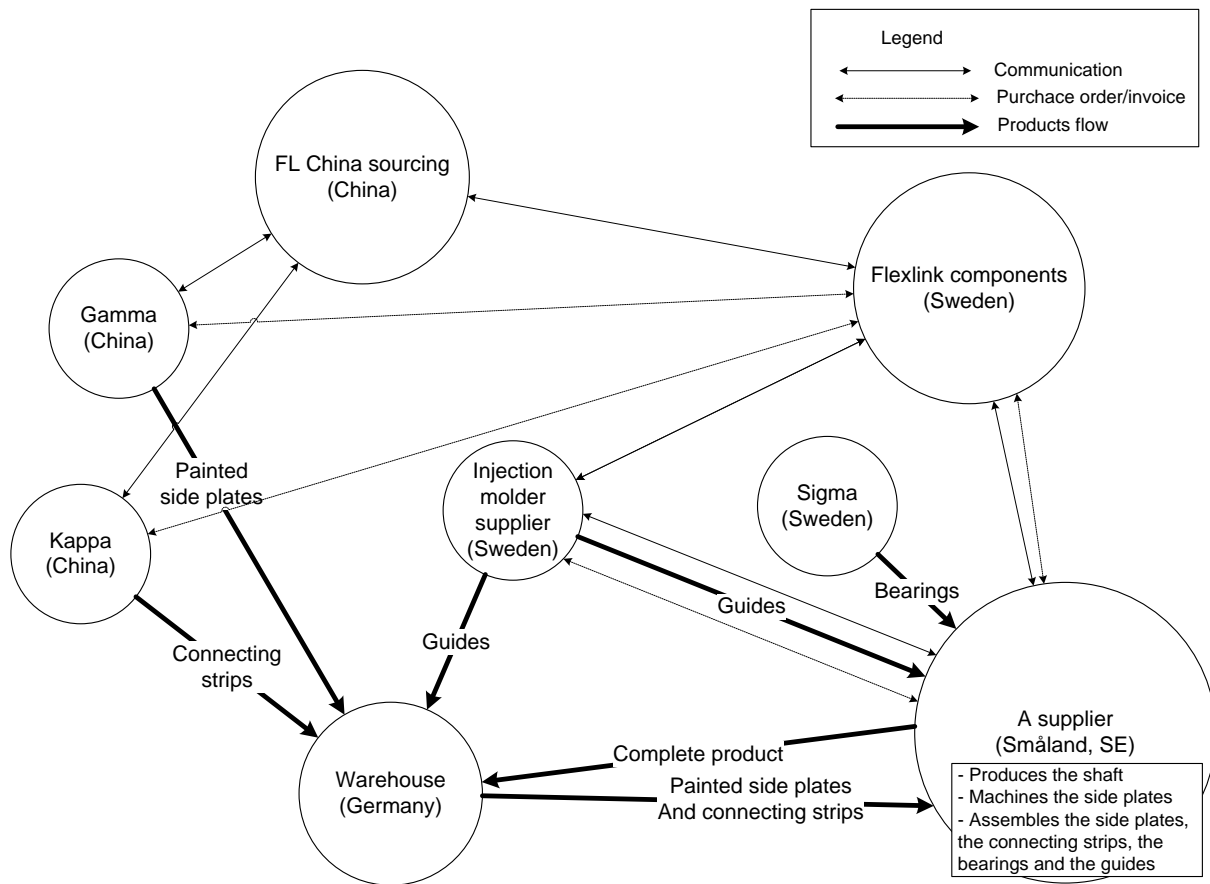
Theta is a German company with a subsidiary in China. FlexLink is a customer of the German firm in their European flow, and when Theta items are needed in China. Theta's factory in China is contacted directly by FlexLink or its Chinese suppliers, and the purchase is made directly. In Sweden, this item is bought from Theta Germany in labeled packs of 50. Knowing that they are produced in China, FlexLink has asked Gamma to contact Theta's subsidiary in China and order the nuts there. Theta does not deliver the nuts to Gamma in labeled packaging. They buy them in full pallets. Thus they can manage to acquire the nuts cheaper than what FlexLink can do in Europe, and FlexLink avoids unnecessary transportation of the nuts between Europe and China.

#### **4.2.6 EXAMPLE: MAPPING OF THE PRODUCTION OF IDLER END 1**

The idler end model 1 consists of almost the same components as the other models of idler ends, however its size and capabilities differ from the others. As shown in Figure 13, each of these components is produced by one of FlexLink's suppliers, and assembled by one of them. Two of their Chinese suppliers are involved in the production of this product: Gamma in China die-casts the side plates and uses a sub-supplier to paint them, and Kappa produces the connecting strips out of stamped aluminum. These items are all sent to their IDC in Germany, and sold from there to FlexLink's machining supplier in Småland, Sweden. This supplier also purchases injection molded guiderails from one of FlexLink's suppliers in Sweden and bearings from Sigma in Sweden. This supplier in Småland performs some final machining operations on the side plates and assembles all the items together with the shafts they produce.

What this supplier in Småland does for FlexLink is very similar to what FlexLink Engineering in Malaysia does, and there are many similar cases in FlexLink's supply management in Europe. An interesting point here is that such arrangements in Europe involve more critical items than the corresponding arrangements in China, where FlexLink's supplier-supplier relationships consist more of cheap and peripheral items. To date, none of FlexLink's European suppliers have made

direct purchases from FlexLink’s Chinese suppliers. All of FlexLink’s Chinese suppliers either sell to FlexLink engineering in Malaysia or to FlexLink Components in Sweden or, in some cases, to each other.



**Figure 13 - Supply network for Idler end model 1**

Such supply settings imply that FlexLink becomes both a customer and supplier to suppliers who perform assembly for FlexLink. The supply chain director of FlexLink explained this as:

*“Sometimes we are beating on them: you are not delivering, you are not delivering! But they sometimes tell us we cannot deliver because we don’t get the components from you! So sometimes we are our suppliers’ suppliers”.*

Besides, since some of FlexLink’s European suppliers are quite small companies, they are not able to source cheaply from China; it is either too difficult for them to do it directly, or too costly if they use an agent. Therefore, FlexLink purchases the required items in China, ships them to Germany, stocks them there, and delivers them to their European suppliers when needed. This adds efficiency to FlexLink’s business as well, according to the director of supply chain, because they *“have well-established flows and containers leaving from China every second or third week”*, and thus they can easily accommodate their suppliers’ demands with these flows.

#### 4.2.7 EXAMPLE: MAPPING OF THE PRODUCTION OF IDLER END 2

An idler end model 2 consists of a number of components, each of which is produced by one of FlexLink's suppliers in China, and they are all assembled by FlexLink Engineering in Malaysia. Every conveyor system has an idler end. An idler end does not have any driving force; and is used only to guide the chain at the end of the conveyor. Idler ends are very similar in design, but differ in dimensions and some details. Each idler end unit includes two idler ends, one for the left and one for the right side of the conveyor, which have identical but mirrored design.

As shown in Figure 14, the idler end includes a side plate (die-cast aluminum from Gamma), connecting strip (stamped steel from Kappa), guiderail (injection molded plastic from Xi), shafts (turned steel from Mu), spacer (machined aluminum from Kappa), and bearings (from Nu). Everything is sent to Malaysia through the consolidation point in Shanghai using the transportation company in China.

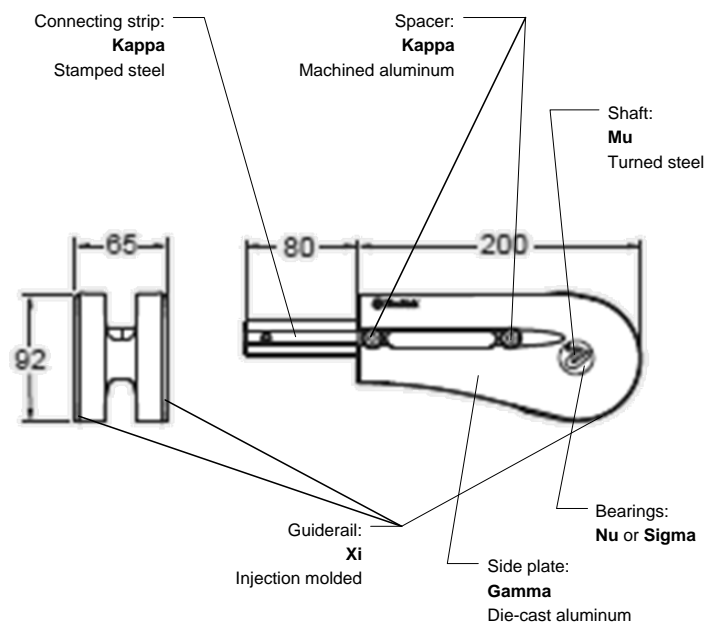


Figure 14 - Idler end model 2

The plastic component in this product (the guiderail) is a critical component, in contrast to the functionality of the plastic component in the phone bracket. A low-quality guiderail may lead to friction, wear and noise. Therefore, among the products that Xi produces for FlexLink, this item is more important than the cover lids for the phone bracket.

Nu is a Japanese company with production in China. The bearings they manufacture are commodity items, and FlexLink's relationships with Nu are maintained by FlexLink Engineering in Malaysia, and FlexLink China Sourcing has no contact with Nu. However, the rest of the components are purchased by FlexLink China Sourcing in China, and this unit takes care of the relationship with all of these suppliers. The supply settings for this item follow the previously-described China-Malaysia flow of products. A planner at FlexLink Engineering Malaysia plans for their local inventories, based on the orders he receives from the planner in FlexLink

headquarters in Sweden. He issues orders and invoices to the Chinese suppliers through the FlexLink China Sourcing unit, and the details of the purchase are handled by FlexLink China Sourcing in Shanghai. Everything is shipped to Germany after assembly at the Malaysian unit.

### **4.3 THE GRADUAL ONGOING TRANSITION TO CHINA**

FlexLink continues to move the production of more items to China. This is being done according to their strategic goals and on the basis of item-by-item procurement cost analysis.

#### **4.3.1 THE PROCUREMENT SAVINGS GOAL**

Every calendar year, the supply chain, product and supply division receives a procurement savings goal from FlexLink's top management. According to the director of supply division:

*“That’s pure top-down. You can say it’s “a number” of MSEK. There are no decimals. It’s set; it’s a challenge that my boss and I get and we have to sort of accept it or of course negotiate it. We have to validate it and we have to look at this number in relation to our total procurement spend.”*

However, in the past couple of years it has been more of a bottom-up process; an achievable number was decided on by the supply division's management and taken to the board of management for confirmation. FlexLink's director of supply division explains this as:

*“Last year my boss called me in December, when I was at the airport in Amsterdam on my way to Malaysia, and asked me “What should be our number for the next year?” And I said like “Ah! You tell me!” And so we decided to stick to the numbers from last year.”*

In order to make such a decision, the supply division considers factors such as the budget, the items on the list of candidates to be moved, and the opportunities that seem reasonable for moving more items to emerging countries.

The supply division then validates this goal by viewing it as a percentage of their procurement costs from the previous year. For 2011, this goal was around 2-3%, which was unchanged from 2009 and 2010. The director of supply division said he believes that it is natural to have lower goals every year. The reason is that when FlexLink started in China, it started by picking the low-hanging fruit: *“because cherry picking works fine in the beginning, and then it becomes more and more [difficult]”*, according to FlexLink's director of supply division. The simplest items to move and items with the biggest possible procurement savings if moved to a supplier in China were moved first. However, as the time has passed and more items are being moved to China, the items that are still left in Europe have less potential for big procurement savings: *“now the pay-off is maybe 3 years, instead of 1 year as it was at the start”*. This has been one reason for keeping almost the same goals for 2011 and 2010 as in 2009.



Another reason is the lower demand in 2009 as compared with 2010 and 2011. When volumes are higher (as in 2010 and 2011), the same procurement savings goal means a lower percentage of total procurement costs that year as compared with the previous year. This affects the supply division's expectations of an achievable goal for the coming year greatly, since when calculating they consider the actual volumes from the previous year. For instance, in 2010 they calculated the goal based on 2009 volumes and, since these volumes were lower than the volumes in 2010, if they set the same procurement savings goal for 2010 this would mean a lower percentage of their total procurement expenditure in 2010 than in 2009. This is a balancing factor against the above-mentioned "low-hanging fruits" effect.

#### **4.3.2 CALCULATING THE ANNUAL PROCUREMENT SAVINGS**

To calculate the company's progress in achieving this goal, the implemented savings are considered rather than the actual earned savings. The difference is that time needs to pass in order to realize the actual savings related to the move of each item to an emerging country. Therefore, if an item is moved within a calendar year, FlexLink's supply division considers it an implemented saving. The amount of this saving as announced to the finance department implies that once all of FlexLink's current stock of that item is exhausted and only the stock coming from the new supplier is being consumed, the amount of implemented savings from moving this item is actually earned. In other words, the value of implemented savings of the move of a certain item in a calendar year is the value of the saving in the long run, provided that currencies and volumes remain stable.

This method of calculation is used in spite the fact that, finance-wise, the actual monthly savings from such a change is more interesting than only knowing the prospective possible outcomes from the implemented saving. This is a matter of dispute between FlexLink's finance department and supply division. The director of the supply division believes that the outcome from performing so many calculations is not worth the time and energy it requires:

*Then I would say well, I could do that, but then you have to lower the goal, because then I would have to spend my days calculating, not implementing.*

The difficulties with calculating the actual figures have to do with the fact that when a supplier is changed FlexLink's stocks may still contain their items during the transition period. In order to calculate the actual outcomes one must keep track of when exactly the old supplies are exhausted and the new ones begin to be used, which is very cumbersome. Therefore, from a sourcing perspective the supply division considers a saving as 'implemented' when the first purchase order for the focal product is issued to the new supplier. Prior to placing the first purchase order, all the commercial transactions have to be in place, and the quality assurance process completed. This process involves buying an initial sample and having it evaluated by the quality assurance department.

### **4.3.3 THE LIST OF CANDIDATE ITEMS FOR TRANSFER**

A key tool for achieving the annual procurement savings goal is the transfer of items from European suppliers to China. As part of FlexLink's regular business planning, the supply division has created and constantly updates a list of candidate items for transfer to China.

The director of the supply division and the manager of China Sourcing usually begin the process of updating this list by reviewing all the items in the assortment that are being sourced in Europe, and sorting them in descending order of volumes and values. Beginning at the top of the list, each item is checked for potential as a transfer candidate. From this point the China Sourcing team becomes involved, reviewing each candidate item with regard to the information provided in the product catalogue and the drawings, and in interactions with FlexLink's engineers in Sweden. They analyze all candidate items based on type, the type of production processes they require, and the special needs of each, such as tolerances, special painting requirements, and so on. This way a list of 30 to 50 items is usually formed. Then the director of the supply division and two strategic purchasers (who are more knowledgeable about the technical characteristics of each item) refine and finalize this list in Sweden to initiate the transfer process.

When this list was updated in November 2010, the initial list of items made by the China Sourcing team consisted of some 50 items, which was reduced to 30 at the FlexLink headquarters in Sweden. Until the time of this interview (August 2011), three of these transfers were implemented, eight to ten were under implementation, while some 15 had been withdrawn from the list of candidates or transferred to other non-Chinese suppliers after further analysis, because better options were found than transferring these items to China.

As shown above, in some cases procurement savings can be achieved by other alternatives than transferring the items to China. If the amount of savings from transferring to another setting is almost equal to the savings that could be achieved by transferring the item to China, the proximity of the other possibilities (for instance in the Central and Eastern European countries) makes these alternatives preferable. Shorter lead times and transportation are among the advantages of such alternatives that matter to FlexLink. For example a number of injection molded items that were being analyzed for transfer from a European supplier to Xi were instead transferred to Hungary after a good price offer, because of better lead time and transportation conditions and lower risks involved.

In many situations, cost-wise, there may be 2 to 3 competing bids, giving FlexLink the chance to choose based on a number of considerations beyond price. In some cases they also try to encourage their existing European supplier of the focal product to lower the price by threatening a possible transfer of the product to China.

Analyzing transfer opportunities almost only on an item-by-item basis has sometimes limited FlexLink's view of other aspects. In summer 2011, for instance, FlexLink realized that they were

only buying one connecting strip from one of their European suppliers. This was “an embarrassing situation”, as explained by the director of supply chain:

*Although it was not a very high volume purchase we still wondered: why aren't we buying this from Kappa<sup>24</sup>? And then we said just do it, and we did it.*

Today, FlexLink follows a continuous expansion strategy in China. They try to expand their points of departure for this analysis and in some cases look at item categories, rather than individual items- According to the director of supply division:

*if we see that one item looks very promising or if there are very similar items or if there are items that use the same tool but maybe with a different hole pattern or something, then we move the whole package.*

However, FlexLink is not yet at a stage in China Sourcing when they are ready to set up a completely new product range from scratch in China.

#### **4.3.4 FINDING SUPPLIERS IN CHINA**

Currently, FlexLink China Sourcing maintains their relationship with five main suppliers in China: Gamma since 2004, Mu since 2005, Kappa since 2006, Xi since 2009, and Lambda since 2010. Each of these relationships is described below. All of FlexLink suppliers in China have export licenses, except for Lambda. This is further discussed in the following sections.

When a new supplier is needed in China, the China Sourcing team does not follow any predefined process. The manager of FlexLink's China sourcing explained this as:

*“Normally from experience, when we want a new supplier, we get information from colleagues, and maybe from the market; we know someone in Shanghai who can cast a reel. So we just go to their factories and see if they have some capabilities to produce what we are looking for.*

However, the scope of this search does not go any farther than Shanghai or the nearby areas; four out of the five suppliers are within a one hour drive from FlexLink's office, while the fifth is three and a half hours away<sup>25</sup>. The desire is to increase closeness among the suppliers, FlexLink's Shanghai office, and the consolidation point. Therefore, not only the transportation of the products is considered for selecting suppliers, but also the possibilities of FlexLink's engineers to support the suppliers, solve supply problems, perform on-site quality assurance, and maintain the relationship with them. All these things are important parts of FlexLink's expansion strategy in China. According to *the supply chain director*:

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<sup>24</sup> A metal sheet metal stamping supplier of FlexLink in China

<sup>25</sup> In Ningbo

*You can probably get cheaper things if you look far away from Shanghai. But we still believe that we need to have a strong presence at the supplier, to communicate our requirements, and also to inspect, to make sure that we get the quality that we want, and also to make sure that if we are having problems, and we need fast deliveries, we can go there and discuss things and make sure we get the attention we want.*

#### **4.4 STRATEGIES AND PLANS FOR THE FUTURE**

FlexLink has a long-term strategy for expanding their sourcing business in China. The current relationships with the Chinese suppliers are the main focus of this strategy. The director of the supply division explained this as: “Our strategy in China is to boost our turnover with our current suppliers”.

They are planning on having complete production in the Asia-Pacific region in the near future (within two to three years). For this purpose, a distribution center is also being planned in Malaysia in the more distant future. It is intended to help FlexLink improve cost efficiency and environmental sustainability. However, Asia-Pacific only accounts for 18% of FlexLink’s sales. Therefore, lead time is not a “*very important*” driver for this decision, and no major steps are going to be taken in the near future.

One key reason for undertaking this strategy is the significance of associated costs: travel, ISO qualification, etc. In order to be able to prorate these costs to a greater extent, FlexLink needs to have more business in China. Another important reason for FlexLink’s expansion strategy is financial in nature. The costs of raw material account for 25-30% of FlexLink’s TCO<sup>26</sup>. Labor and raw material costs are increasing in China at a predictable pace. Therefore, FlexLink needs to expand its business with its suppliers in China in order to gain more economies of scale and cope with these cost increases. The director of the supply division explained this as “Costs will increase in China faster than Europe, but it will still be interesting to source in China.”

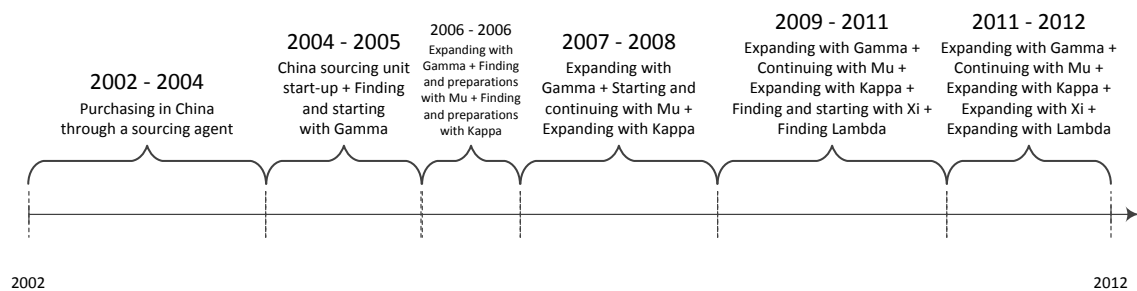
However, China accounts for a relatively small share of FlexLink’s 160 MSEK in annual purchases. The director of the supply division said he believed that if China were in Europe, this share would have been much higher. As a rule of thumb, performing an activity in China should have a price as low as one-third of the price in Europe to be worth it for FlexLink. By 2012, a mid-term goal of 10MSEK in annual procurement saving is projected by FlexLink. In order to achieve this goal, they intend to expand their supplier base in China with two new suppliers, one for producing “pin guns” and one for extrusions, which are labor-intensive activities. Adding these new suppliers would increase the volume of FlexLink’s China Sourcing business by almost 50%, which is major growth, showing the importance of the China business for FlexLink.

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<sup>26</sup> Total Cost of Ownership

## 5 Case analysis

The level of detail in the case of FlexLink reveals various aspects of a firm's development of a supplier base. In this chapter, the case is analyzed with regard to the analytical framework that was presented in section 2.3. For this purpose each relationship, as a component of the supplier base, the interdependencies between the activities in the supplier base in different states, as well as the types of collaboration in those relationships and the supplier base are discussed for each of the dimensions of their levels of involvement in order to reach an understanding of how different economies emerge and are captured in supplier base development. These rely on the three sub-research issues of the study. This chapter is structured as a timeline over which certain time periods are marked and the initiation and development of FlexLink's supplier base in China is described (see Figure 15).



**Figure 15 - Timeline: FlexLink initiating and developing its supplier base in China between 2002 and 2012**

Each period in the timeline represents the supplier base in one state during its development. As the supplier base develops, it changes shape; some suppliers may be removed, new supplier may be added, and the relationships with some suppliers may alter. In order to analyze these developments these changes are depicted in terms of states. As the supplier base develops, it leaves one state and enters the next. The time boundaries around the states can be drawn in various ways. In this study, the states are defined based on major developments in the supplier base over time. These major developments range from adding new suppliers to the base, to major expansions of existing supplier relationships. As the ambition has been to view the development of the base as a whole, the states are constructed based on viewing the development of all supplier relationships at the same time, rather than drawing individual timelines for the development of each relationship.

Using these descriptions it is shown in each state of the development how activities have been interrelated, how relationships within this supplier base have been formed into different levels of involvement, and how collaboration types are undertaken to exploit different types of economies. The development of this supplier base is analyzed by following the development of each of the relationships as components.

The figures in the following sections illustrate the state that is being discussed in each section. Legends given in Figure 16 can be used to interpret them. This analysis only emphasizes the economies that have been primarily in focus as a result of the developments in the supplier base.

In each state, other economies also exist to lesser extents, but they are not highlighted in this analysis to keep the analysis from going off course. The analysis only emphasizes the most important of the economies at each state with regard to what emerges and what results in further developments in the supplier base.

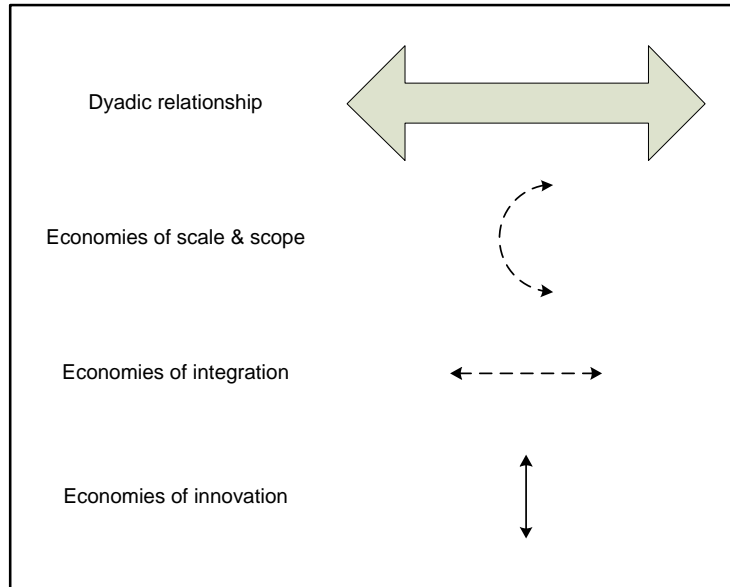
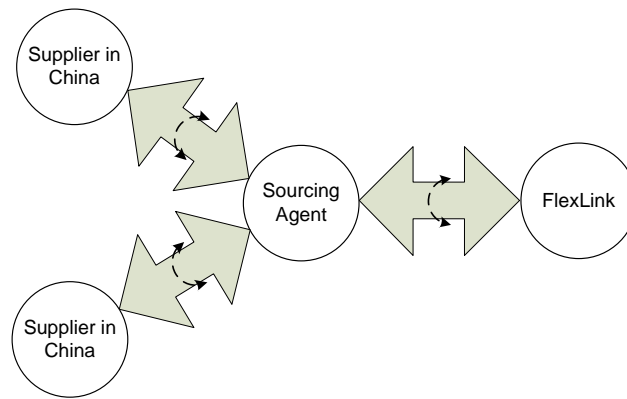


Figure 16 - Legend for all figures in the sub-sections of the analysis

### 5.1 FROM 2002 TO 2004

Before starting to develop the supplier base in China, FlexLink established a low volume purchasing business of simple products with a few suppliers in China through a sourcing agent (see Figure 17). These relationships can be characterized by very low involvement from both the buyer and the supplier sides, and a multiple sourcing strategy on the part of FlexLink in order to maintain sourcing agility in cases of uncertainties. Although FlexLink had considerable reliance on the middleman's resources, its relationship with the suppliers in China can be characterized by distributive collaboration. The sourcing agent's job was to make use of its different resources and carry out the purchases for FlexLink in China. The most important of these resources were the relationships between their subsidiary in China and the suppliers there. This way, FlexLink could share sourcing costs with the other customers of the agent and at the same time take advantage of the products that the agent could provide through having a base of suppliers in China. Therefore, economies of scale and scope were mainly intended to be achieved.



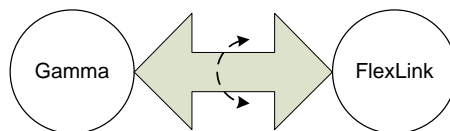
**Figure 17 - 2002-2004: Purchasing through the sourcing agent**

By sourcing through an agent, FlexLink was indirectly related to the suppliers in China. The activities at the suppliers for the production of FlexLink’s items had indirect links to the production activities of FlexLink’s European suppliers. No direct coordination took place between the activities of FlexLink and the suppliers, but the activities that the suppliers performed for FlexLink were production of items that would be used by FlexLink or some of its other suppliers for assembly into systems or packaging for direct sales. Those activities (in aggregation) can be identified as complementary, and serial interdependence can be recognized among them, although the suppliers are not in direct relationships with FlexLink or its other suppliers. Despite the reliance on the sourcing agent’s resources, neither specific resource adaptations nor a high level of actor interactions can be identified between FlexLink and the sourcing agent, or between FlexLink and the Chinese suppliers. In fact, no noteworthy interactions took place between FlexLink and the Chinese suppliers when the supplier base was in that state, and their resource adaptations were limited to low extents of technical adaptations. In addition, very little activity coordination can be found in their purchases through the sourcing agent in China.

## **5.2 FROM 2004 TO 2005**

The state the supplier base was in between 2002 and 2004 was not in line with what FlexLink needed to achieve by purchasing in China. FlexLink’s proactive presence in a network of suppliers, with almost all production and assembly work done outside the firm did not suit such distant relationships (as in the case of agent sourcing in China) in the long run. The serially-linked activities needed to be coordinated more closely. They needed shorter lead times and to be closer to the suppliers in order to be able to accomplish this coordination between the activities of the Chinese suppliers and those of the rest of their network in Europe. Therefore, in 2004 the project of developing the supplier base in China started at FlexLink, in order to have direct relationships with suppliers and capture other economies than those the middleman could offer. FlexLink’s next move was to rely on its existing resources (the sales unit in Shanghai) and establish a sourcing unit in China in order to find new Chinese suppliers and become directly involved with them.

FlexLink's products are not standardized, and only simple production capabilities were required for producing the first items that they sourced to the first supplier they found, Gamma (see Figure 18). Very limited resource adaptations and activity coordination were required to make this happen, while a relatively higher level of actor interactions had to take place. Gamma, at this stage, was given the task of producing very simple items in very limited volumes. FlexLink's supplier base in Europe was not highly dependent on that production, and Gamma's products were being sent to the main distribution center for delivery to customers. A limited extent of serial interdependence can be identified among the activities of Gamma and those of FlexLink's assembly units. As a result, relying on the possibilities of Gamma for attaining economies of scale, FlexLink started a distributive collaboration with them, and technical resource adaptations played a key role in this development. However, just as when sourcing through the agent in China, in order to have a safe transition to production in China, FlexLink undertook a multiple sourcing strategy for Gamma as well. A clear outcome of this system, however, was lower levels of economies of scale than could have been achievable otherwise.



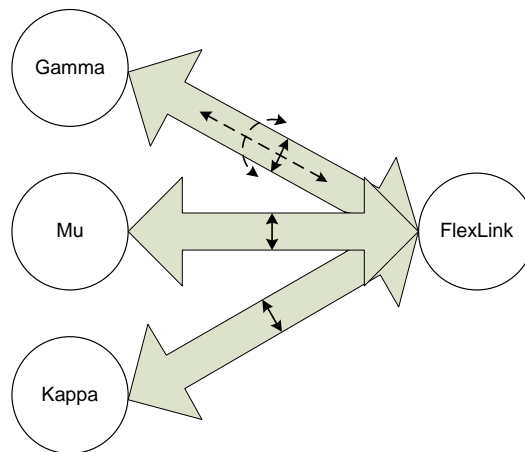
**Figure 18 - 2004-2005: Establishing the China sourcing unit and finding Gamma**

As time passed (in 2005), FlexLink introduced new items to its relationship with Gamma. However, almost all of these items were still simple die-casted products in relatively low business volumes. These products required the same set of technologies and resources, and thus there was pooled interdependence among their related activities. The distributive collaboration between FlexLink and Gamma enabled them to increase the economies of scale (increased but still low business volumes) and scope (i.e. a bigger variety of products). Aiming for similarity and specialization in FlexLink's choice of the items sourced to Gamma provided for higher economies of scale and scope in this relationship.

### **5.3 THE YEAR 2006**

As Figure 19 illustrates, in 2006 FlexLink's relationship with Gamma entered a new phase. Introduction of more complex products that required problem solving and various cases of activity linking created the need for the development of systemic and functional collaboration beyond the existing distributive collaboration between the two firms. Activity coordination between FlexLink and Gamma increased, and various members of the two organizations also met and held joint meetings to solve production problems and help getting the new and more complex production started. Increased business volumes made it possible to make better use of similarities among the activities Gamma was doing for FlexLink, and widening the scope of products provided for more similar and complementary activities, so the extent of pooled and serial interdependencies increased.





**Figure 19 - 2006: Expanding with Gamma, preparations with Mu and Kappa**

A much higher business volume with Gamma and higher buyer and supplier investments gradually enabled FlexLink to reduce and eventually stop its multiple sourcing strategies for Gamma. As a result, administrative adaptations of FlexLink's and Gamma's resources also came into play. This made it possible to realize economies of integration and innovation, in addition to expanding FlexLink's economies of scale and scope. Systemic collaboration at this stage between Gamma and FlexLink provided for various reciprocal interdependencies among activities undertaken for the purpose of initiating the production of new products and solving related problems. This in turn resulted in knowledge-based adaptations of the resources of the two firms.

The same year, FlexLink chose Mu to produce products that required technologies of a different nature. FlexLink began to prepare for production using Mu's operations in China by expanding an existing relationship (with Mu's parent company in Sweden) for turning operations. At this stage various individuals from the two companies interacted in order to adapt Mu's resources to FlexLink's requirements. Reciprocal interdependence, although to a low extent, can be recognized among the activities of the engineers of the two firms when initiating the production for FlexLink at Mu. This can be seen through the knowledge-based adaptations of the resources of Mu and FlexLink during the period of initiating production at Mu. Systemic collaboration is the most significant type of collaboration here, as the production at this stage was in the start-up phase, and engineering and other resources were invested by the two firms in problem solving to get the production started. This shows the emergence of economies of innovation in this relationship at its early stage.

At the same time, Kappa was added to the supplier base to perform machining and stamping operations. With Kappa, systemic collaboration aimed at problem solving and product and production development was mainly in focus from the beginning. Although relatively simple products were initially targeted, a relatively high level of actor interactions and knowledge-based resource adaptations were required to ensure that these first steps are taken correctly and all production problems are solved in groups with both FlexLink's and Kappa's engineers. At this

stage, as seen in the other two relationships, reciprocal interdependencies for the purpose of starting up production at the new supplier played the key role, and led to further serial interdependencies among the production activities of Kappa and some of FlexLink's European suppliers. This provided for initial economies of innovation in this relationship.

#### 5.4 FROM 2007 TO 2008

Between 2007 and 2008, expanding the business with the three suppliers enabled the exploitation of economies of scale and scope in FlexLink's supplier relationships in China (See Figure 20). With Gamma, the same pace of expansion maintained the same level of realization of the three economies as before, and with Kappa the start of mass production of FlexLink's stamped and machined items resulted in more economies of scale and scope. Since the start of FlexLink's relationship with Kappa, a relatively high level of expansion of the business between the two firms has necessitated constant systemic collaboration in pursuit of economies of innovation. Every now and then Kappa needs help from FlexLink engineers or FlexLink needs to start new production at Kappa. To be able to do this, both firms, on different occasions, have adapted their resources with technical and knowledge-based adaptations, which has enabled economies of innovation to increase and build on economies of scale and scope in FlexLink's relationship with Kappa.

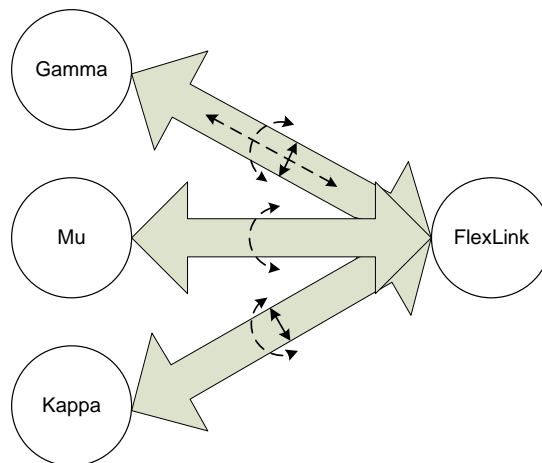


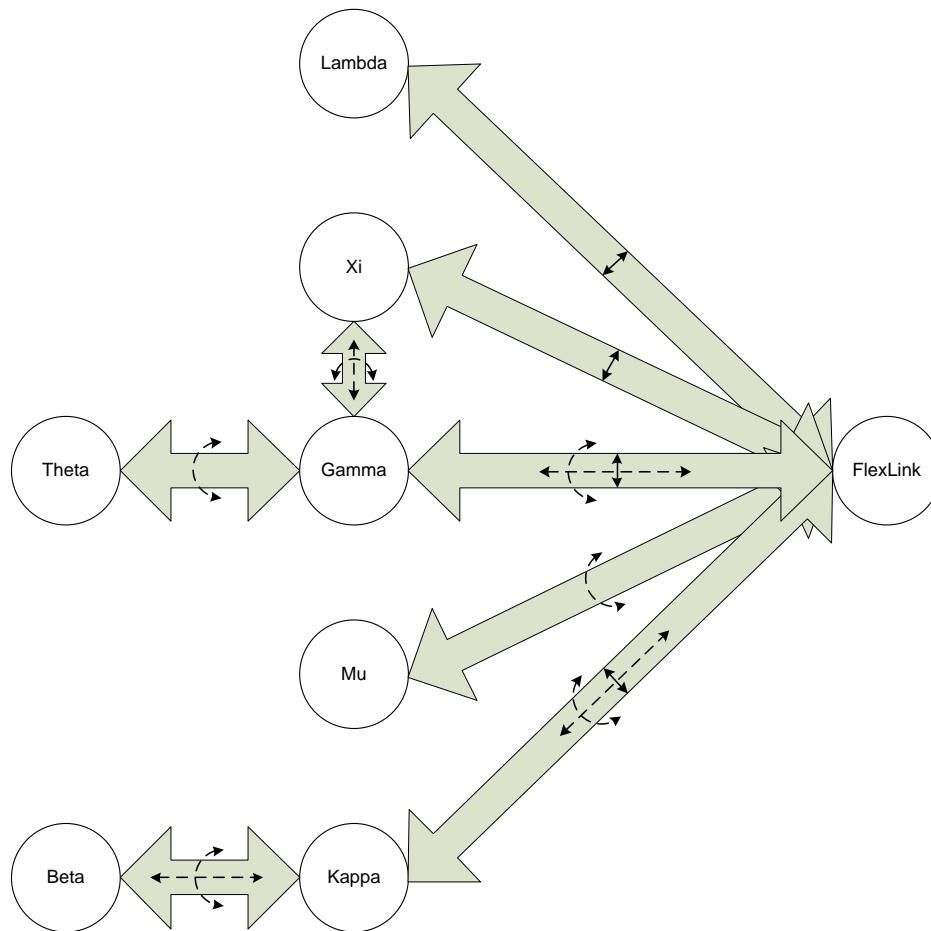
Figure 20 - 2007-2008: Expanding with Gamma and Kappa, and starting with Mu

The relationships with Gamma and Kappa during this period involved all three forms of interdependencies in different ways. FlexLink, by focusing its business development with these suppliers on the use of the same types of capabilities and other resources, managed to increase similarity among the activities each of them undertakes for FlexLink. In this period these suppliers were also gradually asked to produce products that were not only more difficult, but also were more closely related to the production step that followed them. For instance, the production of certain types of side plates at Gamma was a complicated task, as they had to match the machinery of one of FlexLink's European suppliers. That European supplier was then to perform additional operations on the side plates to turn them into finished products of different models.

In FlexLink's relationship with Mu, since in this period most of the initial developments were finished, the main focus was on distributive collaboration and earning economies of scale and scope. The mass production of the first products was underway, and the focus was on making the most of them through technical resource adaptations. As volumes became the focus of development of this relationship, rather than scope, pooled interdependencies became the key types of interdependencies between FlexLink and Mu. A limited part of Mu's resources were assigned to FlexLink and their utilization had to be maximized. Furthermore, the items produced by Mu were used in the production process of FlexLink's European suppliers and in assembly for final sales, necessitating administrative adaptations of their resources. However, the items were not critical input to the activities that followed them at the other firms, and most of them were not high value products. Lower inventory costs meant lower serial interdependency between the activities of Mu and FlexLink's European suppliers, as compared with the same type of interdependencies between Gamma and those suppliers.

### **5.5 FROM 2009 TO 2011**

Between 2009 and 2011, as shown in Figure 21, FlexLink's supplier base in China faced major expansion. Gamma, while maintaining its systemic and distributive collaborations with FlexLink, also greatly expanded its functional collaboration with them. Gamma took a more central role in FlexLink's supplier base, as it became responsible for more of the administrative adaptations of its resources with FlexLink's and other suppliers'. Gamma gained this role by agreeing to purchase a number of FlexLink-specific items from FlexLink's suppliers in China, and perform operations with them such as assembly and packaging for FlexLink. This created a major need for increased activity coordination, resource adaptations and actor interactions not only in FlexLink's relationship with Gamma, but also between Gamma and other suppliers of FlexLink (Xi and Theta) that were linked to Gamma. Just as before, the production and distribution activities involved had both serial and pooled interdependencies, as the expansion of the scope of products and coordination among those activities continued to require reciprocally interdependent activities. This type of interdependence became even more important, as in this period Gamma was linked to two other suppliers of FlexLink and needed to coordinate many of its activities with them. Thus, substantial economies of integration were added to the existing economies of scale, scope and innovation in this relationship.



**Figure 21 - 2009-2011: Expanding with Gamma and Kappa, finding Xi and Lambda, and continuing with Mu**

The picture in this period was different for Mu, however. Since the products Mu made for FlexLink were simple, the need for problem solving was reduced. Not many new products were being introduced to the relationship, nor was the complexity of the new products very high. Mu's relatively higher level of knowledge and expertise as compared with the other suppliers of FlexLink in China reduced the need for problem solving activities, so the products and orders exchanged between FlexLink and Mu did not require high levels of activity linking. Reciprocally interdependent activities, mainly involving major actor interactions, decreased as pooled and serial interdependencies started to take on a more important role. Mu dedicated a set of production resources to its relationship with FlexLink, which made it more important to take advantage of as many pooled interdependencies as possible. The expansion of the scope of products in this relationship at this stage was thus focused on maximizing the utility of those resources for FlexLink, and so the relationship continued to concentrate on increasing economies of scale and scope through distributive collaboration, rather than expanding the horizons in the economies pursued.

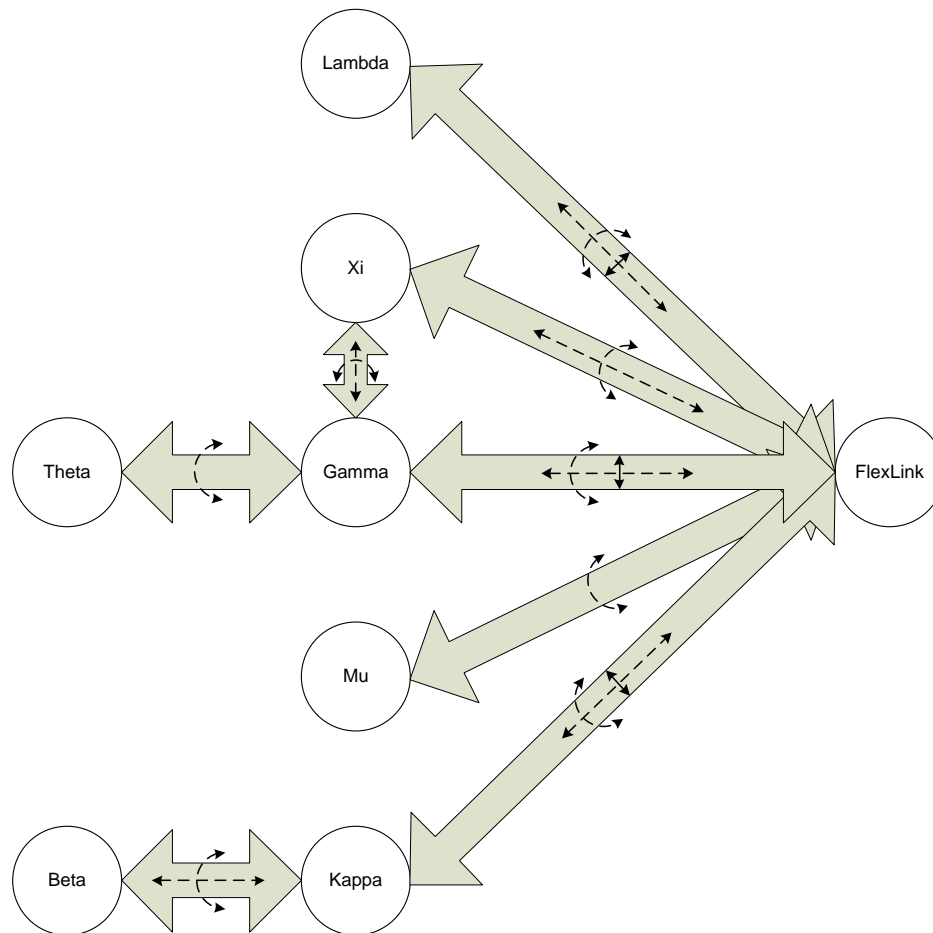
During this period, Kappa's business with FlexLink also grew. In addition to expansions in the achievement of economies of scale, scope and innovation, a natural outcome of the increase in business volumes and the complexity of products introduced, higher actor interactions and

activity coordination were seen. This was mainly because Kappa helped FlexLink find and evaluate a sub-supplier (Beta) for specific production technologies. After having Beta approved by FlexLink, Kappa's activity coordination with FlexLink increased rapidly, as a result of the greater need for administrative resource adaptations in Kappa's business with FlexLink and the sub-supplier. This increased reciprocal interdependencies between Kappa's activities and FlexLink's as well as with the new sub-supplier. The production activities of the sub-supplier that were related to the production of the items for FlexLink were also serially linked to some of Kappa's production activities, and those needed to be coordinated. Moreover, FlexLink needed access to specific resources of Beta to obtain that surface treatment capability. Thus, pooled interdependencies relating to the activities the sub-supplier was going to do for FlexLink and its other customers played an important role.

Additionally, two new suppliers were added to FlexLink's supplier base in China; Xi and Lambda. As this period covers the start of these two relationships, product development and problem solving characterized the main focus between these suppliers and FlexLink at this stage. Therefore, systemic collaboration and economies of innovation were mainly pursued in these relationships at the time. When FlexLink started the business with Lambda, in contrast, there were more activity coordination, resource adaptations and actor interactions than when starting up with Xi, owing to the uniqueness and complexity of the products Lambda was going to produce for FlexLink. As FlexLink did not have the experience of working with this technology, reciprocal interdependencies among activities undertaken for the initiation of the processes with Lambda, through knowledge-based adaptations of their resources, became key in this relationship. There was more of systemic collaboration owing to a greater need for economies of innovation, than in the case of Xi.

## **5.6 FROM 2011 TO 2012**

FlexLink continued its expansion with Gamma and Kappa between 2011 and 2012, and also expanded its business with Xi and Lambda, while its business with Mu remained almost constant, with only minor expansion and with no major exploitation of economies of innovation or integration (see Figure 22).



**Figure 22 - 2011-2012: Expanding with Gamma, Kappa, Xi and Lambda, and continuing with Mu**

In addition to Gamma and Kappa, which continued exploiting all three categories of economies by engaging in all three collaboration types, FlexLink’s relationship with Lambda experienced rapid growth in terms of economies and collaboration types. Owing to the specificity of the technology owned by Lambda, FlexLink relied greatly on Lambda’s resources. The choice of Lambda over the other stainless die-casters was made by FlexLink in the knowledge that extra interactions and support would be needed in order to attain the expected level of quality and delivery certainty. Therefore, a high extent of activity coordination, resource adaptations and actor interactions can be observed in that relationship, all directed not only towards systemic collaboration (for problem solving in production and product development), but also towards functional and distributive collaborations. Lambda’s capabilities, being unique to FlexLink’s supplier base, were not closely aligned with the production schedules of FlexLink’s other suppliers, but high levels of actor interactions and resource adaptations (in terms of knowledge-based and technical adaptations) were required to take care of the reciprocal and pooled interdependencies among the activities in this relationship. As a result, the economies of innovation that were already being pursued in this relationship (at the start of the relationship, for preparation and product development) expanded with the introduction of new products and the higher need for systemic collaboration, while economies of scale and scope, as well as

integration (although to a lesser extent) also became possible owing to the expansion of the business volumes and the variety of the products involved.

## **5.7 DEVELOPMENT OF INVOLVEMENT LEVELS, INTERDEPENDENCIES, AND COLLABORATION TYPES**

The constant expansion of FlexLink's business in China was the basis for the most central resource of FlexLink in China, FlexLink's China sourcing unit and its engineers, to exploit more economies of scale and scope. The reason for avoiding the middleman and developing a supplier base in China was, in fact, to achieve other economies than only scale and scope. As time passed and the supplier base matured, FlexLink found other opportunities in the supplier base. As more and more items were being introduced to their China sourcing business every few months, FlexLink's reliance on these suppliers' resources was constantly increasing. FlexLink's headquarters in Sweden, which played a mediating role with their suppliers all over Europe now had also to coordinate their activities with the Chinese ones. The inventory levels in the warehouse in Germany, the orders issued to FlexLink's European suppliers and the new product development activities in Sweden all had to be coordinated with the activities undertaken by the Chinese suppliers.

All production activities for which the Chinese suppliers gradually became responsible for components either used by other FlexLink's suppliers or by FlexLink's assembly units or by third parties that design and assemble production systems for which they have made several component purchases from FlexLink. Serial interdependencies, thus, are present among many activities that are parts of this supplier base, involving FlexLink's Chinese and European suppliers and with FlexLink's coordination. Functional collaboration was also gradually improved and added to the distributive collaboration, in order to link the activities of the Chinese suppliers with FlexLink's supplier base in Europe. Economies of integration were captured in order to create a well-functioning supplier base, in which different activities are undertaken by different actors using different resources located all over the world.

This moved things to a higher level of involvement between FlexLink and its China-based supplier base. Compared to the past, when mainly economies of scale and scope were in focus, more activities were coordinated between the Chinese suppliers, FlexLink's headquarters, and their supplier base in Europe. In addition, owing to the importance of the role of FlexLink's production tools at the suppliers, more resource adaptations could be found between the firms involved. For example, FlexLink had to adapt its tool designs to the machinery available at Kappa, and the production know-how that was specific to FlexLink's products was transferred to Kappa's workers after investments on the part of FlexLink. Although this made it more difficult for FlexLink to change suppliers, it also created a better situation for exploiting economies of scale, scope and integration in the supplier base.

This was also a sign of systemic collaboration in FlexLink's supplier base in China. Extensive interaction between FlexLink's engineers and the suppliers' engineers and workers as well as

frequent visits from FlexLink's managers from Sweden to their suppliers in China at different times during the development of this supplier base were all reciprocally interdependent activities undertaken by FlexLink and its Chinese suppliers at different points. This created a need for joint problem solving and knowledge sharing for all of the firms involved. One example of this is FlexLink's starting of completely new products directly in China. These newly designed products needed to go back and forth between FlexLink and the suppliers involved in order to finalize the designs. This was enabled by the atmosphere of cooperation that had been created in this supplier base. Another example is how during one of the visits of FlexLink's supply and quality managers to China, and afterwards through the interactions of FlexLink's engineers in China and Kappa's sourcing and engineering personnel, they enabled Kappa to produce a new product by activating a new supplier (Beta) in the base.

As time passed, problem-solving went further than these examples and became routine in FlexLink's supplier base development in China. Building on economies of scale, scope and integration, economies of innovation were also now being pursued by FlexLink. It was to achieve these economies that their relationship with Gamma gradually became a much closer relationship than the others in the supplier base in China. Gamma became a production hub for a number of FlexLink's products, including the phone bracket. By buying a number of FlexLink-specific items from Xi and Theta, assembling and packaging them, and delivering the complete products (rather than individual components), Gamma gained a more important role in FlexLink's supplier base in China and solved a number of FlexLink's sourcing problems there. This was enabled by Gamma's increased coordination of activities with Xi and Theta, which in turn meant an increase in the level of involvement of a number of FlexLink's actors in the China-based supplier base.

With the same logic, FlexLink's suppliers in China also became involved with FlexLink's supplier base in Europe. Idler end 1 is an example of this, where Gamma and Kappa have become a part of the production of an item, for which a Swedish supplier of FlexLink is the hub. In relation to this item, certain activities of Gamma, Kappa, the Supplier in Småland and other actors are all coordinated, and resources are adapted so that all of the designs match all of the suppliers' production settings.

FlexLink's suppliers have different resources, some of which have been activated at different states of the development of this supplier base. During this development, the utility of these resources had to be managed in a smart way. Some of these resources were dedicated to FlexLink's products. For them, increasing the volumes has been an opportunity for both sides to exploit economies of scale and scope, through distributive collaboration. The other resources that have always been shared between the activities related to FlexLink and those related to the other customers of the suppliers create pooled interdependencies that have also offered opportunities for pursuing economies of scale and scope.



FlexLink's supplier base development strategy has always focused on expanding the business to be able to do more with the same amount of resources. The very slow expansion of the China sourcing unit as compared with the rapid expansion of its activities, persistently making use of current supplier relationships for new product developments instead of finding new suppliers, and proactively pursuing the expansion of the Chinese business by setting annual growth goals is only one example of FlexLink's ambition in exploiting economies of scale and scope as a basis for its supplier base development. As the time has passed, the development of this supplier base in terms of exploitation of different economies has kept being facilitated by the building up of the economies of scale and scope.

Table 5 is a summary of the analysis presented above. The table illustrates the development of the supplier base in each state in terms of development of the relationships within it. These developments are attributed by the levels of involvement, the interdependencies between the activities, the types of collaborations between the firms involved and the economies emerging from those developments. These attributes are related to the individual relationships, also considering their relatedness to one another and to the other relationships in the wider supply network in which FlexLink operates. For better readability the level of detail is kept low in this table, and the more detailed level analysis of these developments is omitted from this presentation.

Table 5 - Development of FL's supplier relationships in China

Time period	State of FlexLink's supplier base development	Suppliers involved	Level of involvement: - Activity Coordination - Resource Adaptation - Actor Interaction	Collaboration types	Activity interdependencies	Economies
2002 to 2004	Purchasing in China through a sourcing agent	Chinese suppliers through the agent	Low AC Low RA Low AI	Distributive	Serial	Scale & Scope
2004 to 2005	China sourcing unit start-up → Finding and starting with Gamma	Gamma	Low AC Low RA Medium AI	Distributive	Serial	Scale & Scope
2006	Expanding with Gamma	Gamma	Increased AC Increased RA Increased AI	Systemic + Distributive + Functional	Serial + Pooled + Reciprocal	Innovation + Scale & Scope + integration
	Finding and preparations with Mu	Mu	Low AC Medium RA Medium AI	Systemic	Reciprocal	Innovation
	Finding and preparations with Kappa	Kappa	Low AC Low RA High AI	Systemic	Reciprocal	Innovation

<b>2007 to 2008</b>	Expanding with Gamma	Gamma	Increased AC Increased RA Increased AI	Systemic + Distributive + Functional	Serial + Pooled + Reciprocal	Innovation + Scale & Scope + Integration
	Starting and continuing with Mu	Mu	Same AC Decreased RA Decreased AI	Distributive	Serial + Pooled	Scale & Scope
	Expanding with Kappa	Kappa	Increased AC Increased RA Increased AI	Systemic + Distributive	Serial + Pooled + Reciprocal	Innovation + Scale & Scope
<b>2009 to 2011</b>	Expanding with Gamma	Gamma	Increased AC Increased RA Increased AI	Systemic + Distributive + Functional	Serial + Pooled + Increased Reciprocal	Innovation + Scale & Scope + Integration
	Continuing with Mu	Mu	Same AC Same RA Same AI	Distributive	Increased Pooled + Serial	Scale & Scope
	Expanding with Kappa	Kappa	Increased AC Increased RA Increased AI	Systemic + Distributive + Functional	Serial + Pooled + Increased Reciprocal	Innovation + Scale & Scope + integration
	Finding and starting with Xi	Xi	Low AC Medium RA Medium AI	Systemic	Reciprocal	Innovation
	Finding Lambda	Lambda	Medium AC High RA	Systemic	Reciprocal	Innovation

High AI						
<b>2011 to 2012</b>	Expanding with Gamma	Gamma	Increased AC Increased RA Increased AI	Systemic + Distributive + Functional	Serial + Pooled + Reciprocal	Innovation + Scale & Scope + integration
	Continuing with Mu	Mu	Same AC Same RA Same AI	Distributive	Pooled + Serial	Scale & Scope
	Expanding with Kappa	Kappa	Increased AC Increased RA Increased AI	Systemic + Distributive + Functional	Serial + Pooled + Reciprocal	Innovation + Scale & Scope + integration
	Expanding with Xi	Xi	Increased AC Decreased RA Same AI	Systemic + Distributive	Serial + Pooled + Increased Reciprocal	Innovation + Scale & Scope
	Expanding with Lambda	Lambda	Same AC Same RA Same AI	Systemic + Distributive + Functional	Serial + Pooled + Increased Reciprocal	Innovation + Scale & Scope + integration

## **6 Discussion**

In the previous chapter the case of FlexLink's initiation and development of a supplier base in China was analyzed to understand how, over different periods of time, each of the supplier relationships has developed to form the supplier base. The analysis relies to a great extent on the three main building blocks of the framework presented earlier. The development of those relationships was described and analyzed using the changing levels of involvement, interdependencies, and collaboration types to gain an understanding of how economies emerge during those developments. The three sub-research issues presented in section 2.4 were designed to bridge those three concepts with the concept of economies. The answers to the three SRIs together answer the main research issue of the study, how economies emerge when firms initiate and develop their supplier bases. Therefore, the three SRIs make sense together, and this is how the analysis was made: each state of development of FlexLink's supplier base in China was analyzed using the three research issues in order to understand the emergence of the economies. In this chapter, in accordance with the case analysis chapter, each SRI is discussed briefly in the first section. In the second section the MRI of the study is addressed more thoroughly. A number of aspects regarding the emergence of economies during initiation and development of supplier bases are then presented to create a comprehensive discussion of the MRI.

### **6.1 UNDERSTANDING THE EMERGENCE OF ECONOMIES WHEN INITIATING AND DEVELOPING A SUPPLIER BASE**

#### **6.1.1 LEVELS OF INVOLVEMENT AND EMERGENCE OF ECONOMIES**

The first SRI deals with levels of involvement in relation to the emergence of economies. Involvement levels are defined by Gadde and Snehota (2000) in terms of three dimensions: actor interactions, resource adaptations and activity coordination. Gadde and Håkansson (1993) present various types of resource adaptations, among which these three are keys to the analysis of this study: technical, knowledge-based and administrative adaptations. Based on the discussions in the two references above, the case analysis of the study showed various effects of the involvement levels on the emergence of economies during initiation and development of supplier bases.

Actor interactions are very important to the emergence of economies of innovation. Solving production problems and developing new means of production and distribution of the products takes more than one actor. Individuals from the buyer, from the supplier, and possibly from other actors need to work together to find solutions to those problems. In order to exploit economies of innovation interactions among actors play an important role. Actor interactions are also important for the emergence of economies of integration, which require alignment of activities of various kinds. This presupposes interactions among actors mostly on production and logistics management levels with regular contact and arranging for coordination. Economies of scale and scope do not depend heavily on actor interactions. However, to handle specific production issues and to make it possible to utilize the resources for various activities, individuals need to interact.

Resource adaptations play a different role for the emergence of economies. Technical adaptations of resources are very important for exploiting economies of scale and scope. These economies primarily have to do with undertaking activities, making use of certain resources. These activities can be related to various actors or projects related to the same actor. In order to adjust the machinery and production schedules to make this possible, firms need to adapt their technical resources of various kinds. These set-ups and adaptations also lead to possibilities for exploiting economies of innovation; when new products are to be produced or when other types of production or distribution-related problems are to be solved, technical adaptations are needed. These adaptations are also required for the exploitation of economies of integration. For instance, when activities need to be aligned and coordinated, machinery may need to be adapted so the output of one can be input for the other.

Knowledge-based resource adaptations are central to the emergence of economies of innovation. When the buyer and the supplier (alone or with other actors) aim at solving specific problems and coming up with new ways of utilizing resources, a lot of exchange of knowledge and discussions based on that knowledge is needed, so new and innovative solutions can be found. This type of adaptation is also needed for the emergence of the other two sets of economies, but do not play the same important role as in economies of innovation. In order to exploit economies of integration, all involved firms also need to exchange knowledge, for instance, about the technical specifications of the resources they are planning to utilize for the activities that are to be coordinated. For economies of scale and scope, too, knowledge about the technologies of use and production of each firm is important for the others to have. Technical adaptations, which play an important role, require the exchange of knowledge between actors in the supplier base.

Administrative resource adaptations primarily deal with alignment, matching and adaptation of planning and supply systems. This type of adaptation is very important for the exploitation of economies of integration. To achieve the economies, firms need to align their activities. Those activities utilize resources, which also need to be aligned. However, this type of adaptation does not play a central role for the emergence of the other two sets of economies. Although administrative alignment of resources can facilitate the emergence of economies of innovation, scale and scope, those adaptations are not necessary to their emergence.

Activity coordination is the most important dimension of involvement of firms when it comes to economies of integration. Alignment of activities across firms requires, above all, coordination of activities in different ways. For instance, alignment of production planning systems, daily call-offs, periodic production schedules, and logistics planning systems all require the coordination of activities to different extents. When production systems of two or more firms in the supplier base are closely linked, for example in an integrated production system<sup>27</sup>, high degrees of activity coordination are needed to achieve economies of integration. However, economies of integration are also achievable when production systems are less tightly coupled

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<sup>27</sup> Such as JIT or Kanban

through coordination of activities via administrative work and inter-personal communication. Economies of scale and scope emerge through utilization of certain sets of resources having to do either with multiple actors or multiple production projects of a single actor. Coordination of activities related to these different actors or projects is necessary for exploiting economies of scale and scope. In addition, economies of innovation may also emerge from activity coordination. In order to exploit these economies, firms need to find solutions to various problems. Problems that need to be solved may relate to or entail scheduling and arrangement of activities. The coordination of activities, itself, may require problem solving of various kinds, which leads to the emergence of economies of innovation.

### **6.1.2 INTERDEPENDENCIES AND EMERGENCE OF ECONOMIES**

The frame of reference of the study benefited from a number of key references regarding interdependencies and adjustments. Dubois (1998) divides interdependencies into horizontal and vertical. Horizontal interdependencies are among activities that require the same set of resources. This is what Richardson (1972) calls similarity among activities, and Thompson (1967) calls pooled interdependence. Another category is vertical interdependencies, which cover various types of interdependencies among activities. Resembling Thompson's (1967) sequential interdependencies, Richardson's (1972) complementarity is about interdependencies among activities that need to take place one after another. Close complementarity is when two activities succeed one another, in a way that the outputs of one are direct inputs of the other. Thompson (1967) also introduces reciprocal interdependencies, which deal with activities in which the input of one is the output of the other, and vice versa. Bankvall (2011) discusses adjustments as changes to how activities are linked and are interdependent, and argues that adjustments create new interdependencies, and interdependencies result in new adjustments.

Horizontal interdependencies mainly enable the emergence of economies of scale and scope. Similarities among activities that are horizontally interdependent call for the use of the same resources for all of them. This way, a supplier requires certain set of resources to undertake an activity for a buyer. The supplier's ability to make use of the same set of resources for other activities that relate either to that buyer or to other buyers creates possibilities for exploiting economies of scale and scope. This type of interdependency does not significantly enable the other two economies. However, technical problems that need to be solved in order to make use of resources for similar activities can provide for economies of innovation, and economies of integration can also be achieved by aligning production plans across firms and planning for efficient utilization of the same resources for different activities.

In complementarity, performing one activity presupposes the completion of another that may be done by a different firm. This makes activity coordination essential, and coordination and alignment of activities and resources primarily enables economies of integration. With the same reasoning, close complementarity enables greater economies of integration. If a number of activities have to directly succeed one another, and are not performed at a single firm,

coordination becomes vital. This also calls for solving various logistical and planning-related problems, which in turn provides opportunities for exploiting economies of innovation.

Reciprocity among activities also enables both economies of innovation and integration. When developing new products, setting up new production lines, or solving specific problems related to the production of a product, engineers and managers from the firms involved perform activities of different kinds, which are often directly dependent on each other. For instance, engineers at the buying firm perform activities such as designing a new product. The design then needs to be processed by the supplier and checked for production. Performing this activity, the supplier may realize that the design needs to go through certain changes. This becomes input to the design activity of the buyer and the designs are updated again. This may be repeated several times before the product can enter mass production. Cases of reciprocity among activities can be much more complicated: for instance when more than two firms are involved in the development or production of a new product, or when various members of a number of firms sit together to solve specific production or distribution problems. If, for instance, two production activities that are reciprocally interdependent are located at two firms, activity coordination plays a central role thereby facilitating emergence of economies of integration.

As a result of the development of a supplier base, the way activities relate to one another changes. These changes, or adjustments to activity interdependencies in Bankvall's (2011) terms, can relate to the emergence of economies in various ways. For instance, after a new product is developed and mass production starts at a supplier, the reciprocity among the design and pilot production activities leads to further complementarities and close complementarities among the production activities. This is because those production activities at the supplier take place before, after or between other production activities of the buying firm or of their other suppliers. This way, the adjustment of reciprocal interdependencies into sequential interdependencies provides opportunities for economies of integration based on the exploitation of economies of innovation. The mass production of the new product is then made possible by exploiting similarities in use of resources with the production of other products. To make this happen, the supplier may need to adapt its resources to be used in this new way, and coordinate the undertaking of all activities related to those resources with the rest of its customers. Adjustments are made to the reciprocal and sequential interdependencies among those activities by creating new types of reciprocal, sequential and pooled interdependencies. These adjustments create opportunities for new economies to emerge. Economies of scale and scope emerge as a result of utilizing the same set of resources for multiple customers based on the economies of innovation that have been exploited when adapting those resources for the new way of utilization. Economies of integration also emerge when those activities are coordinated with the activities of the other actors involved. This is in line with what Bankvall (2011) suggests regarding the interplay between interdependencies and adjustments.



### **6.1.3 COLLABORATION TYPES AND EMERGENCE OF ECONOMIES**

In sub-section 2.3.3, based on Gadde et al. (2010), three collaboration types were introduced which were tightly linked to the three sets of economies. The presentation of the collaboration types and economies in that sub-section was expanded further to link to the other building blocks of the framework. Activity interdependencies were connected to collaboration types and economies, based on Håkansson and Persson (2004) and other supporting references. Based on those discussions, the three dimensions of involvement levels were also connected to collaboration types and economies. The following is an extension of those discussions based on the empirical findings of the study. The findings, in line with Gadde et al. (2010), suggest that each collaboration type supports the emergence of one economy. The analysis also suggests that each collaboration type also indirectly facilitates the emergence of other economies (see section 5.7).

Distributive collaboration is based on activity similarities. Mediation plays an important role here. If similar activities needed by multiple actors or multiple projects of a single actor are undertaken by a single supplier, the supplier plays that mediating role. The focus of that supplier is thus on efficient utilization of their resources, and economies of scale and scope are primarily supported by distributive collaboration. This type of collaboration also indirectly facilitates the exploitation of economies of innovation and integration. Economies of innovation are exploited, for instance, through new product development or starting up new production at the supplier. This needs critical mass to be ensured. Economies of scale and scope resulting from the continuation of work that is based on economies of innovation at certain periods of time results in possibilities for further economies of innovation and expansion of business between the buyer and the supplier in the supplier base. Achieving economies of integration through coordinating and aligning activities of different kinds also requires the critical mass to be ensured. In the same way as for economies of innovation, the economies of scale and scope that emerge as results of distributive collaboration help ensuring about the critical mass in performing those activities.

Functional collaboration is the main supporter of economies of integration. Through functional collaboration, activities are linked and coordinated across firms or across relationships. Joint planning of activities and coordinating production plans, as components of functional collaboration, lead to alignment of complementary and closely complementary activities. This in turn provides for the emergence of economies of integration. In order to coordinate closely complementary activities, close cooperation or consolidation is suggested by Richardson (1972). Functional collaboration between two or more firms in a supplier base can provide opportunities for further development of new solutions and solving new problems. For instance, certain adaptations may be needed for a set of machinery to make it capable of being utilized in a coordinated way with others. Close cooperation between the involved firms in coordinating closely complementary activities may also provide new ways of utilizing resources. In such situations functional collaboration can facilitate the emergence of economies of innovation. This type of collaboration, building on possibilities for economies of innovation, can also facilitate the

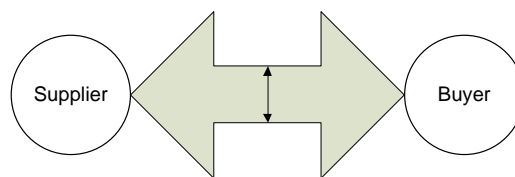
emergence of economies of scale and scope. Through coordination and alignment of activities, better utilization of resources can be achieved, bringing about economies of scale and scope.

Economies of innovation in a buyer-supplier relationship stem primarily from systemic collaboration. Systemic collaboration is about mutual learning and teaching. In systemic collaboration various resources are adapted and actors interact in order to solve problems related to aspects of their relationships. These problems can have to do with setting up the production of a new product at the supplier, development of a new product, specific logistics problems, finding and developing relationships with suppliers of suppliers, finding new ways to utilize existing resources, creating new resource constellations, and so on. Other types of economies can also be indirectly facilitated by this type of collaboration. Systemic collaboration, leading to new ways of utilizing resources and new resource constellations requires further coordination and alignment of activities and resources. This helps exploit further economies of integration. Furthermore, starting up new production processes and developing new products over time builds up critical mass and facilitates the exploitation of economies of scale and scope.

## 6.2 EMERGENCE OF ECONOMIES: A WAY TO DESCRIBE SUPPLIER BASE INITIATION AND DEVELOPMENT

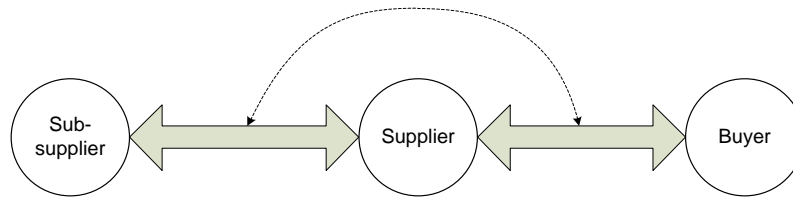
When developing a set of relationships, economies of scale, scope, integration and innovation can be captured to different extents, but this does not mean that all economies will eventually be pursued in every relationship; at least not to a major extent.

Economies of innovation are the focus when actor interactions and resource adaptations are highlighted in the relationship, for instance when the relationship involves individuals from both companies discussing problems and finding solutions together, such as when a new production process is to be started at the supplier's facilities, or when the buyer is going to introduce a new product. In such cases, the interactions between the individuals increases, and also various resources of the two firms may need to be adapted in order for the new solutions to be found and applied (Figure 23).



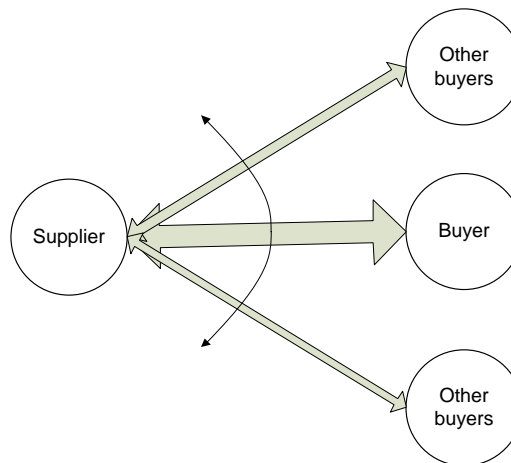
**Figure 23 - Economies of innovation in a buyer-supplier relationship**

Economies of integration are in focus when activity coordination and actor interaction are central to the firms on both sides of the dyad. In such situations, the buyer needs to coordinate its activities with the supplier's and in some cases through the supplier with the activities of the supplier's suppliers. In such cases, again, the interaction among the individuals in the firms involved increases, but the focus is mainly on coordinating the activities and ensuring that the activities are performed in line with one another across the firms or relationships (Figure 24).



**Figure 24 - Economies of integration in a buyer-supplier relationship**

In contrast to the above situations, exploitation of economies of scale and scope does not necessarily require high levels of involvement in terms of activity coordination, resource adaptations and actor interactions. Here, it is important how the supplier can arrange its activities and utilize its resources for the focal buyer in combination with how it manages those activities and resources for its other customers. By making use of the same (or same type of) resources it can improve its achievement of economies of scale and scope, which becomes a driver for the development of such relationships (Figure 25).



**Figure 25 - Economies of scale and scope in a buyer-supplier relationship**

An interesting point that can be derived from the case analysis is that no relationship is developed without either side of its dyad aiming for at least one of the presented economies. The reason why a firm makes investments in developing relationships always has to do with the pursuit of different economies. Since activity coordination, resource adaptations and actor interactions to some extent exist in every relationship; different types of economies are also intentionally or unintentionally pursued based on combinations of different extents of these dimensions of involvement.

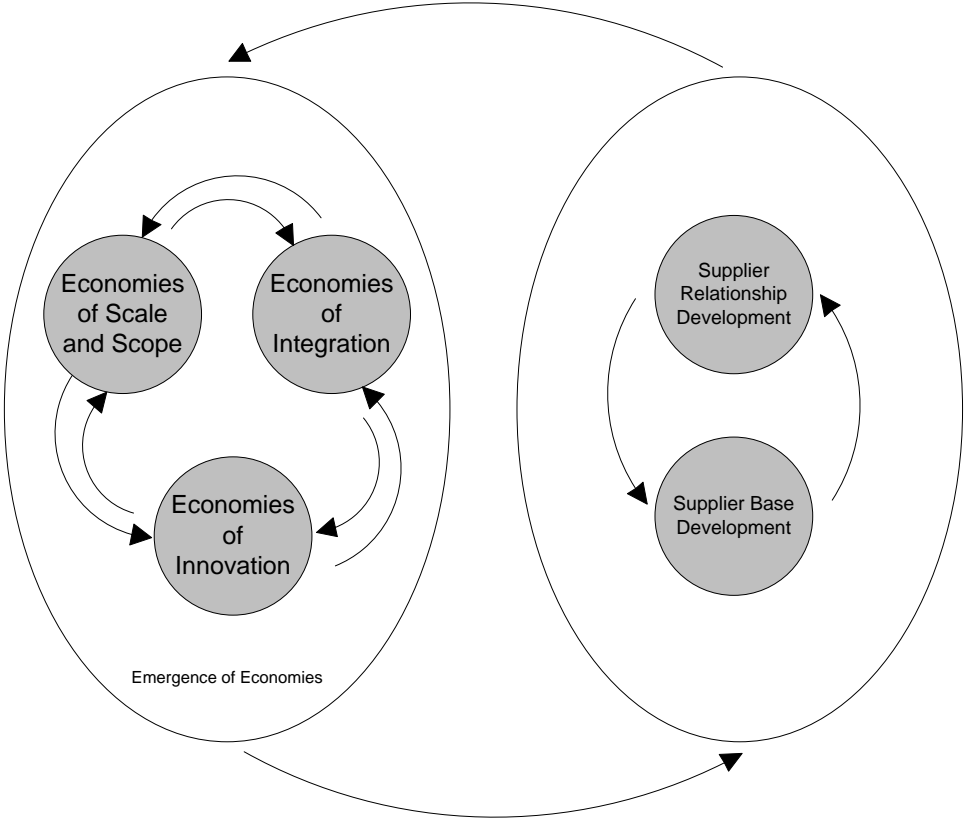
Consequently, it can be said that supplier bases are developed in order for companies to pursue different economies. In the case of FlexLink, their cautious start of sourcing in China, mainly to achieve economies of scale and scope, was transformed into a supplier base development strategy as FlexLink gained experience in the new business environment. By relying on the achievement of economies FlexLink saw the development of the rest of the supplier base as affordable. As FlexLink established relationships with new suppliers and introduced new items,

systemic collaboration with those suppliers provided problem-solving opportunities and the emergence of economies of innovation. As time passed, the existing relationships became more stable. This stability created opportunities for further exploitation of economies. Those relationships that expanded in terms of business volumes and numbers of items required more systemic collaboration in order to make the production of new items possible, and therefore the realization of economies of innovation expanded in the supplier base. Economies of integration came into play when certain relationships grew so that the focal firm gained access to the resources of other suppliers through one of its existing suppliers, or technical complexity necessitated the existence of functional collaboration. Also if a supplier is not given new roles or if more complex products are not introduced into the relationship, the logic behind the outsourcing decision is the basis for pursuing economies of scale and scope.

Håkansson and Persson (2004) suggest that these economies can coexist in any given relationship. The analysis in this thesis, drawing on their suggestion, claims that there is also interplay between them. This is also true when the issue is expanded to the supplier base. Initiation and development of a supplier base, as a set of relationships, involves the emergence of different economies to different extents in different relationships within it. When one economy is emerging, this indicates a certain type of collaboration, a particular level of involvement aimed at approaching a certain set of activity interdependencies. Moreover, supplier bases are parts of supply networks and, owing to the dynamics and the ever-changing nature of networks, different economies may be achievable to different extents at the same time. Firms that intend to exploit economies of integration and connect their serially linked activities to the activities of the other actors in the supplier base might need to start building their functional collaboration on distributive collaboration, where economies of scale and scope provide the economic feasibility for coordinating activities, adapting resources, and the interactions among actors. Systemic collaboration can also be pursued in order to achieve economies of innovation, but that would also be interlinked with the other economies the firms involved in the supplier base under development are pursuing at the same time. This is done by making adjustments to the interdependencies among the activities those firms undertake, modifications in the way their activities are coordinated, adapting their resources in different ways, and changing the interactions among the involved actors. All these changes lead to the emergence of economies to new extents and new possibilities for further developing the supplier base.

Developing a supplier base is a result of developing a set of relationships and the links between them. The development of each relationship is interdependent with the development of the other relationships in the supplier base. Economies emerge from the development of different relationships and result in further development of them. On the supplier base level, emergence of economies as outcomes of the development of each relationship results in the development of other relationships, which leads to the emergence of other economies. This is illustrated in Figure 26.

The development of a supplier base can be described as based on different assumptions. One promising way to analyze supplier base initiation and development is to use the concept of economies that emerge along the process of these developments. Firms develop their supplier bases in new contexts in pursuit of certain outcomes. In doing so, they make multiple redirections as new situations emerge and, as Agndal (2006) points out, their decisions are not necessarily a matter of deliberation; emergence also plays an important role. This study showed that the decision to initiate a supplier base in a new context was of a more deliberate nature than decisions made later in the process of developing the supplier base. In the beginning, the firm may have an understanding of the new context and reasons for why they need to initiate a new supplier base. This process of initiation involves various developments in the supplier base in pursuit of certain economies. Developments in the supplier base result in making adjustments to the interdependencies among activities in the supplier base. The new interdependencies in turn fuel further adjustments by presenting opportunities for exploiting new economies. Over time, the emergence of those economies drives further developments of the supplier base in different directions.



**Figure 26 - The interplay between the emergence of economies and supplier base development**

It is very difficult to identify what intention results in a certain action by an actor involved in the development of a supplier base. Taking the economies approach to supplier base development instead helps tackle the problem from a different angle. By focusing on economies, the

achievable and the achieved are seen together. As a result, the development of the supplier base in each state can be analyzed based on the possibilities (or economies) that have presented themselves in that state, and how the emergence of those economies form the way the supplier base is shaped in that state.

This also emphasizes Holmen et al.'s (2007) suggestion regarding viewing the process of supplier base development in terms of states rather than stages. Analyzing these developments based on emerging economies implies that over time supplier bases do not pass through certain generic stages to reach a given goal. Instead, they change from one state to another as economies emerge and possibilities to achieve different outcomes are identified.

Studying supplier base development is challenging. Above all, as addressed in section 3.3, it is difficult to draw boundaries around a set of actors/activities/resources in a network and limit the analysis to them. The interrelatedness of all actors, activities and resources within industrial networks means that wherever these analytical lines are drawn, one should still not ignore the effects of phenomena outside the boundaries. An important implication for analyzing supplier base development using the economies approach is that in each state the supply network, of which the focal supplier base is part, consists of more actor bonds, resource ties and activity links than the ones being taken into consideration. Therefore, empirical investigation of the development of supplier bases requires detailed investigation of the settings and their changes over time with a wide scope of actors, resources and activities. Longitudinal studies, in which the development of the supplier base in relation to the rest of the supply network can be analyzed over a long period of time, can be of help here. As the study proceeds, the scope of the activities, resources and actors included in the analysis can be narrowed down. Needless to say, the focus of analysis of the development may need to change between different actors, resources and activities at different points in time, because as the supplier base develops from one state to another, new economies emerge that affect different parts of the base. This emergence of economies results in the development of different relationships, highlighting the importance of actor bonds, resource ties and activity links at different times along the development of the supplier base (and throughout the study).

Another issue regarding analyzing supplier base development stems from the difficulties with the empirical investigation of the emergence of economies. It is not only difficult to look for economies when collecting empirical data, it is also almost impossible to directly interpret the collected data in terms of the emergence of different economies. The framework developed in this study includes a number of conceptual tools that helps with the empirical investigation and analysis of the data in order to describe the supplier bases in each state and understand their developments in terms of the emergence of economies.

## 7 Conclusions and further research

The study underlying this thesis aimed at exploring the initiation and development of a supplier base in a new context from the perspective of a firm. A case of a company developing a supplier base was studied to illustrate the phenomenon in the context of emerging country sourcing. The analysis, based on the three building blocks of the developed framework, provided an understanding of how different relationships develop, as components of a supplier base. This was done by analyzing the development of the supplier base over time through a number of states the supplier base passed through during its development. The analysis was taken to a supplier base level for the discussion to build on the economies that emerge as firms develop their supplier bases. In the discussion chapter, the three sub-research issues of the study were discussed to relate each of the building blocks of the framework to the emergence of economies when developing supplier bases. A more extended discussion was then presented, dealing with the main research issue, how economies emerge when firms develop their supplier bases.

The study contributes to the field of purchasing and supply management by providing a better understanding of how firms develop their supplier bases in new contexts. This '*how*' was approached by centering on the concept of economies to analyze the development of the supplier base from one state to the next. Economies are implications, in terms of outcomes, of how firms relate to one another in the supplier base as it develops. Using the concept of economies to describe the development of the supplier base provides opportunities for understanding these developments by analyzing the possibilities each phase of development creates for the firm and the supplier base. The supplier base develops based on the individual relationships, but is not limited to them. Each relationship develops through various states based on the emergence of economies to different extents. Economies coexist and have interplay with one another in the supplier base, so that the achievement of one type of economy creates opportunities for others. The emergence of new economies or different extents of existing economies provide for further development of the supplier base.

As the supplier base is dynamic in nature, there is no end to its development, and economies constantly emerge into new forms. This means constant changes in the ways firms and relationships interrelate. These developments can be understood by analyzing different aspects of the relationships over time. Such analyses should view the developments of the relationships together, and make sense of them by categorizing them into states. Each state of the supplier base represents a holistic view of its relationships and also describes how they relate to one another over time. Identifying where one should draw the analytical state borders is a complicated task and is only possible when the development of the supplier base has been observed for a sufficient period of time. In each state, the relationships in the supplier base and the way they are interrelated is emphasized. One way to define the states can be to use the developments of the key external resources on the supply side of the company.

Development of relationships in the supplier base creates opportunities for new economies to emerge. Such opportunities do not necessarily relate to the relationships in which they were created. When a buyer wants a supplier to produce a new product for them, economies of innovation and joint problem solving play the key roles. Building on that, the buyer and the supplier can create economies of scale and scope by developing production processes that allow for better utilization of the supplier's resources in relation to its other buyers. The supplier needs to coordinate a number of its focal buyer-related activities to its own suppliers' activities (i.e. sub-suppliers to the focal buyer). When the need for more such coordination increases, opportunities exist for exploiting economies of integration. This need has to be based on increasing economies of scale and scope (to ensure the feasibility of such arrangements).

The study showed that involvement levels, interdependencies, and collaboration types can provide a thorough understanding of the emergence of economies, making it possible to describe how firms develop their supplier bases in new contexts. Below, a summary of these findings is presented.

Economies of scale and scope play an important role in development of supplier bases by helping to improve their economic feasibility, through better utilization of resources. Pooled interdependencies among activities provide for exploiting these economies by technically adapting resources and coordination of activities in order to enable better utilization of resources. Exploiting these economies is primarily dependent on distributive collaboration. To undertake distributive collaboration, firms have to engage in systemic and functional collaboration with each other.

Economies of integration are direct results of the engagement of firms in functional collaboration. In order to exploit these economies, firms need to focus on the coordination of their activities, the most important of which have complementary interdependencies. To do this, administrative resources need to be adapted. These adaptations provide for the alignment of activities and schedules. To enable functional collaboration, firms may also need adaptations of technical resources that the coordinated activities utilize. Exploiting economies of integration also requires various actors to communicate and interact. Therefore, systemic collaboration also leads to opportunities for economies of integration, and distributive collaborations indirectly support the exploitation of these economies.

Economies of innovation emerge when actors interact to adapt knowledge-based resources. Technical resource adaptations and activity coordination are also needed for these economies to emerge but to a lesser extent. Actor interactions are of utmost importance for exploiting these economies. Situations where interdependencies among activities are of closely complementary or reciprocal natures provide for the emergence of these economies. Systemic collaboration is, then, the most helpful type of collaboration when these economies are to be exploited by firms during their development of supplier bases. Distributive and functional collaborations also provide indirectly for the exploitation of these economies.



The analysis of the development of FlexLink's supplier base illustrated the emergence of different types of economies that build on one another, as improvements in one result in enhancing a certain type of collaboration which, in turn, creates opportunities for new economies to be attained. In the presented case, economies of scale, scope, integration and innovation are realized by building on one another; where advancing in the achievement of each economy paves the way for expanding another. Supplier base development, thus, is a process that takes place not only by developing various relationships individually, but also by relating them to one another by the means of different extents of activity coordination, resource adaptation and actor interaction. In doing this, how different activities are linked to one another plays a key role, both in terms of activities that are already linked in the focal supplier base, and of the new links that are created as the supplier base enters a new state. As supplier bases develop, adjustments are made to the ways the activities are linked to one another. These adjustments are results of developing the supplier bases, and entail new activity interdependencies and further developments in the bases. The extent of each of these dimensions in each relationship is motivated, in each state of the development of the supplier base, by the economies that are achievable, and achieving each economy provides for further economies to be exploited. This in turn becomes a driver and may provide direction for further development of the supplier base.

### **7.1 MANAGERIAL IMPLICATIONS**

As discussed in section 2.2, going abroad and sourcing items from suppliers located overseas has mostly been in search of lower costs of ownership. This has resulted in defining such actions as '*emerging country sourcing*' and in those countries being seen as '*low-cost*' or '*low-labor cost*' countries. Failures of such attempts and a number of reasons underlying them were discussed. An important barrier to realizing the benefits of sourcing in emerging countries is having a short-term approach. By expecting short-term returns on investment, undermining the importance of the relationships with the suppliers in those countries, and disregarding the significance of relating them to the rest of the network surrounding the buying firm, many firms have failed to achieve the true benefits of establishing a position in emerging countries.

In this thesis, by analyzing a case of a firm becoming involved in emerging country sourcing, a new perspective has been presented. In the case of FlexLink it is clear that the approach was not merely cheap purchasing or exploiting inexpensive Chinese labor. FlexLink developed a supplier base in China and by ensuring the proper levels of involvement and attention to those relationships managed to establish promising foundations for further developments by pursuing the economies described, at different times.

The economic situation today does not allow for a simple '*emerging country sourcing*' approach. On the one hand, costs of raw materials and labor are constantly increasing in China, and on the other hand the Asia-Pacific market is becoming more and more important to Western companies. Najafi et al. (2013) present three approaches to emerging country sourcing: transactional, supplier base, and network positioning. As the firm's position in the new context expands, their approach also shifts from transactional through supplier base towards network positioning. The

importance of emerging countries is no longer limited to their inexpensive workforce; their markets also play an important role in attracting Western firms. Expansion of the firm's emerging country sourcing ultimately requires a long-term perspective and a holistic approach, where the suppliers and customers in the emerging countries are also recognized when connecting the upstream and downstream supply chains.

By no longer viewing such efforts as 'just going abroad and buying cheap', and undertaking *supplier base development as a strategy*, firms can achieve economies and make the most out of their supplier bases. Success in sourcing in emerging countries takes more than a '*low-cost country sourcing*' approach allows for. This study shows that an alternative approach focusing on establishing a position in the target country can realize considerable benefits. Such an approach should aim for developing a supplier base in the target country and linking it to the rest of the network in which the buying firm is active. The expansion of this supplier base should be continuous to ensure its economic feasibility in the long run, and thorough enough to make sense of the emergence of new opportunities and exploit the economies that emerge as the supplier base is being developed.

The starting point for developing a supplier base in a new context should include a number of considerations. The study points out three categories of such considerations that are central to making decisions for the initiation and development of such supplier bases. First, in each state of development it is important to identify which activities would be potentially affected by the developments. The way those activities relate to one another then needs to be managed by firms. Different types of interdependencies among activities allow for the emergence of different economies. Pooled, sequential and reciprocal interdependencies create direct possibilities for the emergence of economies of scale and scope, integration, and innovation. As discussed above, specific types of interdependencies also lead indirectly to the emergence of other economies. Exploitation of those economies, in turn, results in further adjustments. Thus, at any point during the development of a supplier base, it is important to review the way activities are interrelated and what opportunities those interdependencies can bring. Those opportunities (or economies) can set the direction for further developments of the supplier base.

Second, each type of interdependency among activities requires adequate levels of involvement in its three dimensions. The question is what kinds of involvement are required in order to make the most out of the development of the supplier base. Exploiting each economy requires firms to become involved in terms of specific extents of actor interactions, resource adaptations and activity coordination. The extent to which each of these dimensions should be emphasized when developing the supplier base cannot be defined in advance. Still, the study shows how important each of these dimensions is for the exploitation of each of the economies, and how exploitation of each economy provides for emergence of further economies, which may require the dimensions of involvement to higher or lower extents. When developing their supplier bases, firms need to constantly revisit their levels of involvement with their suppliers and analyze how those levels can contribute to the exploitation of their favorable economies. This way, they

would be able to direct further developments in their supplier bases with regard to what it would take to exploit certain economies.

Third, firms can collaborate in different ways. Initiation and development of a supplier base in a new context depends on how firms within the supplier base collaborate. The buying firm needs to consider not only that certain types of collaboration are suitable for exploiting certain economies, but also that becoming involved in any type of collaboration with the suppliers indirectly also provides for exploiting other economies. Engaging in each type of collaboration is suitable for certain activity interrelations and implies certain degrees of actor interactions, resource adaptations and activity coordination. When developing supplier bases in new contexts, it is therefore important to ensure that all of these aspects are properly managed.

A holistic and long-term perspective on the economies firms aim to exploit can be significant. Developing a single supplier relationship has short-term and long-term implications for the rest of the supplier base as well. For instance, when the focal buying firm starts to develop a new product together with one of its suppliers, engaging in systemic collaboration with the supplier in the short run creates possibilities for exploiting economies of innovation. This may lead to opportunities for that supplier to improve its utilization of resources and achieve economies of scale and scope in the long run. This may facilitate linking of certain activities the supplier performs for the focal buying firm with those they perform for their other customers, which may also strengthen the relationships of the supplier with their own suppliers, and create better opportunities for exploiting economies of integration.

Managerial decisions in this respect cannot be either purely deliberate or completely emergent. As discussed in section 6.2, when initiating a supplier base in a new context, decisions will be mostly deliberate. Firms may decide to initiate those supplier bases to solve certain problems or to aim at certain goals. They may have long lists of considerations and have a deliberate plan at hand when initiating the supplier base. However, during the development of the supplier base, new actors come into play, who bring with them new perspectives. Whatever development the firm plans for has implications for the other actors in the supplier base. Different actors may benefit from or suffer by those developments. The suppliers, together with their other customers, may also have development plans which may result in conflicts with the developments intended by the focal buying firm. In line with Håkansson and Ford (2002), each actor may aim for certain economies that cannot harmonize with the economies for which the rest of the actors are aiming. This means that each actor may develop its business and attempt to influence the development of the supplier base in the direction that fits with its own intended economies.

So although it may be possible to recognize a deliberate outset for a supplier base, further developments of it cannot remain as deliberate as the start. The process of developing a supplier base in a new context is not straightforward. Interaction among actors and networking activities lead to the emergence of new economies. When the buying firm and its suppliers execute development plans together, help each other to find new members for the supplier base, connect

those members to the rest of the network, coordinate various activities and adapt resources to make it possible to work with other suppliers or customers beyond the supplier base, economies emerge in unforeseen ways. The interactivity of these economies for all actors directly and indirectly involved cannot be deliberately planned for. Instead, firms need to be aware of these opportunities and challenges and prepare for them with awareness that the development of a supplier base is not a linear process. All in all, in order to initiate and develop supplier bases in new contexts, firms need to widen their perspectives both in terms of time and space, and reach out to grab opportunities that emerge along the way.

## **7.2 IMPLICATIONS FOR FUTURE RESEARCH**

Development of a supplier base is a complicated topic. This study shows that viewing these developments from the perspective of economies can help better understanding how firms develop their supplier bases. Development of the supplier base is path-dependent; studying the interaction, networking and emergence of new situations inherent in the nature of these developments requires a 'backwards' approach. Any model that tries to tackle them with generic pre-defined steps may face the problem of over-simplification and underestimation of the contingencies. Future research in the field of supplier base development needs to consider this issue and, instead of defining generic steps to explain the development process, should view the developments in retrospect. The nature of the phenomenon requires a longitudinal approach to enable analysis of the details of changes in a case. Instead of generating models to predict the process of developing a supplier base, future research in this field should investigate the path taken by firms who have developed their supplier bases in new contexts and should develop an understanding of what works and what does not. Such an approach makes it possible to dig deep into the case and analyze the comparisons between the different states over several years of development of the supplier base under study.

One major problem concerning any future research on supplier base development is the problem of boundaries. As network research is always challenged by this problem (c.f. Halinen and Törnroos (2005)), supplier base development research also needs to deal with this challenge since in network research no clear boundaries are assumed between firms. Actors, resources and activities are considered as operating with blurry boundaries that change constantly over time as networks develop. This it is a challenge to find out what parts of these changes are relevant for one's study of the development of a firm's supplier base, and which ones should be left out.

A second issue arises as a result of the sheer number of actors, resources, activities, bonds, ties and links a researcher in this field faces when analyzing this phenomenon. It is a challenge to find out where one should draw the boundaries of analysis. Although widening the boundaries complicates the analysis, it does not necessarily provide a better picture of the reality, but too narrow analytical boundaries can result in ignoring important elements for the analysis.

A third challenge is to find a balance in the investigation of the historical background of the case. This is mainly a methodological question concerning how far the researcher should go back into

history to trace changes and their impacts on the later states of the supplier base. The analytical boundaries for the study need to be drawn with consideration of this issue. Case research on supplier base development cannot start by drawing analytical boundaries and limiting the investigation to them. Instead, in line with the abductive approach (Dubois & Gadde, 2002); the study should start with a wide but feasible scope of analysis. As the study proceeds, continuous matching of the framework and empirical investigation will mean gradually revising the analytical boundaries. When the researcher finalizes the boundaries of analysis as a result of ensuring about the consistency of the case, the method and the framework, the study can be concluded. The analytical boundaries of this study are a result of this process.

The study led to a distinction between two key terms: supplier base and supply network. The supplier base of a firm is the set of direct relationships with its suppliers. Supplier bases are dynamic, and developing the supplier bases is not only about developing the firm's relationships with its suppliers, but also about connecting those relationships to one another. Having a firm's perspective, this study dealt with the initiation and development of supplier bases. The supplier network is a result of the conceptualization of the set of actors that interact and utilize resources to perform interrelated activities of various kinds. Firms are members of these networks. From the perspective of a firm, one can define supplier bases. Investigating the development of supplier networks requires a wider scope that takes into account the perspectives of a variety of actors in the network, as well as the interactivity of their perspectives and motives. By focusing on the effects of interaction and networking among the actors involved, a supply network can be studied.

In this study a background was given, presenting how the field of purchasing has developed over the years in practice and research. Building on that background, and referring to the context of the study, it was shown how research and practice have approached global sourcing as a phenomenon. Firms have been shown to follow certain rationales and aims when taking the initiatives to make their purchases abroad. In this respect, the practice of emerging country sourcing has encountered various problems, and research has faced the difficulties of theorizing about this emerging phenomenon. Oversimplification of assumptions about the differences that need to be overcome, vast underestimations of the transition process and lack of rigorous practical and theoretical methods for analyzing the *ex-ante* and *ex-post* consequences of such major changes are but a few important examples of these challenges<sup>28</sup>.

The history of purchasing and its developments over time has the potential to help researchers consider the above problem in a different way. Purchasing in a global context, instead of being approached from an emerging country sourcing viewpoint, can be viewed from a supplier base development perspective. Change and embeddedness are key aspects of every supplier base; not only are every activity, resource and actor in supplier bases constantly subject to change and

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<sup>28</sup> For a more detailed discussion see section 2.2

development, but numerous links, ties and bonds also connect every activity, resource and actor to the others.

The main contribution of the study for global sourcing research is that it provides an alternative way of viewing the global expansion of companies' sourcing business. In this thesis, a case of a firm starting to source in an emerging country was approached by taking the emerging country sourcing as the context, in which the supply network development of that firm was studied as the phenomenon. Having this view helps to tackle the problem from a different perspective and to understand the firm's expansion of sourcing business on a global scale with regard to the rest of its supply network and the implications, in terms of economies, of the network developments for the firms involved. This calls for further longitudinal case studies that allow for deep, contextual investigations of the details of these developments in order to gain a better understanding of how firms develop their global supply networks.

Further research aimed at understanding supplier base development can draw on the findings of this study and further develop them, focusing on the economies approach to describing supplier base development. A first step might be to expand the boundaries of empirical investigation and analysis. How the previous<sup>29</sup> or other existing<sup>30</sup> suppliers of the focal firm are affected needs to be investigated. The way the development of the focal firm's supplier base in the new context has impacted the development of their supplier base in their older contexts can give new insights into how firms develop their supplier bases. The interconnectedness of the activities, resources and actors among those supplier bases necessitates this type of analysis for further research.

Further details regarding the perspective of the suppliers both in the new and the older contexts also need to be investigated. Further research in the field should increase investigation not only of the reactions of those suppliers to the supplier base development in the new context, but also the impacts of their reactions on the development of the supplier base.

This study shows the emergence of different types of economies in different relationships as components of the supplier base. Further research is needed to conceptualize a network understanding of how companies economize and how different economies emerge on the network level. It is important to consider that it is not only the focal firm that economizes. The suppliers and the other actors in the network also economize in different ways. The way each actor economizes is not necessarily in line with how the other actors economize and these different approaches to economizing affect each other. For instance, development of the suppliers in the new context can contribute to development of the firm's marketing in that context (c.f. Najafi et al. (2013)). Therefore, further research on obtaining a network level understanding of the emergence of economies needs to take into account how the emergence of

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<sup>29</sup> For suppliers whose relationships with the focal firm are terminated as a result of the development of the supplier base in another context.

<sup>30</sup> For suppliers whose relationships with the focal firm are maintained during the development of the supplier base, but are not members of the supplier base.

economies from the viewpoint of different actors impacts the development of the focal firm's supplier base.

Last but not least, developing a supplier base is not only about opportunities that emerge and companies strive to exploit, but can also be a result of the difficulties and failures faced by actors in the network. Actors involved in the development of the supplier base interact, and one important result of this interaction is learning. This learning is mainly specific to the relationship and context. As a result of these interactions and learning, firms strategize about their development. This strategizing is a mixture of deliberate planning and emergence of new opportunities and limitations. Actors involved in a supplier base interact and react to each other's' actions. Strategizing and economizing in relation to further developments of the supplier base are results of these interactions, which can bring both opportunities and problems for the actors involved. Further research on obtaining a network understanding of how firms develop their supplier bases also needs to consider the impact of such factors, and conceptualize not only the exploitation of economies, but also the challenges that drive supplier base developments.





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## Appendices

### LIST OF INTERVIEWS

#	Interviewee	Date	Location	Duration	Comments
1	Supply chain manager (Peter Lindkvist)	2009-06-23	FL HQ, GBG	3h	
2	Supply chain manager (Peter Lindkvist)	2011-02-07	Chalmers, IMA	2h	Additional interviewer: Anna Dubois
3	Supply chain manager (Peter Lindkvist), Manager for China sourcing (Yalong Yin)	2011-04-21	FL HQ, GBG	2h	
4	Supply chain manager (Peter Lindkvist)	2011-08-24	Chalmers, IMA	3h	
5	Logistician (Sonia Sandoval)	2011-10-14	FL HQ, GBG	1.5h	
6	Supply chain manager replacement and former senior strategic purchaser (Per Siesing)	2011-10-14	FL HQ, GBG	1.5h	
7	Product quality manager (Anders Jonsson)	2011-10-14	FL HQ, GBG	1.5h	
8	Mu project manager, technical engineer (Simon Peng), and commercial manager (Ambjörn Håkansson)	2011-11-09	Mu Precision Machinery, Shanghai	1,5h	Additional interviewees: China sourcing manager, China sourcing logistician, China sourcing quality inspector Translation: Yalong Yin and Stella
9	FL China sourcing manager (Yalong Yin)	2011-11-09	FL China sourcing	1,5h	

			office		
<b>10</b>	FL China sourcing logistician and administrator (Stella)	2011-11-09	FL China sourcing office	1h	
<b>11</b>	Kappa's general manager (Matt Ke), and sales responsible (Zhu Jia Yan)	2011-11-10	Kappa factory, Shanghai	1,5h	Additional interviewees: China sourcing manager, China sourcing logistician, China sourcing quality inspector Translation: Yalong Yin and Stella
<b>12</b>	Gamma's vice general manager (Wu Chang Qiao), and senior sales and logistics officer (Nancy Niu)	2011-11-10	Gamma Machinery Manufacturer, Shanghai	1,5h	Additional interviewees: China sourcing manager, China sourcing logistician, China sourcing quality inspector Translation: Yalong Yin and Stella
<b>13</b>	FL's Supply Chain Manager (Per Siesing)	2012-06-20	FL HQ, GBG	1,5h	

**LIST OF OBSERVATIONS**

<b>#</b>	<b>Interviewee</b>	<b>Date</b>	<b>Location</b>	<b>Dur- ation</b>	<b>Comments</b>
<b>1</b>	Visiting the shop floor	2011-11-09	Mu factory, Shanghai	0,5h	Accompanied by Mu's project manager, technical engineer, and commercial manager
<b>2</b>	Visiting the assembly shop floor	2011-11-09	FL office and assembly plant in Shanghai	0,5h	Accompanied by FL China sourcing manager
<b>3</b>	Visiting the shop floor	2011-11-10	Kappa factory, Shanghai	0,5h	Accompanied by Kappa's general manager, and sales responsible
<b>4</b>	Visiting the shop floor	2011-11-10	Gamma factory, Shanghai	0,5h	Accompanied by Gamma's vice general manager, and senior sales and logistics officer

**PRE-STUDY DATA COLLECTION**

<b>Target</b>		<b>Data collection technique</b>
<b>IMI Indoor Climate Group</b>	Purchasing manager	3 semi-structured interviews
		1 follow-up email
<b>FlexLink AB</b>	Supply chain director	1 semi-structured interview
		1 phone interview
		1 follow-up email
<b>Volvo Car Corporation</b>	Director of overseas operations purchasing	2 semi-structured interviews
	Purchasing manager	1 semi-structured interview
	STA senior manager	1 semi-structured interview
	Vice-president for talent management, HR	1 semi-structured interview
	Former HR business partner for purchasing	1 semi-structured interview