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## Conference Paper

# Generating competitiveness through interfirm co-operation: the forest industry of South Karelia and small and medium size subcontracting companies

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**GENERATING COMPETITIVENESS THROUGH INTER-FIRM CO-OPERATION. CASE: THE FOREST INDUSTRY OF SOUTH KARELIA AND SMALL AND MEDIUM SIZE SUBCONTRACTING COMPANIES**

Paper for the 42<sup>nd</sup> Congress of European Regional Science Association, Dortmund, Germany, August 27<sup>th</sup>-31<sup>st</sup>, 2002.

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**Abstract:** After the depression in the beginning of 1990's regional development has been unequal in Finland, favouring some rapidly growing growth centres. The motors of the development in these centres have essentially been universities and IT-firms. At the same time when IT-based regions have been very successful many of the more traditionally oriented production areas have had problems ensuring economic growth and balanced development of the whole region. In South Karelia (province which lies at the South-East border of Finland) the development of the whole region is heavily related to one economic branch, forest industry. This is due to the fact that South Karelia and its surroundings forms production area in which the production is (even in the world scale) most intensively focused on chemical forest industry. In South Karelia case it is obvious that large scale enterprises have a significant role in the balanced and comprehensive development of the whole province. This applies especially to the development of economical circumstances and smaller companies in the area, but also to other aspects of human life: social, cultural and political.

When we look at the structure of the companies in the area, we can determine that the situation is very biased. There are large-scale companies and small companies but almost none medium size companies. In these economical conditions it is evident that there might be several barriers and hindrances to develop successful and multilateral co-operation between the two company-clusters, which are formulated here according to company size. One of the most important barriers between the two parties is the

capacity of production: The differences in production capacities impede companies' abilities to develop inter-firm co-operation.

This study focuses on four central concepts: inter-firm co-operation, subcontracting, competitiveness and regional development. The aim of the study was to find operation modes through which the companies in the South Karelia region would be able to improve their competitiveness. The main objective of the study was to determine how the large-scale enterprises of the forest-industry in the South Karelia region could increase and improve their subcontracting activities among local small and medium size companies. The sub-objective of the study was to clarify the weight that those companies have on the economic structure of the South Karelia region, and to determine the different inter-firm co-operation forms that were used in the area. The methodology of the study comprised several characteristics of both concept analytical and constructive paradigms.

The study was divided into theoretical and empirical parts. The theoretical part of the study forms a frame of reference in order to determine the concept of inter-firm co-operation and also to classify different forms of inter-firm co-operation. The theoretical part of the study was used as a basis for questionnaire and interviews. The results of the study show that inter-firm co-operation is a significant factor if the forest industry increases their subcontracting activities among the local small and medium size companies. The results illustrate quite clearly, that inter-firm co-operation can increase the competitiveness of companies in the area. Those modes of action, which are based on long-term relationships and create so called win-win- situations are especially useful.

**Key words:** inter-firm co-operation, competitiveness, subcontracting, regional development

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## BACKGROUND OF THE STUDY

In today's modern society regional development and inter-firm co-operation are two essentially important fields of studies. This is due to the fact that modern operational environment often forces companies to use and develop in their business relationships action modes in which the attention is heavily focused on multilateral interaction, mutually beneficial action policies and long-term relationships, which aim to create so called win-win-situations. The primary reasons for the rise of these co-operation action modes can be largely derived from the ever-increasing complexity of operational environment and production technologies, cost of resource management and resource insufficiency. In today's operational environment companies are forced to concentrate on their core competence/-ies in order to maximize the profits and minimize the costs. In dynamic and turbulent environment determinants like risks, opportunities, efficiency and adaptability of production play an important role when determining the best action policy to any given business relationship.

When companies focus on their core-competencies, they usually will have to increase also the level of outsourcing because of the limited resources. This makes the whole value system more efficient and gives a logical reason to the rise and development of different kind of business networks and co-operation forms. Companies will become inter-dependent and mutually complementary, due to the fact that they are dependent on

the resources that other companies possess (Klein Woolthuis 1996, 2; Håkanson & Snehota 1989; 191). In business networks the actions that one company makes will also affect to the whole network and thus also to each individual network firms.

During the last few decades the search for a model of regional growth has increasingly focused on the examples of industrial districts (Perry & Goldfinch 1996, 222). Partly due to the inter-firm co-operation different areas around the world have specialized on activities, which aim to produce or support production of one industrial branch. Behind that development can be seen factors like economies of scale, economies of scope, favourable location and geographical proximity. The well-known examples of these areas include (i) high-tech, R&D and innovation-intensive areas (for example Silicon Valley, Boston, Britain's M4 corridor and Grenoble); (ii) industrial districts in both semi-rural regions (for example, the Third Italy) and inner cities (for example, film making in Los Angeles; and (iii) subcontracting nodes formed around large manufacturing companies, such as Baden-Wurttemberg and Southern California). (Perry & Goldfinch 1996, 222)

In Europe the integration process of the European Union has had strong effects on the economic structures and economic conditions of the whole continent. It is evident that due to the free movement of capital and labour force, national states have decreased their comparative importance and different kinds of regional production areas/-clusters and industrial districts have increased their power, when determining the preconditions for effective economic activity and effective operational environment. We conclude that networking, inter-firm co-operation and concentration of production are in general significant and extensive factors when researching regional development and preconditions for effective economic activity.

### **THE AIM OF THE STUDY**

“After the depression in the beginning of 1990's regional development has been unequal in Finland, favouring some rapidly growing growth centres. The motors of the development in these centres have essentially been universities and IT-firms.” (Riikkinen 2002, 1) At the same time when IT-based regions have been very successful many of the more traditionally oriented production areas have had problems in ensuring economic growth and balanced development of the whole region. In South Karelia (province which lies at the South-East border of Finland) the development of the whole region is heavily related to one economic branch, forest industry. This is due to the fact that South Karelia and it's surroundings forms production area in which the production is most intensively focused on chemical forest industry. In South Karelia case it is obvious that large-scale enterprises have a significant role in the balanced and comprehensive development of the whole region. This applies especially to the development of economical circumstances and smaller companies in the area, but also to other aspects of human life: social, cultural and political.

When we look at the structure of the companies in the area, we can determine that the situation is very biased. There are large-scale companies and small companies but almost none of the medium size companies. In these economical conditions it is clear that there might be several barriers to develop successful and multilateral co-operation between the two company-clusters, which are formulated here according to company

size. One of the most important barriers between the two parties is the capacity of production: The constraints in production capacities of SMEs inhibit companies' abilities to develop inter-firm co-operation. This has clearly a strong effect on regional development of the whole county. This is mainly due to the fact that in today's global operational environment large-scale manufacturing companies are in general declined to use operation modes, in which activities are based on large subcontracting modules. In other words the trend is to move towards fewer subcontracting partners, but at the same time also towards larger subcontracting modules and deeper, more intense business relationships in purchasing: It is easier to co-ordinate and to control a few subcontracting-partners than a disintegrated network of large amount of subcontracting SMEs. (Carter & Narasimhan 1996, 4-5; Kuivanen & Hyötyläinen 1997, 17 )

This study focuses on concepts of inter-firm co-operation, outsourcing and competitiveness. In this study regional development is viewed (partly) as an outcome of these concepts. This is due to the fact that successful entrepreneurship creates material benefits for the company itself, but also for the benefit of the whole area in which it operates. The objective of the study was to determine how the large-scale enterprises of the forest-industry in the South Karelia region could increase their subcontracting activities among local SMEs and find operation modes through which the companies would be able to improve their competitiveness<sup>1</sup>. This thematic entity has everything to do with regional development in South Karelia case. The sub-objective of the study was to clarify the importance that Large Scale Forest-Industry Companies have on the economic structure of the South Karelia region, and to determine the different inter-firm co-operation forms that were used in the area. The methodology of the study included several characteristics of both concept analytical and constructive paradigms.

### **SOUTH KARELIA AS AN ECONOMIC ZONE**

South Karelia Region is a part of Province of Southern Finland. The acreage on the area is 7325 km<sup>2</sup> and there are about 137 000 people living in the area. The production in South Karelia is very strongly concentrated on forest industry. There are four major forest industry production plants in the area: Stora-Enso's Imatra Mills, UPM-Kymmene's Kaukas Mills, Metsä-Serla's Simpele Mills and Metsä-Botnina's Joutseno Mills. The emphasis of the production is on chemical forest industry. The biggest industrial areas of the province are the towns of Lappeenranta and Imatra. There are also located the biggest single production plants of the area in these cities: Stora Enso's Imatra Mills in Imatra and UPM-Kymmene's Kaukaa Mills in Lappeenranta. In year 2000 there were 6523 business places in the area, which offered ca. 34000 employment places. In year 1997 primary production employed circa 10 % of the areas' working labour, secondary production circa 30 % and services circa 60 %. All four major forest industry production plants were among the 11 biggest employers in the area in year 2000. If we eliminate the effect of public sector in this statistic, the effect of the forest industry will rise exceptionally high showing all four forest-industry production plants among the 5 biggest employers in the area. The aggregated value added of the production in South Karelia was in year 1995 about 1.026 € (~ 6.1 billion FIM). Over 64 % of this monetary amount was from manufacturing of forest industry products. (Kotonen 1998, 21-22)

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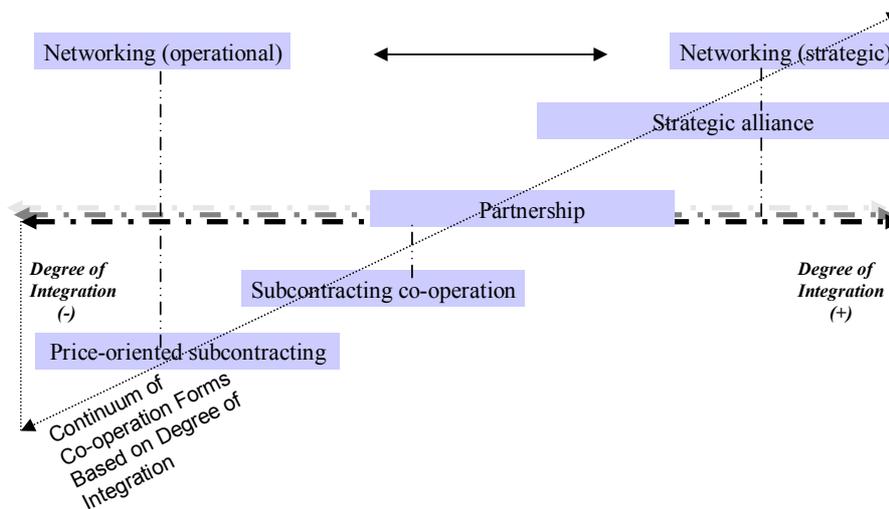
<sup>1</sup> In this paper competitiveness is determined in terms of improved efficiency of companies' actions, which eventually also increase the economic outcome of companies.

## RESEARCH PROCESS

The study was divided into theoretical and empirical parts. The aim of the theoretical part was to create a frame of reference, through which the inter-firm co-operation and problematic nature of South Karelian subcontracting activities could be studied. In doing so we capitalized on transaction cost theory, value-chain theory, network-theory and different parts of subcontracting theory. There can be determined several factors, which account for the use of different co-operation modes in the field of inter-firm co-operation. In this study we made an assumption, that the central factor, which explains opt for co-operation mode, is the strategic significance of operation for which the mode is adapted to.

In our study network-theory formed a solid ground-base for the analysis. By doing so we have absorbed the view in which networking is seen as a transitional form between markets and hierarchies (Vesalainen 1996, 9; see also Jarillo 1988, 32 and Thorelli 1986). In network-theory companies are linked to resources of other companies and companies will become mutually complementary (Klein Woolthuis 1996, 2; Håkanson & Snehota 1989, 191). In that way companies can often generate more competitive advantage than by working alone. This can be seen as the central benefit of networking<sup>2</sup>. Even though networking has its advantages there also exists risks (e.g. free-riders, co-ordination problems, financing, trust), when networking is put into practice (Echeverri-Carroll et al. 1998, 725). These risks can be derived from the Transaction Cost Theory.

In this study we approached our research subject by making argument that all parts of inter-firm co-operation can be seen as a part of networking and also as a part of subcontracting. These two concepts form a continuum in which networking and subcontracting presents opposite ends. Figure 1, which is influenced by the ideas of Ollus, Ranta & Ylä-Anttila (1998, 78) presents this continuum (Karhu 2002, 67).



**Figure 1.** Continuum of Co-operation Forms Based on Degree of Integration

<sup>2</sup> According to Echeverri-Carroll, Hunnicut & Hansen (1998, 724) the benefits of networking are the following: more beneficial information to companies, less transaction costs, better co-ordination of production and economies of sale. Many researches have also included to this lists factors such as adaptable production and efficiency of economic activity, which is achieved through focusing on core competencies (See Georgantzis 2001, 175).

In figure 1 the categorization of different inter-firm co-operation forms is made by using only one variable, the integration-degree of a co-operational action mode. For the purposes of this study this approach offered sufficient, unambiguous and accurate basis enough for the analysis. Even though the categorization is very concise we can conduct five important conclusions underlying this classification.

- Firstly, when we move in figure 1 from left to right it is presumable that in business relationships more attention is paid to mutually beneficial action forms, which aim to create so called win-win situations.
- Secondly, it is presumable that when moving from left to right the duration in business relationships is significantly longer. This often means long-term yearly-based agreements between the companies.
- Thirdly, it is probable that (again) when moving from left to right companies move at the same time towards shared values and mutual operational and/or strategic goals.
- Fourthly, we can conclude that figure 1 reflects the change of operational environment that companies face in their daily activities. We suggest that when we move from left to right in our classification we also move from past to present regarding the companies' operational environment. By this we mean that when talking about price oriented subcontracting we talk of an action mode, which was dominant a few decades ago. Networking in turn reflects modern operational environment and the complexity of the modern business architecture.
- Fifthly, and most importantly, according to figure 1 networking can be seen as a wall-to-wall concept, which more or less covers all other forms of inter-firm co-operation. To emphasize this argument we have determined that the premises for networking can be operational or strategic. According to Knoke & Kulinski (1982) networking can be determined in general level as specific relationships, which link certain people, objects or events together (Szarka 1990, 10). Möller and Wilson (1995, 9) refer in turn the term networks, as to exchange relationships between multiple firms that are interacting with each other. In this article we examine networking as a form of inter-organizational co-operation, in which two or more parties work together in order to achieve mutual goals or/and to improve the functions of companies. From this point of view operational networking can be determined as a loose form of co-operation, in which the inter-organizational level of integration between network-members is low and relationships consist mainly of social connections. Strategic networking is in turn a form of co-operation in which the level of integration between the network-members is high and companies have close, long-lasting relationships. In strategic networking the aim of the action is to provide together a service or a product to the end user. Determinants like mutual trust/commitment, shared values, risks and profits have a significant role in this co-operation<sup>3</sup>. Appendix 1. presents the characteristics of different co-operation forms examined in this article. (Karhu 2002, 67-69)

In the empirical part of the study it was important to canvass the problems that can be detected in the business relationships between the SMEs and large-scale forest-industry

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<sup>3</sup> Perry & Goldfinch (1996) have determined that when starting a new business, operational networking has a more significant role. When entrepreneurship is more stabilized, strategic networking takes more place.

companies (LSFC). Another factor that was also essentially important to study was the criteria based on which the LSFCs choose their subcontracting partners. These two factors were considered as most critical in order to meet the aims of the study. In the empirical part of the study we created three different questionnaires for the two study groups: SMEs and LSFCs. The classification presented in figure 1 was used as a basis for the questionnaires in which the nature of economic activity was divided into 6 different branches: Industry, Construction, Retail and Commerce, Traffic and Logistics, Business Services and Other services. During the research process 340 questionnaires were sent and 22 interviews were carried out.

## **RESULTS**

### **INFLUENCE OF THE LARGE SCALE FOREST INDUSTRY COMPANIES FOR SMEs**

In our study 60.4 % of South Karelian SMEs informed that they have business relationship(s) with one or more LSFCs operating in the area. The effects that these companies have directly to the aggregated turnover of SMEs were however quite exiguous: 33.0 % of companies approximated that <10 % of their sales came from LSFCs operating in the area and only 10 (out of 91) companies informed that >40 % of their sales came from those companies. In our study LSFCs had proportionally most extensive effect on the following branches of economic activity: industry, building and other services. In general we can notify that based on quantitative analysis direct effects of LSFCs to SMEs were not very significant.

When we examine the effects of the LSFCs to SMEs based on qualitative variables, the positive effects of LSFCs will become significantly notable. According to analysis, which was based on 5-step Likert-scale 24.2 % of the companies informed the effects of LSFCs to their business as “very significant” or “significant” (17.6 %). 27.5 % informed the effects as “not very significant” and 18.7 % “no significance”. According to analysis based on qualitative variables the study group of SME’s seemed to be quite bivalent.

Based on differences in the previous two analyses we concluded that SMEs in South Karelia region will receive more benefits from transactions coming from LSFC than what the analysis based on turnovers alone will show. This is due to the fact that often SMEs are not in direct business relationship with LSFC, but the companies are linked together by the actions of some intermediary company. These business relationships can be called as secondary or indirect business-relationships and are corollary of differences in production capacity between LSFC and SMEs.

### **INTERFIRM CO-OPERATION IN SOUTH KARELIA**

LSFC in South Karelia obtain a large amount of different kinds of services and products through outsourcing. Some of these services/products are strategically important for the function of a whole production plant. In these operations the principal wants to secure fluent and efficient function of operations in all cases through yearly-based contracts

and training of subcontracting-partners. In LSFC these operations fall mainly into the category of maintenance and industrial services occurring in times of factory shutdown, when every hour is worth of hundreds of thousand of euros (€). In these cases fluent and exact subcontracting actions are of utmost decisive criteria based on which the subcontracting partner is chosen.<sup>4</sup>

All services, that LSFCs obtain through their subcontracting networks are not however as important strategically for the principal as the services mentioned previously. A good example of these services is transportation and logistics. In these services the principal can use the price as the primary criterion, based on which the subcontracting “partners” are chosen.

According to our findings a large amount of SMEs took in their business activities advantage of subcontracting co-operation (17.5%), partnership (18.8%) and especially networking (21.2% [strategic 10.0%] [operational 11.2%]). Price oriented subcontracting (5.0%) or strategic alliances (8.7%) were not so popular among these inter-firm co-operation forms. When we examined only the business relationships between SMEs and LSFC we found that the mainly used operation modes were subcontracting co-operation, partnership and price oriented subcontracting. As mentioned before the strategic importance of transaction will explain the use of these operational modes. In general we noticed that SMEs saw that the subcontracting activities consisted in these cases more extensively of price oriented subcontracting, whereas LSFC saw that in subcontracting, elements of partnership or subcontracting co-operation were more dominant. We also detected that in branches of economic activity (industry, construction) where the influence of LSFCs was high the partnership co-operation was more generally used co-operation form.

In the theoretical part of the study we made a conclusion upon which we claimed that by using inter-firm co-operation companies try to achieve better efficiency and competitive advantage in order to support the operational or strategic activities of the firm. Based on this theoretical postulate we can assume that the findings of previous section will also give a prediction of what the companies attribute to be effective and most useful co-operation forms in their business activities. In our questionnaires we verified this assumption. Especially important finding is that almost 40% of SMEs saw networking (operational 28.1%, strategic 9.4%) to be very useful in their business activities. 15.6% saw partnership to be the most useful co-operation form, 14.1% vote for subcontracting co-operation and 12.5% strategic alliances.

When we examine only the business relationship between LSFC and SMEs we can notice that the subcontracting co-operation was seen to be very powerful tool in order to increase the efficiency of subcontracting activities and competitive advantage of companies. Also partnership was seen as effective tool in order to meet those aims. Especially in industry and manufacturing partnership was seen as an effective way to increase the efficiency of subcontracting actions. The difference between these two co-operation forms is very faint. However we determined that subcontracting co-operation

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<sup>4</sup> It is important to remember that even though price / monetary amount is not in all cases the most decisive criterion based on which the transaction partners are chosen, it is still usually the most decisive criterion based on which the success of economic activity is evaluated. In other words, the outcome of economic actions are evaluated in terms of price / money, but the means to an end may vary from time to time, from company to company and from transaction to transaction.

places more emphasize on the quantitative variables and price in general in subcontracting activities. Partnership emphasizes in turn (in addition to quantitative criteria) more qualitative factors such as fluent fulfilment of transactions and mutual development of end products or services. This view is based on Ellram (1990, 8). The central rationale behind the use of these co-operational forms is that while they increase the efficiency of actions they also decrease the costs derived from subcontracting actions.

### **SUBCONTRACTING CRITERIA OF LSFCs**

The first concern in order to find out possibilities to increase subcontracting activities between LSFC and SMEs was to determine the criteria based on which LSFC choose subcontracting partners. It is important to notice that in South Karelia case LSFC posses so much market power that they can determine quite unilaterally the subcontracting criteria based on which they choose their partners. This is due to the fact that large companies have resources to carry out their outsourcing activities globally operating in vast geographical areas. So they can choose their subcontracting partners from large variety of companies and emphasize different criteria for different kind of transactions. In our study we were able to form three categories of subcontracting criteria, which were based on both quantitative and qualitative analysis. In our classification category 1 mirrors the most significant criteria of subcontracting activities.

#### **Category 1:**

- ❑ Accurate, exact and punctual fulfilment of transactions.
- ❑ Price of transactions.
- ❑ High quality of services and products.

#### **Category 2:**

- ❑ Good service of subcontracting agent.
- ❑ Previous good experiences of subcontracting agent.
- ❑ Special know-how of subcontracting agent.
- ❑ Geographical proximity.
- ❑ Skilful personnel of subcontracting agent.
- ❑ Extensive network-connections of subcontracting agent, which enable flexible production.

#### **Category 3:**

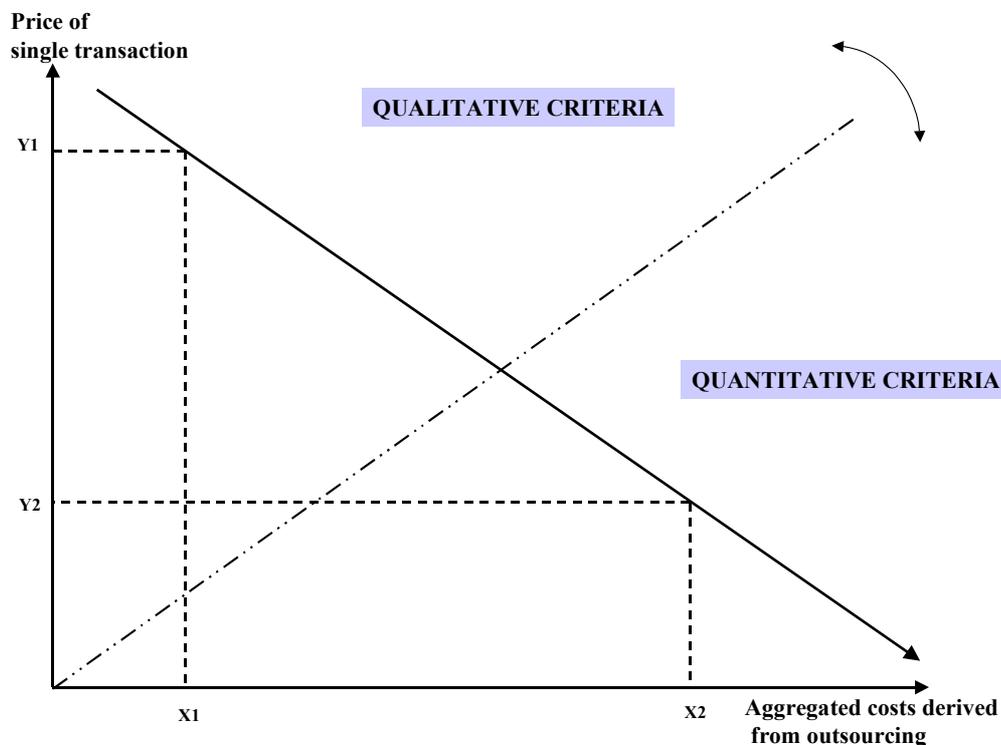
- ❑ Subcontracting agent is able to produce large and/or small batches.
- ❑ Subcontracting agent can flexibly modify production schedules according to principal's wishes in short notice.

In addition to previous list environmental criteria have increased their importance in subcontracting activities during recent years. The objective of these criteria is to bind subcontracting agent to environmental criteria placed on principal's products.

When we examine the first category of subcontracting criteria we detect that accurate, exact, and punctual fulfilment of transactions is seen as most deciding criterion in outsourcing activities. This is mainly due to the fact that forest-industry is very capital-intensive branch of economic activity, which demands for the use of exact and punctual actions especially during factory shutdowns, which occur regularly and are expensive to carry out. During these times reliable "partner" is more valuable than we can easily

imagine. This is also why the LSFC teach, coach and prepare their subcontracting agents and apply principals of partnership and networking in their subcontracting actions. A good example of this is EKY-network in South Karelia, which is a local maintenance and industrial service network. EKY-network operations are based on long-term agreements and mutual (LSFC and SMEs) development of subcontracting actions. This has improved the quality of transactions and has also decreased the costs of subcontractor co-ordination. Presumably this has also had a positive effect on the problems, which are derived from asset specific resources and capacity differences.

The next important subcontracting criteria were the aggregated costs of subcontracting viewed over a long period of time (not so much of a single transaction) and the quality of transactions. It is important to notice that when company concentrates in subcontracting activities only for the price of a single transaction, it's aggregated costs from the actions are often higher than in case where company uses also other criteria, such as mentioned in previous chapters. This is due to the fact that lower price often means also higher co-ordination costs. We detected a strong trade-off between these factors in our study. These factors were also strongly dependent on the strategic importance of transactions in questions. We determined that price was the primary criterion in subcontracting activities, which occurred frequently and were operational in their nature. In activities where strategic importance was higher other criteria overtook price in determining the characteristics of suitable subcontracting partner. Figure 2 presents our view on the trade-off between subcontracting criteria, price of an single transaction and aggregated costs derived from outsourcing.



**Figure 2.** Trade-off between Qualitative and Quantitative Criteria in Outsourcing

There are two cases depicted in figure 2 ( $x_1, y_1$ ) and ( $x_2, y_2$ ). These points present an example from which company can choose in general in planning outsourcing. In case ( $x_1, y_1$ ) a great deal of emphasis is put to price of an transaction but also to many other qualitative criteria such as flexible production, exact transactions, extensive data transfer, know-how, competent personnel and customer-oriented action policies. In the long-run these elements will probably benefit principals cost structure by improving the total quality of subcontracting actions which in turn will in high certainty lead to decreasing transaction costs. In case ( $x_2, y_2$ ) the outcome of outsourcing will probably be quite different. At first it seems that a good bargain is made when the cheapest bid is chosen, but in the long run it may cause problems, if the subcontractor is not willing or capable to act customer-oriented and seek for the benefit of customer. In brief we can conclude that often when company emphasizes too much price as the most important subcontracting criterion it will often almost automatically choose those companies for outsourcing agents, which are not customer-oriented in their action policies. In the field of outsourcing actions this will lead to problems and disappointments in many cases.

We can summarize that in general the LSFC in South Karelia cast around for subcontracting partner, which is able to produce good quality in reasonable price. We conclude that the factors in categories 2-3 present factors that are more or less determinants in evaluating the aggregated quality of outsourcing. Especially interesting criterion is geographical proximity, which affects both the price component and the quality component of transaction.

### **BARRIERS OF CO-OPERATION BETWEEN LSFCs AND SMEs IN SOUTH KARELIA**

In our study we examined the biggest problems of inter-firm co-operation in South Karelia from two distinctive viewpoints, LSFCs and SMEs. Based on these two standpoints we made synthesis of this thematic entity. The following list presents the biggest barriers of co-operation based on this synthesis. These factors also affect negatively to the ability of companies to generate competitiveness through co-operation. The list is not in order of importance but later on we discuss some of the most critical factors of this thematic entity. In some cases we can observe intersection between the cases. This is due to the fact that the problems mentioned below are linked to other factors, which often intertwine and amplify each other.

- Traditionally labour unions have been very strong interest groups in Finnish economy. The advocates of paper making labour union go against the idea of outsourcing and subcontracting of LSFCs activities.
- SMEs capacity to produce goods and services for the LSFCs is too low and even if they could manage to perform the transactions it takes too much time.
- LSFCs demand too big a subcontracting entities or modules and often the orders come unexpectedly and too late from the SMEs viewpoint. This is connected to data transfer-problems between companies.
- Subcontracting SMEs don't have applicable know-how for all subcontracting entities in the area.
- LSFCs are declined to use vertical integration in certain functions and operations. Especially they want to keep their basic know-how in their own hands.

- ❑ Subcontracting SMEs are not always capable of producing high quality with appropriate price.
- ❑ Companies seek only for their own interests in transactions between other companies.
- ❑ There is too little mutual interaction and planning co-operation between the principal and subcontracting agent. This makes it hard for SMEs to produce services and goods cost efficiently.
- ❑ Principals orders come irregularly and often in too a big modules, which demand extensive capacity.
- ❑ LSFCs don't always search subcontracting partners from South Karelia.
- ❑ There is too much price oriented, short-term subcontracting, which leads to higher aggregated costs derived from the subcontracting transactions.
- ❑ There is no feeling of unity among the LSFCs and SMEs in South Karelia: Companies seek only for their own interest in transactions between other companies and not for common benefits, which often leads to higher profits derived from aggregated transactions.

### **The Production Capacity of SMEs**

In our synthesis presented in previous chapter one of the most significant factor resulting problems in the field of outsourcing is capacity constraints of the SMEs. According to Ollus, et al. (1998, 41) the partnership with large-scale companies imposes new challenges and demands for the SMEs. This notion has many important implications in the case of South Karelia. According to our analysis networking can offer valuable tools in order to tackle these challenges. In developing these networks it is crucial that the networks are formed under the supervision of LSFCs: The action principals of networks must be derived from the subcontracting criteria of LSFCs.

In our study the capacity deficit in South Karelia is especially true in cases of large investment projects and factory shutdowns, which in main rule all LSFCs have in the area at the same time. This arrangement leads to the fact that there isn't enough capacity in the area to carry out the necessary transactions and large amount of transactions are forced to obtain through subcontracting agents outside the area. The reasons for this arrangement vary, but the main reason can be traced to the high-powered interest groups of labour force. In large investment projects and factory shutdown cases the capacity deficit culminates, because of the fact that these projects would be vital and extremely valuable for the enlivenment and success of the local SMEs, and whole area in general. Even though there can be detected some problems in the field of large investment projects/factory shutdown cases, we conclude that in the field of continual maintenance and industrial services the supply for the LSFCs is quite extensive in South Karelia.

### **Quality and Know-How in Outsourcing**

In order to ensure effective operation of industrial plants LSFCs in South Karelia obtain a large amount of different kind of subcontracting modules and operational entities through outsourcing. Some of these subcontracting transactions/modules require capital or service intensive know-how, which the local SMEs hold. Some of these actions require, in turn, know-how, which can't be obtained by using the local SMEs as

subcontracting partners, but the suitable partner has to be searched outside the area. In these cases it is usual that the markets are dominated by only a few national-wide or even globally oriented companies. A good example on this case occurs in times of fume leakage of industrial autoclaves: The nearest company, which possesses know-how in resolving this industrial malfunction lies at the town of Tampere, which is located ca. 400 km north-west of Lappeenranta. Because of this geographical distance the availability of service isn't good, (or at least it rises the price of service), even though it usually takes only an hour to execute the welding operation, which resolves the problem. Based on interviews it is highly unlikely that these special know-how intensive companies will be established in near future to South Karelia. This is due to the fact that special know-how intensive operations usually demand a large amount of fixed capital in the start-up phase of a new business venture. At least the possible creation of these companies would call for active involvement and commitment of the local LSFC to these projects.

We can, in high certainty, conclude that SMEs should, in all cases, concentrate to their core business and operations in which they are at their best, even though opinions in the area may vary in regards to the creation of new know-how-intensive companies. In order to improve the quality of their services/products they can start actions, which unilaterally aim to improve the whole operation of company. For example they can seek new markets and expand their activities elsewhere in Finland and even in foreign markets, and by doing this learn new ways to become more customer-oriented. However it is important to notice that if companies (LSFC/SME) truly want to improve the quality of subcontracting operations in the area, they should work together in bilateral co-operation. This means that both LSFCs and SMEs will have to possess a high degree of commitment to mutual goals. In this co-operation one key element is training of subcontracting agents and bilateral understanding of companies' action policies, which often rise from the companies production technologies. This means that the key players in the field of co-operation are the LSFC operating in the area. Without their contribution it is highly unlikely that the problems in the field of subcontracting transactions quality could be resolved. The benefits of this co-operation will materialize through more fluent fulfilment of transactions and improved total quality of subcontracting activities, which in turn lead to decreasing transaction costs. According to our interviews EKY-network has already had this kind of effect on subcontracting activities in the area, but there can still be detected a clear demand for this kind of activity.

### **Data Transfer between Companies**

According to our findings data transfer between companies was seen as one of the problems in the field of inter-firm co-operation. It is highly presumable that quality training of subcontracting agents, which embodies characteristics of partnership co-operation and subcontracting co-operation, will also resolve the problems connected to this subject matter. This is due to the fact that these co-operation forms amplify the level of inter-organizational interaction and familiarity. This leads to increased commitment, long-term agreements and mutually complementary goals between companies, which in turn build a solid ground for the development of efficient data transfer. This data transfer doesn't necessarily need the help of modern information-technology based solutions, but it is obvious that these technologies can offer clear

benefits. To our opinion it is important to understand that the most important elements of successful data transfer are extensive interaction, good personal-level relationships and commitment to mutual goals. In the absence of these elements modern information-technology based solutions can hardly gain any benefits for the improvement of data transfer.

In our study we researched the need for regional internet-based subcontracting data bank in South Karelia. The reason why we studied this thematic entity, was the fact that there is Internet-site called “Business Target” operating in the area, but the benefits of this service were unclear, blur and ambiguous: Based on interviews hardly any of LSFCs had capitalized this service or were even aware of this kind of service availability. In our study we find out that LSFC didn’t have primary need for this kind of internet-service. This is due to the fact that during the long history of their operation they have brewed up a clear outlook of suitable subcontracting agents operating in the area. However based on our analysis it was quite clear also that LSFC had secondary need for this kind of internet-service. The explanation for this is that “Business Target” is a good marketing channel to introduce new business ventures arising in the area. More importantly for the need of SMEs it can be a very useful tool in order to enter into transactions with main supplier in the cases of large investment projects. If SMEs can establish contracts with main suppliers in the first phase of investment projects, it is more probable that also in future they will have a good chance to contract agreements in the field of maintenance, and industrial services, because of the geographical proximity and project specific know-how that they possess.

### **Significance of Geographical Proximity**

In this study geographical proximity was clearly seen as a central competitive edge for SMEs. This is due to the fact that geographical proximity provides an edge for the SMEs in terms of easier co-ordination and management of subcontracting relationships between principal and agent. Even though today’s modern technology, both in the fields of information and logistics, offers many ways to overcome the “barriers” caused by geographical distance, it is still apparent that the management of business relationships is easier in many cases, when the companies are closely located. This postulate was strongly confirmed in our analysis. The competitive edge, that company gain through geographical proximity often comes to fruition in terms of cost-management. For example the travelling-costs and cost of accommodation are smaller in cases where principal and agent locate close each other. Also the availability of service is better and quality control is easier to carry out from the viewpoint of principal. Based on that, it is clear that geographical proximity affects also to the quality of service or product. The decisive criteria based on which LSFC choose their subcontracting partners is the total quality of service or product. This total quality consists of both price-element and quality-element of the transaction in question. This means that geographical proximity can only be deciding subcontracting criteria, when total quality is contemporaneous and subcontracting agents equally attractive.

## **Global Competition and Breeding-Ground Approach**

Today the competition in almost any field of economic activity has become increasingly hard-edged and intensive. Especially large-scale manufacturing companies have often embarked to use globally oriented outsourcing policies, which also means usually that the subcontracting modules have become bigger and also in many cases impossible for the SMEs to carry out by themselves. In the case of South Karelia it is quite clear that LSFC want to increase the size of the modules that they obtain through outsourcing. This is because of the fact that fewer subcontracting partners are easier to co-ordinate and this often reduces the price of outsourcing. This global trend of reducing the supplier base creates also a clear danger for the development of SMEs. We presume that unless SMEs in South Karelia are able to create an alternative to large hierarchies, they may befall difficulties in the future.

Networking is often seen as an alternative way for SMEs to compete with large hierarchies in the doctrine of inter-firm co-operation. We believe that local subcontracting networks in the case of South Karelia can offer LSFCs much of the same benefits than national wide or even global hierarchies. The operation modes of these networks have to be based on the subcontracting criteria of LSFC operating in the area in order to be successful. The advantages offered by geographical proximity, serves as a solid ground-base for developing these kind of networks. Based on our findings it is clear that this kind of networking cannot be created without the influence and commitment of LSFC.

### **RECOMMENDATIONS FOR INCREASING SUBCONTRACTING ACTIVITIES AMONG SMEs**

We are able to give the following recommendations in order to increase the subcontracting activities among the local SMEs. Many of these factors hold true only in the case of South Karelia. Still there can also be detected factors, which offer benefits for companies operating in many dissimilar operational environments and geographical areas. The recommendations are not in order of importance. These factors often intertwine and amplify each other.

**The advocates of paper making labour union go against the idea of outsourcing and subcontracting of LSFC's activities.** This problem should be tackled in order to create an operational environment where subcontracting links between LSFCs and SMEs could increase and develop. One of the key elements in order to do this is that the factory shutdowns should be decentralized. This calls for extensive negotiations between labour union and LSFCs. This decentralization can be seen as one of the key elements in developing the subcontracting activities in the area, because it is quite apparent that concurrence of factory shutdowns is the most important single factors causing capacity deficiency in South Karelia.

**SMEs capacity to produce goods and services for the LSFCs is too low and even if they could manage to perform the transactions it takes too much time.** In resolving this problem the SMEs should develop network connections with each other and LSFCs. Developing subcontracting networks can be powerful tool in order to tackle the capacity problem. In developing these networks special attention has to

be placed to the subcontracting criteria of LSFC's. Without the commitment of LSFCs it is implausible that any kind of functional subcontracting networks can be created in the area. The development of these networks can presumably resolve also other subcontracting problems in the area, such as data transfer between companies and quality/know-how problems of subcontracting actions.

**In South Karelia a great deal of attention should be placed on the development of data transfer between companies.** This would relieve the problems detected in the field of orders coming too unexpectedly and too late from the SMEs viewpoint. As mentioned before networking creates good starting point to this development of data transfer. Further development of Business Target-internet service is advisable in order to fully capitalize the possibilities of modern Internet-technology. In determining the functionality of these Internet-solutions, it is important that the information provided by the service is based on subcontracting criteria of LSFCs.

**The LSFC could/should recommend some of the best local SMEs for their main suppliers' subcontracting partners in cases where the main project has gone outside the area to some large company.** If the local SMEs could be bind to investment projects in early phase, the future transaction (in the field of service and maintenance) would also be more presumable, because of the project specific know-how that they possess.

**SMEs in South Karelia should, in all cases, concentrate to their core business in which they are at their best.** In order to improve the quality of their services for LSFC they can start actions, which unilaterally aim to improve the whole operation of company. Seeking new markets and expanding activities elsewhere in Finland and even in foreign markets is advisable. This would relieve SMEs dependence on forest industry, which is a very cyclical branch of economic activity. By doing this they could also learn new ways to become more customer-oriented.

**It is vital to notice that if companies (LSFC / SME) truly want to improve the quality/level of subcontracting operations in the area, they should work together in co-operation.** This means that both LSFCs and SMEs will have to possess a high degree of commitment to mutual goals. In this co-operation one key element is training of subcontracting agents and bilateral understanding of companies' action policies, which often rise from the production technologies of companies. The key players in the field of co-operation are the LSFC operating in the area. Without their contribution it is highly unlikely that the problems in the field of outsourcing could be resolved.

**Inter-firm co-operation forms such as partnership, subcontracting co-operation and networking can offer great benefits in order to improve the efficiency of outsourcing activities in the area.** These co-operation forms are based on long-term agreements and action plans between companies. They increase the level of integration between companies and create a suitable environment for efficiency improvement in terms of decreasing transaction costs. However these inter-firm co-operation forms call for extensive level of mutual commitment and thus are also difficult to put into action effectively. This often leads to disillusion and disappointments, if the co-operation does not immediately generate great benefits for the improvement of business activities and competitiveness.

**One of the central competitive edge of SMEs in South Karelia rises from the fact that geographical proximity offers them a clear benefits in order to provide services and goods to LSFCs operating in the area.** This geographical proximity offers benefits both for the cost-structure of companies and quality of subcontracting services. These elements often generate better price-quality-ratio for local SMEs compared to companies that are located outside the area. This should be considered as one of the most important factors affecting the future of subcontracting activities in the area and securing the development and enlivenment of SMEs

## CONCLUSIONS AND OUTLINE FOR FUTURE STUDIES

This study focused on four central concepts, inter-firm co-operation, subcontracting, competitiveness and regional development. The objective of the study was to determine how the large-scale enterprises of the forest industry in the South Karelia region could increase their subcontracting activities among local SMEs and find operation modes through which the companies in area could be able to improve their competitiveness. This thematic entity has everything to do with regional development in the case of South Karelia. The methodology of the study included several characteristics of both concept analytical and constructive paradigms.

The study was divided into theoretical and empirical parts. The theoretical part forms a frame of reference in order to determine the concept of inter-firm co-operation and classify different forms of inter-firm co-operation. The theoretical part of the study was used as a basis for questionnaire and interviews. The results show that inter-firm co-operation is a significant factor if the forest industry increases their subcontracting activities among the local small and medium size companies. The usefulness of inter-firm co-operation is explained here in terms of overcoming the capacity constraint of SMEs: With the help of inter-firm co-operation companies can often maximize their production capacity through multilateral and complementary action policies. Especially useful are those modes of action, which are based on long-term relationships and criteria based on which LSFC choose their subcontracting partners. These action policies create often also so called win-win situations, which benefit all parties of inter-firm co-operation.

## REFERENCES

Carter, J. R. Narasimhan, R. 1996. Purchasing and Supply Management: Future Directions and Trends. *International Journal of Purchasing and Materials Management*. Fall.

Echeverri-Carroll, E.L., Hunnicutt, L., & Hansen, N. 1998. Do Asymmetric Networks Help or Hinder Small Firm's Ability to Export? *Regional Studies*. Vol. 32, No. 8, pp. 721-733.

Ellram, L. M. 1990. The Supplier Selection Decision in Strategic Partnership. *Journal of Purchasing and Material Management*. Fall. pp. 8-14.

Georgantzias, N. C. 2001. Virtual Enterprise Networks: The Fifth Element of Corporate Governance. *Human Systems Management*. Vol 20, No. 3, pp. 171-188.

Håkanson, H. & Snehota, I. 1989. No Business Is An Island: The Network Concept of Business Strategy. *Scandinavian Journal of Management*. Vol. 5, No. 3, pp. 187-200.

Jarillo, J. C. 1988. On Strategic Networks. *Strategic Management Journal*. January/February. Vol. 9, No. 1, pp. 31-34.

Karhu, E. 2002. Generating Competitiveness through Interfirm Co-operation – Case: The Woodprocessing Industry of South Karelia and Small and Medium Size Subcontracting Companies. Lappeenranta University of Technology. Department of Business Administration. Licentiate Thesis: Lappeenranta.

Klein Woolthuis, R. 1996. Improving Innovative Capability Through Industrial Networks. HTSF-Conference. 5-6. September. 1996. Enschede.

Kotonen, U. 1998. The Economic Development of the Municipal Districts in South Karelia in Planning Period 1998-2000. (in Finnish) *Etelä-Karjalan kuntien taloudellinen kehitys suunnittelukaudella 1998-2000*. Lappeenranta University of Technology. Research Report of the Department of Business Administration No. 13: Lappeenranta.

Kuivanen, R., & Hyötyläinen, R. 1997. Toward New Kinds of Business Networks: How to Develop Multilateral Business Networks. (in Finnish) *Kohti uudenlaisia yritysverkostoja: Monikeskeisen verkostoyhteistyön kehittäminen*. Publications of VTT 1830. Technical Research Center of Finland (VTT): Espoo.

Möller, K. & Wilson, D. (editors) 1995. *Business Marketing: An Interaction and Network Perspective*. Kluwer Academic Publishers, USA.

Perry, M & Goldfinch, S. 1996. Business Networks Outside an Industrial District. *Tijdschrift voor Economische en Sociale Geografie*. Vol. 87, No. 3, pp. 222-236.

Ollus, M., Ranta, J., & Ylä-Anttila, P. 1998. The Revolution of Networks - How to Conduct Network-oriented Company. (in Finnish) *Verkostojen vallankumous – Miten johtaa verkostoyritystä*. SITRA 202. Taloustieto: Vantaa.

Riikkinen, S. 2002. Regional Effectiveness of Lappeenranta University of Technology (LUT) and it's Role as a Source of Knowledge. Paper to be presented at the VII International Congress of Educating Cities. 16-19.6.2002. Tampere, Finland.

Szarka, J. 1990. Networking and Small Firms. International Small Business Journal. Vol. 8, Issue. 2, pp.10-22.

Thorelli, H. B. 1986. Networks: Between Markets and Hierarchies. Strategic Management Journal. No. 7, pp. 37-51.

Vesalainen, J. 1996. Models for Co-operation—A Handbook for the Organizers of Co-operation. (in finnish). Yhteistyön malleja-käsikirja yhteistyön edistäjille. Research Reports of Ministry of Trade and Industry No. 18: Helsinki.

**Appendix 1.** The Characteristics of Different Co-operation Forms (Ollus et al. 1998, 78; Karhu 2002)

Co-operation form	Quality	Logistics	Development of product and technology	Subcontracting criteria
<b>Price-oriented subcontracting</b> (bilateral co-operation)	<b>Production &amp; quality control</b> ✓ Agent manufactures product ✓ Principal conducts quality control examinations	<b>Short-term transactions</b> ✓ Order by phone and deadlines for delivery ✓ Reserve supply stock necessity for principal	<b>Principal responsible</b> ✓ Principal decrees the attributes of product ✓ Inspection of first delivery	<b>Price of an single transaction</b>
<b>Subcontracting co-operation</b> (bilateral co-operation)	<b>Development of physical attributes of product</b> ✓ Agent certificates it's action principals ✓ No quality inspections needed for principal to carry out ✓ Quality improvement programs between principal and agent	<b>Well planned delivery strategies</b> ✓ Long-term agreements ✓ JOT-delivery (minimization of stocks) ✓ Minimization of stocks' turn-over time in co-operation	<b>Development of product in co-operation</b> ✓ Technical specifications of product planned together with agent ✓ Functional data-transfer between agent and principal	<b>Long-term aggregated costs derived from subcontracting actions</b>
<b>Partnership</b> (bilateral co-operation)	<b>Development of functional attributes of product</b> ✓ Analogus between agent's subcontracting components and quality specifications of products' end users ✓ Kaizen (Constant improvement) ✓ Defining the quality specifications of product in co-operation	<b>Systematic co-operation</b> ✓ Integration of logistics processes between principal and agent ✓ Shared data-transfer and planning systems	<b>Development of product in co-operation</b> ✓ Agent participates in product development already in the beginning of the "new product" - project ✓ Agent contributes product development with new ideas and comments	<b>Rapid, accurate and exact delivery of products</b>
<b>Strategic alliance</b> (bilateral co-operation)	<b>Like partnership, but more emphasis placed on the strategic goals of companies</b>	<b>Like partnership, but more emphasis placed on the strategic goals of companies</b>	<b>Like partnership, but more emphasis placed on the strategic goals of companies</b>	<b>Rapid, accurate and exact delivery of products + strategic goals</b>
<b>Strategic networking</b> (multilateral co-operation)	<b>Mutual development of business</b> ✓ The planning of business processes in co-operation	<b>Systematic and automated co-operation action policies</b> ✓ Shared data system	<b>Shared vision</b> ✓ Companies possess high level of commitment in product development and planning of business processes	<b>Development potential of companies</b> ✓ Ability to innovate, shared values and adaptability
<b>Operative networking</b> (multilateral co-operation)	<b>Like strategic networking, but operative goals &amp; less or none integration between companies</b>	<b>Like strategic networking, but operative goals &amp; less or none integration between companies</b>	<b>Like strategic networking, but operative goals &amp; less or none integration between companies</b>	<b>Adaptability, social focus</b>