Project Report

Regional Brain Gain

Designing Regional Strategies to Mobilize Evasive Knowledge Entrepreneurs

Version 2.2

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synocus

Synocus Oy, Bulevardi 5 A 5, FIN 00120 Helsinki, Finland
Tel: +358 9 622 62 60, Fax: +358 9 622 62 622
www.synocus.com

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1 Introduction

When the Regional Brain Gain initiative was started the ambition was to look for ways to better understand why certain regions are more competitive than others (for a more detailed description of the original objectives, and how the Regional Brain Gain –project unfolded, see Appendix 1). The initial assumptions were as follows:

1. Regions are competitive when they create new job opportunities, generate economic growth and at the same time have an increased amount of residents being satisfied with both their professional situation and their private life.
2. For a region to be competitive it has to attract knowledge holders. These knowledge holders are residents within the region and combine their knowledge with the one of other members of the region, thereby generating development.
3. The knowledge holders form the major driver for the regions to become competitive. Subsequently the regional decision makers have to understand why such individuals are attracted to the region, and make their best to improve the conditions for such individuals. This ways an increasing amount of "right" type of individuals will stay in or move to the region, and increased competitiveness of the region will follow.
4. As knowledge holders will evaluate their situation both based on their professional life and their private life, the regional decision makers should direct their efforts to provide best possible conditions on both dimensions.

The basis for this reasoning can be expressed as in Figure 1.

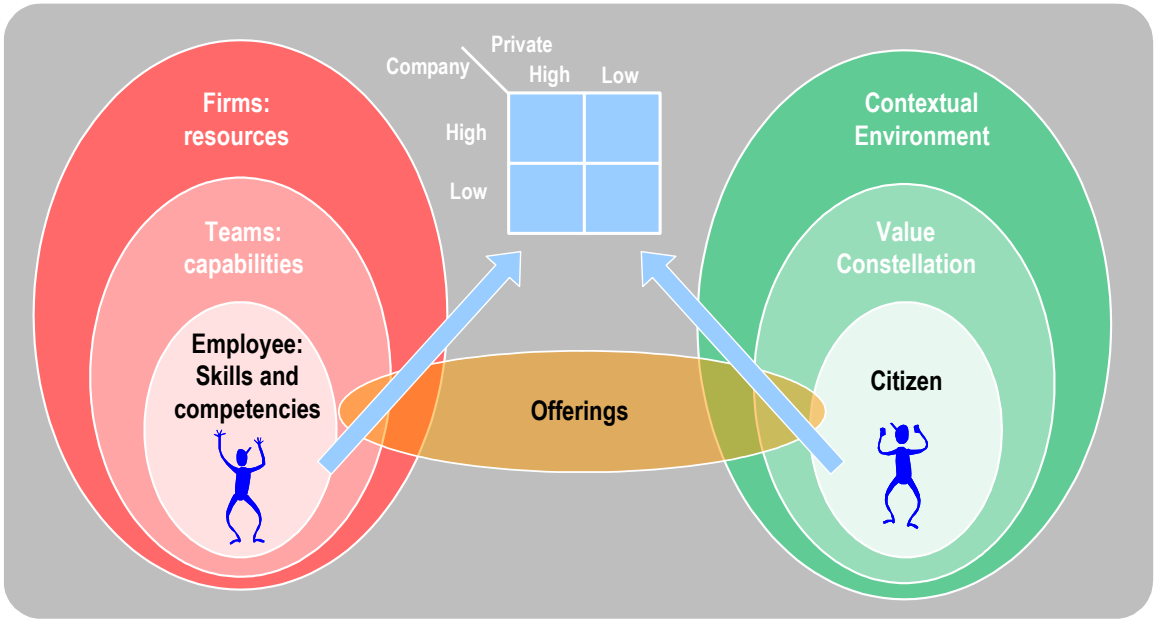


Figure 1. Professional and private roles as drivers for individual localization

The first discussions relating to the Regional Brain Gain –project were initiated in the year 2000. At this moment in time there was the IT-/Internet-boom. The project idea was born in Sweden, inspired by the front cover of Newsweek on February 7th, 2000 portraying Stockholm as Europe's Internet Capital. At that time it was felt that highly educated, presumably young, and workers

especially in the ICT sectors, would be decisive for how a region could grow and prosper. As we know now, the Internet did not deliver on all of its promises. Regions that were announced as the center of future growth in the new economy, like Stockholm, have three years later went through radical restructuring, and many of their flagship firms are now bankrupt or have been radically downgrading their previous growth ambitions.

In light of the more nuanced perspective on what really makes regions competitive the research team around the Regional Brain Gain project had to also more profoundly investigate what really creates more long term success of a region. In this context the notion of capabilities rose as a centerpiece of the research (see Appendix 2 for the conceptual framework used in the study).

Prahalad and Hamel[1] introduced the notion of core competence in 1990, based on which a significant stream of research around organizational capabilities has been conducted. This has considerably changed the way management scholars look upon the notion of competitiveness. A capability can be defined as *the ability of an organization to perform a coordinated set of tasks, utilizing organizational resources, for the purpose of achieving a particular end result*[2].

In spite of the growing amount of research on organizational capabilities, there is yet very little applied research on the role of capabilities in a regional context. However, the very early discussion regarding core competence and capabilities had a strong regional attachment to the use of the word competence. In their award winning article Prahalad and Hamel used Sony as one example, and stated that miniaturization was a competence. It can be argued that this competence was based on a long manufacturing tradition in Japan that had generated a collective regional learning, which could be exploited by Sony. Inspired by this notion the development of the conceptual framework used in this study was tested by investigating the boatbuilding tradition in Ostrobothnia, which has showed some remarkable success lately (Chapter 2). By using this as a basis it was then possible to generalize some of the findings to develop a framework for strategic management in a regional context (Chapter 3). This framework was then applied to analyze the development of the three regions participating in the Regional Brain Gain study: Oulu, Tampere and the Finnish capital region (Chapter 4).

Throughout the whole Regional Brain Gain –study there has been a strong emphasis on "grounding" the reasoning based on stringent empirical research. The results from this part of the project including both quantitative and qualitative findings are presented in Chapter 5.

The final chapter of this report (Chapter 6) synthesizes both the conceptual development work and the findings from the empirical study into some normative conclusions. In addition some implications for policy and decision makers are suggested.

[1] Prahalad, C.K., Hamel, G. 1990. The Core Competence of the Corporation, Harvard Business Review, May-June 1990, pp. 79-91.

[2] Helfat, Peteraf. 2003, p. 999 Helfat, CE, Peteraf MA. 2003. The dynamic resource-based view: capability lifecycles. Strategic Management Journal. Special Issue **24**(10): 997-1010.

2 Boat building in the Ostrobothnia region; case Nautor [3]

The area around Pietarsaari has a long tradition of boat building. Earlier, when Finland belonged to Sweden, shipwrights traveled north from Stockholm to here to build the nation's naval vessels. The area has since that maintained its boat building tradition, which in the mid 1960's also caught the interest of Pekka Koskenkylä. In 1966 he founded a company called Nautor, which by 2003 has produced more than 1 700 Swan yachts, considered as the Rolls-Royce of the seas, and bought by wealthy people from all over the world, as the price range is from 600 000 € upwards.

When Koskenkylä arrived in Pietarsaari it was estimated that around 100 people got their living from boat building activities. In the year 2003 it was estimated that there are about 1 500 people or more in the area that get their income from boat building. This development has been possible because of the successful interaction between strong individuals, companies and regional actors. How this evolution took place offers an in-depth perspective on the building blocks for regional competitiveness. The dynamic properties and the increasingly global nature of regional competitiveness are also illustrated. The case also raises some interesting questions regarding who should be considered to be a knowledge holder. The relation between the physical location of the "knowledge holders" and a competitive firm in a specific region is demonstrated as well.

Because of the significant implication the boat building case has had on the formulation of the ideas in this project, the case description is quite detailed. The ambition is to provide the reader with not only the conclusions, but also with the background facts that have lead to these conclusions. The boat building case is later generalized to develop a framework for strategic management in a regional perspective.

At the age of 29, in 1966, Pekka Koskenkylä, a salesman of the local pulp and paper company Oy Wilh. Schauman Ab, formed a company called Nautor. He was interested in sailing, and had built a sailing boat in his free time since he had moved to Pietarsaari in 1965. Having successfully sold this boat he got the idea to start a company doing what he liked to do in his free time: build sailing boats. His idea was to combine the long boat building traditions of the Pietarsaari area with world class design, and develop a new approach to yacht building: production yachts made from glass-reinforced plastic fiber (GRP).

When Koskenkylä started he contacted Sparkman & Stephens Inc. in New York and asked them for drawings of a sailboat about 11-12 meters long. By accident Sparkman & Stephens had been waiting for years for somebody to approach them to design a production boat in fiberglass, and Mr. Koskenkylä happened to be the first one to do this. As Rod Stephens by coincidence was coming to Finland in a couple of weeks after he was contacted by Koskenkylä he agreed to meet him. In this first meeting in September 1966 it was already decided that Stephens would provide the drawings of a 36 feet sloop, which was to be marketed as the Swan 36. When Koskenkylä came back to Pietarsaari he needed a suitable space in a hurry. Outside the town, fifteen kilometer from the sea in the county of Pedersöre, there was an old brick building, which had been used as a tannery. It was empty and he was able to rent it at a very low rate. It needed some modifications but now he had a place to start. He appointed his wife's (who was born in the area) uncle as a foreman and they started to hire people.

[3] This section is to a large extent based on "The Swan Story" by Pekka Koskenkylä (http://www.classicswan.org)

There were many skillful joiners in the surrounding area of Pietarsaari. Many of them were part time farmers and eager to take a full time job, because their farms were so small that they could not support them. Many of these people had a small woodworking shop at home and they had been doing doors, window frames, furniture etc. to supplement their income. These activities were, however, getting less attractive financially, because more and more factories were producing these items as mass production and thereby suppressing prices.

The other category of workers Koskenkylä was able to hire was small individual boat builders. Their boat building operation was a family business, and most of them built wooden fishing boats, but there were some, who also had built pleasure boats to customers' orders.

Pietarsaari and the surrounding counties was a major ship building area during the time when Finland was part of Sweden in the 1600's and 1700's. Koskenkylä recognized that the quality of the workers and their skills were something very special. If he would not have had access to these kinds of people he admitted later that he would have failed, especially considering his lack of experience in business in general and running a yard in particular. Fortunately there was no shortage of such highly skilled and motivated people in the area.

The sincerity of the whole organization also became apparent to Stephens on his first visit to the factory. As they had prepared the plug of the deck mould of what would be the first Swan 36 he could witness the most beautifully prepared plug, all painted and polished and ready to use to make the mould for the first fiberglass deck. But Koskenkylä still insisted that Stephens would propose any modification to further improve it. So he did, and after lunch the highly skilled carpenters had already carried out the corrections. Based on this experience Stephens understood that the Nautor people and Koskenkylä in particular were very serious in their desire to make every thing as good as possible, and the commitment from Sparkman & Stephens was cemented. A couple of years later a lot of builders were knocking on their door, but Sparkman & Stephens remained loyal to Nautor and did not give out competing designs.

Koskenkylä quit his full time job at the paper mill. He traveled a lot. He went to boat shows to learn more about yachts and to promote Nautor and solicit orders. Apart from looking at equipment he would pretend to be a buyer and be very interested to look at all the details. He was trying to figure out how everything was made. He was very successful, and the development was quite rapid. By the end of 1968 Nautor already employed 145 people. In charge of operations was Rurik Riska, who originally had had a local joinery factory for furniture. He had been persuaded to take responsibility for the factory, as Koskenkylä had recognized that he needed one of the locals to lead the workforce.

In December 1969 disaster struck. The main factory building, with a whole production line of thirteen boats in different stages of completion, was destroyed by fire. Nautor had insurance covering the loss of assets, but it did not have adequate insurance to cover the impact of the interruption of business. A new factory being built for Nautor by the Pedersöre county council in Kållby was half way completed at the time, but needed a few more months of work. Nautor was out of production for three months. The new plant in Kållby followed suit to another successful negotiation Koskenkylä had had with the local authorities. In 1969 he had completed a deal whereby Nautor opened a joinery shop at Kronoby, another county some 18 km from the main factory, and later a local workshop for building the plugs and wooden moulds in Larsmo, also a county in the Pietarsaari area. He recognized that spreading out the production facilities to

scattered locations of the various stages of the boatbuilding operation in areas where local craftsmen lived was important to make these highly skilled craftsmen loyal employees. Most of the workers could walk to work from their nearby homes. Luckily this strategy also reduced the impact of the fire. But from the perspective of Koskenkylä it was of minor help. Because of the financial difficulties he had to sell the majority of his shares to the Schauman Group, the pulp and paper company he had worked for, as this was the only way to find a financial solution that would rescue the company after the financial difficulties caused by the fire.

The initial capabilities of Nautor are illustrated in Figure 2. (A more detailed description of the basis behind the formation of these capabilities can be found in Appendix 3).

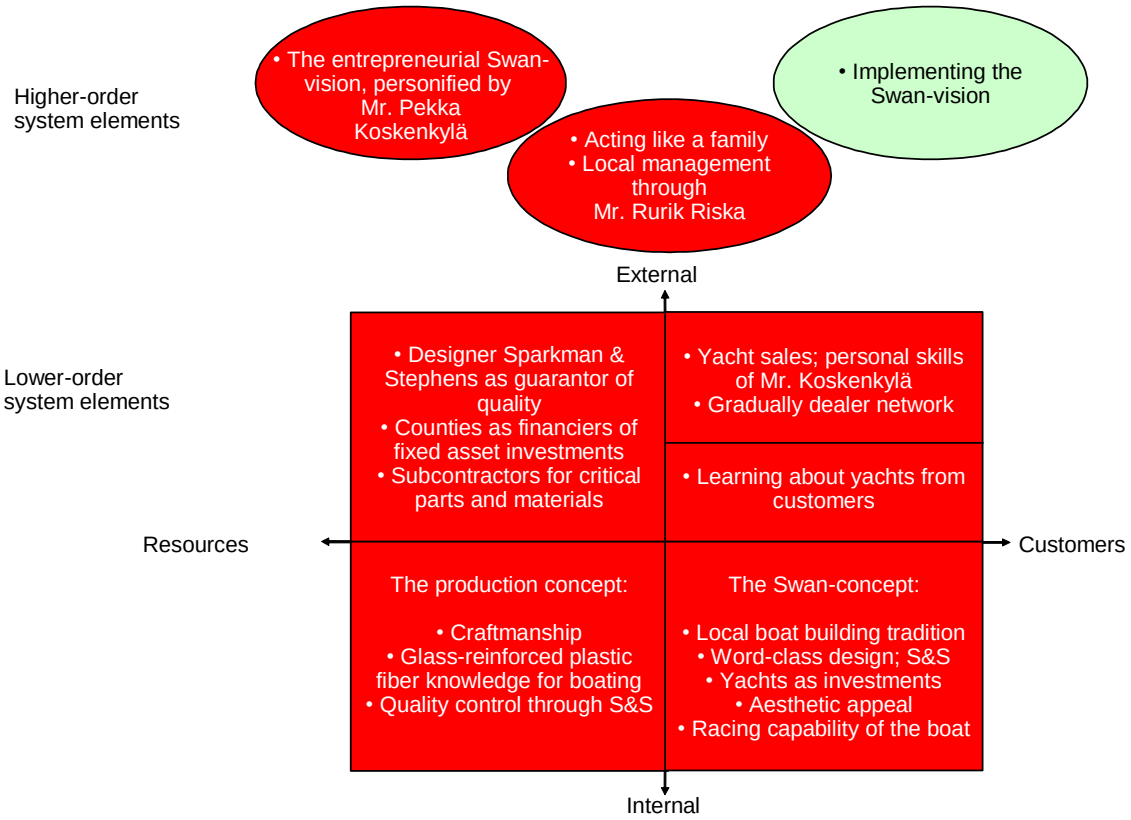


Figure 2. Initial Nautor capabilities; 1966-1972 (most critical components in red)

The new owners were worried about the financial situation of Nautor. The focus of the new managing director, Jens Rudbäck, was therefore on streamlining production, ordering and construction processes. Unfortunately this meant that Nautor gradually became a bureaucratic organization, which was only trying to further improve the creation of Koskenkylä. However, the initial success still provided Nautor with momentum. The victory by the Swan 65-footer Sayula II in the first Whitbread race in 1973-74 was followed in 1978 by having three Swan 65s among the top five in the second Whitbread race. In 1978 Nautor, then employing 400 people could therefore still be seen to be a front runner among the world's builders of ocean racing yachts. But the success was very much based on the ideas and the work that Koskenkylä had laid out for Nautor much earlier.

Rudbäck was replaced with Olle Emmes as managing director in 1982. He took over a company with 400 employees and sales of $20 million. Emmes tried to make Nautor more market led by building a smaller range of products, but with many more variations that could be tailored to the needs of the market. However, during the leadership of both Rudbäck and Emmes Nautor did not initiate any major business model innovation on top of the original ideas that had been generated by Koskenkylä. Based on the number of employees the company actually shrank during the period 1972-1998. The "bureaucratic" culture was politely described by Nautor's chief designer German Frers as "conservative". Nautor primarily leveraged those capabilities that had already been developed in the entrepreneurial stage, 1966-1972.

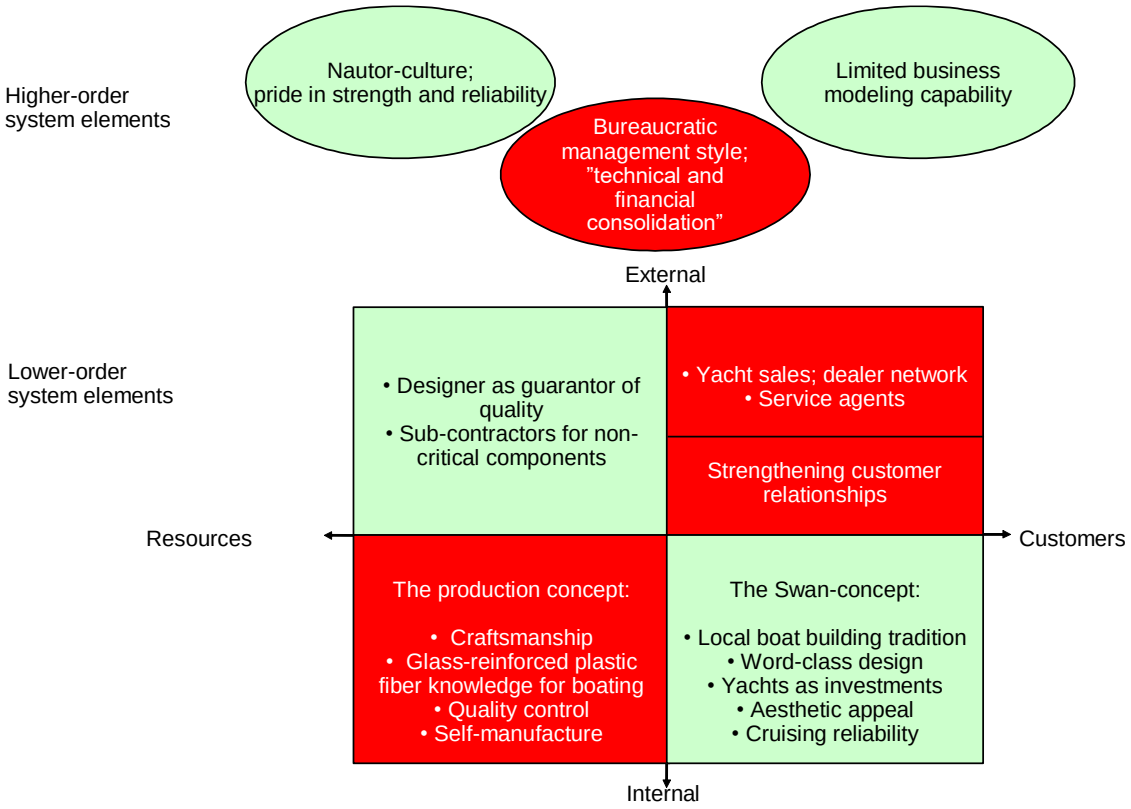


Figure 3. Nautor capabilities; 1972-1998 (most critical components in red)

In April 1998 it was announced that Nautor had been bought by a private consortium of Swan owners. The investors were led by Leonardo Ferragamo, of fashion group Salvatore Ferragamo Italia, and Peter Fazer, chairman of Finnish confectioners Fazer Group. Both were long-standing Swan owners – Ferragamo owned a Swan 68 and Fazer sponsored the Swan 651 Fazer Finland in the 1985/86 Whitbread round-the-world race. Now they became owners of a company employing 325 people with a turnover of €27 million, and a very loyal customer base.

Initially Peter Fazer was elected chairman of the board, but his untimely death months after the purchase, meant that Ferragamo became the chairman of the board with his first goal to improve Nautor's efficiency. Luciano Scaramuccia was appointed as new managing director. He had previously been a senior manager at Italian yards such as Azimut-Benetti and Perini Navi.

Scaramuccia got the responsibility to secure the continuity at Nautor, and at the same time address the problem of financial underachievement. His conviction was that Nautor should stay in Finland, but that the skill base would have to be expanded and flexibility would have to be increased. Therefore one of his first measures was to develop a network of small local subcontractors in order to be able to increase its production flexibility.

A new element brought in by Scaramuccia was to treat each individual yacht as a project, with a single person responsible to shepherd the boat through the construction process, all the way until the day the new owner accepts delivery. This approach was also better supporting the strategy of using more sub-contractors. Previously the building of a Swan was accomplished with each part of the boat as a separate responsibility.

Nautor had in the 1990s done little to capitalize on the name that gained fame by winning the first Whitbread around-the-world race in 1974. It continued to produce everything in-house, which did little to encourage innovation, while German Frers, the world-class designer and Swan's long-time stylist appointed in 1980, grew frustrated at not being able to use new materials and technology to produce the sort of sleeker, lighter boats that rivals were creating. The new owners were impressed by the quality and craftsmanship of Nautor, and realized that combining this with Ferragamo's experience and relationships from the fashion world could radically improve the performance of the company. As Scaramuccia put it, the people in Nautor were not very good at marketing themselves. Under the previous management Nautor had became quite inward looking, and was not really aware of the potential that existed around the company. The new ambition was not only to follow the trends, but to once again become an active trendsetter. Nautor also aggressively tuned to outside suppliers to address the ever-growing demand for new technological features of the sailboats of the most demanding customers asking for both top performance and high comfort. Titanium fittings and carbon masts were examples of new technology brought into the new models introduced by Nautor.

The product range was expanded into bigger and even more extravagant yachts. Previously 60-footers used to mark the top end of the Swan's range, Nautor now offered 80-, 82- and 112-foot models, and was contemplating a 160-foot craft. And for customers willing to sell out the €4 million plus it costs for a 82-footer, Nautor would customize much of the boat, whether it was personalizing the layout of the deck and interior or adding touches such as finishing in hand-rubbed Burmese teak. To further strengthen customer loyalty Nautor was also extending its after sales services and community building efforts through its ClubSwan program, which offered to its members access to valuable services and products.

The need for larger yachts meant that the production outlets in Kållby suddenly became a bottle neck. All completed yachts had to be transported from the factory to the harbor on a truck to be launched at a dedicated facility some 10km away in Pietarsaari. The Swan 112 already pushed the capacity of both hauling trucks and the Finnish state highway system during its delivery. So in 1999 the planning began for new and larger waterside premises, big enough to produce Swans 150 feet long. This new factory called the Boat Technology Center was built in Pietarsaari.

In 2002 Nautor had a turnover of €82 million, and the order book had grown by a multiple of five since Leonardo Ferragamo bought the company in 1998. One reason for the rapid growth was that Nautor in four years had launched nine new models, of which Swan 112 was the largest. The Swan 45, introduced in May 2002, was the first attempt to apply a standardized modularized

concept enabling Nautor to produce the Swan 45 in only 14 days. By September 2002 Nautor had already sold 30 of the $582 000 Swan 45s.

The new Nautor management in many ways reintroduced the sprit that Koskenkylä originally installed into the company. In the early days Rod Stephens personified the external capabilities that had to be mixed with the longstanding boat building tradition of Nautor. Under the Italian leadership it was not about finding one single actor to interact with, but the question was to introduce a more open corporate architecture in general (See Figure 4).

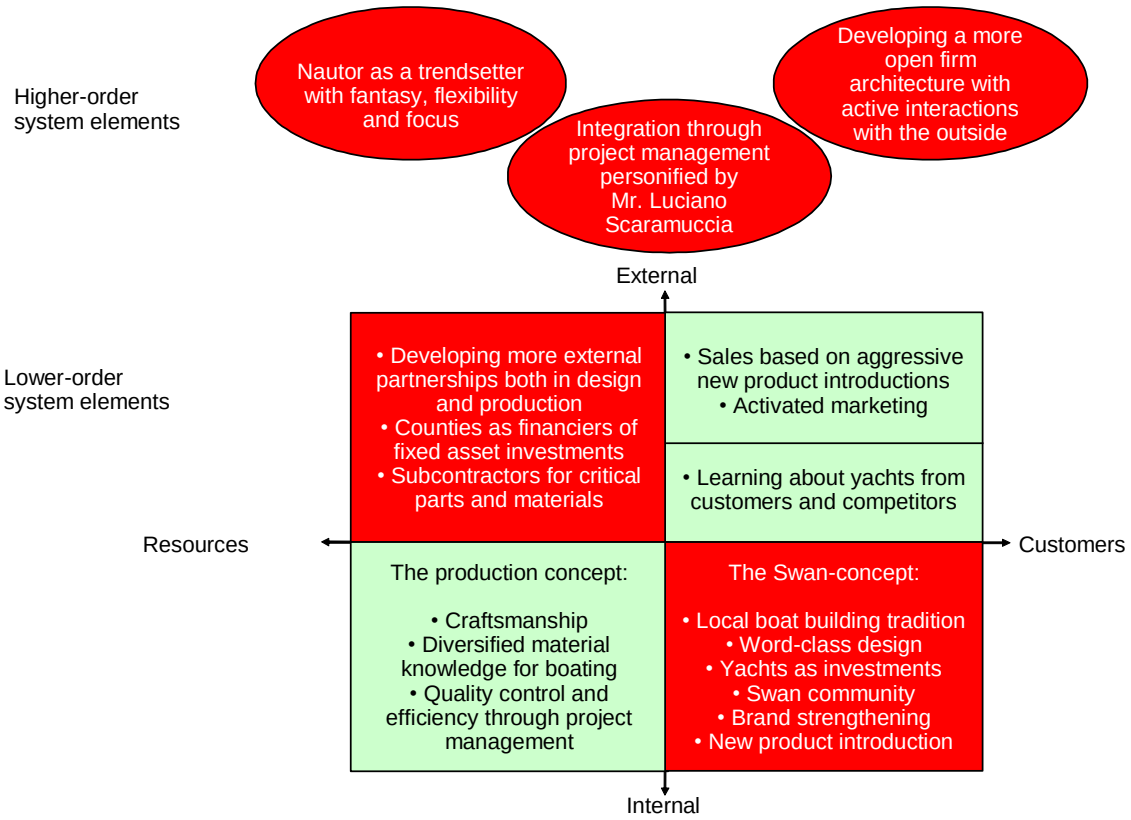


Figure 4. Nautor capabilities; 1998 -- (most critical components in red)

3 Strategic management in a regional context

3.1 The regional implications of the Nautor development [4]

When setting up Nautor in 1966 Koskenkylä had identified the market potential for a disruptive technology[5], fiberglass, as a material for mass produced luxury yachts. He recognized that he had to enter the market with a visible brand, the Sparkman & Stevens designer. He could see that the access to highly skilled labor could be efficiently arranged by inviting the counties to become sponsors for building premises needed for production. In five years he went from scratch to become the biggest yard in the world building offshore yachts from 40 feet upwards, having over 300 employees, and operating from three factories. His vision had been implemented and he had established himself as an impeccable salesman. Good financial performance was the only element missing, partly due to the impact of the disastrous 1969 fire. What is striking is that he also was able to maximize the benefits from combining two sets of skills: the production knowledge of the local workforce with the design and marketing knowledge of Sparkman & Stephens in such a way that a mutually reinforcing positive development process took place.

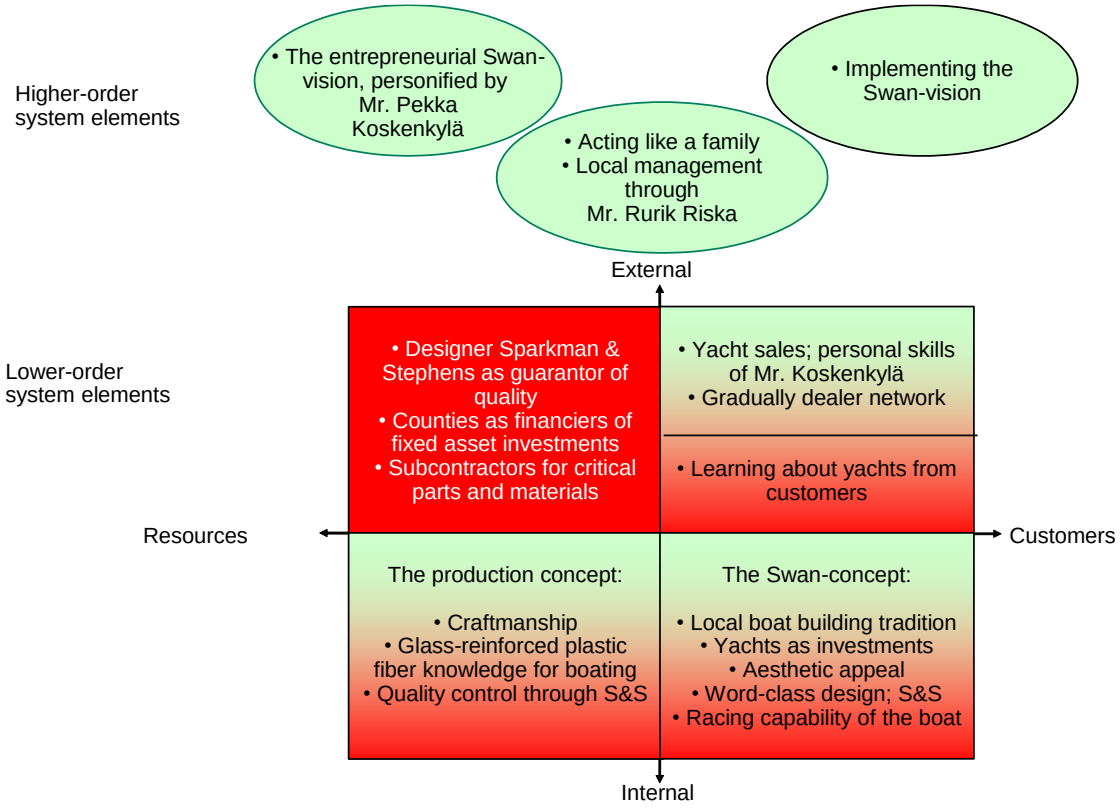


Figure 5. Local (green) versus addressed (red) capabilities in the initial phase

[4] Sources used for this section include a multitude of articles, material provided by Nautor, and several discussions with individuals involved in boat building in Ostrobothnia

[5] Christensen, C.M, 1997. The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail. Harvard Business School Press.

One striking feature of Nautor is that the vision of Koskenkylä retrospectively proved to form the basis for a very sophisticated and also very successful strategy. Koskenkylä had identified his own strengths and weaknesses, and then in a skilful way put together complementary capabilities that were enabling the implementation of his ambitious vision.

In many ways the boatbuilding tradition in the area of Pietarsaari formed a dormant pool of resources and knowledge, which was exploited very skillfully by Koskenkylä. However, this knowledge pool would not have become productive knowledge, if it had not been for the successful combination of this knowledge with the complementary knowledge of the well established and networked Sparkman & Stephens design office. The talent of Koskenkylä enabled the facilitation of the successful marriage of these two elements. On top of this Koskenkylä was himself providing the necessary sales skills to get this new endeavor started.

The regional decision makers initially just provided financial support. The local decision makers, short of investment alternatives, were happily responding to the requests from the visionary and undoubtedly successful young entrepreneur. So for Koskenkylä two regional factors enabled his success: (i) the existence of the local knowledge, which in many ways also was the main trigger for his entrepreneurship, and (ii) the support in the form of financial back-up for the premises in Pedersöre, Kronoby and Larsmo.

From the regional perspective it is worth noticing that what was initiated by Koskenkylä did create spill-over effects quite early. In 1973 a break-away team of Nautor workers formed Baltic Yachts, which has grown to become a well recognized player in the world of producing large one-off high performance cruisers up to and over the 200-foot range. In the year 2003 this company employed 130 people.

The formation of Baltic Yachts may also be seen as a counter reaction against the direction taken by the new management of Nautor in the 1970s: focusing on financial stability and creating a "predictable, efficient production enterprise", fulfilling the demand that had been created by the racing successes of the Swan yachts. The way management attacked this was to bring more and more of the activities in-house. The word "self-manufacture" is describing this clearly. Consequently management also reduced the amount of interactions with the external world. This meant that there was a less active flow of new ideas. The development therefore became "more of the same" instead of bringing in something radically new.

At the same time also the interaction between Nautor and the regional decision makers diminished. The premises needed had been established already in the early 1970s, and during 25 years the number of employees did not grow. On the contrary during difficult times the company had to make personnel redundant or at least from time to time introduce part time redundancies.

The emphasis in doing most of the thing themselves was partly driven by the negative experience from facing late deliveries of critical supplies in the early years. But it was also a shift in approach reflecting the different background of the new management.

Both Rudbäck and Emmes were less international in their own experience compared to Koskenkylä. It is also important to understand that neither Jens Rudbäck nor Olle Emmes did have the natural gift to engage in creative and visionary dialogues in the way that Pekka Koskenkylä e.g. had convinced Rod Stephens in the first place. Therefore it was a natural

decision to increase the relative importance of activities carried out “at home”. So it was stressed that an increasing amount of the design activities were also handled by the design team in Nautor, and that meant that the role of later designers Ron Holland and German Frers was much more restrictive, than the role Rod Stephens originally had. From a regional development perspective the paradox is that by concentrating more on doing everything on one’s own, within the context of the region, in fact the potential for regional development decreases. The rapid early development was to a large extent fostered by the very active interaction between the local people and the external experts, be them Rod Stephens, Bill Emery of US agent Palmer Johnson or demanding new clients that Pekka Koskenkylä was prepared to serve, without primarily looking into how it affected the production costs.

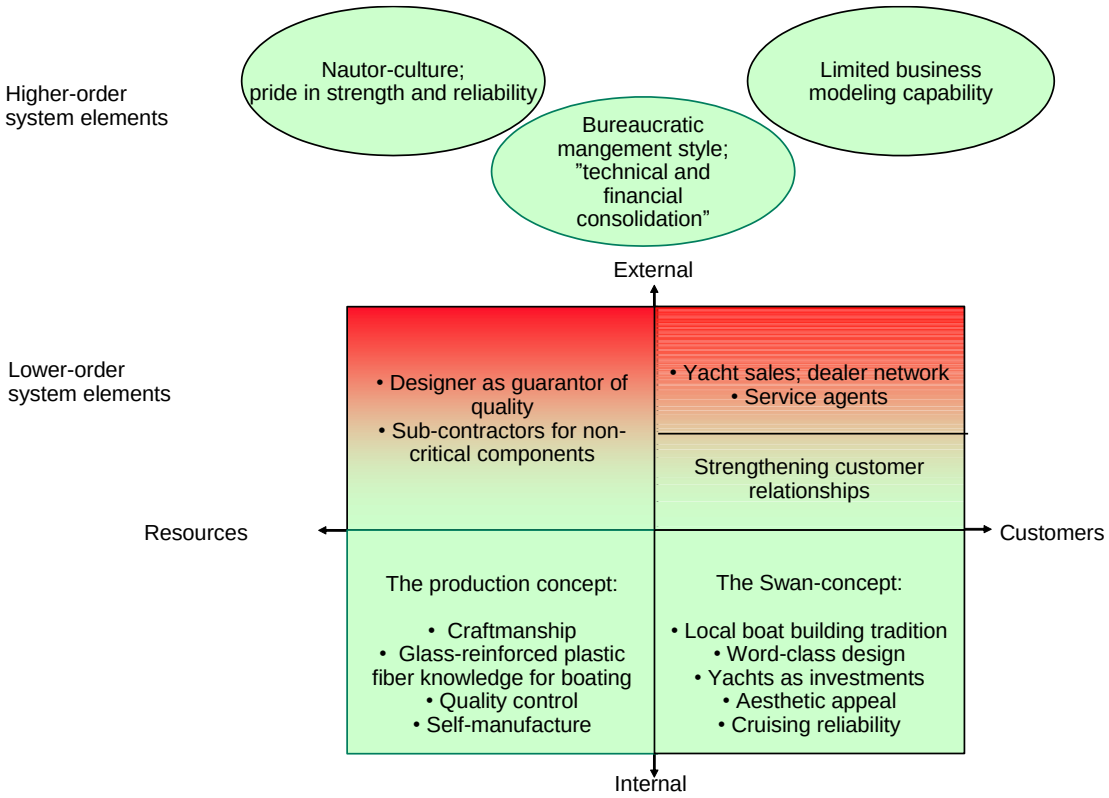


Figure 6. Local (green) versus addressed (red) capabilities 1972-1998

In 1998 the new management under the leadership of Leonardo Ferragamo and personified locally through the new managing director Luciano Scaramuccia reversed the focus from doing everything in-house into again opening up for more collaboration. Koskenkylä originally had been forced to collaborate due to the lack or resources and capabilities to carry out certain activities on his own. Scaramuccia saw the networked model as a means towards higher flexibility and productivity but also as a prerequisite if Nautor wanted to grow more aggressively.

The network approach was also welcomed by the regional decision makers, and in the autumn 2000 a quite large delegation of small suppliers for the boat building industry participated in Interboat 2000 in Viareggio in Toscana, Italy, the home region of Scaramuccia. Lead by the local chamber of commerce, the initiative aimed at broadening the international awareness of also smaller enterprises in the boat building sector. The initiative had been precluded by a smaller group of Nautor suppliers making a trip to Viareggio already in 1999, lead by Scaramuccia.

The Italian fashion-industry experiences were applied to make Nautor more competitive. What was understood was that Nautor had to be able to rapidly adapt to changes in the preferences of customers, and add external capabilities to the pool of local resources to become more competitive. This type of value creation asked for considerably more efforts in the management of external resources. The rapid pace of introducing new products meant that new co-ordination capabilities had to be added. Nautor's new project based management model could be applied both for internal product development efforts and for deliveries to customers. Even if these projects were different ventures, their overall need for clear responsibilities were similar.

The case of Nautor developing its "orchestration capabilities" (see Appendix 2) included both leveraging of existing capabilities and building new ones. What Leonardo Ferragamo was doing was by his Italian business colleague Domenico De Sole, CEO of Gucci Group described as "evolving a modern boat design but maintaining the beauty and tradition of Swan". Examples of leveraging were the introduction of the Swan 45, a new more efficient "lower-end" offering, and the strengthening of Nautor's customer interactions through the revitalization of the annual Nautor's Swan Cup, and other races for the Swan owners.

The new ownership returned to look for the local authorities to actively support the development of the firm. In April 2000 it was announced that the city of Pietarsaari had accepted to join the development of a new boating centre, BTC (Båtbranschens Teknologicentrum), in the Pietarsaari harbour area, including the construction of a large construction hall that would be able to handle the manufacturing of Swan yachts up to 200 feet. The new centre was inaugurated in October 2002. The centre also provided a node for the sub-contracting network. The 45-footer was manufactured through a network of five key sub-contractors: Riskas Snickeri, Marino, Dahlins Båtar, ABB and Cozmoz. This way Nautor could both cut lead times and increase flexibility. The members of the subcontractor network had agreed that the Nautor generated revenues should not exceed 50 % of the member's turnover.

In the year 2002 the Nautor organization was reorganized whereby Scaramuccia became vice-president for the whole group, with specific focus on improving the sales network. New plant manager for the Finnish activities became Simone Marconcini. The responsibilities he had to take over included a workforce of 350 employees in Kållby, 70 in the Kronoby facility and another 100 people in the new BTC-premises in Pietarsaari.

Marconcini was pleased to move to Pietarsaari, even if never before had visited the Nordic countries. For the summer he brought his wife and daughter at two and half years, which he was happy to put into an English kindergarten. He praised the security of the society and the quality of life that Pietarsaari could offer. During the winter his family was staying in Genoa, where he was able to spend four days a month with them.

In spite of the leveraging efforts the major reasons for the successful turnaround of Nautor 1998-2002 seemed to be the capability building that took place under the new leadership. The major contribution is cited to be the injection of "luxury-goods marketing savvy" into Nautor and the Swan brand. Examples of this are the full-page editorial article in the Business Week and a favorable article in the Financial Times. This way Ferragamo and Scaramuccia infused Swan with new excitement and cachet, which affected the "higher-order systems elements" of Nautor, or the way how the whole company was managed and how it worked. As Figure 7 shows the

original strong capabilities were still important, but in addition to improving the product, production and sales strength the introduction of new capabilities was necessary when shifting from a product focus to more emphasis on working in a networked context, i.e. applying an "orchestration-type" of business model.

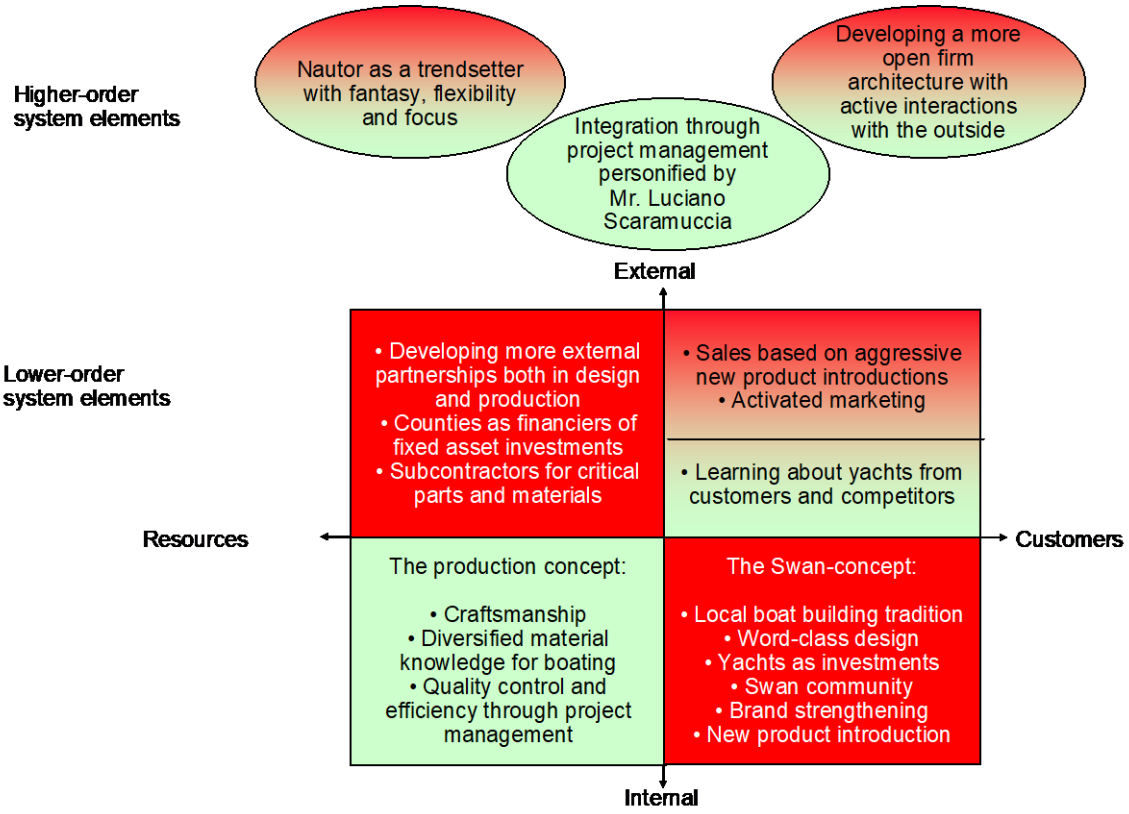


Figure 7. Local (green) versus addressed (red) capabilities 1998 --

The development of boat building in Ostrobothnia has converted and developed individual skills into world class capabilities. In 2003 there were around 70 companies directly involved in boat building in the region. The export revenues from this industry were in excess of €200 million. The chamber of commerce and its chairman Bengt Jansson have been key actors in gradually bringing these entrepreneurs together and strengthening the networking among the firms.

In 1999 under Jansson's leadership a study was carried out to investigate which the main areas for development would be. By interviewing representatives from 48 of the firms in the boat building sector it became evident that marketing was the single weakest part of the sector. In this respect the infusion of marketing skills into the region based on the role of Ferragamo was an immediate benefit not only to Nautor, but to the whole region. Jansson therefore very actively engaged in the process of establishing good contacts between Nautor and the other boat building companies in the region. In addition to that he was also instrumental in forging the links between the boat builders in Ostrobothnia and their counterparts in the Viareggio area. The outcome of this was that the existing boat building capabilities in the region, which are a scarce resource, were successfully combined with unique marketing and networking capabilities of the Viareggio area, another scarce resource. This combination primarily strengthened Nautor, but also had spill over effects that benefited other companies in the region.

Historically the development of boat building in Ostrobothnia has witnessed a virtuous circle of capability development: existing resources in the form of the regional boat building infrastructure has been systematically combined into organizational capabilities (in firms like Nautor and Baltic Yachts), which in turn have been further strengthened by the infusion of new knowledge through key knowledge holders (like Rod Stephens, German Frers, Luciano Scaramuccia, Leonardo Ferragamo, etc.). This in turn has enabled the building of additional regional infrastructures, like the Boat Technology Center. In the latest phase of this development the speed has been increased considerably by having the local Chamber of Commerce as a regional actor orchestrating the interaction between the different actors. What is worth noticing is that a large part of the "knowledge infusion" has come through individuals that not have moved to the region, but have been actively seduced to support the knowledge development of the region (like Rod Stephens, German Frers and Leonardo Ferragamo). Based on this there is a need to thoroughly rethink the notion of regional attractiveness. The crucial point is not to physically attract people to stay in a region, but to make sure that the critical knowledge is addressable. In the case of Nautor it has been able to address critical knowledge without having individuals to move permanently to Ostrobothnia. In light of this experience it could be stated that a regional actor can foster competitiveness on three levels:

1. Providing physical resources and infrastructures supporting knowledge development.
2. Attracting and supporting individual companies and groups of companies, or fostering networking to attract addressable capabilities and knowledge, in order to develop the critical capabilities of the industry.
3. Supporting the local talent pool of individuals, both through direct skill enhancing activities in the form of education, and indirectly by providing the individuals with an attractive living environment, that both attracts individuals, and provides the context for creative and productive work

How this has played out in the case of boat building in Ostrobothnia is illustrated in Figure 8.

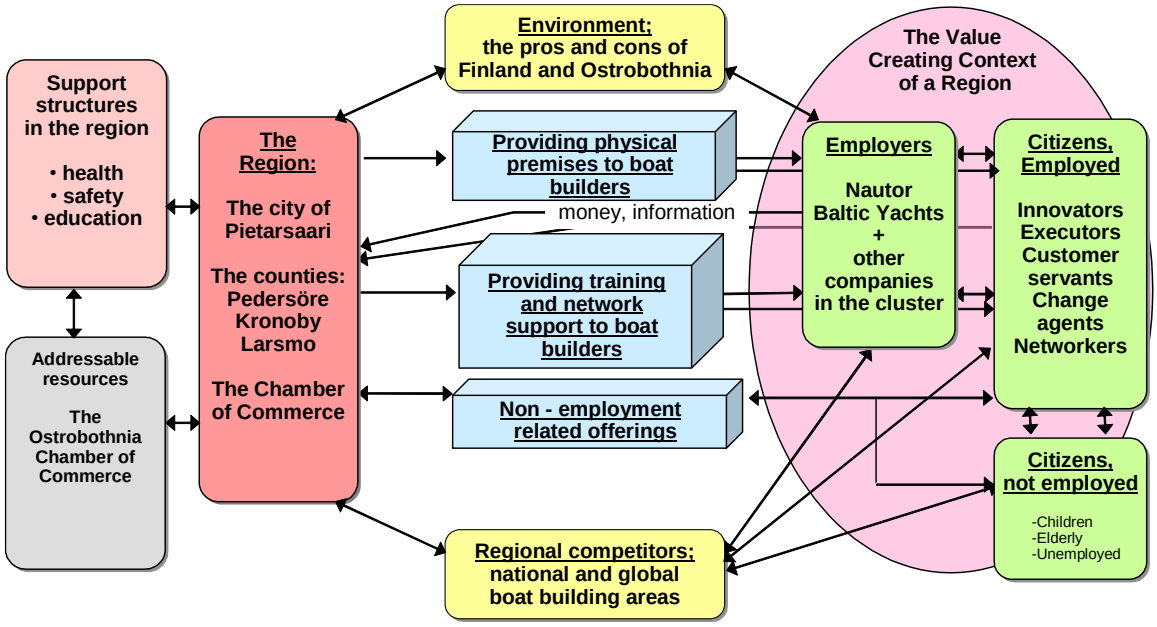


Figure 8. Boat building in Ostrobothnia; elements of regional competitiveness

The implications from the boat building case in Ostrobothnia can be summarized as follows:

1. Regional competitiveness has to be based on some resources (including capabilities) that exist or can be developed in the region in such a way that firms can exploit these resources for building successful businesses.
2. Capabilities forming the basis for competitiveness are dynamic in their nature and have to be constantly upgraded and thus approached from an evolutionary perspective.
3. The firms in the region may need to have access to capabilities outside the region in order to be to continuously update their own capabilities to remain competitive.
4. A regional actor, like the Chamber of Commerce, or the City can nurture the capability development process by providing different forms of support:
    a. Providing resources and infrastructures.
    b. Actively supporting and attracting relevant employers to the region.
    c. Developing an attractive living and learning environment for its inhabitants.

3.2 Regional competitiveness; established frameworks

There are two pieces of research that have greatly influenced the Finnish discussion regarding regional competitiveness. Porters work on international competitiveness[6] took its origin in a particular industry and used the findings to develop a view of competitiveness of nations, seeing the industrial clusters as the key unit of analysis. Florida[7], who in turn introduced the notion of the "Creative Class", used among others Austin, Texas and Dublin as examples of cities that have been successful "Creative Communities". However, both these authors have not escaped without criticism. One country that used Porter as a consultant in the early 1990s was Portugal, and recently it was reported that limited practical benefits came out from this assignment[8]. Florida's somewhat populist argument that Dublin has a vibrant cultural and music scene alongside a rapidly growing high-tech industrial sector is less convincing in the light of the quite serious problems faced by the present Irish IT-sector problems[9].

In spite of the criticism of the above mentioned two perspectives, their significant contribution to our understanding of regional competitiveness is important, and therefore both will here be exemplified by providing two illustrative analysis, a country analysis of Sweden, using the cluster perspective of Porter as the basis, and an analysis of the Irish software sector making reflections based on the ideas presented by Florida.

The competitiveness of Sweden

Porter approaches the competitiveness of nations by analyzing individual industries and competitors and builds this up to the economy of a nation. He argues that a particular industry is where competitive advantage is either won or lost. His point of departure for the extensive research documented in "The Competitive Advantage of Nations" was to be able to answer the question why a nation does become the home base for successful international competitors in an

6 Porter, M.E. 1990. The competitive advantage of nations. The Free Press.

7 Florida, R. 2002. The rise of the creative class. Basic Books.

8 Financial Times. October 7th, 2003. Special Report Portugal. Austerity measures aim to close EU gap. Pp. 4-5.

9 Lawton, T.C., Innes, P.A. 2003. Institutions and institutional engineering: a study of the Irish software sector.

industry. Or put somewhat differently, why firms based in a particular nation are able to create and sustain competitive advantage against the world's best competitors in a particular field.

When combining the nation perspective with the one of the firm, Porter concludes that the principal economic goal of a nation is to produce a high and rising standard of living for its citizens. The ability to do so depends on the productivity with which a nation's resources (labor and capital) are employed. It depends on both the quality and features of the offerings (which determine the prices they can command) and the efficiency with which they are produced. Productivity is thus the prime determinant in the long run of a nation's standard of living, for it is the root cause of national per capita income. Therefore the only meaningful concept of competitiveness at the national level is according to Porter national productivity.

To be able to address national productivity one needs to focus on the specific industries and industry segments that form the aggregate of the nation. Porter introduces four broad attributes of a nation that he argues shape the environment in which local firms compete and that promote or impede the creation of competitive advantage:

1. Factor conditions. The nation's position in factors of production, such as skilled labor or infrastructure, necessary to compete in a given industry.
2. Demand conditions. The nature of home demand for the industry's product or service.
3. Related and supporting industries. The presence or absence in the nation of supplier industries and related industries which are internationally competitive.
4. Firm strategy, structure, and rivalry.

These four determinants he calls the "diamond". In additional to the four determinants he adds two more elements that influence the evolution of the diamond: chance and government actions. The basic unit of analysis for understanding national advantage is the industry. Nations, according to Porter, succeed not in isolated industries, however, but in clusters of industries connected through vertical and horizontal relationships. In addition to the diamond Porter also raises the importance of the role of social and political history and values in influencing economic success. He sees cultural factors as important because they shape the environment facing first; they work through the determinants, not in isolation from them. Social and political history and values create persistent differences among nations that play a role in competitive advantage in many industries.

Using this model Porter then presents the findings from ten different nations, one of which is Sweden. Typical for Sweden is that the exports are very concentrated in large firms; twenty largest multinationals accounting for more than 40 percent of total exports (1986 figures). One reason for the dominant position of large companies is that Sweden was a major beneficiary of World War II. Neutrality preserved Sweden's industrial base, and Swedish firms were able to gain important international positions in serving the post-war demand for industrial goods. The Swedish government has also been very supportive in its relationship with industry, particularly the large, established Swedish multinationals. The problems of small enterprises have at the same time received less attention.

The list of industries where Sweden has a large share of total world exports contains many natural resource-related industries. Coexisting with these there are also a wide variety of machinery and mechanical industries. In total Porter identifies five major clusters for Sweden:

1. transportation (cars, trucks, ships, engines)
2. forest-related industries (timber, pulp and paper, chemicals connected to pulp and paper)
3. ferrous metals and fabricated metal products (products related to mining, furnaces, rolling mills and rolls, tools)
4. health-related products
5. telecommunications

Porter notices that Sweden had virtually no international position in consumer packaged goods of any type and a weak overall position in consumer goods. (However since this study was made, the successes of Hennes & Mauritz and IKEA may somewhat change the conclusions if 2003 figures would be used.) Porter continues that Sweden's ranges of internationally competitive industries are quite narrow, but its position in sectors is deep. He also puts quite an emphasis on the Swedish human resource conditions, and the (from an American perspective) unusual wage structure. The system for so-called solidarity wages means that Sweden has lower wages than some major competing nations in a number of industries. This combined with a high level of education, a common language, common religion, and an identical school curriculum nationwide, yields a well-trained workforce with the ability to work closely together. R&D (Research and Development) cooperation within clusters is also strong in Sweden, and R&D spending as a percentage of GDP (Gross Domestic Product) is high. What also is important to notice is the enormous Swedish state sector (in 1986 the public sector employed 31 percent of the workforce). At that time government monopolies controlled health care delivery, child care, and many other services. (Part of these services has now been deregulated.) Because of this private demand for many services have been eliminated, creating a situation where Sweden has few international service firms. In addition, because of the large public sector government is also a major buyer of many products and services.

The clustering of Swedish industries is very developed. The Swedish context has made mechanisms that make interchange and information flows within clusters particularly effective. The flip side of this is that Swedish society values cooperation and being part of the group. Because Sweden is a relatively small country, many Swedish executives know each other, went to school together, or served in the military together. Swedes can be characterized as cooperative and loyal to the company. Swedish companies are conservative, disciplined and based on trust. Leaders are nondirective but respected. (This has lately been questioned because quite a number of scandals relating first to ABB and Percy Barnevik, and recently to Skandia have been occurred.) Swedish firms are also very open to internationalization, because they have relatively small home market for many of Sweden's specialized goods as well as the long distances to markets.

One feature that stroke Porter was that there were many international industries where there were only one significant Swedish company. Examples include car carriers, refrigerated ships, telecommunications equipment, roller bearings, mining machines, and a variety of others. Mergers had led to domestic monopolies. A similar observation is that Swedes are taught to cooperate, not compete. This was by Porter seen as beneficial in vertical relations and interactions with related industries, but eliminated the spark of conflict so necessary for some important types of innovation. One general conclusion Porter therefore makes is that Sweden does not seem to succeed in industries that demand rapid responsiveness and frequent product changes. Sweden

appears to have difficulties to compensate for the absence of active domestic rivalry. (Here one could argue that the recent EMU-referendum indicated that this attitude still prevails.)

In his concluding remarks about Sweden Porter noticed that Sweden illustrated a nation in which some deliberate policy choices and some national values (such as egalitarianism, a profound concern with social welfare, cooperation instead of competition, and a major role for the state) may be becoming inconsistent with the imperatives of further economic advancement. He said that Sweden's challenge was to avoid a drift that may lead eventually to a lower relative standard of living. Even if the Swedish government cannot by itself be the solution to the problem, he said that it had a tendency to seek too large a role. For example the looming government role in the services sector constrains consumer choice and blocks new enterprise formation. He therefore strongly argued that resources should be redeployed away from the public sector if the Swedish economy was truly to advance.

Comparing the picture portrayed by Porter in 1990 with the story about Stockholm in the Newsweek article in February 2000 presents a quite different Sweden. The future described in Newsweek was seen as highly promising due to the possibility to combine two key information technologies: wireless communication and broadband. Sweden, one of the most wired and most wireless countries in the world, was by technology forecaster Paul Saffo labelled as the most advanced consumer test-bed on the planet – far ahead of the rest of Europe and the United States. Stockholm in turn was described as a Scandinavian Seattle – a place where a new mood and new money had energized everything from design to music. Prime Minister Göran Persson proudly stated that Sweden was starting to deliver. The measures taken in the 1990s had included the deregulation of the credit and currency markets, a reform of the tax code, the joining of the EU in 1995 and subsequent tightening of budgets, tweaked welfare system, privatization and deregulation.

The reason for Stockholm seeing the burst of Internet innovation take off was in Newsweek by Paul Saffo, director of the Institute for the future in Menlo Park, California described as follows:

> "Sweden is a small place, and people know each other and are always bumping into each other. In Sweden everyone graduates from one of a relatively small number of schools, and lives and works in close proximity. Sweden also has high computer usage and a technology-inclined populace…The real reason that Sweden took off has much more to do with initial conditions. Its citizens have always been open to trying new technologies. It has always had comparatively low-cost communications even back in the monopoly days, and those costs got even cheaper when deregulation began in the late '80s."

Almost four years after the peak of the Internet boom Sweden is again internationally in the limelight. This time the reason is different. In a closely watched referendum Sweden decided to say no to the Euro, and three days before election the murder of Anna Lindh raised serious questions about the status of the "Swedish way". In a presentation in Helsinki in the end of September 2003, Göran Collert honorary chairman of Swedbank, one of the four major Swedish banks, was presenting a quite pessimistic outlook for Sweden. However, the initial reaction upon the results of the referendum has not been that dramatic, and some observers say that the decision actually could have been good for Sweden, as it now forces the government to deliver on its promises of increased attention to competitiveness. Continuing with its own currency means that the progress of Sweden will be much more transparent, and the actions to be taken will also be closely followed by fellow countries in the EU.

The Irish software sector

The argumentation presented by Porter is that from a national competitiveness point of view the focus should be on clusters. Based on his findings clusters are often concentrated to a certain area in a country, which means that the natural level to stimulate clusters is on the regional level. At the same time he however takes a quite reluctant stance to the possibility of governments to greatly influence the development of the clusters, other than providing general infrastructural conditions like stimulating education and training, supporting investments in science and technology, providing good transportation, logistics and telecommunications, developing efficient mechanisms for allocation capital, and expanding the stock of information available to firms. However, as the discussion on targeting shows, most regional decision makers are not satisfied with this relatively superficial level of intervention, but they want to go more in depth into the issue of how to stimulate productivity. One possibility is that the government intervention is focused on the industry-level, and it attempts to use policies that strengthen the development of a network at the organization-level. Exactly this was the ambition of the Irish government in its efforts to support Ireland's globally competitive software industry. The material presented in the following is based on the study by Lawton and Innes.

Lawton and Innes relates to the way Ireland has acted as a proactive type of government intervention. Such an intervention has a number of key characteristics. These general factors include:

- A government's use of purposeful strategies.
- An organizational focus.
- Emphasis on the relationships between key organization actors.
- Ambitions to provide the infrastructure for subsequent network development.

Proactive interventions focus on providing information relevant to the organization as a singular unity. They engage the structure of relations between organizations, and while focusing directly on information dissemination, they indirectly build on key relationships between organizations. How this played out in the Irish software industry is illustrated below.

Ireland has since the early 1980s emerged as a hotbed of software development activity. Many of the world's leading software companies have established operations in Ireland. In total in 2003 there were more than 800 international and indigenous software companies located in Ireland, employing over 25 000 people and generating a combined turnover of IR£6bn. Ireland has attracted one-third of all US electronics investment in the EU. One-third of all personal computers sold in Europe are manufactured in Ireland. Microsoft's Dublin operation alone accounts for four per cent of Irish exports. The indigenous sector employs more than 11 000 people and generates revenues about IR£1bn. In total, the software sector in Ireland is responsible for nearly 8% of Ireland's GDP and 10% of its exports.

The analysis of Lawton and Innes reveals that there are at least 250 local Irish companies engaged directly in the development of software product, more than half of which have been set up since the beginning of 1999. The birth of many of these companies is more a result of spin-offs from later-stage successful indigenous companies and from campus companies than from the many international companies that have operations in Ireland. Over the last ten years seven Irish indigenous software companies have listed on the public markets: SmartForce (e-learning), IONA

Technologies (middleware), Baltimore Technologies (network security), Trintech (payment technologies), Riverdeep, Pathus and Datalex. With 5 000 employees and a combined annual turnover of over IR£500m these seven companies alone account for half of the indigenous revenues. In spite of these success stories, home firms account for only 15% of the total revenues generated by Ireland's software sector. Moreover, the multinationals tend to use Ireland as a base to export software developed elsewhere so little of the value generated trickles down to local software firms.

The roots of the development of the Irish software sector go back to the educational reforms of the 1960s and the highly educated generations that were produced in the subsequent decades. A further factor in the success of the Irish software sector stems from the low corporate tax regime, which has proved particularly attractive to multinational corporations.

Under the policy constraints of the 1980s, overseas firms in Ireland had to be classified as manufacturing rather than service firms if they wished to obtain support from the Irish government, e.g. Microsoft had to manufacture disks in Ireland in order to qualify for assistance. The reasons for this anomaly lay in first, corporate tax rules that required proof of 'tangible substance' in the output of companies; and second, governmental reluctance to assist service sector companies (arguing that the wealth creation value was intangible). From 1981, a statutory instrument identified ten service sectors that government could support. Software was one of these sectors. The objective was to identify winners but only in the context of what was already occurring through market selection and forces in international business. Irish policymakers saw software development and data processing as emerging businesses in Ireland with high growth potential. During the years 1981-97 the Irish government pursued a targeted, preferential policy regime. In 1997 a new regime was mooted, and current government policy does not target sectors or provide preferential treatment for any industrial areas.

The Irish industrial policy in the 1960s and 1970s was criticized for supporting foreign MNCs and was less interested in the promotion of indigenous Irish companies. An influential report produced by the National Economic and Social Council in 1982 initiated a series of changes that has increased the attention of the government on the indigenous companies.

The recent Irish industrial policy can be considered as 'state interventionist but with a hands-off approach', which encapsulates the apparently contradictory nature of Irish industrial policy. An example of government proactivism: In the late 1990s, Chris Horn, founder of Iona Technologies, one of Ireland's largest software companies, led an inquiry into the state of the labor market in the IT sector. He concluded that the industry was heading for a labor shortage unless large-scale supplies were found. The Irish Government immediately announced that it was quadrupling the number of degree places in computer science from 400 to 1 600 over the seven years to 2004. The rules on immigration were also eased to facilitate the entry of IT engineers from abroad. FAS, the government sponsored training agency, also began to host overseas job fairs.

The impact of the recent technology crash has highlighted the fragile nature of many of Ireland's early-stage software companies. Lawton and Innes estimate that there is a need for IR£1bn in external funding over the next two years if the whole sector is to be kept alive. When studying how the Irish software cluster comes out internationally, Lawton and Innes recognized that there are a number of other emerging hotspots: Cambridge in the UK, Finland, Sweden and Israel.

The last year has for the Irish software sector meant thousands of jobs lost. During 2002 the sector lost in the region of 4 500 jobs. This is the first time jobs have been lost in the sector since Enterprise Ireland started recording data around 1991. The situation is described as survival of the fittest, with cost cutting being the dominant ethos. Some of the biggest, vanguard companies like Baltimore Technologies and Iona Technologies are in real trouble. There are some bright spots – companies that have gotten into riches (e.g. Riverdeep). However, none of them are doing very well. The reliance in the US is behind the problems – the US economic slump and depreciation of the dollar is making Irish exports even less attractive.

A key actor in trying to support the Irish software sector is the National Informatics Directorate, NID (previously the National Software Directorate), which was set up in 1991 to 'facilitate the network' and focus on research skills development and output. NID directly interfaces with and has an impact on business in the software sector in a number of ways: R&D funding, matchmaking, information on new technologies, mentor program (retired people that NID pays for ten days to advise and mentor start-ups). NID also is involved in human resource development, market research and sales promotion and participates in equity investments. NID also does benchmarking against other countries, e.g. they watch Singapore, New Zealand and Finland closely.

When making investments NID takes five per cent, usually on the basis that somebody else will take 25-30%. NID's initial investment usually makes it easier to attract a venture capitalist to take such a stake. The NID's VC involvement is obviously more altruistic as it is to help the company rather than to make a profit. Two different sets of criteria have to be met for a company to get assistance:

- General: the company has to be exporting already and have ten employees or more.
- Start-ups: the company has to be a high potential start-up, meaning an intention to reach at least ten people and €1.3 million turnover within three years, part of which has to be exports.

> "We have to sell, otherwise we're sunk. We have to get revenues, rather than say skill development. If you go back about two years, skills were the big issue. Now it is about selling and corporate survival. How does NID do this? One example has been assisting some Irish companies to redirect their export emphasis from the US to the UK, as the UK market has remained more buoyant. This was a typical example of how the NID could help – draw attention to alternative markets and provide information and networking assistance in entering these markets." (Quotation from an interview with a representative from NID)

The findings of Lawton and Innes suggest that government policy and support will be increasingly critical if the Irish software sector is to achieve its potential. They consider government's role in creating and nurturing the right environment and conditions for high-technology and software clusters as crucial. The immediate need of the software sector is to generate revenues, but in the long term the moving up the value chain is the ambition. This would mean that Ireland will be responsible for the idea generation, the design, the management and the marketing and the actual churning our software will be done somewhere else. One focus area for the future is digital media (e.g. animation or computer games). Two specific initiatives are under way: the digital media incubators and the 'web works' concept (See the NID website).

3.3 Towards an improved understanding of regional competitiveness

Porter sees as the key role of governments and regional decision makers to nurture and reinforce clusters, but he admits that clusters often emerge and begin to grow naturally. Government policy had little to do with the beginning of Silicon Valley or the concentration of mechanical firms around Modena, Italy. So what the Porterian "industrial analysis" approach can do is to identify clusters that are already on their way. When Porter presented his view on the role of government (seeing its proper role as a pusher and challenger) he concluded that the competitive advantage in a nation's industries is created over a decade or more, not over three- of four-year business cycles. His recommendations are therefore basically that government should positively influence all determinants of the diamond. However, he notices the phenomenon of targeting, i.e. the practice of government to single out particular industries for support and development. He openly states that every nation practices targeting of some kind, whether it will admit to it or not. So therefore Porter ultimately has little to give in respect of normative statements for

- How to select clusters that should get attention from governments and regional decision makers?
- How to support these clusters in the very embryonic phase?

Three things get limited attention from Porter, and are somewhat downplayed, but have in the Regional Brain Gain study popped up as quite important issues:

1. The role of leaders, and individuals during the very early stages of cluster formation.
2. The notion of learning.
3. The role of cooperation between firms to stimulate growth.

Porter's view on the three above mentioned issues will here be shortly presented.

Porter admits that his conceptual framework has little to say about leaders. He continues that he doesn't want to diminish the importance of leaders, but the issue of leadership can be included in the classification of the four determinants that forms the "diamond". He illustrates with several examples of visionaries who had a large impact on their companies and industries, but concludes that great leaders emerge in different industries in different nations. The right environment not only shapes a leader's own perceptions and priorities but provides the catalyst that allows the leader to overcome inertia and produce organizational change. The essential role of the leader is to create an environment that fosters innovation, increases competitiveness and brings forth the right challenges to meet.

The level of granulation in Porter's is on such a high level that he doesn't directly address the issue of learning from the perspective of single clusters. However when addressing government policy and the issue of factor creation he emphasizes education and training in general as a key area where government can influence competitiveness. His study confirms that education and training are decisive in national competitive advantage. However, using his comments that the nations that had invested the most heavily in education were Germany, Japan and Korea reveals now retrospectively that this single issue neither can be isolated, as both Germany and Japan recently have faced serious problems in their development. However by not talking about learning but about how to facilitate interchange within clusters Porter lists some important elements that can be used when considering how to facilitate learning within clusters. These

elements include among others: personal relationships, ties through the scientific community or professional associations, community ties due to geographic proximity, trade associations encompassing clusters and norms of behavior such as a belief in continuity and long-term relationships.

Regarding cooperation Porter is highly skeptical. He lists plenty of problems with alliances, saying that alliances are rarely a solution, and that no firm can depend on another independent firm for skills and assets that are central to its competitive advantage. In this respect Porter is nowadays quite unanimously opposed by scholars in the field of strategic management.

A recent paper by professors Dyer, Kale and Singh[10] state that alliances often are likely to out-perform acquisitions (and therefore be a preferred choice) due to four primary reasons: the absence of auctions in alliance situations, the lower risk with alliances given uncertain business environments, the ability to access select complementary assets through alliances and due to the greater speed/flexibility afforded by alliances. In line with this reasoning professor Richard P Rumelt of UCLA[11] also questions the usefulness of the notion of competitive advantage in the sense it was meant, when Porter for the first time introduced this concept in the early 1980s. Rumelt raises two major problems with the notion of competitive advantage. The first relates to the sustainability of competitive advantage. Due to the increased speed of change it seems that the competitive advantage in a particular industry or within a particular product segment is today achievable for a much shorter period of time than previously. The second problem with competitive advantage and sustainability is using the firm as the unit of analysis. Professor Rumelt suggests that the unit of analysis instead should be scarce resources. The consequence of this is that the strategic question is primarily not about configuring the optimal firm boundaries. Instead the challenge is how to complement the scarce resources the firm possesses with other valuable resources that the firm can address, and that will further enhance the return on the resources of the firm. Putting it simply: payments for resources should be maximized. This has profound implications on how to structure the discussion on strategy and competitive advantage. Looking for scarce resources means that one has to take a relative perspective, and accept that scarcity is a contingent notion. How scarce the resource is depends on competition. And competition continuously changes.

Rumelt concludes that the resources probably most scarce have to do with intellectual capital, i.e. closely related to the capabilities a firm possesses. Porter supports this when he talks about "higher-order advantages" marked by a number of characteristics such as they require more advanced skills and capabilities such as specialized and highly trained personnel, internal technical capability, and, often close relationships with leading customers. He also talks about pools of specialized knowledge, and concludes that "higher-order advantages" are not only more sustainable but are associated with higher levels of productivity.

Richard Normann and Rafael Ramírez[12] stated that strategy is the way a company defines its business and links together the only two resources that really matter in today's economy: knowledge and relationships or an organization's competencies and customers. The task of optimally configuring resources was by them called "designing value constellations". In line with

[10] Dyer, J., Kale, P., Singh, H. 2003. Alliances and acquisitions as alternative growth vehicles: Why alliances outperform acquisitions.

[11] Rumelt, R.R.. 2003. What in the World is Competitive Advantage? Key note presentation, 23rd SMS Conference, Baltimore, MD.

[12] Normann, R., Ramírez, R. 1993. From Value Chain to Value Constellation: Designing Interactive Strategy. Harvard Business Review, July-August, 1993, 65-77.

this reasoning Normann[13] argues that cities and territorial actors now typically try to transform themselves and go through a transition from a very traditional view of city management (seen as administration and management of various service and infrastructure operations), via a period when it was realized that cities had to made attractive and therefore had to market themselves, and – now – to a period when the achievement of genuine strategic management must be on the agenda.

Normann highlights the importance of leadership. He sees strategic management in a regional perspective requiring a coalition of key actors – in effect a strategic management group, formalized or not – working in the city or regional context to co-align their forces based on a grounded and converging vision of the region's or city's strategic identity and mission. The list of what Normann expects to find from a competitive region is presented in Appendix 5.

The list of Normann includes issues like aesthetic and cultural issues high on priority, and he also stresses high quality of life for 'global knowledge entrepreneurs', including areas such as healthcare, culture, ecology, nature. A competitive region would most likely have a high proportion of people coming from unconventional business circles, like entrepreneurial immigrants and women, becoming involved with business innovation and new start-ups.

Florida puts creativity in the focus of his reasoning. His argument is as follows:

> "Creativity involves distinct kinds of thinking and habits that must be cultivated both in the individual and in the surrounding society. Thus, the creative ethos pervades everything from our workplace culture to our values and communities, reshaping the way we see ourselves as economic and social actors – our very identities. It reflects norms and values that both nurture creativity and reinforce the role that it plays. Furthermore, creativity requires a supportive environment that provides a broad array of social and cultural as well as economic stimuli." (Florida, 2002, p. 22)

However, what Florida does not explicitly address is how to combine the substance issues relating to the business success with the more generic creativity nurturing issues. The shift in emphasis in the Irish software sector shows that "when the going gets tough" not so much has changed after all. When "the tough gets going" then the focus is on substance and the "skill development becomes replaced with revenues" as the representative of the Irish NID said.

The Regional Brain Gain project has focused on the development of a comprehensive framework that could encompass both the Porter's and Florida's perspectives. What was found was that both are relevant. But there is no "one size fits all" in respect of regional management. What we however support is that the scarce resources should form the unit of analysis. We would bring this statement one notch further by stating that ultimately capability development is the key area to focus on when competitiveness is looked for.

Taking capabilities as the unit of analysis, both Porter and Florida can be combined, and the notions by Normann regarding strategic management are also well incorporated. The cluster approach is a tool to define present and future capabilities needed to be successful in a specific cluster. The question of creativity and a creative environment again relates to the type of capability building that is needed in the cluster and/or by the company. For example, in an engineering setting with a large body of experts already present in a particular region, the

[13] Normann, R. 2001. Reframing Business; When the Map Changes the Landscape. Wiley.

potential knowledge holder will weigh this fact against some possible less attractive elements in the overall living environment. However, if there is a question about highly individualized design, then the knowledge holder probably has much higher demands on the environment. Here the external environment is not only a part of the living environment but a source of inspiration, which may be a critical element in the success of the knowledge holder in her professional role.

The case of the boat building industry in Ostrobothnia indicated that the capabilities were the decisive factor when explaining, why certain periods were more progressive than others. The main reason for regional intervention by the Chamber of Commerce in the late 1990s was arguably the capability maps of the individual firms in the boat building cluster. Thus by affecting critical capabilities it was possible to improve the competitiveness of the firms, and consequently also improve the overall standard of living in the area. The Chamber of Commerce had only a limited role in this development, but the case well illustrates the possibility of a regional actor to influence the capability building within the cluster.

By using the experience from the boat building sector as basis, a more generic model of the value-creating context of a city or a territorial actor can be presented in accordance with Figure 9.

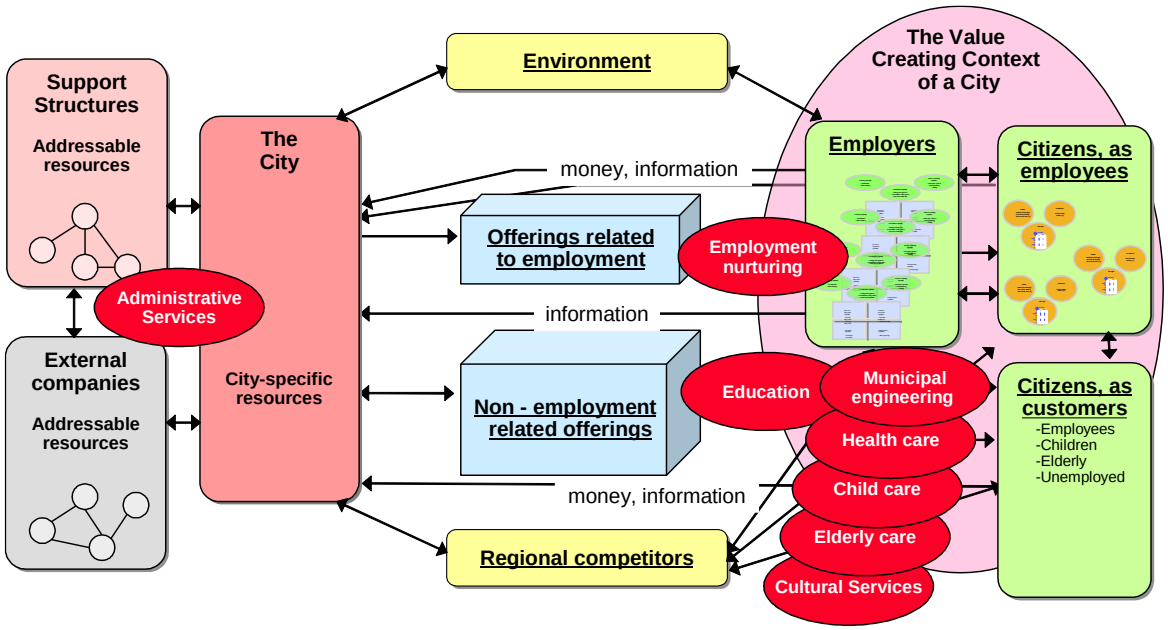


Figure 9. The value-creating context of a city

Considering its value-creating context the decision makers, or in the words of Normann: the strategic management coalition would have to make decisions on which areas to put priority on, as not all good intentions can be carried out. The first step in providing a structured approach to the strategic management agenda is to define a *mission of The City*.

On a more generic level, the mission of any city would have to be to provide well being and increased standard of living for its inhabitants. This would have to be provided by orchestrating the purposeful resource allocation to guarantee certain levels of employment and secure agreed upon service levels regarding infrastructure development, education, health care, child care,

elderly care, and cultural services. In addition to this The City would have to handle those administrative tasks, for which it is responsible according to the law.

Once there is agreement on the formulation of the mission statement the next step would be to define the *vision for The City*. As job creation is a crucial task for any city, the vision statement should always have an element stating what ambitions The City has in respect of job creation. Depending on its other priorities other crucial development objectives can be stated as well.

The vision is the basis for the strategy. The strategy defines the way The City will move from its present position towards the state defined in the vision statement. Based on this The City will make decisions regarding which resources to allocate, where and when. This means that The City has to make sure it provides the purposeful orchestration of its own, its employers' and inhabitants' activities to secure that the vision will be achieved. This will then make the The City, its employers, and the region they are jointly forming, competitive.

To make the strategy happen the vision has to be broken down into concrete objectives. Here the framework developed in the Regional Brain Gain project would suggest that the objectives are stated for respective cluster or industry/service sector that The City actively nurtures in order to achieve its employment targets. Once the sectors are identified, the interplay between the different employers of the sectors should be evaluated, and the necessary capability development tasks identified. The capability requirements may include demands for specific educational efforts, targeting of immigrants as a potential source of knowledge, or forming international network arrangements in the way the boat builders in Ostrobothnia were approaching their counterparts in Viareggio. As the needed type of knowledge has been identified the representatives from the clusters together with The City representatives can form even more specific plans for the types of individuals that possibly would have to be seduced to move to The City. Based on such a requirement profile The City can then make very concrete plans to increase the probability that the inflow of knowledge holders will match the emerging demand by the employers. The City would here act as an orchestrator aiming at collective efficiency among all those actors engaged in the cluster. Some of the key questions to be answered when building such a strategy include:

1. What are the competitiveness factors of respective sector?
2. Who are the actors giving inputs to the sector?
3. What are the employer's key business issues?
    a) Operationally?
    b) Strategically?
4. What makes the value proposition of The City unique in the specific sector?
5. How can The City facilitate processes that strengthen capabilities and improve competitiveness?

To summarize, a city or any other territorial actor aiming at improving the regional competitiveness should consider the following issues:

- The capability priorities of the employers of the region define what the region should do to support the value creation of its targeted present employers.
- The personal expectations of the employees targeted by the employers add the individual dimension to the requirements that the region has to match.

- As the situation of the employers is changing, their capability requirements change, and the way how regions can support them and their employees change.
- Some of the targeted employers will not achieve their objectives, and therefore the region also has to nurture the emergence of new employers.
- Regional competitiveness is a dynamic property and manifested in the eyes of the customers of the region, i.e. the present and future employers, their employees and the remaining citizens of the region (children, elderly, unemployed).

Regions are competitive if they can develop and maintain the resources and capabilities needed to provide value creation and job opportunities. If the conditions for the employers of the region (i.e. the sectors) change the competitive position of the region is likewise changing. Regional competitiveness relates to the knowledge development of the sectors and firms present in the region and to the attractiveness of the region per se. The region, its firms and the capable individuals can form a virtuous circle of reinforcing capability development activities resulting in increased competitiveness of the firms of the region, and consequently increased competitiveness of the region. Competitiveness is an evolutionary issue and the stocks and flows of capabilities of the employers in the region are major building blocks for strategic regional management.

4 Three cases of regional evolution; the Oulu region, the Tampere region and the Finnish capital region[14]

4.1 The Oulu region

4.1.1 The dynamics of employment development in the Oulu Region

In 1970 there lived 120 000 citizens in the Oulu region. Thirty years later by the end of 2000 there were almost 190 000 inhabitants in the region, and the population of the city of Oulu was 121 000. The value creating context of the Oulu region in 2000 is presented in Figure 10.

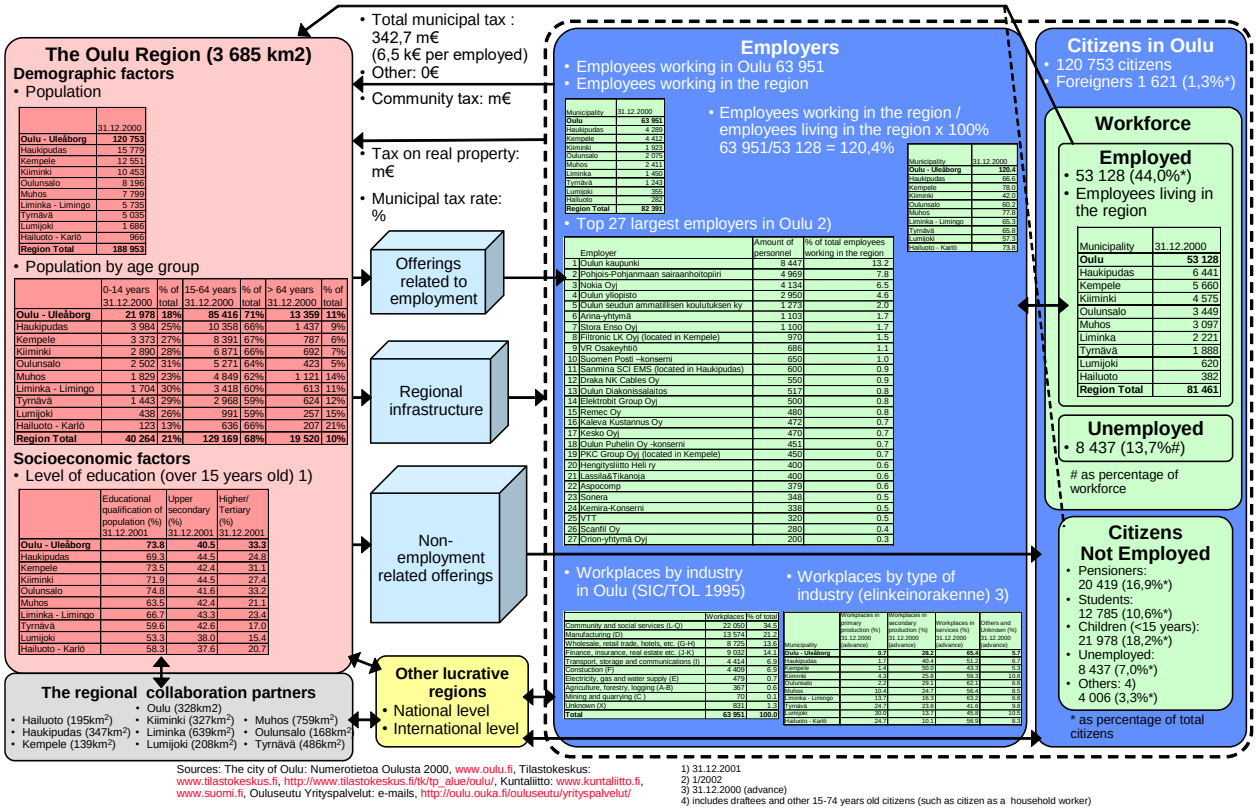


Figure 10. The value creating context of the Oulu region in 2000

The rapid growth of the region has been due to the rapid expansion of employment at the electronics and IT industry. In the last thirty years Oulu has transformed from an industrialized timber and pulp and paper town into one of the most IT and electronics intensive cities in Finland. Over the last decades, the proportion of foreigners has been growing in Oulu. Still, the proportion of foreigners in Oulu was only 1.3% in 2000 (compared for example to the proportion of 3.2% in Espoo). In general the inhabitants of the Oulu region have a good education. In 2001 74 % of people over 15 years of age in Oulu had completed at least upper secondary educational qualification.

[14] Sources used for the fourth section include strategy documents of the cities, statistical material collected by the internal statistical units of the cities (The city of Oulu, Tampere and Espoo), data from the Statistical Yearbooks of Finland and StatFin -Online Service published by Statistic Finland, books and publications related to the city development and telephone interviews.

In the 50's and 60's Oulu was a major pulp and sulphate cellulose industry area. Both cellulose and chemical industries were remarkable employers in the Oulu region. The 1973 oil crisis pushed the manufacturing industry into economic slump in the mid 70's. The total industrial workforce decreased by 600 employees between 1976 and 1978. The construction industry represented about 14% of total jobs in Oulu in 1960. The share has dropped to 7% in 2000. In 1970 8 600 jobs (22% of total) were in the wholesale, retail trade, hotels, etc. sector and in 2001 the number was 9 200 (14% of total).

The majority of job growth from 1960 until 2000 has been created by the service sector and the electrical engineering and electronics industry. The increased amount of jobs in services (including community/social services and commercial services such as finance, insurance, real estate) was important when the region was growing. The share of the services in 1960 represented about 27% of all jobs in Oulu and in 1970 there were 12 500 jobs (32% of total) employed in the service sector, and the number reached 32 600 (50% of total) in 2001. The industry structure of the region is clearly electronics and IT dominated today.

The evolution and life cycles of the most remarkable employers were described based on the detailed analysis of the 27 largest employers in the region. These employers have been divided into three groups, which are 1) public sector organizations, 2) employers in basic industries and 3) electronics and IT firms. The development of electronics and IT industry in the Oulu region is the most detailed description.

The used symbols are explained in Table 1.

Table 1. Symbol explanations

	Operations of a firm or an organization were increasing, amount of personnel was increasing
	Stabilized and neutral operations, not remarkable changes in business
	Decreased and limited business operations
	Preliminary work, firm/organization does not directly operate in the region
	A causality / an influence on the establishment process of another organization/firm in the region
	Comments regarding foundations, spin-offs, management buy-outs, mergers, etc.
	Some persons that have a great impact on the changes of the evolution

The regional cluster development regarding public sector is described in Figure 11.

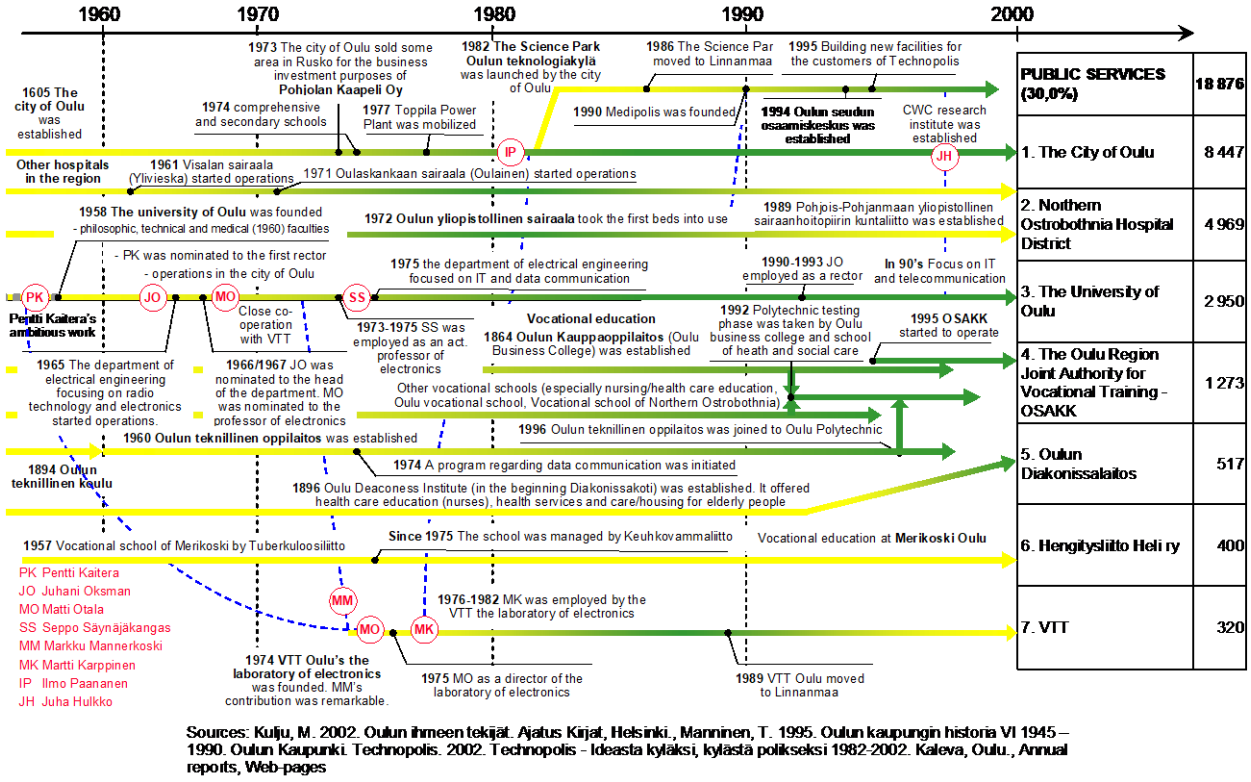


Figure 11. The evolution of the major public sector organizations in Oulu from 1960 to 2000

The city of Oulu, the University of Oulu and Oulun yliopistollinen sairaala, today as a part of Northern Ostrobothnia Hospital District, have been important actors from the public sector employment perspective from the 1970s to 1990s. A committee chaired by Pentti Kaitera suggested to establish a University in Oulu having philosophic, technical and medical faculties. The University of Oulu was founded in 1958 and Pentti Kaitera was appointed to the first rector of the university.

The University of Oulu created the basis for the growth of electrical engineering industry in the 1960s-70s. In 1965 the department of electrical engineering focusing on radio technology and electronics started operations in the city centre of Oulu. Juhani Oksman was the first professor of the department of electrical engineering and Matti Otala was employed as the professor of electronics in the University and the director of the laboratory of electronics of Technical Research Centre of Finland (VTT). In the 1970s the department of electrical engineering focused on the IT and data communication. In the 1990s continuous expansion related to IT and telecommunication was carried out. An outcome of this was the establishing of the Center for Wireless Communication in close co-operation with the local industry.

The department of electrical engineering had created the basis for the growth of electrical engineering. In the 1970s the national policy was to decentralize governmental offices. VTT, the laboratory of electronics, was established in Oulu in 1974. Already in the 1970s VTT had a close co-operation with the university. The co-operation between the University of Oulu, VTT, Technopolis and the local companies is even more vibrant today.

In the 1960s Oulun teknillinen koulu was an important regional educational institution when the educated employees were needed for the local employers. Oulun teknillinen oppilaitos was established and in 1960 and it was transformed into Oulu Polytechnic in 1996.

Based on the work by Elektroniikkatyöryhmä the Science Park Oulun teknologiakylä was launched by the city of Oulu in 1982.

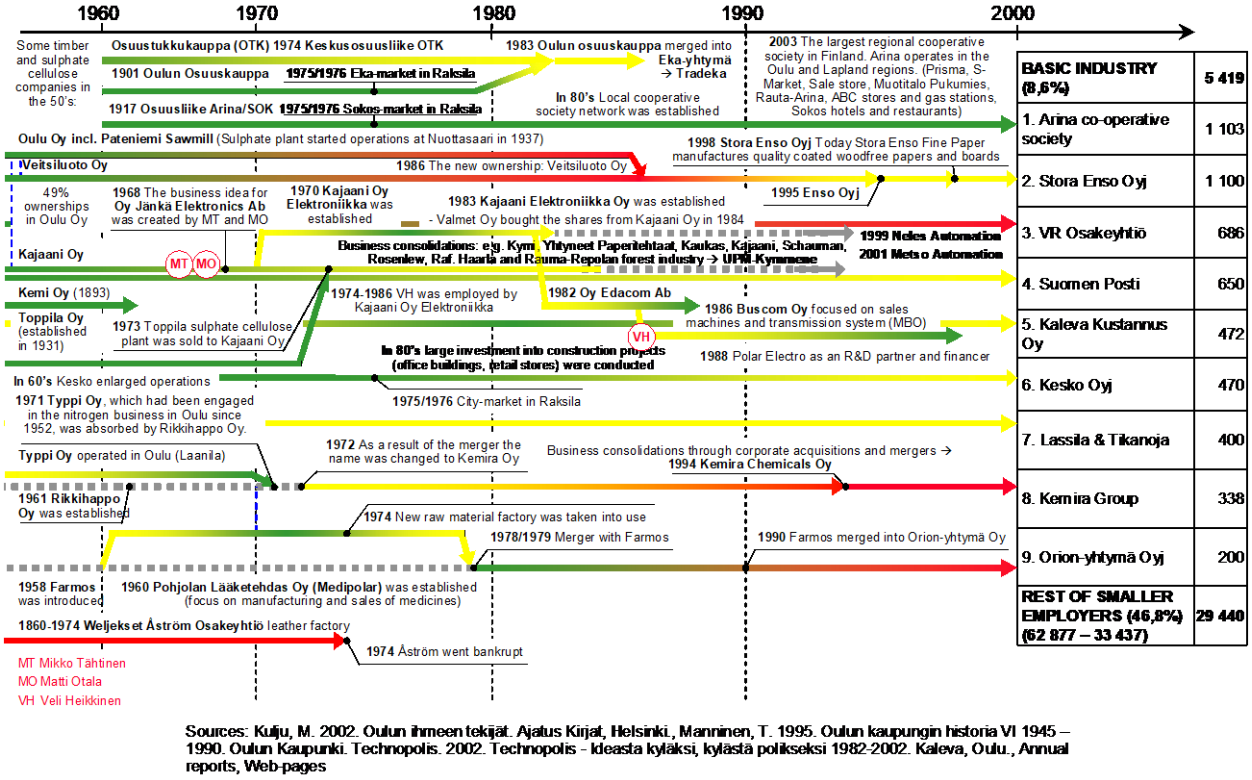
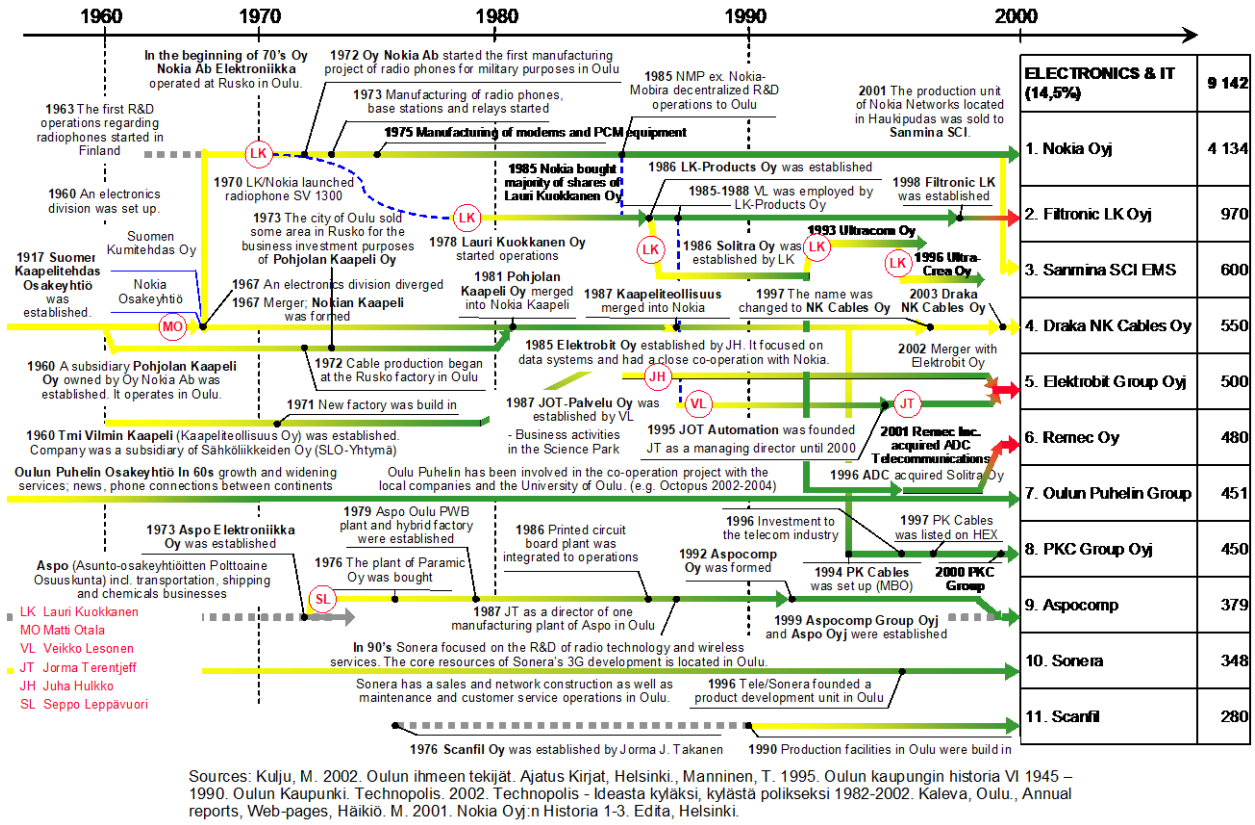


Figure 12. The evolution of the major industrial employers in Oulu from 1960 to 2000

The regional development regarding employers in basic industries focused on pulp/paper industry and retail/wholesaling is described in Figure 12. As mentioned earlier the main industrial employers were chemical, sawmill and cellulose industries in the region in the 1960s and also in the 1970s. In 1974 Kemira, formerly known as Typpi Oy, employed over 1 000 people. In January 2002 only 338 employees was employed by Kemira. The state railways, VR, has been an important employer in Oulu, but like Kemira it has reduced its workforce: in 1974 over 1 000 employees and in 2002 only 686 employees. In wholesaling and retail trade the co-operatives (such as Oulun Osuuskauppa and Osuusliike Arina) have been important employers.

The development of electronics and IT sector in the Oulu region is described in Figure 13.



Sources: Kulju, M. 2002. Oulun ihmeen tekijät. Ajatus Kirjat, Helsinki., Manninen, T. 1995. Oulun kaupungin historia VI 1945 – 1990. Oulun Kaupunki. Technopolis. 2002. Technopolis - Ideasta kyläksi, kylästä polikseksi 1982-2002. Kaleva, Oulu., Annual reports, Web-pages, Häikiö. M. 2001. Nokia Oyj:n Historia 1-3. Edita, Helsinki.

Figure 13. The evolution of the major electronics & IT firms in Oulu from 1960 to 2000

Pohjolan Kaapeli owned by Nokia and Kaapeliteollisuus owned by Sähköliikkeiden Oy were established in 1960. These cable manufacturing companies created ground for the structural change towards electronics and IT industry in the beginning of the 1960s. In addition to this Oy Nokia Ab Elektroniikka, Kajaani Oy Elektroniikka and Aspo Elektroniikka Oy along with Pohjolan Kaapeli Oy and Kaapeliteollisuus Oy were the main actors in the electronics industry in the 1970s. In 1974 Pohjolan Kaapeli Oy was the largest employer of the electrical industry having 900 employees in Oulu. In 1972 Nokia started to manufacture radio equipment in Oulu for the Finnish military forces. In 1973 manufacturing of radio phones, base stations and relays was started and in 1975 manufacturing of modems and PCM equipment was initiated. It is evident that in the beginning of the 1980s visionary and ambitious persons had an essential role when new firms and subcontractors for Nokia were established.

Table 2 shows the development of personnel amounts in some electronics and IT sector companies in the Oulu region.

Table 2. The development of personnel in some electronics and IT sector companies in the Oulu region (some of the numbers are estimates) [15]

The name of a firm	1974e	1983	1990	1/2001	1/2002	1/2003
Nokia Corporation						
Nokia (Oy Nokia Ab Elektroniikka, Nokia Telecommunications, NMP)	276 (the Rusko plant)	374	1 860	4 271	4 134	4 300
Mobira Oy	-	125	A subsidiary of Nokia (1982)			
Insele Oy	-	68	Part of Nokia			
Sanmina SCI EMS (Nokia Networks)	-	-	-	863	600	730
Cable manufacturing						
Draka NK Cables (Nokia Kaapeli, Pohjolan Kaapeli Oy)	900	1 200	1 550	550	550	523
Kaapeliteollisuus Oy (+Sähköliikkeiden Oy)	170 (+90)	230 (+84)	Merged into Nokia Kaapeli (1987)			
PKC Group	-	-	-	450	450	490
Filters, Antennas, etc.						
Filtronic LK (Lauri Kuokkanen Oy)	-	50	n/a	1 100	970	700
Remec (ADC Telecom., Solitra Oy)	-	-	n/a	648	480	420
Other						
Elektrobit Group	-	-	27	400 (incl. JOT)	500	370
JOT Automation (JOT-Palvelu Oy)	-	-	n. 20-30	n. 300	Merger with Elektrobit	
CCC Group	-	-	60	158	280	300
Aspocomp (Aspo Oy Elektroniikka)	n. 20	150	220	414	379	296
Scanfil Oy	-	25	n/a	270	280	260
Polar Electro Oy	-	n/a	<100	258	291	n. 300
Kajaani Oy Elektroniikka (Metso Automation)	40	228 in Kajaani	Merged into Valmet (1984)	Metso Automation (2001)		
Research						
VTT the laboratory of electronics	14	95 in 1982	205	325	320	320

The jobs in the Oulu region "information" sector increased between 1993 and 2000 from about 3 000 to about 8 500, which makes up of about 10% of all jobs in the Oulu region (Figure 14). It is important to observe that some of the electronics and IT companies have recently carried out staff reductions.

[15] Sources: The City of Oulu – Internal statistical sources., Ouluseutu Yrityspalvelut. 2003., Jakkula et. al. 1983. Pohjois-Suomen sähkötekninen teollisuus. Selvitys alan syntyyn ja kasvuun vaikuttavista tekijöistä., Phone calls.

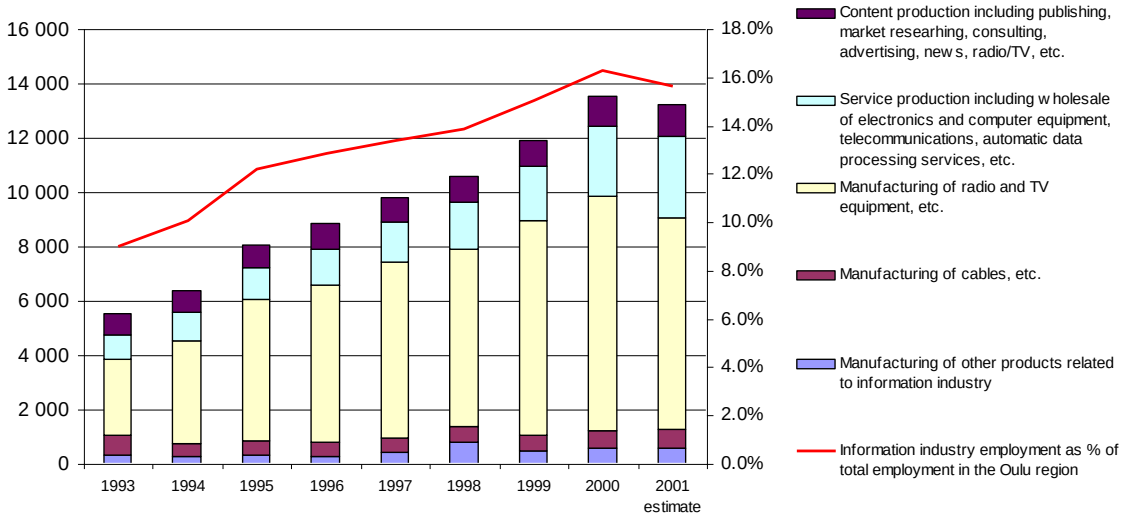


Figure 14. Jobs in the information sector in the Oulu Region 1993 – 2001e

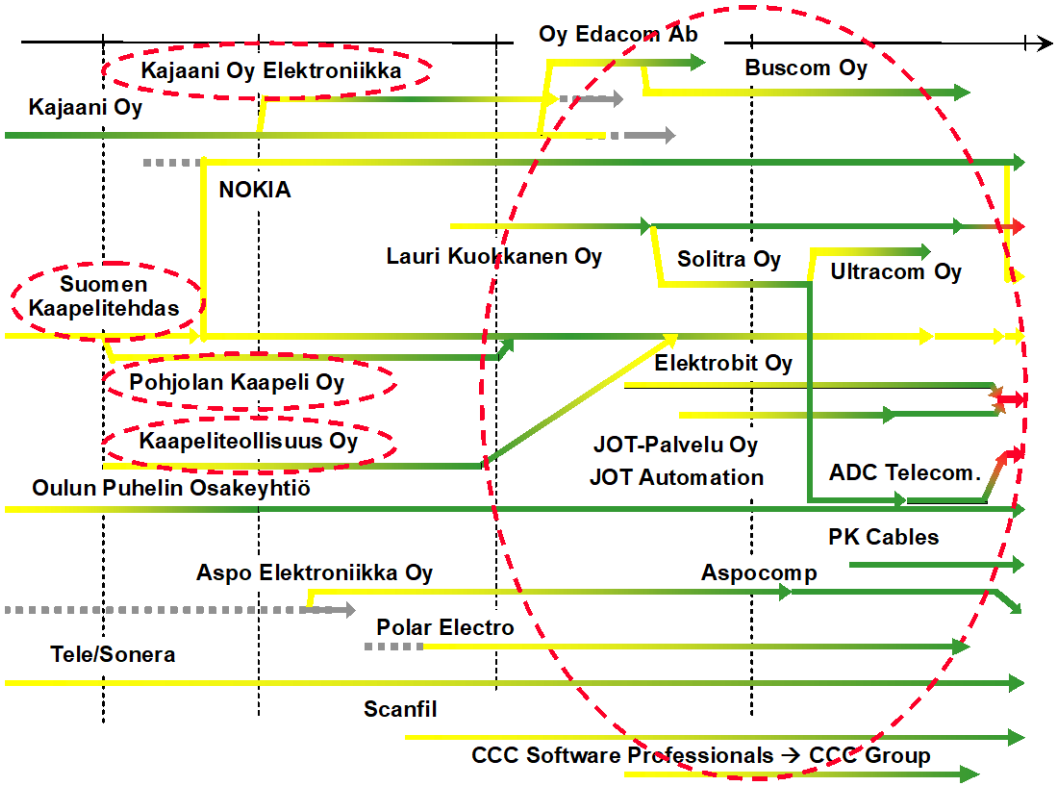


Figure 15. The reconfiguration of the electronics and IT cluster

4.1.2 The evolution of the electronics and IT cluster

The development of the electrical engineering industry in Oulu in the 1960s was based strongly on the business operations of Pohjolan Kaapeli Oy and Kaapeliteollisuus Oy, which were the main employers of the electrical industry. Based on a survey conducted in 1975 the availability of a work force (especially highly educated employees), infrastructure and connections were the

most dominant factors presented by firms in the electrical industry that had established operations in Oulu. The cable industry combined with the electronics manufacturing companies (e.g. Oy Nokia Ab Elektroniikka, Kajaani Oy Elektroniikka and Aspo Elektroniikka Oy) were the main employing about 2 000 people in northern Finland in the late 1970s. Very little entrepreneurship was yet present in the cluster.

The University of Oulu became a source of entrepreneurial activity. Examples of innovation stemming from the university and later leading to commercialization include the heart rate monitor innovation by Seppo Säynäjäkangas for Polar Electro, thick-film hybrid innovation by Seppo Leppävuori for Aspo (Elektroniikka) Oy and a product innovation called CORAM for Kajaani Oy Elektroniikka. Other important entrepreneurs with a connection to the University of Oulu include Veikko Lesonen and Jorma Terentjeff.

In many ways the role model for a more entrepreneurial culture was Lauri Kuokkanen. The firm Lauri Kuokkanen Oy was set up in 1978 and the firm started operations in Oulunsalo. The activities were not remarkable in the beginning and the firm employed 35 employees. Gradually the company expanded, and based on his initial success Lauri Kuokkanen moved on and became the founder and first CEO of numerous electronics start-up companies in the area of radio technology such as Insele Oy, LK-Products, Solitra Oy, Ultracom Oy, Ultraprint Oy, and Ultra-Crea Oy. Still, he is actively working on matters like R&D and new product development.

The role of the Science Park (Oulun teknologiakylä) was noteworthy in the early phase of entrepreneurial activity in the cluster. The Science Park was established by the city of Oulu in 1982. The park provided a viable infrastructure and facilities for local entrepreneurs. The Science Park expanded to become Technopolis. There were over 6 000 knowledge workers and over 230 firms operating in the facilities of Technopolis in 2002.

Today there are two science parks in the Oulu region: Technopolis Plc and Medipolis Ltd. Technopolis Plc is Finland's largest provider of operating environments for high tech companies. It offers a comprehensive service package combining modern facilities, business and employee services and corporate development services and programs.

Medipolis was founded in 1990 and is located next to the Oulu University Hospital. Medipolis operates under the same concept than the Technopolis, and is the intermediary between research and companies in the field of biotechnology and medicine.

4.1.3 The city of Oulu as an nurturer of the electronics and IT cluster

The evolution of the electronics and IT cluster in the Oulu region case has presented some interesting perspectives on two dimensions of the interplay between the region and individual companies in a cluster. During the last decade the business operations of Nokia Corporation have had an influence on the region as the biggest employer in the ICT-sector, thus providing the basis for the employment growth and the welfare of the region.

Regional development policy has been very important for the take-off of the cluster. In the 1970s, the Finnish government decided to invest substantially in the University of Oulu, to promote regional development in the north of the country. Also, tax breaks were offered to companies to

encourage location in the north. Partly due to this reason Nokia started to produce radio equipment in Oulu for the Finnish military forces in 1972. Since then, Nokia has stayed and extended its activities.

The city of Oulu supported in different ways the electronics and IT business in the 1970s, and continued to do so in different forms in the 1980s and 1990s through focused education and setting up the activities regarding the Science Park and the Oulu Region Centre of Expertise (Oulun seudun osaamiskeskus). In summary, the following actions were taken by the city of Oulu:

- Regional development activities related to the regional policy and development co-operation such as the committee for electronics (Elektroniikkateollisuusjaosto) in the 1970s.
- An open-minded attitude of the regional decision makers regarding the development of electrical/electronics industry in the 1970s.
- In 1973 the city of Oulu sold some land in Rusko for the business investment purposes of Pohjolan Kaapeli Oy / Oy Nokia Ab, which provided the basis for the expanded manufacturing processes in the Oulu region, i.e. investments in infrastructure.
- In 1974 a reform related to the comprehensive and secondary school system was implemented in Oulu.
- Based on the work by electronics workgroup (Elektroniikkatyöryhmä) the Science Park was launched in 1982.
- In 1994 Oulu Region Centre of Expertise was established by Technopolis.

To summarize it can be stated that towards the end of the 1990s the activities of the city of Oulu became more focused on specifically support the firms in the cluster. The focus has also been easier to agree upon because of the unexpected expansion of Nokia. This Oulu case shows that one dominant actor in one specific cluster can have very profound impact on the whole development of the region, and if handled right this can also create a large amount of spill-over effects that further strengthen the cluster in the region (See Figure 15).

The next step of Oulu is outlined in their strategy document “The Oulu Growth Agreement”. The vision for 2006 is to create a total of 22 000 high tech jobs in the Oulu Region by 2006. 12 000 out of these jobs should be in telecommunications technology, approximately 3 500 in medical technology, biotechnology and related fields, some 3 500 in the software industry and 3 000 in electronics and other high tech branches. In light of the recent layoffs in some of the firms in the electronics and IT cluster the employment objective of Oulu seems very challenging. The similarities to the situation of the software sector in Ireland are striking. It is therefore quite easy to join the views presented in a recent OECD report that concluded that the industrial basis focusing primarily on the ICT cluster is too narrow for Finland/the Oulu region.

So, from an industrial policy perspective there is an urgent need to find other sectors that can be nurtured to dependence of the Oulu region on one single cluster. At the same time the companies in the electronics and IT sector need to be able to position themselves to an increasing degree as viable global competitors and reduce their dependence on or two major customers (Nokia and Ericsson). Developing capabilities to move from the position of an OEM-manufacturer for well known customers to become independent actors with stand alone products presents some challenges for many of the ICT-firms in the Oulu region.

Strong and visionary personalities in the university of Oulu and VTT laboratory of electronics provided the successful emergence of a viable ICT cluster in the region in the 1960s and 70s. The initial success of the sector was tightly connected to the ground breaking work done by a few individuals. Facing the need for renewal, the Oulu region now has a challenge to find network and orchestration type of policies that could bring forth the next phase of evolution.

For the educational actors, the university and the polytechnic it is important to notice in the new millennium strong technical know-how is not enough any more, but it has to be combined with global management skills to secure success in the increasingly global context. The education curriculum and research focus need to mirror these new requirements.

4.2 The Tampere region

4.2.1 The dynamics of employment development in the Tampere region

In 1970 the population of Tampere region, was 220 000. Of these 155 000 or 70% lived in the city of Tampere. In year 2001 the population of the region exceeded 300 000 persons, 197 000 of which lived in the city of Tampere (Figure 16). The estimated average annual population growth from 2001 to 2010 is in Tampere 0.8%, when it is 0.9% in Oulu and 1.3% in Espoo. In 1970 22% (16 % in 2001) of the population in Tampere was under 15 years of age and only 9% was older than 64 (15 % in 2001). Compared with Oulu and Espoo the age structure in Tampere is different. In Oulu 18% of the population is under 15 years of age and 11% is older than 64 years of age and in Espoo 21% of the population is under 15 years of age and 9% is older than 64 years of age.

There has been a considerable improvement in the educational level of the population in Tampere during the last twenty years. In 2001 almost 70% of the population over 15 years of age in Tampere had completed at least upper secondary educational qualification. In 1980 this number in Tampere was only 43%. The proportion of foreigners has been growing in Tampere region during the last decades. In 2001 the proportion of foreigners as percentage of total citizens in Tampere was 2.5%.

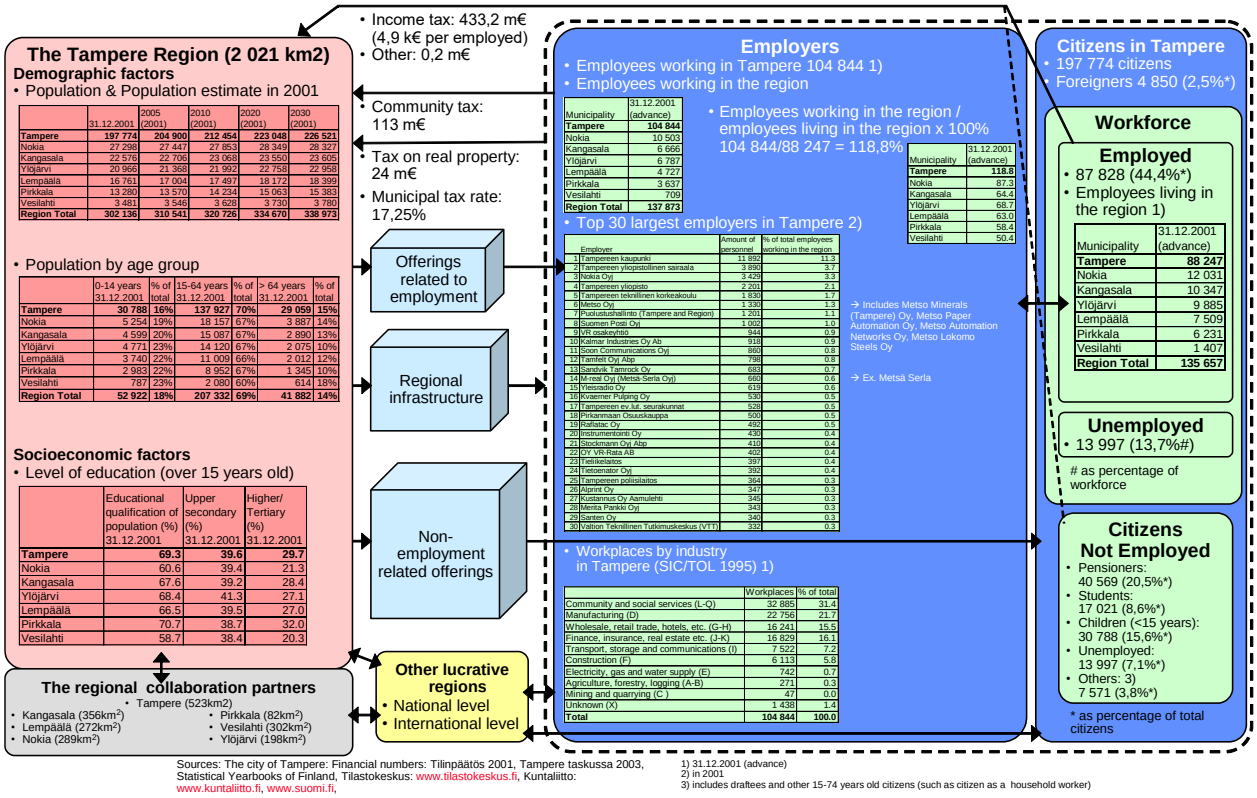


Figure 16. The value creating context of the Tampere region in 2001

Self-sufficiency of jobs in Tampere has been over 100% since 1970. Recently the ratio has been 118%. In the same time as the population of Tampere has grown from 100 000 in 1950 to almost 200 000 in 2001 the number of jobs has grown from 53 500 to 104 800. The proportion of

industrial jobs started to decline already in the 1950s, however still in the 1960s almost half of the working places in Tampere were provided by the industry. The textile, clothing and shoe industry provided more than 14 000 jobs in 1950. In 1985 less than 5 000 jobs were left from this sector. The number of employees in the mechanical engineering industry has also started to diminish. The peak was reached in 1975 when almost 9 000 people worked for this sector. The three major players in this sector were at that time Tampella, Lokomo and Valmet (previously Valtion lentokonetehdas). In total there were almost 30 000 industry workers in 1950 (See Figure 17). Fifty years later, the number had dropped to 22 000. The community and social services sector has been the biggest growing sector during the last decades together with the finance sector.

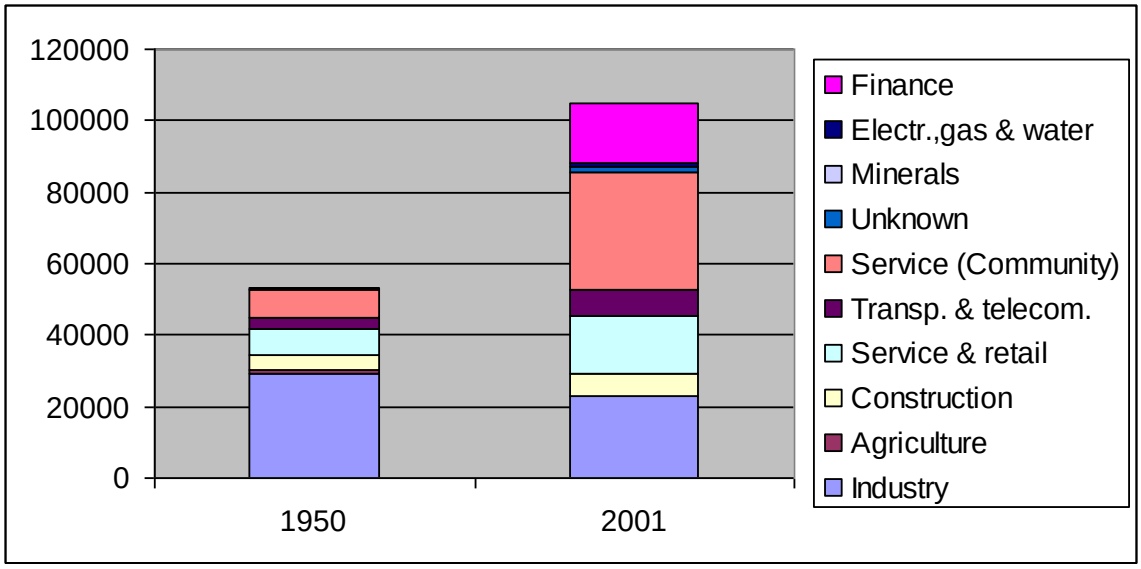


Figure 17. Job Development in Tampere 1950 - 2001

In the 1960s both University of Tampere and the Tampere University of Technology were established. Tampere University started as an institute but in 1966 the name was changed to University of Tampere. Also Tampere University of Technology started as a branch to Helsinki University of Technology. This lasted until 1972 when Tampere University of Technology became independent. In the beginning of the 1960s Tampere Polytechnic moved to new and modern facilities. Tampere Polytechnic had played an important role in providing the local industry with engineers and technicians already from its establishment in 1923. Reino Kurki-Suonio was nominated the first Nordic professor in computer science in 1965 at Tampere University. Eleven years later Yrjö Neuvo became the first professor of electronics at Tampere University of Technology.

The representatives of the city of Tampere had played an active and crucial role to get the universities to the city. In the same active way the decision makers wanted to develop the possibilities for R&D in the city together with the universities. In 1986 the technology center of Hermia was established and the construction of Hermia started. The first companies moved to the Hermia facilities in 1988. Although information technology was not the main focus when Hermia started its activity it soon became the center for companies involved in this activity. When Hermia opened in 1988 it comprised ten buildings. In total 66 companies and institutions moved in with 500 employees. The biggest single company to move in was Nokia with 80 researchers.

Tampere Central Hospital opened in 1962. When the hospital was functioning with full capacity in 1964 almost 900 beds were used. The Tampere Central Hospital has an important function in the region not only as being the major hospital but also as a provider of medical education and research. In 2001 Tampere Central Hospital was the second biggest employer in the region after the City of Tampere – in total 3 890 persons worked at the hospital. In 1970 the number of employees at the hospital was 2 300. The number of employees at University of Tampere was in 2001 in total 2 200 persons and in Tampere University of Technology 1 830. Twenty years earlier the number of employees were 1 100 and 350 respectively.

Of the traditional business sectors of Tampere – mechanical engineering, textile, clothing and shoe industry, only mechanical engineering managed to survive the industrial and business changes of 1980s and 1990s. However the mechanical engineering had to go through many structural changes during the years. These structural changes included new ownership arrangements and new international players participating in the local business and in many ways forcing the companies into new more narrow business segments. Today many of the major companies in Tampere region in the mechanical engineering cluster are owned by global multinationals like Metso, Kalmar Industries (now Kone), Sandvik-Tamrock and Kvaerner Pulping. All these companies have between 530 and 1 500 employees. Just as comparison it is noteworthy that Finlayson had almost 2 500 employees in 1950.

The information and telecommunication technology grew rapidly in Tampere in the 1990s. In the year 1994 the ICT sector employed around 3 000 persons and in 1997 already 6 750 persons worked for this sector. The rapid growth continued until year 2000 when already almost 10 000 people worked for the ICT sector in Tampere. If media and new media sub-sector and the related services and commerce sub-sectors are included in the number the employment rises to 15 500 people. The role of both University of Tampere and Tampere University of Technology has been important in the support of the development of the ICT sector in the region. The role of Nokia in the development of Tampere region and the ICT sector has also been important. An important milestone was 1986 when Nokia bought Softplan. As a result of this Nokia’s activities connected to information technology increased. In 1988, Nokia started the Nokia Cellular Systems in Tampere to develop mobile phone systems. The number of employees grew also rapidly during the end of the 1990’s – the number grew from some tens of people, into almost 4 000 workers.

Table 3. The largest employers in the Tampere urban area from 1999 to 2001

Nro	Employer	Municipality	1999	2000	2001
1	The city of Tampere	Tampere	10 925	11 174	11 892
2	Central Hospital (TAYS)	Tampere	3 868	3 791	3 890
3	Nokia Oyj (Nokia-yhtymä)	Tampere	2 726	3 600	3 429
4	The University of Tampere	Tampere	1 944	1 789	2 201
5	Tampere University of Technology	Tampere	1 473	1 629	1 830
6	Metso Oyj (In 1999 Valmet 701, Norberg-Lokomo Oy 687)	Tampere	1 388	1 490	1 330
7	Defensive forces (Tampere and Region)	Region	1 200	1 200	1 201
8	Suomen Posti Oyj	Tampere	1 080	1 050	1 002
9	VR osakeyhtiö	Tampere	1 150	1 116	944
10	Kalmar Industries Oy Ab	Tampere	844	820	918
11	Soon Communications Oyj (Tampereen Puhelin Oyj, TPO)	Tampere	704	715	860
12	Tamfelt Oyj Abp	Tampere	720	726	798
13	Alma Media Oyj	Region	n/a	723	n/a
14	Engel Oy	Region	n/a	720	n/a
15	Sandvik Tamrock Oy (Tamrock Oy)	Tampere	716	656	683
16	M-real Oyj (Metsä-Serla)	Tampere	1 283	1 315	660
17	Yleisradio Oy	Tampere	650	650	619
18	Kvaerner Pulping Oy	Tampere	500	524	530
19	Tampereen ev.lut. seurakunnat	Tampere	574	505	528
20	Pirkanmaan Osuuskauppa	Tampere	486	505	500
21	Raflatac Oy	Tampere	423	428	492
22	Instrumentointi Oy	Tampere	381	449	430
23	Sonera Oyj	Region	n/a	430	n/a
24	Stockmann Oyj Abp	Tampere	400	390	410
25	OY VR-Rata AB	Tampere	n/a	n/a	402
26	Tieliikelaitos	Tampere	n/a	n/a	397
27	Tietoenator Oyj	Tampere	n/a	n/a	392
28	Tradeka	Region	390	390	n/a
	Others		95 879	98 500	101 535
	Employees working in the Tampere region		129 704	135 285	137 873
			31.12.1999	31.12.2000	31.12.2001e

Research and teaching connected to medical electronics started in Tampere already in the 1960s. In 1974 a VTT laboratory of medical technology started in Tampere. The development of healthcare technology was supported by a foundation formed by the Faculty of Medicine of the University of Tampere and the Tampere Central Hospital. In September, 1995, Finn-Medi Research Ltd. began its activities. Finn-Medi develops products, equipment, methods and services for health care requirements.

In the Tampere development concept networking is characteristic for developers of the chosen clusters. Tampere Technology Centre Ltd is responsible for ICT and engineering cluster, Media Tampere Ltd for communications clusters, Professia Ltd for knowledge-intensive business services, and Finn-Medi Research Ltd for health care technology.

4.3 The Finnish capital region

4.3.1 The city of Espoo as a part of the capital region

In 1970 there lived 96 000 citizens in Espoo and the whole capital region consisting of Helsinki, Espoo, Vantaa and Kauniainen had almost 700 000 inhabitants. The population of the city of Espoo has grown rapidly. By the end of 2001 there lived almost 217 000 citizens in Espoo. The annual population grew by 2.6% in average from 1970 to 2001.

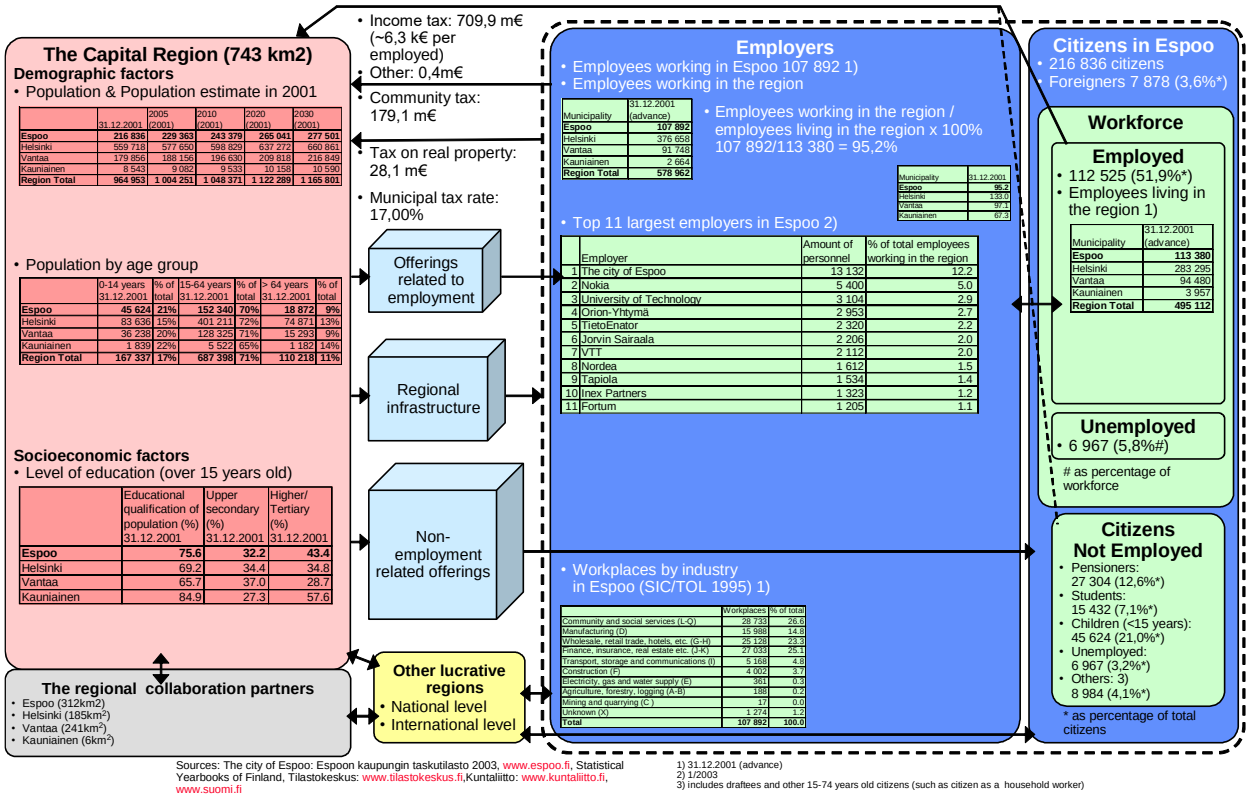


Figure 18. The value creating context of the Finnish capital region in 2001 (focusing on Espoo)

Fast growth of the capital Helsinki had a great impact on the development of Espoo in the 1900s. The capital region is specialized especially in companies of logistics, high technology and specialized service sector. From the 1950s Espoo has transformed from an agricultural county into the second biggest and a highly educated city of Finland.

In 1960 Espoo was divided into four district centers; Tapiola, Leppävaara, Bemböle (Muurala) and Stensvik. Muurala was chosen to become the administrative center. The small country town Espoo was established in 1963. Espoo received its town charter in 1972.

The value creating context of the capital region is illustrated in Figure 18. The demographic factors like population and age structure and educational level are presented on the left hand of the figure. Information regarding employers in Espoo and citizens can be found on the right hand. The proportion of foreigners of total population in Espoo was 3.6% in 2001 (3.2% in 2000).

The citizens in Espoo are well-educated. In 2001 over 75% of people over 15 years of age in Espoo had completed at least upper secondary educational qualification. About 43% had higher/tertiary degree educated.

Espoo has participated in the development of the Capital region in close cooperation with the surrounding municipalities in order to be able to develop a competitive Finnish metropolitan area. The city of Espoo and government have in different ways supported the regional growth:

- The government based actions taken in the end of the 1940s were crucial from the establishment perspective of Helsinki University of Technology and Technical Research Centre of Finland (VTT).
- Regional development activities related to the regional policy: Tapiola-Hagalund living area, Otaniemi-Keilaniemi science and business region.
- YTV formerly know as YTT was established by the city of Espoo, Helsinki, Vantaa and Kauniainen in 1970. Then, the capital region perspective was possible to take into account in some decisions. Additional joint efforts in the metropolitan area include development of the Helsinki region including municipalities Kirkkonummi, Vihti, Nurmijärvi, Hyvinkää, Järvenpää, Kerava, Tuusula and Sipoo, regional plans and HUS.

4.3.2 The dynamics of employment development in Espoo

In the 1950s, a period of vivid development of Espoo set in. As shown earlier the population grew rapidly and the building rate increased. Construction of Tapiola – Hagalund was started in 1952 and the first citizens moved to their residencies in Tapiola in 1953.

One of the crucial factors for the growth of Espoo was that the government bought area from Espoo in 1949 and localized the Helsinki University of Technology and Technical Research Centre of Finland (VTT) to Espoo. There were some notable major companies such as Kauklahden lasitehdas (Aktiebolaget Norstedt Oy), Lindholms Såg Ab (Lindholmin saha Oy), Kera Oy, Esbo Elektriska Ab operating in Espoo in the 1950s. The largest industrial companies operating in Espoo in the 1960s were Oy Aga Ab, Oy Epeko Ab, Oy Kovametalli Ab, Oy Slev Ab, Suomen Sinkkivalko Oy.

In 1950 over 40% of total employees living in the region were employed in industry, handcraft and construction industry. Most of the workplaces were located in Helsinki. In 1960 about 20% of the jobs in Espoo came from the construction industry. In 2001 the number was 4 000, which represented 4% of all workplaces in Espoo.

In the 1960s the companies in Espoo were small. The self-sufficiency of jobs rate (Employees working in Espoo divided by employees living in Espoo) was only 36% in 1960 (48% in 1970, 67% in 1980, 88% in 1990 and 92% in 2000). Employees were used to work in Helsinki and live in Espoo.

Since 1960 the number of jobs in Espoo has grown ten folds. In 1960 there were less than 10 000 jobs in Espoo. The number of jobs in Espoo has grown from 23 300 in 1970 to 107 900 in 2001. This means approximately 5% annual average growth of jobs. In the same time the population has grown from 97 000 to 217 000 (2.6% annually in average). The rapid expansion of

employment in Espoo and attractiveness of the city has been closely interlinked with the development of some key industries, such as:

- Trade specialized in technical and consumer good wholesale trade.
- Business services specialized in data processing, technical services and consulting services of law, accounting and administration.
- Manufacturing specialized in electronics and chemistry (pharmaceutical industry).

The economy and well being of the city of Espoo and its inhabitants are widely based on the profitable performance and good success of the enterprises operating in the city. In the beginning of the 2000s the share of personnel in establishments related to trade, business services and manufacturing located in Espoo is three quarters and 85% of turnover.

The largest employers in Espoo are shown in Table 4.

Table 4. The largest employers in Espoo from 2001 to 2003

Nro	Employer	Municipality	1/2001	1/2002	1/2003
1	The city of Espoo	Espoo	12 263	12 976	13 132
2	Nokia Oyj	Espoo	6 487	5 358	5 400
3	Orion-yhtymä	Espoo	2 555	2 915	2 953
4	VTT	Espoo	2 225	2 159	2 112
5	University of Technology	Espoo	2 166	3 023	3 104
6	TietoEnator	Espoo	1 969	2 282	2 320
7	Jorvin Sairaala	Espoo	1 741	1 861	2 206
8	Tapiola	Espoo	1 318	1 478	1 534
9	Nordea, (Merita)	Espoo	1 240	1 240	1 612
10	Fortum	Espoo	1 189	1 165	1 205
11	Tellabs	Espoo	1 125	1 035	n/a
12	Inex Partners	Espoo	1 100	1 287	1 323
	Others		67 181	71 113	
	Employees working in Espoo		102 559	107 892	
			31.12.2000	31.12.2001e	31.12.2002

The community and social service sectors have grown (like in Oulu and Tampere). In 2001 over 28 700 jobs were in this sector (27%). In 1980 only 8 000 jobs (17% of total) were in the finance, insurance, real estate sector. This sector has grown extensively lately. In 2001 almost 27 000 (25% of total) jobs were in this sector.

As mentioned the employment structure in Espoo is focused on manufacturing and designing of electronics and pharmaceutical products, technical and consumer good wholesale trade and business services in different areas. In order to get a better understanding these clusters would have to be studied in-depth, like the way the electronics and IT-cluster was studied in Oulu. Classes of lines of businesses as defined in official statistics need to be rearranged to form more relevant cluster definitions. Based on these employer organizations' facts, the clusters could then be studied in-depth. Such an in-depth study is out of the scope agreed for the Regional Brain Gain project.

In order to be a competitive metropolitan area on a global level the city of Espoo and especially municipalities in the capital and Helsinki regions need to evaluate more in-depth the strongest industries and businesses in a specific industrial context from the perspective of strategic management in a regional context. Espoo will have to evaluate which resources are crucial to support the most promising businesses in the area. Subsequently the challenge for the city is to match supply and demand for knowledge development in these businesses. Some identified areas for further exploration are:

- To develop public services and especially the education sector that should provide interesting opportunities for collaboration with the private sector in developing new innovative concepts. The city authorities can here act as an orchestrator or playmaker in order to ensure enough interest in new initiatives.
- To use forth coming large infrastructural projects (e.g. Kehä II) as a platform for new comprehensive efforts to repeat the success Espoo had with the development of Tapiola.
- To develop new concepts for the services covering the whole capital region to enable a more competitive metropolitan area in an international context (e.g. YTV). The main challenges are in the areas of public transport, housing and health care.

The different development dynamics of the Espoo region is illustrated with Figure 19.

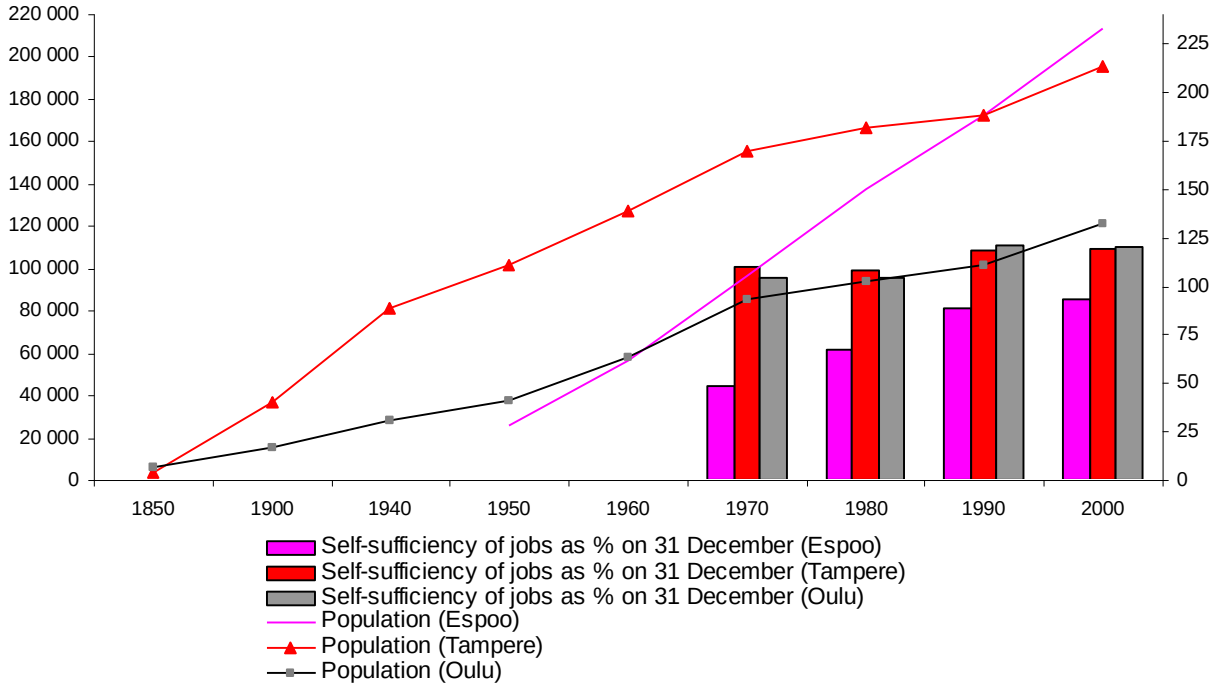


Figure 19. Statistics related to the evolution of the three cities (Espoo, Tampere, and Oulu)

5 An empirical study of the mobility of Finnish knowledge holders

Moving is always fundamentally a personal choice. A person considering whether or not to move thinks about the changes the relocation would bring to his of her own life, both from the private and the work perspectives. Therefore, understanding the individual knowledge holders is fundamentally important for regional decision makers. Regional Brain Gain –project included a wide empirical study of highly educated employees in industry and learning sectors and its results provide the necessary information about the moving of the studied professional groups.

5.1 Quantitative study

The Regional Brain Gain project included a survey among knowledge holders in Espoo, Tampere and Oulu. The 5 837 sent internet questionnaires provided us with 1 605 received answers (answering percentage of 27.5%), of which only 52 were of foreign origin. With the 1605 answers, it was possible to register some interesting findings concerning the expectations individuals have regarding their jobs and the attractiveness of the area where they live, and their propensity to move. This chapter describes the most important results of the empirical study. For detailed results and analyses descriptions see specific report concentrating on empirical research.

The general propensity to move is represented by the blue slice in Figure 20.

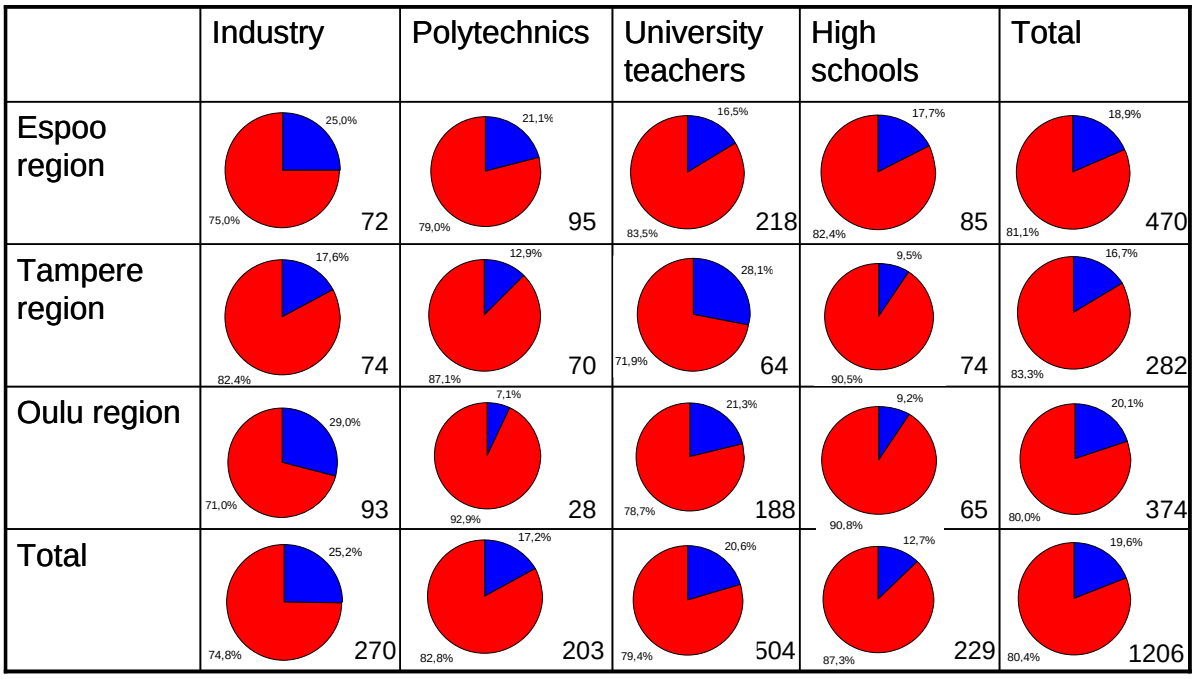


Figure 20. General propensity to move by respondents[16]

General propensity to move of the respondents was 20% (i.e. 20% of people who have thought about their living location, have at least considered moving, or even made preparations; in the cities the number was: Espoo 19%, Tampere 17% and Oulu 20%). There seems to be two reasons

[16] Note that some people didn't answer the question regarding propensity to move, or stated that they haven't thought about it, and thus the total sum in the table is less than the total number of answerers, 1605.

for this low number. Firstly, people are connected to the area they currently live in and secondly, the people see that moving elsewhere would not bring a change for better, and are therefore unwilling to move.

The main differences between willingness to move of people are between professional groups, not cities. Knowledge workers in Industry are more willing to move (25%) than people in Universities (21%) and Polytechnics (17%), who still move more likely than high school teachers (13%). Of the employees of an individual cluster, university teachers in Tampere (28%) and Industry R&D people in Oulu (29%) are especially willing to move. High school teachers in Espoo (18%) are more willing to move than their colleagues in Oulu (9%) or Tampere (10%).

Willingness to move abroad (of the people willing to move in the first place) was approximately 50% in all groups and geographical areas, except for high school teachers for whom it was 28%. The difference is understandable, considering the national nature of the high school teacher profession.

The role identification of the individuals was estimated with the question: ”Which of the following expertise- and role descriptions describe your role in your working environment best (the most important =1, the least important = 5)

- "Innovator" - producing and executing new sometimes controversial ideas.
- "Executor" - a doer taking care of the organization’s basic functions.
- "Customer servant" - maintaining and developing existing customer relationship.
- "Change agent" - designing change in the organization’s working environment and customer relationships.
- "Networker" - building new customer relationships and other relationships with external organizations.

Most of knowledge holders define themselves as executors (36%), while change agents (12%) and networkers (11%) received fewer replies. 15% of the respondents were customer servants and 26 defined themselves as innovators. As in the propensity to move, differences occur between professional groups, not between regions. Respondents in the Industry cluster throughout Finland are relatively seldom seeing themselves as networkers or change agents. The highest rate of respondents regarding themselves as innovators could be found in the Universities, whereas the replies from polytechnics had the largest portion of networkers. High school teachers were especially prone to consider themselves as executors, but quite often they also chose the alternative customer servant. The effect of these implications about the orientation of Finnish knowledge holders have on Finnish Industry will be further discussed in the chapter 6.

When analyzing differences between people willing to move and those not prepared to do so, the most important determinant for moving was identified as the previous moving experience, followed by young age (however a less dominant factor in industry) and single or two-person household. Values and valuations of the person cannot explain the propensity to move, unless the changes are extreme (i.e. dramatic difference of work content of a work oriented person). Men are more willing to move than women. Executors are more willing to stay than people with other role identifications. High school teachers are more willing to stay than other professions. Teachers in polytechnics in the capital area are more willing to move than colleagues elsewhere. Otherwise in polytechnics the differences are related to previous moving. Differences between regions are again smaller, even though some can be found. E.g. in Tampere innovators currently

living in the area have considered moving more often than other role identities (this phenomenon was not found elsewhere), and in Oulu previous relocation experience seems to have less meaning than in other parts of the country.

The questionnaire also enquired reasons for which people are willing to move. Obviously this is different than the valuations of a person, which were included in the analysis of people willing to move, i.e. people may value something, but be not prepared to move because of it. There are two possible reasons for this. Firstly, especially in Finland the knowledge holders can expect to have the same basic level of the valued attribute everywhere, due to the homogeneousness of the Finnish society and regional services. Secondly, in some of the attributes tolerating possible lower level is easier than in others. E.g. if the only chess club of a town is closed, it is possible to start playing in the Internet or change to Backgammon, but if the only radio technology research center is closed down, the professional facing layoffs most certainly has a strong incentive to move.

From the 1605 answers we found that the most significant reason for people to move is their job and its content. Finnish professionals are very work oriented. Family and economic reasons are also important for all answerer groups, but family especially to people working in the learning cluster and economic reasons to those working in the industry. Free time activities can't usually act as reasons to move, even though the living environment itself may be a reason to move (or not to move) to a certain place. Furthermore learning and career opportunities have little significance in the decision where to locate. Thus, regional managers should attract people with interesting and competitively rewarded jobs, and by keeping the costs of living on a reasonable level. The implications of this chapter are further discussed in the following section, where the qualitative interviews are interpreted.

5.2 Qualitative interviews

The empirical study included also 133 interviews, of which 22 were with people of foreign origin. The interview included a 45min – 1h30min thematic interview, which was summarized and revisioned with a thematic card game of 15-25 minutes.

Compared to the survey, the interviews provide deeper knowledge on the subjects at hand. The questions were directed to clarify the issues found important in the quantitative survey, i.e. work content and work environment. In order to include the regional perspective, also regional services and other regional factors were included. And finally, to be able to understand the individual knowledge holders, their personal views on the optimal situation were discussed.

Also the interviews showed that the most important reason for moving was a persons work and professional identity. The results received through both channels support each other, and thus provide reliable and deep information about the phenomenon.

5.2.1 Employment, work environment and incentives

Important differences between the knowledge holder groups researched in the study can be found in their potential labour market. For University teachers, the labour market is purely global, which means that the best jobs and best applicants are searched for and matched on a global scale. For people willing to develop in university professions are practically obliged to work

abroad for a certain period of time, and thus their moving patterns are guided by the locations of the related research units and institutes.

The ultimate contrary example is the high school teacher, whose geographical labour market is in effect Finland. Thus relocation most often happens inside Finland, at least if it happens due to work related reasons. Inside Finland, the work possibilities are wide; most of Finnish towns have their own high schools, and even more of them have a lower secondary stage school, where the professional skills of a high school teacher are also applicable. For the university personnel the situation inside Finland is fundamentally different – in most research areas only one or two Finnish universities have world class expertise. The same is true for the professionals in industry R&D, as the high technology expertise is concentrated to certain areas. The polytechnics are somewhere in between these two extremes: there is a number of polytechnic schools in Finland, and which also have international connections which can be used when willing to move abroad. Yet, these locations are not so concentrated as the ones in the university and industry R&D areas are.

For universities this means that (when considering recruiting professionals) their nearest comparison target is not in Finland. The international merits of the particular unit are the key to its competitiveness and lucrativeness as a possible working place. The information spreads effectively through informal networks of the researchers, only three out of 29 interviewed Finnish university workers mentioned they heard about their jobs through a channel other than personal or research unit connections.

Industry professionals have most often ended up in a work because of its interesting content, stating that money has little to do as an incentive[17]. In general, for industry people the best incentive seems to be possibility to concentrate on ones own work: professionals see that not having to fear for ones job, time to benefit from the provided training quota and a functioning organisation increase satisfaction in a job.

The professionals in polytechnics and high schools also value safe jobs and good working environment, but see especially the students and their development as sources of satisfaction. Especially in high schools this is important, as the salary and other benefits aren't very high. Long summer holidays and relatively good salary in polytechnics compared to universities keep people in these two clusters. Common for these two groups is also their goal; instead of professionalism in one particular field of science, polytechnics and high school teachers often strive for pedagogic excellence. This means, that unlike university personnel, they don't follow a certain goal which guides them to different locations or units because it benefits them professionally; instead they may choose to develop while working in the same school using the provided courses and autonomy in their teaching. For example of the 15 polytechnic teachers only one was speculating with going abroad because of professional reasons, while in Universities eight out of 32 had already been abroad.

Another interesting similarity between high schools and polytechnics, compared to universities, is the source of dissatisfaction in the work environment. In polytechnics and high schools, the

[17] This is somewhat contradictory with the results of the survey, which clearly indicates that people see economic reasons as an important reason for relocation. There is two possible reason for this: either the level of economic well being is too similar today to cause moving from an area to another, or people are unwilling to state they consider money important when face to face with another person, i.e. the interviewer.

source of organisational dissatisfaction lies in the differences of the values of the teaching personnel and those of the administration. In Universities, the autonomy of the actors and constant competition for financing cause additional dissatisfaction. Controversially, the autonomy also aids in tolerating the pressures, as professors may easier also act against the wishes of the administration, and due to the research-based satisfaction difficulties in possibilities to teach aren't as bad for motivation as in e.g. high schools. In high schools, where principals are recruited from the teachers, the incentives to become part of the administration and accept the extra responsibilities are often considered to be small, especially because the change separates the person from the students and seeing their development, which is usually seen as the best part of being a teacher.

It is important to note, that the limits discussed here are far from absolute. People in state-of-the-art R&D centres in the industry sector are very close to university people in what comes to their work content. They often even consider university a better work environment, due to the autonomy of the research, and even play with the idea of changing job. Research oriented people in the universities on the other hand complain about their work environment due to it's internal competition and constant financial pressure. Universities' teaching oriented people on the other hand is very similar to the teachers of polytechnics and high schools, these group's incentives are related with seeing the students evolve and graduate.

5.2.2 Living environment and local services

When explaining differences between professional groups, living environment has less explanatory power than the working environment. In the interviews it was evident, that in all professional groups there are people who find the living environment important, while others gave it less importance. None of the interviewed professionals said that living environment doesn't have importance at all, but the importance of the different properties differed from person to person, not from professional group to another.

In general the service level in Finland is good and quite homogenised, which also explains its smaller importance as an explaining factor. Also, most of the large Finnish cities have e.g. different kinds of living areas and at least one good school, so the professionals are able to modify their living environment and available services inside the area. Combining this with the fact that according to the statistical analysis living environment doesn't cause interregional moving, the image of a region in the eyes of potential movers is currently typically based on geographical location. In the Oulu the northern location and nature and it's possibilities as a recreational environment were seen as a differentiating factor, whereas in Capital region the closeness of sea and international connections were mentioned. Tampere gained credits for closeness to and good connections with important locations (Helsinki, Helsinki-Vantaa airport and harbors).

An important factor (especially for the industry people) is easiness of traffic, which was raised in all three geographical areas, but for different reasons. In the capital area, the crosswise public transport was seen as an important development target, whereas in Tampere and Oulu the role of private transportation was emphasised, even though the interviewees also stated that the public transport is not on a good level. This relates to the fact that in capital region it is possible not to own a car, since public transportation is on a reasonably good level and often even faster than using own car, but elsewhere in Finland private car is necessary for daily activities. This is also visible when people talk about private transportation; often they also state that the cost of living

in the area is low, i.e. calculate car ownership as a part of the total living costs. Yet, also in areas where private cars are the main transportation mean, people would benefit of better service level, because that would aid e.g. in the transportation of their children.

High school teachers are the most stable people throughout the country, even though there were clear incentives to move. As seen from Figure 20, the only exception is Espoo, where propensity to move is almost twice as big as elsewhere. The reason for this is that the teachers have to sustain the high living costs of the area with the same salary as elsewhere in Finland.

Lack of clear development targets in the public services doesn't mean that they aren't important. If the level of the service decreases too much compared to other regions in Finland, it will be noticed and can become a prohibiting factor. In the interviews everybody noticed at least one service they think is important. The most often mentioned ones, in addition to the traffic (66) were health services (59), education services (42), culture (37) and sports (32). It should be noted that these people don't necessary use the services they mention; e.g. most of the interviewed had health care services as an employment benefit, but still wanted the municipality to provide good level of service in the area, and people also often stated that they value good culture services, but don't actually use them.

5.3 Conclusions

The conclusions of the empirical study can be summarized as follows:

- There are differences in professional groups propensity to move, as well as in their role identification. Between the regions of the study, the differences are smaller, and usually explainable (e.g. the larger propensity to move in Oulu's Industry is probably due to restructuring in local companies at the time of the study, late 2002).
- Finnish professionals are clearly "execution" oriented people. To lesser extent professionals identify themselves as "innovators" or "customer servants". In general quite few perceive to regard themselves as "networkers" or "change agents". Some variance can be found among different professions.
- Propensity to move is significantly increased by young age, previous relocation experience and living in a one- or two-person household. Such professionals form the main target groups when attracting people to an area.
- Best attraction tools for regional decision makers are good jobs. Especially the job content, organizational issues and financial reasons may attract people. Living environment itself doesn't usually attract people.
- The effective labor markets of different professional groups differ from each other in geographical concentration and spread. For university professionals working abroad may be a requisite in some point of the career, while high school teachers have a training mostly usable only in Finland.
- The professionals receive their satisfaction through their work or its effects. Thus problems in the organization etc. can be very harmful to their satisfaction.
- The Finnish level of regional services is currently quite homogeneous, and therefore acts seldom as an attraction or prohibiting tool.
- According to the interviews, the most important services to the professionals are traffic, health care and education.

6 Implications for regional management in the Finnish context

The results of the Regional Brain Gain project support that the notion of cluster is an important element when developing strategies for regional management. The interplay between small and some big firm(s) within an industry in a certain geographical area is a decisive factor for regional development. The success story of the Oulu region in Finland seems to be based on the positive interplay between Nokia, smaller companies and the technical university, a collaboration that started already in the early 1970s (see more in Chapter 4). One could also argue that a few key individuals had a great impact on this development in the early stages. A similar development can be identified in the boat building sector in Ostrobothnia. What here is interesting is that the role of capabilities not only refer to capabilities within the region, but that also the ability to interact with knowledge holders representing *addressable* capabilities becomes an increasingly important element of successful firms, and subsequently successful regions.

The empirical analysis clearly revealed that Finnish knowledge holders primarily are evaluating alternative locations based on the work opportunities available. This means that progressive regions have to identify the employers (companies or public sector employers) they want to have established in the region. This part of "relationship marketing" seems to have received limited attention in the Finnish context this far. However, e.g. the city of Rotterdam has put in place a systematic way of working in this area, which is illustrated in Figure 21.

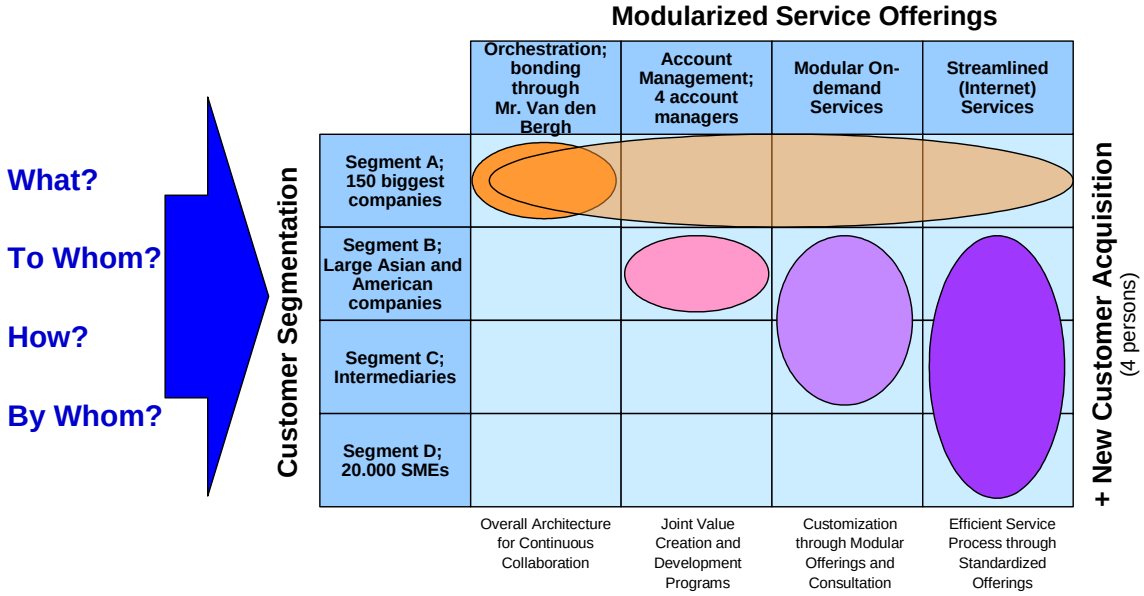


Figure 21. Segmenting employers as target groups; the case of Rotterdam

Identifying the "right" employers is important, as these organizations most probably will attract the "right" individuals that will be instrumental in the development of new knowledge and generate new innovations. Technological innovation is driven by the quality of human resources, in particular, the share of scientists and engineers or other highly skilled involved both in innovation as well as in the diffusion and use of new technologies. (Campbell, 2003, p. 5)

The "capability map" and the Nautor case illustrate that different types of capabilities are needed in different phases of industrial development. For policy makers it is therefore important to recognize that "scientists", usually developers of generative capabilities, to an increasing degree have to be complemented by other experts that provide resource-integration, transformative and business modeling capabilities. Many times these capabilities are difficult to teach, and one could argue that they reintroduce the sense of "craftsmanship" into the productivity scenery. The craftsmanship we then talk about is intellectual and social craftsmanship and not mechanical craftsmanship. This also highlights the importance of certain key individuals during critical stages of the development of the firms, and indirectly also the development of the regions. For example the role of Koskenkylä was absolutely paramount to the success of Nautor in its initial years. In the same way the role of Leonardo Ferragamo has been extremely important in the revitalization of Nautor.

One question which has great interest in the discussion on regional competitiveness is the role of education and training. Conventional wisdom has suggested that it is the quality of labor supply, including how that labor supply is organized and managed, that has become the chief source of productivity growth. However, the examples of Germany and Japan from the study conducted by Porter would challenge this assumption.

The Nautor case presents some interesting perspectives on two dimensions of the interplay between the region and individual companies. Initially Koskenkylä could exploit the existing knowledge among the individuals residing in the area around Pietarsaari. But as Nautor grew and generated its own presence as a well-recognized brand, Nautor in itself became a major attraction for the region. Ferragamo was attracted to the Pietarsaari region because of Nautor, not because of the region per se. However, the region had in different ways supported the development of Nautor, and has continued to do so, thereby further strengthened the virtuous circle of collaboration between region, employer and e.g. through focused education efforts individual knowledge holders. This interplay around knowledge development can be described in accordance with Figure 22.

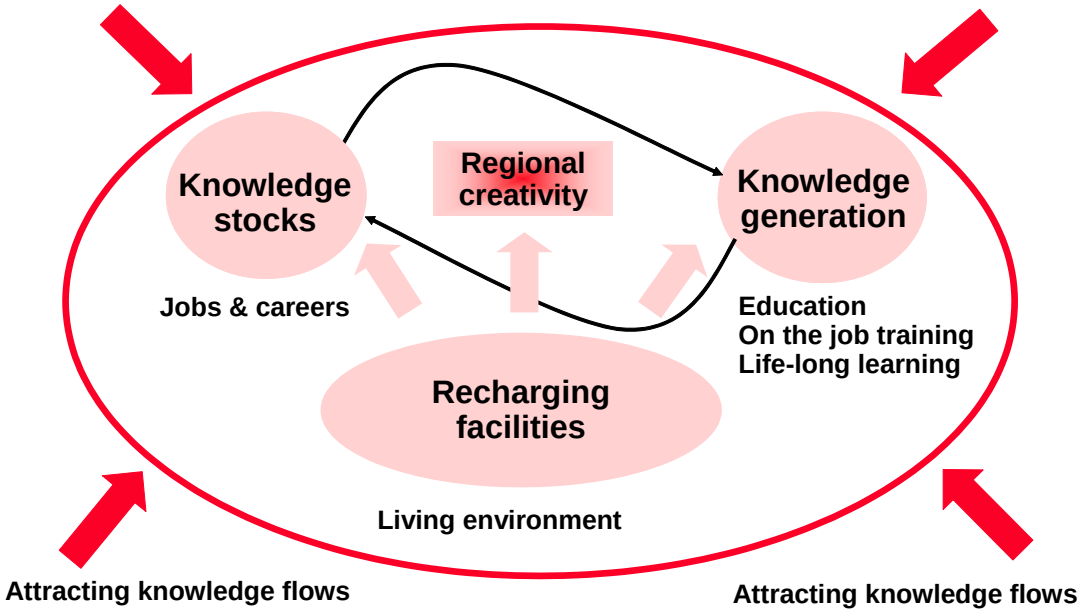


Figure 22. Regional attractiveness in the knowledge society

Mika Raunio has been an active contributor to the conceptual development during the Regional Brain Gain project. He has especially looked at the role of knowledge development. In a continuously changing environment skills and knowledge depreciate over time and continuous learning and updating of skills and knowledge are required in order to sustain their value. Thus individuals may have to climb the steps of learning several times during their career. In order to do this, the region should offer two key facilities for individual knowledge holders: learning facilities that creates the capabilities to learn (from preschool onwards) and professional skill development and updating facilities that provides professional development. On top of this there are three central processes that also need to be supervised and nurtured by cities or other regional actors: the maintenance of knowledge stocks, knowledge generation and recharging.

Maintaining knowledge stocks:

- *Work and career opportunities* – jobs where individual knowledge holders are working – creates the knowledge *stock* of the region and working *process* transfers the knowledge and qualified human resources into wealth; to activities that improve the competitiveness of employer organizations, urban region and the psychological and economical wellbeing of its workers/inhabitants. Utilization of the asset (knowledge, tacit knowledge, skills, etc.) of professional labor helps employer organizations and urban region to develop their economic output and offers individual worker satisfying work.
- From attractiveness point of view the interesting and challenging job opportunities – well functioning and high quality creative problem solving environment - are the major attraction for highly skilled labor as such. Thus, the size and quality of the knowledge stock and the quality of the process that utilize it are the preconditions that determine the level of the value creation on the region and the attractiveness of the region as a place to work. For individual utilization as an organization's success factor is just one element of attractiveness, others are work environment and opportunities for personal competence development and career.

Knowledge generation:

- Learning of individuals and organizations is a life long process and the base for the wellbeing and success of the urban region. Thus, *educational facilities and alternatives* should be proper from day-care to post-graduate. The foundations for learning abilities, skills and willingness to learn as well as social skills are created already in early childhood. Versatile and high quality day-care system should be provided, not to teach toddlers math or science, but to ignite the desire to learn, to live and to create as a part of the society. This process should be extended to the school system and offer variety of pedagogical alternatives as well as high quality class with emphasis on certain subjects. Production of knowledge and qualified human resources should not be left for universities only. They may provide the highest knowledge, but the process of positive learning begins much earlier. At the university level programs may be adjusted according to local key industries, but cautiously. Even more important is the high quality basic research, which merely creates new alternatives and paths for the local economic development also than just supports those already existing. Various alternatives for extension studies and specific training programs are crucial as well. Structures are in most cases already available, but contents, processes and attractiveness of education can always be improved.

Recharging:

- The living environment has to offer a pleasant place to live and work in all different phases of human life. The aim is not only to offer "warehouses to stock the knowledge", but the aim should also be to recharge and renew the innovative and creative resources of the region. This kind of environment does not only attract human resources to the area but also keeps them there.
- A high quality living environment is hard to determine, and is clearly context specific. Its particular form for a specific region should be actively looked for by regional management, so that it could be developed in order to support the wellbeing and rooting of the human resources. Since "life-styles" and different "tribes" of individual knowledge holders are increasing, a versatile and tolerant environment seems to become one crucial success factor in the long term.

One question which will become of increasing importance for the Finnish national and regional decision makers is the impact of migration. This was indirectly raised by Jorma Ollila, the chairman and CEO of Nokia, in October 2003 when he stated that it is a crucial question for the future of Finnish economy how Finland can succeed in a competition on investments and skilled people with the leading centers of Europe, Asia and America. On a regional level this will be translated into the question of what regions can do to increase their attractiveness and keep their foreign knowledge holders.

- When entering the country.
- When looking for job opportunities.
- In keeping contact with own culture.
- When trying to accommodate to the foreign culture.
- When using public services.
- For life long learning.

Another perspective on immigration is how Finland can move from a reactive social immigration policy to a proactive foreign recruitment policy? Some preliminary findings in this area have been the results of a separate study carried out in close collaboration with the Regional Brain Gain project by Ph.D. Annika Forsander. The results of this study are available in a separate report.

The conclusions of the Regional Brain Gain project are that the Finnish knowledge holders primarily seem to be motivated to choose their location based on factors related to their work. However, work related expectations vary depending on category of profession. The importance of employment is therefore stressed because for two different reasons, firstly the creation of jobs is a top priority for any city or region, and secondly the employment opportunities in themselves are the most important contributor to keep professionals within a region. By using the so called capability map it is possible to summarize the results of the project by highlighting some of the crucial capabilities the regional actors have to possess in order to be competitive. This is presented in Figure 23.

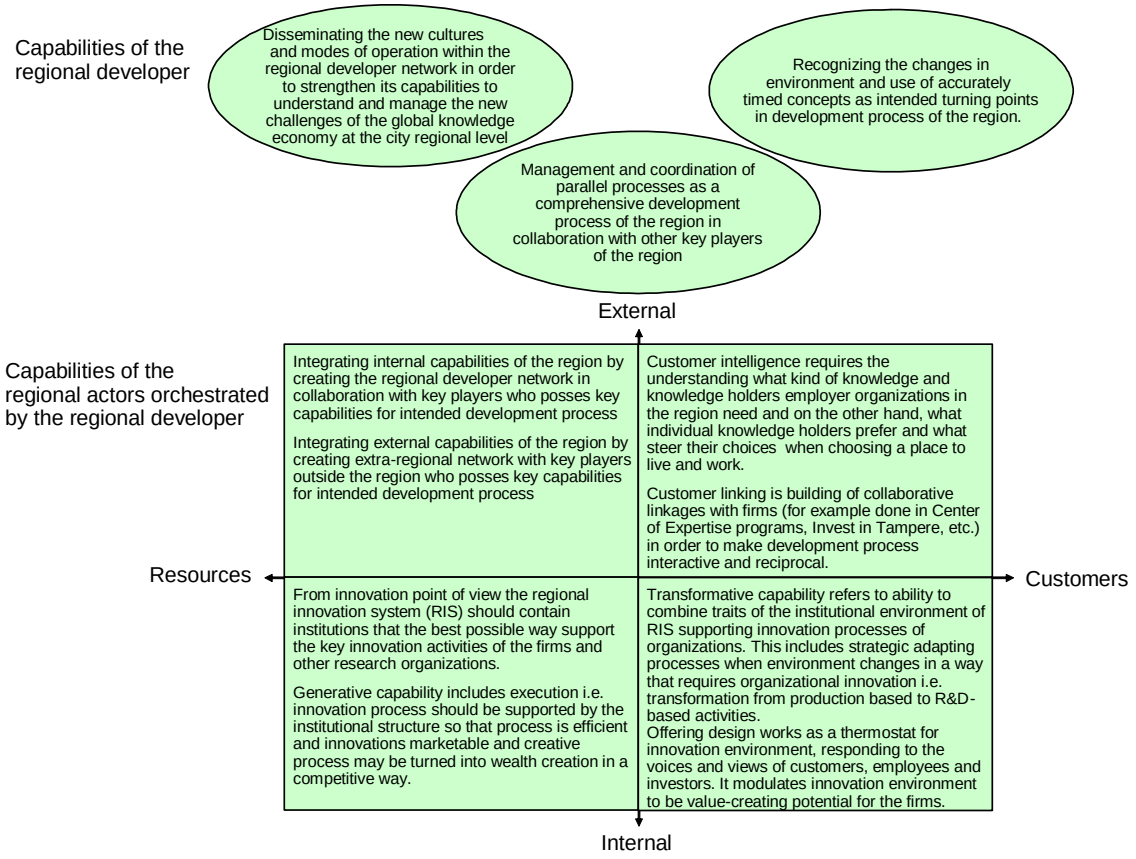


Figure 23. Capabilities for regional development (in collaboration with Mika Raunio)

The Regional Brain Gain project was addressing a comprehensive area relating to an important phenomenon: how Finland can become more attractive for important knowledge holders, and how better policies can be developed for regional management. The results of the project have been quite encouraging, and the participation from the different stakeholders has been very active.

When the project was initiated one of the success criteria defined was that the project should create a movement, a process of joint learning, which should continue after the project was concluded. There are indications that this objective also will be reached. However, the process will not continue without the steady input of new knowledge into the learning interactions. For that purpose two major themes for more in-depth studies have been identified.

Firstly, the specific characteristics of the Capital region could not be investigated in enough detail due to the fact that only one of the actors, Espoo, was officially participating in the project. We think that both the question of regional attractiveness and the application of our capability based model for strategic management in a regional context would be highly relevant also for the other actors in the Capital region. Discussions have therefore been initiated in order to identify how the findings could be further elaborated to even better serve the regional decision making in the context of the Capital region. Issues that would emerge relate to city policies and the management model of the cities, and especially for the collaboration within the Capital region.

Secondly, the empirical study clearly supported the view that to improve competitiveness in general in Finland the emphasis should be on cluster or sector level. Professors share very much the same values and expectations regarding their work and living environment irrespectively if they are located in Espoo, Tampere or Oulu. The same applies to teachers and scientists. Because of this homogeneity within clusters national policies regarding cluster development seem to be a more appropriate model for policy making than to try to develop e.g. three separate regional policies for the ICT-cluster. Of course there are some local differences because of the different companies in respective region, but many of the requirements are shared across regions. A cluster based analysis of the most promising new clusters for the Finnish economy, using the here developed more in-depth understanding of the capability requirements mechanisms during the formation and development phases of the cluster would therefore be a natural continuation of the Regional Brain Gain study. The capability map could here be a tool that could be used to benchmark different clusters against each other as an addendum to more traditional cluster analyses in accordance with the methodology developed by Porter. Interesting clusters would be the learning cluster, the health care cluster, the revitalization of the mechanical engineering cluster and the ICT-cluster from a customer related capability perspective. The offerings provided by different national and regional actors would most probably have to be configured differently in accordance with the illustration in Figure 24.

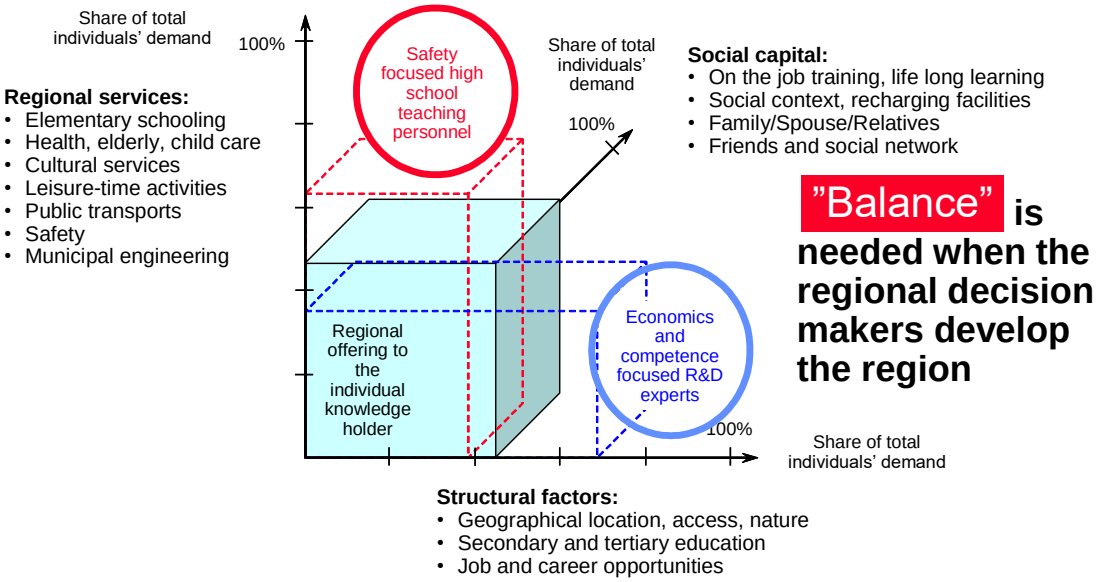


Figure 24. Cluster based offering; an illustration

Helsinki, January 26th, 2004

Synocus Oy

Appendix 1. How the Regional Brain Gain project was conducted

Introduction

During spring 2001 representatives of Synocus and Ambrosetti decided to initiate an international multi-client project called Regional Brain Gain. The phenomenon that intrigued us was that certain regions and cities better than others seem to have succeeded in *attracting* knowledge workers better.

In today's society there is an increased attention paid to how *attractive* the region is for highly educated people. A growing portion of new jobs created demand higher education. Our belief when we initiated this project was that there are many different factors affecting the decision making of highly educated workers. We also thought that it would be important for regional decision makers to better know how the individuals, who they want to attract, evaluate these factors when they decide to join the region, stay in the region or possible leave the region. Whereas there is lot of research on the more aggregate level of *regional competitiveness*, there are less research findings available on the more granular issue of *regional attractiveness.*

Our research approach was quite straightforward. We assumed that knowledge workers make up their mind on where to locate basically along two dimensions: on the one hand what (i) employment opportunities the region provides, and on the other hand what the region can provide in respect of (ii) satisfying expectations relating to the private life of the knowledge worker.

The first objective of the Regional Brain Gain -project was to develop some hypotheses for how different groups of knowledge workers consider these issues, and then empirically test these hypotheses in the context of the Finnish and Italian regions that participated in the project.

The second objective was to use the empirical material to generate some additional hypotheses regarding how certain groups of individuals behave in a homogenous way within the cluster, but show divergent behavior between clusters. These hypotheses were then tested with further qualitative analyses.

The final and third objective of the research was to evaluate the results of the empirical research among knowledge workers to draw some conclusions on what regional decision makers could do in order to improve the attractiveness of their region among those groups of individuals they primarily target as inhabitants and taxpayers. Our perspective was thus ultimately a managerial one, with the focus on regional decision makers.

The Regional Brain Gain project thus had ambitions that were very broad in scope. We could therefore only make modest effort to dig into the vast amount of issues that we faced when taking on such a challenge. However, we felt that if we would be successful the community formed around our project would find ways to continue these discussions, and further bring forth the line of thinking that hopefully would be firmly grounded during the duration of this endeavor. The original project outline and the actual proceedings of the Regional Brain Gain project are presented in the following sections.

Our research questions and original assumptions

The ambition of the Regional Brain Gain project was to develop a unique understanding of which values (in the sense of Zetterberg, 1982) and priorities characterize the most productive knowledge holders in a particular region. Why do people move to a region? What makes them decide where to live? Why are certain individuals committed to stay in the region, whereas others decide to leave? Is the interaction between and dynamics of individuals in the business and social environment different in different regions? Which characteristics of the individuals best explain differences between groups, such as gender, age, family circumstances, education, type of employer, nationality or specific skills. By understanding the inner ambitions, goals and capacities of these individuals, it should be possible to develop policy statements aiming to attract to and retain skilled people in a geographic region. As a consequence, this enables the region to better capitalize on its other resources. This would however require that the decision makers consider their regional organizations as "business entities" that will have to develop their own distinctive capabilities in a way similar to the way firms do.

Due to these ambitions, the methodological approach of the Regional Brain Gain -project were both inductive and deductive. It was deductive in the sense that we used previous findings about the preferences of individuals in a regional perspective, very much relying on previous research done by the Unit for Urban and Regional Development Studies of University of Tampere (Sente). It was inductive in the sense that the large empirical study that was conducted in Finland and Italy provided us with both quantitative and qualitative material, based on which we are now able to profoundly challenge existing perspectives on how knowledge workers make up their minds.

In a more general sense, the results of the Regional Brain Gain –project were expected to be relevant and useful for regions but also for organizations and firms whose business success relies on the ability to attract important knowledge holders. To be more precise, we focused our attention on the shared interest of public and private actors to jointly develop competitive knowledge intensive regions. Evidently, both private firms and public authorities will gain from being located in a competitive knowledge intensive region.

In fact, we believed that the way a region is "organized" in the sense of having high quality strategic processes (Normann, 2001) that create useful interactive patterns, as well as an attractive vision of the region and its competitiveness, are crucial factors for regional prosperity. In taking this perspective we pose that regions develop capabilities that make them more competitive in comparison with other regions. A better understanding of what capabilities to build and leverage for each of the regions that participate in this study was the ultimate objective of the project.

The Regional Brain Gain -project aimed at generating empirically and theoretically rigorous knowledge concerning why key knowledge holders stay in a region or move from one region and decide to live somewhere else. This leads to the issue of how to create regional strategies aiming at attracting knowledge holders and at managing stable, long-term network relationships with knowledge holders having high geographical mobility. In the end, this should enable regions to better prosper from its other – perhaps very immobile – assets.

The project outline

The Regional Brain Gain project had four main stages: 1) initial desk research, 2) quantitative survey of the target individuals, 3) in-depth qualitative interviews, and 4) a final analysis and syntheses leading to policy-focused conclusions. The participants joined all stages, which were interdependent and complementary. Thus, the structure of the third stage was to some extent dependent on the insights made in stage two. The last stage provided strategic conclusions based on the new knowledge gained in the introductory stages. All stages had a multi-client set-up, even though the last stage allowed for individualization in terms of conclusions and recommendations.

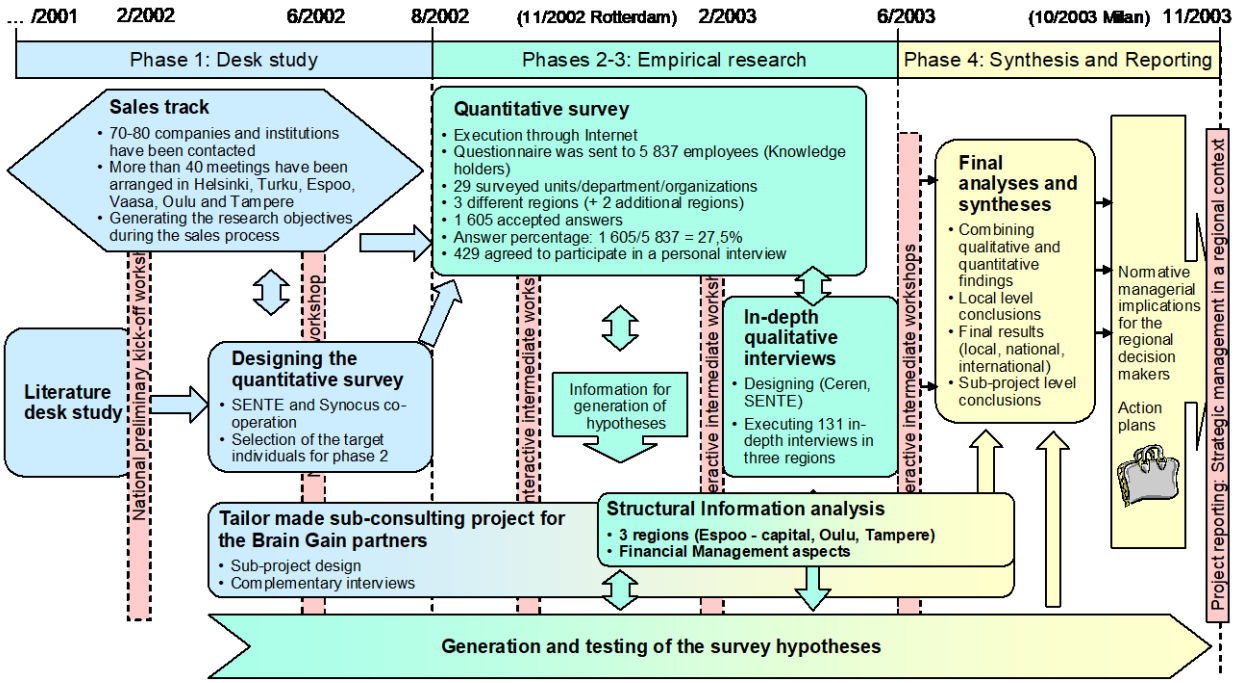


Figure 1.1. The project phases in Finland

Selection of key lines of businesses and firms

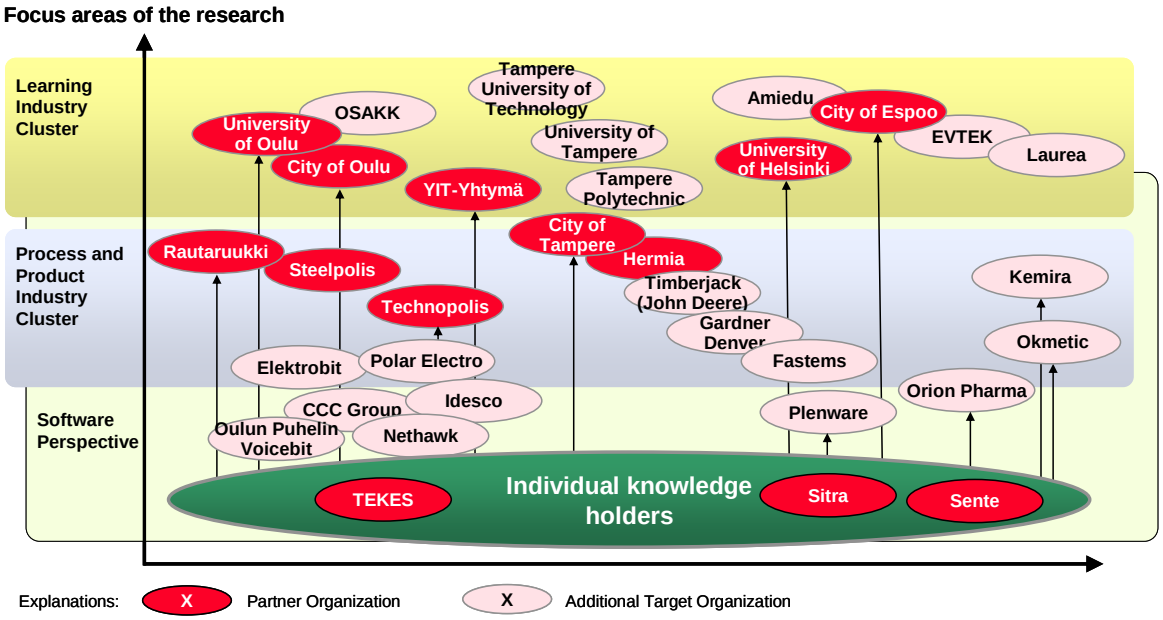


Figure 1.2. Partners and target organizations in Finland

Two main clusters were chosen for the project in Finland: the learning cluster and the process and product industry cluster. We also looked at the software knowledge holders as a background factor.

The learning cluster was focused around the participating cities, and around the two participating universities: The Helsinki University and The Oulu University. In addition to the participating universities, Amiedu, the vocational training center for adults and development center for adult education, Espoo-Vantaa Institute of Technology (EVTEK), Laurea Polytechnic, The Oulu Region Joint Authority for Vocational Training (OSAKK), Tampere University, Tampere Polytechnic and Tampere University of Technology participate in the quantitative phase of the research as target organizations.

Questions related to the industry cluster, especially in the Oulu/Raahe region, have been linked to Rautaruukki and Steelpolis. The quantitative research also included answers from the companies such as Orion Pharma, Okmetic, Kemira, Polar Electro, Elektrobit, CCC Group, Nethawk, Oulun Puhelin/Voicebit, Idesco, Gardner Denver, Timberjack, Fastems, and Plenware.

Company-specific information and data has been collected during the process. This information was used as background information in the quantitative phase of the project and also in the qualitative phase.

Empirical research

The target groups were defined together with the partners and other organizations and institutions that participated in the quantitative phase of research. Complementary interviews with experts in both clusters also took place. This phase started in autumn 2002 and continued until beginning of 2003. The questionnaire was sent out to a total of almost 6000 persons in October-December. When this phase of the project ended in January 2003 the answering percent was around 30 %. Sente/University of Tampere (Research Unit for Urban and Regional Development Studies) has been responsible for the design and outlook of the questionnaire.

The quantitative material was analyzed by Synocus together with Professor Pertti Laininen from Helsinki University of Technology. The final results from the quantitative phase were ready by May 2003.

The qualitative research phase started end of March 2003. In total more than 130 persons were interviewed during April and May. Some of the interviews had a stronger focus on the immigrant aspect and these interviews are the base for the research input made by CEREN, Helsinki University/Sitra. The qualitative interviews consisted of two parts linked together. The first part was a theme interview looking at job related issues, future plans of the interviewee, moving history of the interviewee and thoughts about the living environment and region. The second part consisted of a value charting based on findings from the factor analysis in the quantitative phase. The value charting looked at issues related to economics, competences, work environment, free time/regional services, safety and private life.

Interactive workshops

Workshops have been held on regional, national and international level. In June 2002, a national workshop was held at Synocus premises in Helsinki. All regions were represented in this meeting and the schedule for the project including workshops and activities was decided upon. The first workshop in autumn 2002 was held in Tampere in September and the second was held in Oulu in October. The first international workshop was arranged in Rotterdam in November 2002. This workshop looked into the research situation of Italy and Finland. Richard Normann from SMG presented research concerning healthcare and the society in the Skåne region in Sweden. The Rotterdam City Development Corporation, the Erasmus University and Technical University of Delft had their own presentations at the workshop. The second international workshop was arranged by Ambrosetti in Milan in October 2003. In addition to the Finnish and Italian participants also a representative from ILO, Geneva participated in this workshop.

In the Tampere workshop in autumn 2002 the first pilot for the quantitative survey was presented. The first preliminary results from the quantitative research were presented in Oulu in October 2002.

During January and February 2003 three local workshops were arranged in Finland, focusing on the preliminary results from the quantitative research phase. In June three local workshops were arranged, one in Oulu, the 6th of June, one in Tampere, the 10th of June and one in Espoo, the 19th of June. These workshops focused on the final quantitative results and preliminary qualitative results. To these workshops also representatives from the target organizations were invited. The local finalizing workshops were arranged in Espoo and Tampere in November, and

in Oulu in December. The concluding seminar of the project was organized in Helsinki in February 2004.

Appendix 2. The conceptual framework

The roots of competence-based strategic management can be traced back at least to the 1950s. Selznick (1957) noted that organizations have to represent a fundamental congruence between external opportunity and internal capability:

> Leadership set goals. But in doing so takes account of the conditions that have already determined what the organization can do and to some extent what it must do...In defining the mission of the organization leaders must take account of (1) the internal state of the policy: the strivings, inhibitions, and competences that exist within the organization, and (2) the external expectations that determine what must be sought or achieved if the institution is to survive (Selznick, 1957, pp. 62, 67-68)

The competence perspective evaluates the resources and competences regarded as important through the firm's intermediate outcomes (Mosakowski, McKelvey, 1997) to improve the understanding of how the short-run competitive interactions of competence leveraging can be linked to the long-run dynamics of competence building, and how the two dynamics interact in driving the evolution of industries.

Firms face the challenge of building future competences on the one hand and responding to present customer needs on the other hand.

> Two opposing, responsible forces pull top management: those that demand commitment to the old, and those that advocate for the future. Management must find the right balance between support for incremental improvements and commitments to new and unproven innovations. Understanding and managing this tension perceptively may well separate the ultimate winners from the losers. (Utterback, 1994)

In static business environments there is no need for a continuous development of capabilities to stay competitive. However, most firms face dynamic, competitive contexts where it is assumed that competitors will continuously introduce new improved offerings, based on their development of new capabilities.

The notion of value creation

Normann and Ramírez (1993, 1994) perceive value creation as the "raison d'être" for a firm. This focuses the attention on the interaction and interplay between suppliers and customers. An offering is defined as the output produced by one (or several) actor(s) - 'producer' or 'supplier' - creating value that becomes an input to another actor (or actors) - the 'customer' - creating value. Successful firms are effective "conversation holders", catalyzing an effective dialogue between competence development and customer development. The concept of the value-creation framework (Figure 2.1) illustrates this.

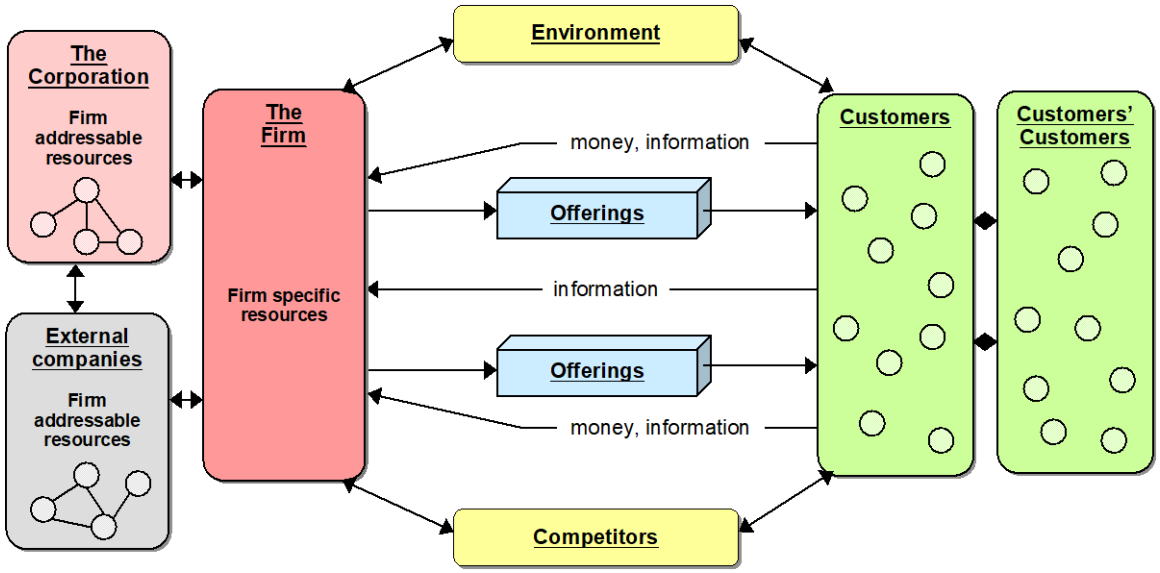


Figure 2.1. The value-creation framework

Value creation stems from a combination of three ideas (van der Heijden, 1996):

- Discovering a new way of creating value for customers.
- Bringing together a combination of capabilities, which creates this value.
- Creating uniqueness in this formula in order to appropriate part of the value created.

Sanchez and Heene (1997) and Khanna, Gulati, and Nohria (1998) have noted that networks of firms sometimes function like competence alliances. In such alliances, firms enter a succession of short-term collaborations for the explicit purpose of more quickly reconfiguring and maximizing a temporary pool of resources to take advantage of short-lived market opportunities (Sanchez, 1995). Using the notion of "offering" instead of "product" enables a better understanding of the dynamics of such competence alliances.

The model of the process part of firm as an open system (Figure 2.2) can be summarized to consist of three parts: the purpose (values and goals), the recipes (the business model), and the value creating processes. This is similar to the description by Simon (1960) of the organization as a three-layered cake. In the bottom, the basic work processes; in the middle layer, the programmed decision-making processes that govern the day-to-day operation of the system; and in the top layer the non-programmed decision-making processes, the processes that are required to design and redesign the entire system, to provide it with its basic goals and objectives, and to monitor its performance.

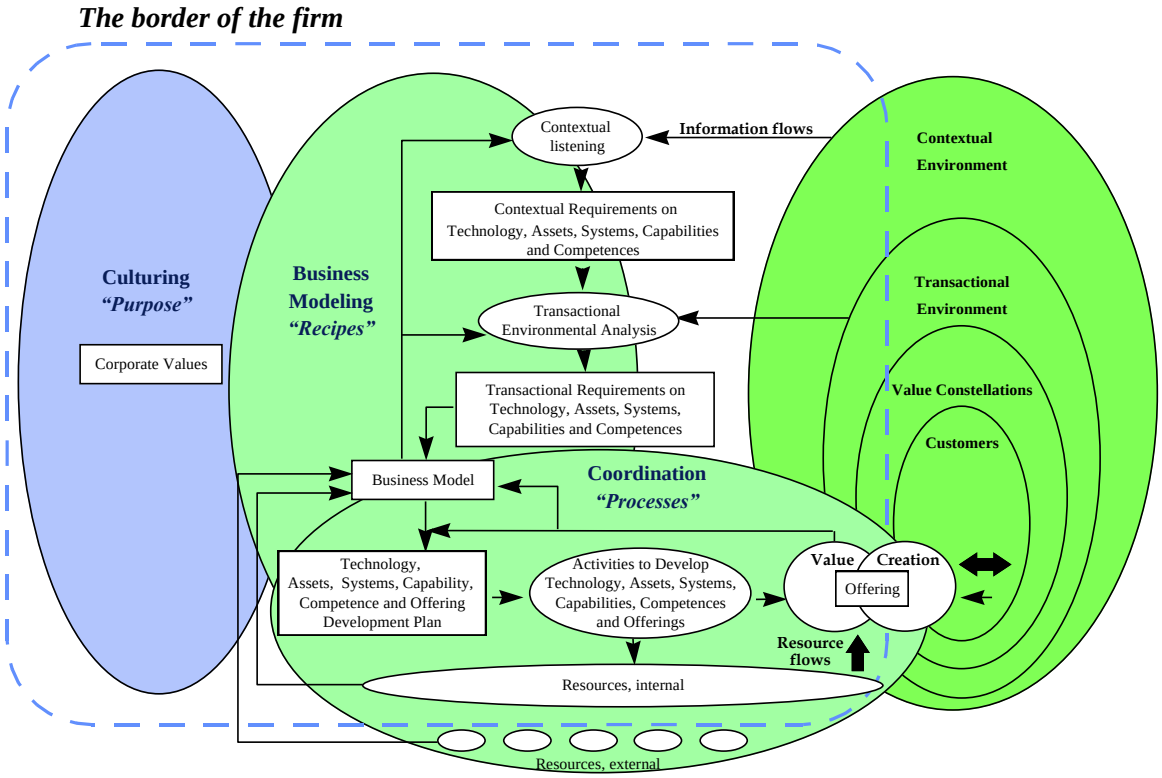


Figure 2.2. The firm as an open system (adopted from Wallin, 1998)

The value-creation framework (Figure 2.1) depicts the "lower-order elements"[18] of the model of the firm as an open system (Figure 2.2). The value-creation framework can be used to categorize the capabilities of the firm that relates to "lower-order system elements" (Wallin, 1997). Sanchez and Heene commented on this categorization as follows:

> Viewing customers as "co-producers"...helps to identify...four capabilities: the capability of the firm to develop and maintain relationships with its customers (relationship capability), the capability of the firm to design products that deliver value to customers (transformative capability), the capability to create new kinds of product performance (generative capability), and the capability to deploy both firm-specific and firm-addressable resources (integrative capability). Recognizing these four dimensions of competence provides a framework for both goal setting in competence building and developing insights into key aspect of industry change dynamics. (Sanchez, Heene, 1997)

The firm can also have capabilities that relate to "higher-order system elements" governing changes in a firm's managerial cognitions, whereas lower-order system elements refer to tangible assets, operations, and products (Sanchez and Heene, ibid). These higher-order system elements were in the model of the firm as an open system (Figure 2.2) identified as culturing, business modeling, and coordination.

The categorization of capabilities suggested here would thus consist of seven categories: relationship, transformative, generative, integrative, culturing, business modeling, and coordination capability in accordance with Figure 2.3.

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[18] The capabilities of an organization can relate both to business and management processes. Business processes are "lower-order" system elements, whereas management processes can be both "lower-order" (e.g. production planning, delivery scheduling etc.) and "higher-order" (e.g. business model renewal, cultural change programs etc.).

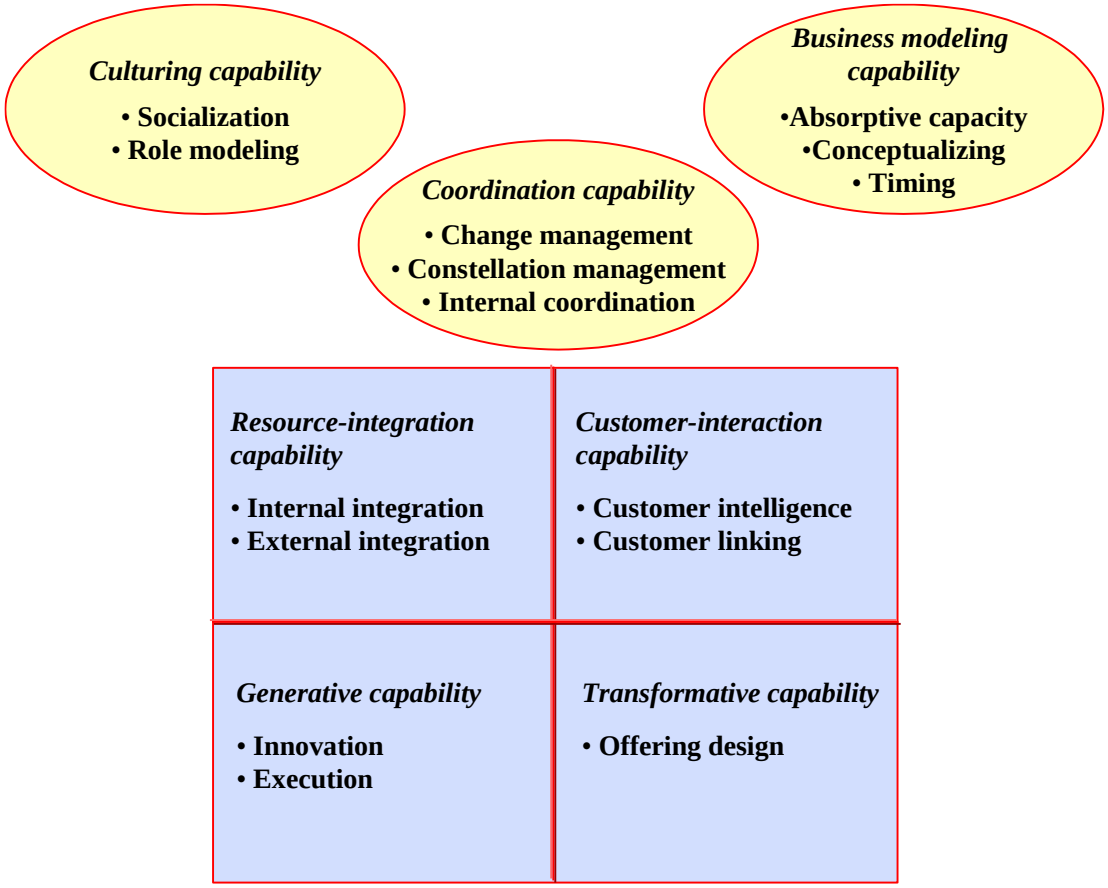

Figure 2.3. The capability map (Wallin, 2000)

Customer-interaction capability, or ***relationship capability***, is the capability to listen to and understand the customer, as well as the ability to communicate to the customer the value-creation possibilities of the firm, and to do so over long periods of time.

Day (1990) divides the customer-interaction capability into two sets of capabilities: ***customer intelligence*** and ***customer linking***. Customer intelligence involves the processes for gathering, interpreting, and using market information. Customer linking includes the well-defined procedures and systems that a firm uses to achieve collaborative customer relationships.

Transformative capability refers to the ability to combine bundles of product traits that in terms of physical, service and people content have the threshold traits required by each customer and which can be offered at costs less than their perceived value-creating potential.

The central transformative capability is ***offering design***. The distinction between creation and design here follows the reasoning presented by Gorb (1990). He defines design as a planning process of artefacts (in our language offerings). By that definition, design is a key element in the planning process of the business. Design is separate from the innovative process. Innovation is the creative process. Design is the process that modulates, controls, and encourages the innovative and creative inputs into the business - something that makes innovation meaningful. Design acts as a thermostat for innovation, responding to the voices and views of customers,

employees and capital investments. Design is therefore, according to Gorb (ibid.), a major driving force for both change and the rate of change.

Generative capability is the ability to create new bundles of product traits that constitute firm-specific competences. Two important features of generative capability can be identified, ***innovation*** and ***execution***. Innovation was described in the previous section on design. Execution refers to the capability to perform according to set objectives and is closely related to the notion of efficiency.

Resource-integration capability, or ***integrative capability***, refers to the capability to deploy firm-addressable assets and capabilities inside and outside the boundaries of the firm/business unit. The resource-integration capability can be divided into ***internal integration*** and ***external integration.*** Internal integration has been discussed by Hamel and Prahalad (1994) who emphasize the need to extract value out of the management of interlinkages. They introduce the notion of an "enlightened collective strategy" to describe this. External integration refers to how the firm integrates its own resources with the resources of outside actors.[19]

"Higher-order system elements" can form capabilities in culturing, business modeling, and coordination. The process of recognizing, articulating, and shaping the values and culture within the firm is called ***culturing***. Based on the discussion by Schein (1997) regarding how leaders embed and transmit culture, two central aspects of culturing can be identified: ***socialization*** and ***role modeling***. Socialization refers to the explicit processes to pass over and teach the values and the culture to members of the organization (Schein, 1997). It includes transferring knowledge from one individual or a group to become knowledge for another individual or group (Nonaka, Takeuchi, 1995).

Role modeling involves how the leading actors demonstrate values and culture through their own behaviour. Role modeling has a more implicit function of transmitting the values to the organization than socialization. Role modeling is here defined to include what the leaders pay attention to, measure, and control on a regular basis, how they react to critical incidents and organizational crises, how they allocate scarce resources, how they allocate rewards and status, and how they recruit, select, promote and excommunicate organizational members (Schein, 1997).

Business modeling is the management process whereby the firm develops, prepares and makes decisions on its future business model. Business modeling capabilities address three parts relating to the development, preparation and making of decisions on business models: ***absorptive capacity***, ***conceptualizing,*** and ***timing***.

Cohen and Levinthal (1990) define absorptive capacity as the ability of firms to recognize the value of new, external information and to add this information to their own knowledge base. Here the process capabilities relating to the processing of external information are seen as key elements in the definition of absorptive capacity. Having the right process capabilities provides the content, the "insight". The notion of insights was introduced by Hamel and Prahalad as follows:

[19] External integration has been extensively discussed in connection with networks (Gomes-Casseres, 1994, Gulati, 1998), ecosystems (Moore, 1993, 1996) and value constellations (Normann, Ramírez, 1993, 1994).

> Foresight is based on deep insights into the trends in technology, demographics, regulation, and lifestyles that can be harnessed to rewrite industry rules and create new competitive space (Hamel, Prahalad, 1994).

Hamel and Prahalad (ibid.) defined foresight as "the capability of management to recognize changes in the business environment and identify gaps between existing and future capabilities". Having a definition of foresight based on insights is problematic, as the insights will only materialize ex-post. "Insights" which at one moment of time look right, may later prove to be wrong. One such example is the case of NEC, which in the early 1990s was praised for insightful behavior. In the late 1990s it was reported that NEC had suffered extensive losses, and considerable management changes had taken place.

Conceptualizing refers to the capability of transferring the knowledge derived from absorptive capacities into actionable activities, as described in van der Heijden's (1993) "concept research" notion. Through conceptualizing, management develops actual business opportunities that exploit new ways to create value.[20]

Absorptive capacity and foresight has been connected by practitioners to the question of timing (Ala-Pietilä, 1998, Ollila, 1999).[21] Nokia has defined timing as "time when put in context of what to do", and considers timing as one of the cornerstones of "excellence in execution" (Ala-Pietilä, 1998). De Leo (1994) has noticed that timing and speed is a dimension of strategy which does not find a place in the traditional strategy frame. Eisenhardt and Brown (1998) use the notion of time pacing to describe a strategy for competing by scheduling change at predictable time intervals.

Managers gather and interpret data, make decisions, and initiate gap-closing actions (Garvin, 1995). Capabilities in this area can be called coordination capabilities when they relate to value-creating activities. These capabilities include both an internal perspective related to coordinating resources (***internal coordination***) and an external one (***constellation management***). In addition the process of closing gaps is a special form of coordination (***change management***).

Internal coordination renders the day-to-day management of the business possible. It includes financial, human resources, legal, and information management.

Value constellations are constantly changing. A firm designing or co-designing these must therefore have a management process to take care of its positioning within its value constellations. Constellation management involves deciding with whom to create value, determining the roles each actor will play in value constellations, including allocating accountabilities and responsibilities, and managing these relationships as a coherent system. Constellation management therefore includes the definition of the boundaries wherein the value-creating activities of the firm can take place.

Change management entails making it possible for an organization to actually change from one business model to another. There seem to be an increasing awareness that change is difficult to preplan in detail according to the "unfreezing", "change", and "refreezing" metaphors. For example, Orlikowski and Hofman (1997) suggest an improvisational model for change

[20] Metaphors and analogues (Nonaka, Takeuchi, 1995) and scenario techniques (Schwartz, 1991, van der Heijden, 1996) are examples of tools for conceptualizing.

[21] For example the introduction of the Newton handheld computer by Apple has been mentioned as a product launch that came too early.

management to encourage ongoing and iterative experimentation and learning, as they recognize that change is typically a process made up of opportunities and challenges that are not necessarily predictable at the start.

The competence-based strategic management perspective suggests that a firm must manage its capabilities as a system and avoid excessively focusing managerial attention on developing and managing a "single competence" judged by some criteria to be "core" (Sanchez, Heene, 1997). Therefore, the firm's building, leveraging, and maintaining of capabilities has to be carefully evaluated against the context of value creation that the firm is encountering. It could be argued that the balancing between capability building and capability leveraging ultimately drives what specific capabilities the firm need to focus on at different times. If learning from the supplier is a significant value-creating element for the customer, the supplier would benefit from assembling capabilities (firm-specific and firm-addressable) into offerings that would leverage the value of the learning advantage that the supplier possesses. The more customers are demanding personalized offerings, the greater the need for the supplier to also be able to address outside capabilities in order to put together an offering that is truly matching the value creating potential of the customer.

The learning potentials thus create opportunities for companies serving customers in close relationships to develop incentives for close collaboration and mutually reinforcing learning processes. But this will not take place without costs. There are two main problems related to close supplier-customer relationships. First, the more resources the supplier allocates to one single customer, the more likely his own competence building will suffer, and the risk for not providing a competitive set of offerings in the future is increasing. Second, the more the supplier will try to gain understanding of the customer's customers' value creating potentials, the greater the risks that there will be overlaps in activities, and thus the creation of sub-optimization of resource allocation and lost cost-efficiency.

Orchestration

The proliferation of orchestration as a term in management has been motivated by the "endless upheavals of the digital age", which has been seen to put focus on how to reconfigure the resource base, leaving the interaction between the orchestrator and its customer with less consideration. Symptomatic to most of these presentations is an anecdotal style, and a reliance on a few, often repeated examples, such as Li &Fung, Nike, and Cisco[22].

The competence perspective has been accused of tautology and lack of operationalization (Williamson, 1999). The same can be said about how orchestration has been put forward in recent popular management articles. One suggested way to address the tautological nature of this perspective is to evaluate those resources and competences regarded as important through the firm's intermediate outcomes (Mosakowski, McKelvey, 1997). Congruent with this reasoning orchestration can be defined as a capability[23] enabling a certain type of value creation. The definition of orchestration combines the cognitive, military, systems and value creation perspectives on orchestration.

[22] Some recent articles referring to the notion of orchestration are Stopford, 1996, Bailey, 2000, Sawhney, Parikh, 2001, McGee, Sammut Bonnici, 2002, Seely Brown, Durchslag, Hagel, 2002, Hagel, 2002.

[23] Capabilities are repeatable patterns of action in the use of assets to create, produce, and/or offer products and services (i.e. offerings) to a market (Sanchez, Heene, Thomas, 1996).

Orchestration *is the capability to mobilize and integrate resources for the purpose of providing an offering to a customer and simultaneously create value for the customer, the orchestrator and the subordinates (or network members) involved. The orchestrator considers the constraints, based on which conversations are nurtured to define and execute the purposeful resource allocation to create, produce and provide the customer with the offering.*

Orchestrators can have many different shapes. One extreme is the apparel manufacturer/ coordinator, which takes orders from the customer, performs some tasks in-house, and subcontracts most of the work to low-cost producers. On the other extreme we find the coalition of partners that may among themselves alter the role of orchestrator when they pursue a new standard in the ITC-sector (e.g. the coalitions were constantly re-built and reconfigured when the standards for the third generation of telecommunications were established in the 1990s, but Nokia was quite successfully taking the orchestrator role in some decisive phases of this process, Ramírez, Wallin 2000).

This far the use of "orchestration" and "orchestrator" in the management vocabulary has not made clear distinctions between different contexts for orchestration. Orchestration is one possible tool in the strategic toolbox when evaluating how value can be created in the best possible way. And orchestration then has several forms depending on how the orchestrator relates to the customer and to the subordinates.

However, the attention of management scholars has been on firms that systematically have established orchestrating contexts where the role of the orchestrator is "cemented" into the value constellations, and the orchestrator interacts with the customers in one pre-designed way and also handles the member network in a certain manner. In such cases one can say that the firm has chosen orchestration as strategy. Using the framework for orchestration (Figure 2.4), it could be suggested that there are three possible alternatives when developing a strategy based on orchestration.

The first alternative when developing a strategy based on orchestration is to focus on the management of the member network or the subordinates. Such a strategy could be called "resource aggregation". An often cited example of this type of orchestrator is Li-Fung.

The second alternative is to develop distinctive capabilities in the area of offering design (i.e. the relation between the orchestrator and the customers). Such an orchestrator could be called an "offering designer". Nike is an example of this type of firm.

The third alternative is to pursue a strategy aiming at continuously expanding and/or strengthening the total network surrounding the orchestrator, and looking for possibilities to economic gain through fees based on the transaction volumes passing through the orchestrator. Such a strategy could be called "community nurturing". Here eBay is a good example.

The three different approaches available when considering orchestration as a strategy are illustrated in Figure 2.4.

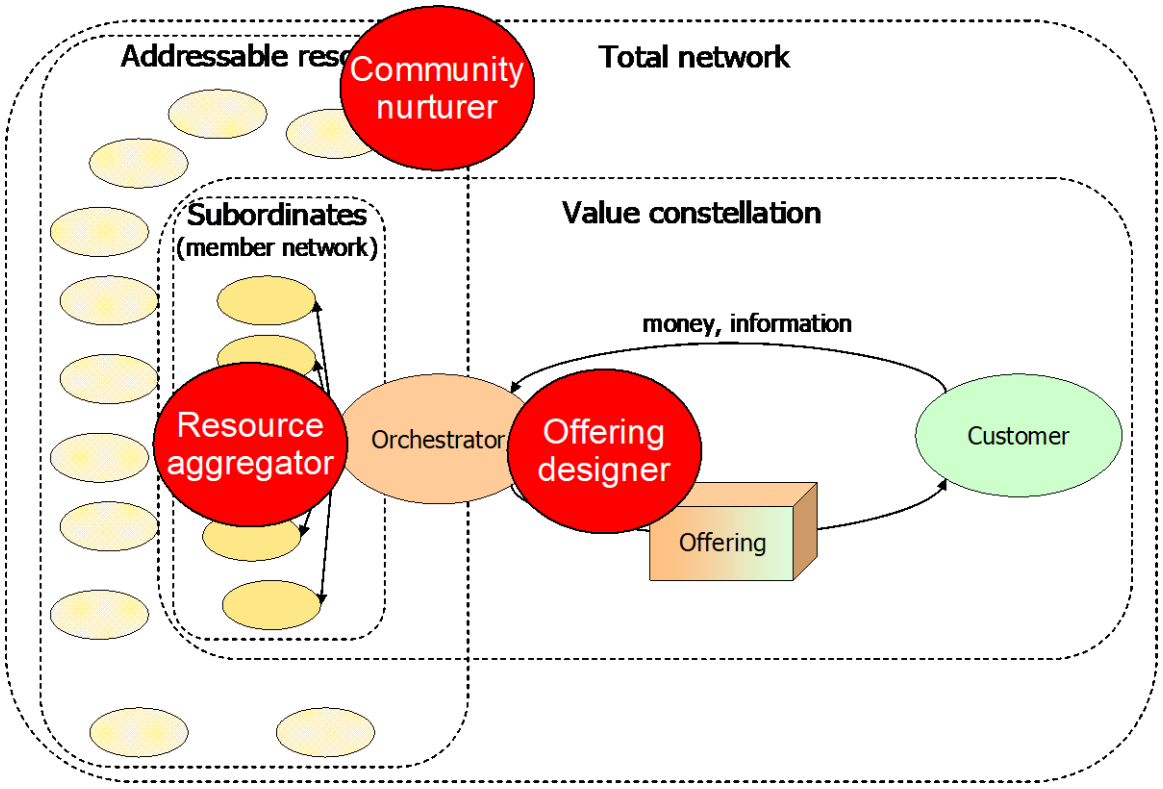

Figure 2.4. Alternatives when considering a strategy based on orchestration

Firms can find value creating opportunities where the orchestration perspective can be worth while considering, even if the firm as such would not see itself pursuing a strategy based on orchestration. Nautor cannot be seen to have orchestration as strategy (in the sense e.g. Li & Fung has) as Nautor itself performs most of the value creating activities in-house. If Nautor acts as an orchestrator in front of its resource pool of subordinates, it can be perceived as an "offering designer", transforming the market potential into sub-modules of the offering that fit the subordinates' production capacity. But Nautor can also be perceived as an orchestrator in front of its customer. By leveraging on the design capability of its chief designer German Frers, or exposing the long ship building tradition of its network of subcontractors, Nautor can position itself as a "resource aggregator" providing the customer with the possibility to choose from a broad set of resources and customize the final product according to his/her own taste. Both these phenomena can be valid for one single offering. However, having established the relationships both with its subordinates and with a number of repeat customers, Nautor can also take its orchestrating efforts outside the context of a single offering. The introduction of the ClubSwan program in collaboration with Bulgarian and Italian wine group Fescobaldi is an attempt in this direction. Taking this approach Nautor aims at becoming a "community nurturer".

Recent writings about orchestration have focused on firms that have selected orchestration as the strategy. What has been missing is the identification of the above mentioned different roles of the orchestrator. Li & Fung is primarily a resource aggregator, which is a completely different strategy than the one of Nike, who is an offering designer. The introduction of the Internet has enabled the emergence of pure-play community nurturing, of which eBay is the most well known example. All these companies have developed strong orchestration capabilities, and have based on this developed a strategy that could be called an "orchestration strategy". But the more

granular capabilities behind the “meta orchestration capability” are quite different when we compare Li & Fung, Nike and eBay.

The notion of orchestration, and the metaphor of the orchestra as a resource pool whose combined performance very much depends on both the music composed and the way it is interpreted by the conductor, is presenting the field of management with an interesting new way to approach value creation. This provides plenty of opportunities to further deepen our understanding of how management can cope in a world where the source of success is in leveraging the experience and creativeness of the most skillful individuals available in the orchestra, i.e. the addressable pool of resources.

Appendix 3. Initial capability formation in Nautor

Product innovation and process quality

Koskenkylä decided to make the Swans look like a painted wooden boat. In fact when looking at a Swan 36 one could not tell it was fiberglass. He thought that people were conservative, and there would be a lot of resistance toward fiberglass as a building material for a yacht, which the customer would be proud to show to his friends. According to Koskenkylä this was the main reason, why large yachts have to be so luxurious, much more so than the house in which the owners live. The first Swans provided a soft landing with the look alike to a wooden boat, but once the tide started to change, it only took a couple of years and wood was definitely out and fiberglass was in.

To secure high quality Koskenkylä trusted Rod Stephens to provide the expertise to the Nautor organization. Stephens was a practical man, who liked to travel and visit the yards that were building S&S designed boats around the world. He would go out with customers on sea trials. This way he would help the yard to build a high quality boat and he would help the client to sail it well. His work for Nautor was absolutely essential. Because of his long experience in both sailing and building he knew how to build yachts. Especially in the case of Nautor it would have been difficult to obtain the high quality reputation of which Swans have always been known without Rod Stephens' keen interest and frequent visits.

Koskenkylä considered that it was Nautor's luck having S&S rather than some other designer. Once Rod Stephens told Koskenkylä that the fact that Nautor knew so little, had one big advantage. The people at Nautor were not set in their ways. Other older yards would argue with him, that they had for the part 20 years done things so and so and did not always feel that Rod's comments were right. Instead Nautor needed all his know how and took all with no resistance. Later Rod Stephens admitted that it was very easy for Sparkman & Stephens to work with Nautor, as the objective was clear: to design a top quality product that would be strong and seaworthy. Koskenkylä's idea to team up the impressive race course record of Sparkman & Stephens with the native Finnish skills at the yard proved to be a winning concept. It could be added that the use of fiberglass as a disruptive technology also helped. The yachting elite were enthusiastic. Celebrities like Herbert von Karajan became proud Swan owners.

Even if the role of the designer as a networking partner was an important part of the initial success of Nautor, the philosophy was sill very much doing most of the activities in-house.

> "Nautor has an unrivalled manufacturing facility in the countryside around Pietarsaari. From the small commissioning dock in the city of Pietarsaari, to the main factory at Kållby, via the joinery factory at Kronoby and the plug and mould factory at Larsmo, they manufacture just about all the major parts of their boats.
>
> There are workshops fabricating stainless steel components, laminating large and small parts, building masts, assembling accommodation sections in special jigs, even a fully staffed technical and drawing department working flat out to supply the production teams with information and detailed drawings for modifications and developments." (20 years of Nautor's Swan, p. 9)

> "From early on it was realized that ultimate quality control lay in self-manufacture or, if that wasn't possible, in self-specification. Even by 1970 we were designing and anodizing our won spars, prompted by suppliers failing to deliver." (Nautor Swan 25 years, p. 7)

Another factor in explaining the fast growth of Nautor was that it was considered that Swan was a good investment. Koskenkylä used this argument a lot and it often worked, because there were facts to prove it. As it was explained earlier Koskenkylä had initially to sell boats at a low price because Nautor was in a vicious circle and had to get orders and advance payments. Later Nautor had to, and could, raise prices as the Swans became better known. Another factor making the Swans attractive investment objects was that much of the competition was still one-off wooden boats and Nautor's production line methods with the use of molds etc. gave Nautor a cost advantage. Each year therefore Koskenkylä was able to increase the price by 10 or 20 per cent. If a client ordered a Swan, then waited one year for delivery, and then used the boat for two years, he could usually sell it for more than he had paid for. When this happened the client was usually so happy that he ordered a new and bigger Swan. Nautor also had some clients who liked to plan and see their boat being built more than they liked using them.

Networking

As the production volume of Nautor increased they found that they were more dependent on suppliers and subcontractors. One year for instance the mast and rigging makers in England were late in deliveries. First they were only a few weeks late, but then it turned out to be months. It was spring and there were a lot of boats to deliver. The customers were angry. Some were staying in the local hotel with crews. Their expenses were mounting day by day and their summer vacation running out. The mast makers were in the U.K, but Koskenkylä was in Finland, so he got the heat. In addition the bank was getting nervous, because the clients naturally would not pay the last payment because of the delay of the delivery. This was one more time when Nautor almost went broke. Koskenkylä felt that because of Nautor's remote location they were the last to get the orders delivered whenever suppliers had delivery problems. This was the reason Nautor decided to start making its own masts and many other fittings. One such item was the folding propeller. The reason for redesigning this component was quality problems.

Nautor was buying propellers from the U.S, but some of the clients complained that sometimes they would not open and when you were coming into a marina and the propeller would not work, that could be a serious problem. The American company was not interested to fix the fault. Koskenkylä knew someone, who he thought could solve the problem, Helge Sundqvist. He had been the local village blacksmith. When entering Nautor in 1967 he became the car mechanic, the electrician, the hydraulic expert etc., a man of all trades, a real inventor. He solved technical problems for Nautor. He had no formal education, but he read a lot about anything mechanical and according to Koskenkylä he was a genius. Koskenkylä showed him the propeller and explained the problem and the next day Sundqvist provided him with the solution. Nautor had a few of them made by a subcontractor in Finland, but then one of Nautor's clients after hearing the story asked if he could start making them and selling them to others as well. After he promised Nautor a lower price Koskenkylä agreed and this client then started a company in Denmark called Gori Propeller. The first Gori propeller was introduced to the market in 1975. In November 2002 Gori propeller - Steel Team A/S was awarded the overall "Ernst & Young Entrepreneur of The Year 2002" award in Denmark. The company now offers a full range of folding propellers for the marine field and custom propellers for industrial and commercial projects all over the world.

As the volume grew it was felt that Nautor was ready to take on the U.S market. Koskenkylä discussed it with Rod Stephens and he recommended Palmer Johnson Inc. as a potential agent. Rod knew them well because Palmer Johnson had built many of the S&S designed American Cup boats. Palmer Johnson as a company was bigger than Nautor was at the time with a sound financial situation. Mike Kelsey, the president, came over and signed the contract. Koskenkylä was easily convinced, because Kelsey ordered many boats at a time and paid a big deposit. The only problem with this relationship was that they wanted to market these beautiful Swans with the Palmer Johnson brand. At first Nautor accepted this because the money was needed, but as Nautor grew stronger Koskenkylä started to insist that they would change the name to Swan. Kelsey did not agree, so finally Nautor cancelled the arrangement and started direct marketing. The few years that Nautor worked together with Palmer Johnson were important for the development and the growth of Nautor, not only because of the increased volume of orders, but also technically. Palmer Johnson sent their representative Bill Emery to supervise the contraction of their boats. He was the practical type and had one fool-proof method of testing if any particular item was strong enough. If he could not break it by using his hands and/or weight it was OK, otherwise he would show a happy smile and tell Nautor to do it again. He was a very big and heavy man and the Swan boats became even stronger.

Sales and customer relationships

During its first year of operation Nautor deliverd four boats, the wooden one, which was used for the plug and three fiberglass Swan 36's. Koskenkylä was able to sell all of them at a very early stage. A very important factor for this initial success was the highly capable workforce Nautor had, because initially they had nothing to show. The only tangible thing was the name and reputation of Sparkman & Stephens. Retrospectively Koskenkylä argued that is difficult to understand how superior in reputation they were compared to other yacht designers. There was only one best choice then. The name and reputation of S&S was built on the winning boats of their design in all ocean racing from the America's Cup, One Ton Cup, Admirals Cup, Cowes week etc. Most of the winners in these races were designed by S&S. Then Nautor came from Finland, the first to produce S&S designed boats not only in series at a very reasonable price, but also in a new and stronger material than wood.

On the top of being price competitive, the Swan’s were lighter as well and therefore had a better chance of winning races. Just to broaden the appeal to more potential buyers Koskenkylä’s sales argument was that because it was built of a lighter material Nautor could afford to make the boat with a nice wooden interior and therefore appealing as a family cruising boat as well as a racing boat. This was the argument the racing minded sailor needed to convince his wife. The racing in those days was not as competitive, or rather, the boats were not as extreme racing machines as they are today, so it was in fact possible to win big time with a Swan that looked like a family cruising boat with heavy teak interior. Good examples of this are two of the Swan’s that have contributed to the success of Nautor more than perhaps all the others combined. The first was Casse Tete, which in 1968 was the most successful boat ever to have participated in Cowes Week in the UK. The second was Sayula II, which won the first Whitbread (now Volvo) Round the World Race in 1973-74.

Casse Tete was the fourth Swan 36 to be produced. It was sold at the London Boat Show in January 1968, and entered the English Cowes Week races in July the same year. It won six of the

seven races, which she had entered during the Cowes Week. Nautor had a tremendous amount of free publicity in the major newspapers including the Times. The client was extremely happy.

Sayula II was a Swan 65, the first one to be produced. One day in 1972 Koskenkylä received a phone call from the local airport. Raymond Carlin from Mexico introduced himself and asked how he could come to the yard, because he saw no taxis at the airport. He said that he was coming to buy a Swan 48. This was the first and only time somebody told Koskenkylä he wanted to buy a boat before even asking the price and other details. He had the company driver fetch him to the office and they spent the afternoon working out all details of extra equipment etc. and looking at the different boats under construction in the factory. When everything was signed and sealed, Koskenkylä noticed that it was too late for the last plane from Pietarsaari, so he booked a hotel room for Carlin and invited him for dinner in the local restaurant. He felt that was the least he could do after such a good day. At the dinner when they had time for small talk, he asked him what he wanted to do with the boat. He said it was a secret, but that he would tell it anyway. He revealed that he wanted to participate in the Round the World Race. Then Koskenkylä said that he also had a secret, but he would tell him anyway. His secret was, that we had a new boat under construction, which would be much better for this race, because the Swan 48 that he had just signed for, was in Koskenkylä's opinion a little too small for such a race. The new one was the Swan 65 and Nator had just started to make the plug. Carlin decided then and there to change his order to the 65 instead. They spent the following morning working out the details of the new contract and Carlin tore up the old one.

Carlin told that he only had done one ocean race from San Francisco previously and therefore had very little experience. Koskenkylä promised to help. He told Rod Stephens about Carlin and asked him to find the best crew, which he did. That was obviously important to win the race, but as the crew told Koskenkylä later, Carlin deserved full credit because of the way he inspired the crew and made it a harmonious team. Some other boats in that long race had personality problems that affected their performance. Carlin's original aim was not to win, but only to complete the race. The desire to win came only after he saw that they were leading. One example of his relaxed way was that the bilge and space under the bunks were full of wine bottles, when all the other boats would only consider taking one bottle of champagne if they were optimists. All the crews on all other boats were only considering what they could throw out to save weight, but Carlin wanted to have wine for him and his crew every dinner!

Offering design

The offering developed by Koskenkylä has not changed very much over the years. A tribute to the concept has been presented by Matteo Salamon, and is here quoted to describe the elements providing the success of the Swan-offering *(source: www.classicswan.org)*:

1. Nautor, in order to construct perfect and absolutely rigid hulls, fuse with resin into the interior of the two shells during construction a series of transversal and longitudinal joists which create a network of panels no more than a metre square each, which confer great strength to the torsion and rigidity of the hull.

2. All the boats are constructed and certified following the standards and norms of the Lloyd's Hulls Construction Certificate, and are furthermore examined independently from the shipyard by the experts at Lloyd's.

3. All, or almost all, aboard a Swan is built in the shipyard itself, especially the steel and aluminum parts, including the masts, which are each anodized internally, in special baths.

4. The interiors are built in a workshop by carpenters, and before being installed in the actual yacht, are "tested" (as would a suit at the tailor's) in a special boat, especially designed for this purpose. Only after any minor discrepancy, normal in such craftsman-made items, is fixed, and everything is perfect, are the items brought to the workshop with the yachts' hulls, to be installed, paying careful attention to the coating with resin of the bulkheads before their painting, for a perfect adhesion with the synthetic glues, with which the wooden bulkheads are joined to the hull.

5. Nautor has only highly specialized staff, and in particular architects and engineers who will work on site on all their executable drawings, and who will examine under close scrutiny all the smallest and even apparently insignificant details of construction. Nothing is ever produced without being first subjected to study and especially to in-depth tests.

6. How many shipyards can declare that they can provide their clients of every boat with practically any piece of their yacht for repairs, even if they might be over 30 years old? Nautor can!

7. If the owner of a Swan so desires, and of course if he is willing to cover the possibly quite substantial costs, he can have a Nautor technician come to examine the boat to ensure the perfect execution of any major work undertaken, or to consult or advise on work to be done.

8. Nautor, justifiably it can be said, but also because it is the only shipyard ever to do so since its inception, keeps in its archives a dossier where each and every difference relative to the standard model, of every Swan at the moment of its launch. This data is however noted in the Owner's Manual, a copy of which will always be available in the shipyard.

9. It is said that Swan boats are unique, and many have in effect have tried to imitate them (to not say copy them; commissioning the same naval architects…), but with results which in time show themselves to be wanting. And also, why have a copy if the original is available?

10. A Swan, even being a boat of the 1960s or 1970s, or a later one of the most recent generation, has an inimitable character, and, in its lines, never overstated in modernity, is, and will forever be, timeless.

Managerial coordination

In the early days Nautor was very much a result of a team work in a company run like a family business. In fact Koskenkylä had several of his wife's relatives as workers, first among them was the first foreman Ragnar Holmqvist. Another, even more important, local person was Rurik Riska. He first started as a subcontractor, because he had a small joinery factory for furniture in the next village. He knew all the workers in the area and he had a superb and very democratic way to inspire the workers. It is also worth mentioning that Finland is a bilingual country with a small 5-6 per cent Swedish speaking minority, but it is concentrated in small areas and the counties around Pietarsaari are 100% Swedish speaking. In fact, in the beginning of the 1970's when Nautor had more than 300 employees Koskenkylä was the only one with Finnish as the

mother tongue. Because of the fact that this relatively small community of a minority language group was quite isolated from its surroundings and only a few of them could speak Finnish, it was a very close community. People had a lot of relatives around them, they all knew each other and felt very comfortable with one of their own. Koskenkylä recognized that he was an outsider, and that he needed one of them to lead the workforce. Rurik Riska agreed to close his furniture shop and rent his factory building to Nautor and become the second in charge at Nautor to take over the production and worker relations, so that Koskenkylä could concentrate on the rest.

Rurik Riska did not have any formal education. When the paper mill took over, the university educated engineers did not feel that a man of no degrees and speaking the local dialect like workers could have such an important position. According to Koskenkylä they thought they knew better in Helsinki. This was one of the factors that influenced his decision to leave. The new board had decided that Nautor should have a university graduate engineer as technical manager. Nautor got one in 1970, Jens Rudbäck. He was the one following Koskenkylä as managing director in 1972.

But even if Koskenkylä was forced to leave the institution he had created he had installed a culture that outlived him. Throughout the company there was an ingrained belief, even pride, in building for strength and reliability. It had become something that was taken for granted by the whole workforce. They needed no reminders, and it accounted for what some mainline builders would call inordinate hours and materials. The yachts built by Nautor were actually semi-custom yachts, not really production boats. They were built by artisans, and they were built to last.

Appendix 4. Conducting the empirical study

Our research evolved in three phases. The first phase was a deductive phase. We conducted a literature study in order to develop hypotheses regarding the propensity of individuals to move from one region to another. We then developed a first set of hypotheses (Category 1 of research hypotheses) to identify how propensity to move differs across individuals placing different values for private and work life. Subsequently we developed a second set of hypotheses (Category 2 of research hypotheses) to explain how the various aspects affect the propensity to relocate (split up into the general model, Category 2a, and model divided into professional groups Category 2b). The last hypothesis (Category 3 of research hypotheses) was centered around regional differences, and it was supposed to explain differences in propensity to relocate in the geographical target areas.

The second phase of our study was to use the responses of the quantitative survey to test the hypotheses. By testing the hypothesis 2a, we wanted to search for groups, which show homogeneity in their relocation willingness within the group, but clearly distinguishable differences across the groups. We then used a qualitative study to test whether these findings could be verified or not and to study the phenomenon deeper. One preliminary hypothesis was that even if we could identify differences between tribes, these would not easily be recognized in the Finnish culture, as the cultural protestant inheritance suppresses the inclination of individuals to show very strong individualistic ambitions and behavior. This was expected to be further emphasized by the consensus building Finnish political culture, partly caused by the geo-political historical position of Finland as a nation between West and East. Another hypothesis would suggest that the tribes would mainly emerge based on educational, knowledge and industry related issues and would to a lesser degree be dependent on age, family and social factors. We would then use the identification of groups of individuals to hypothesize possible offerings to be provided by the regional actors in order to increase the affinity of the individual to the region, and subsequently test the attractiveness of these offerings in our qualitative study.

The third phase of our research was to combine the findings from the knowledge worker based empirical part with the structural regional competitiveness study in order to develop some normative suggestions on strategic management in the regional context.

The detailed research results including the statistical analyses are presented in a separate report called “An empirical study of attitudes and propensity to move among Finnish knowledge holders”.

Appendix 5. Normann's criteria for a competitive region

The following is what Richard Normann would expect to find in the competitive region:

- It would be the 'nerve centre', the node, of some international Prime Mover business companies.
- There would be certain clusters of companies of different kinds and sizes around these larger internationally oriented Prime Movers.
- It would be the home of some highly competitive knowledge-intensive service companies, sine they – rather than traditional manufacturing – now lead the development of the economy.
- Physical and informational infrastructures would be of a high standard.
- There would be a high quality of life for 'global knowledge entrepreneurs', including areas such as healthcare, culture, ecology, nature.
- There would most likely be a high proportion of people coming from unconventional business circles, like entrepreneurial immigrants, women, becoming involved with business innovation and new start-ups.
- There would be several meeting places for 'tacit knowledge', both within industry clusters and across various realms of society including between industry, culture, politics.
- I would expect a good portion of 'the bacteria phenomenon', as I have come to think. Bacteria, having much shorter lifecycles than, for example, human beings, can change their genetic codes comparatively very quickly. Perhaps the analogy is dangerous and partly incorrect, but we see similar phenomenon in places like Silicon Valley. Individuals move about and cross-fertilize between organizations much more quickly than organizations are created and develop and die. So just as bacteria supposedly can change and therefore influence their environment in the most unexpected ways, people who move from one context to another can, in principle, change these contexts much faster than institutions can change.
- There would be a high degree of reconfigurability.
- There would be a high level of quality of the 'strategic conversation', and very likely at least an informal buy effective 'strategic management coalition' between actors cutting across all realms of society.
- There would be several interesting experiments going on to break traditional taboos and boundaries with regard to traditionally imprisoned areas like welfare services.
- There would be a high degree of externalization of support functions for city cervices in infrastructure, education, healthcare, etc., as well as a certain level of 'outsourcing' of such services to international players.
- The area would be recognized as one in which aesthetic and cultural issues are particularly high on a priority list and there would be a range of people from around the world visiting for this reason. Cultural institutions would flourish.

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