The Strategic Role of ICT in the Competition Between Public and Private Health Care Sectors in the Nordic Welfare Societies
- Case Finland

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Abstract

Since the beginning of 1990s the health care sector in the Nordic countries has significantly increased its investments in information and communications technology (ICT). As such, major spending on ICT is not exceptional – indeed, 40\% of European industrial and commercial investments goes into ICTs. However, the goals for ICT expenditure are different in the private and public sector. Investments in the public sector are not usually intended to improve the competitive position, as is the case in the private sector. But on the other hand, like in private sector they are expected to increase effectiveness.

In this article we firstly discuss the role of public health care services as a base of a welfare society in the Nordic countries. Next we present the theoretical framework - the resource-based -approach - then applying the theory to our empirical findings. Finally we draw conclusions about the compatibility of the two. We start by explaining the health care situation generally in the Nordic countries and later use Finland as a case country.

1. Introduction

"Social state" has been the phrase that us people of the Nordic countries have most readily associated with our countries. This is thought to mean that we want to reap the benefits of capitalism and competition, but at the same time must secure basic social security, even for those doing badly. Competition exists to show its pleasure face to the citizens, and the detrimental sides of capitalism should be eliminated.

This philosophy has indeed been reflected in the health care industry. Independent of wealth and ability to pay, Nordic citizens should be able to gain high-quality health care services. However, this illusion can not be maintained forever.

To date, the majority of health care services are offered by legislation through public health care. The private sector has attempted to gain small shares by offering special treatments and improved service, but there has not yet been actual market share competition. More recently the changes in legislation have enabled municipalities, as service providers, to acquire health services from the private sector. At least theoretically, therefore, public sector health care is challenged to compete with this private sector. In many ways the competition is still one-sided. Public sector actors have not yet pressed costs down to a minimum because a strong public monopoly in the area still exists.

High pressures meet the Nordic markets both when it comes to customer expectations and ability and the ramifications for producing services. Suomi \cite{14} summarizes the pressures as follows:

- new networked way of handling patients and processes
- increasing cost justification needs
- advances in ICT
- growing demand
- better education of personnel
- more demanding customers

The authors have identified two main trends:
1. privatization of the industry
2. computerization of the industry

Both trends are studied extensively in their relevant disciplines, but in this article our goal is to work on the
relationship between the two issues. Thus our research questions are the following:

• What is the interplay between privatization and computerization processes in the health care sector?
• What impact does an increased use of ICT have on the balance between the public and private health care sector?
• What is the outcome of the whole for the Nordic welfare societies?

Our analysis is based upon two intensive studies in two Finnish health-care organizations conducted between 1998-2001. More specifically in this paper we report only on the later study. The case studies are reported in more detail in [16, 17]. Our task in both organizations was to assess the process of information system implementation and to assist in the implementation process in order to gain an optimal outcome for the whole.

We aimed to build our analysis on a solid theoretical base. We decided to use the resource-based - approach, e.g. [4] [5] [9] as our theoretical approach. Many reasons influenced our decision:

• we have used the resource-based - approach intensively in the case studies
• the popularity of the approach is particularly high at present
• rareness of resources is a key organizational issue for health care organizations
• ICT and information deserve more attention as valuable organizational resources, especially in the health care sector.

2. The roles of private and public sector health care in Nordic.

Public health care has both long and strong traditions and position in the Nordic welfare societies. The organizational structures of health care services are relatively similar in all Nordic countries. Therefore we are interested to widen the perspective of our research to also include other Nordic countries, even though the empirical part of the research is based in Finland.

Common nominators for the Nordic countries are:

• unilingual environment
• the strong Lutheran religion
• small economy size
• high taxation
• strong public sector
• well developed and free education system

One of the main objectives in establishing welfare states has been equitable and extensive health and social care for everybody. The services are obtainable for low fees or totally free without being dependent on patient income. The state and local government structure plays an essential role in organizing the health care system. The guideline for health care organization and development comes from the state government level, although nowadays the local level is fairly independent to organize the services according to the local needs.

Primary medical care services are available at municipality level first in the health centers, or in the Danish case from self-employed general practitioners who act as gatekeepers to the special health care or to the hospitals. Patients have to first consult the general practitioner who writes the referral to the hospital or special health care.

Services are financed mostly (60-80%) from state or municipal taxation and the remainder from the National Insurance scheme (10-20%) and co-payments. Co-payments are most often used in the case of dental care and pharmacetics. Municipalities possess their own health care budget from which they acquire for their citizens the special health care from hospitals or from private suppliers. Municipalities do not usually produce special health care services by themselves. Table 1 shows the financing system of health care in the EU member countries.

<table>
<thead>
<tr>
<th>Countries</th>
<th>Predominant system of finance</th>
<th>Main supplementary system of finance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finland, Greece, Ireland, Italy, Sweden, Spain, United Kingdom</td>
<td>Public: taxation</td>
<td>Private voluntary insurance, direct payments</td>
</tr>
<tr>
<td>Denmark, Portugal</td>
<td>Public: taxation</td>
<td>Direct payments</td>
</tr>
<tr>
<td>Austria, Belgium, France, Germany, Luxembourg</td>
<td>Public: compulsory social insurance</td>
<td>Private voluntary insurance, direct payments, public taxation</td>
</tr>
<tr>
<td>Netherlands</td>
<td>Mixed compulsory social insurance and private voluntary insurance</td>
<td>Public taxation, direct payments</td>
</tr>
</tbody>
</table>

Private health care is seen to mostly complement the public health care sector. The markets for the private sector have established slowly mainly because of the extensive role of public services. The sector has remained marginal because there has not been substantial demand for private services. By 1996 the share of private doctor consultation in Finland was 16% of all doctor consultations and the share of doctors who practice solely...
in the private sector was 5%. The total share of private health care services was 22%. Doctor, dentist, physiotherapist and employee health services are the most used health care services in private sector.

Our research question asks “have ICT changed the balance and roles of valuable resources in private and public sector health care in Nordic countries?” Since public health care has the dominant role in Nordic welfare model we are reflecting to that issue. The change of the structure whereby services are supplied to a higher degree from the private sector is not an easy task both politically and functionally. The public sector has to prepare itself to meet the challenge of those private sector companies with their effective business management and up-to-date management models. The authors also suggest the resource-based approach as an appropriate management theory to be applied to the area.

3. Competition in private and public sector health care

Despite the numerous plus sides of the public health care, its role as a symbol of welfare society has been one obstacle in creating real competition between the private and public sector. The results of services have been fairly positive; meaning those who support the current balance between those the public and private sector can draw on strong evidence to support their argument. The political pressure to maintain the current system is strong. The main characteristics of the system are outlined in Table 2.

<table>
<thead>
<tr>
<th>Country</th>
<th>Health related expenses of gross national product, percent</th>
<th>Percentage of population satisfied very or relatively with health service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>10.6</td>
<td>43</td>
</tr>
<tr>
<td>France</td>
<td>9.6</td>
<td>60</td>
</tr>
<tr>
<td>Belgium</td>
<td>8.8</td>
<td>56</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>8.6</td>
<td>70</td>
</tr>
<tr>
<td>Italy</td>
<td>8.4</td>
<td>15</td>
</tr>
<tr>
<td>Sweden</td>
<td>8.4</td>
<td>46</td>
</tr>
<tr>
<td>Denmark</td>
<td>8.3</td>
<td>48</td>
</tr>
<tr>
<td>Greece</td>
<td>8.3</td>
<td>11</td>
</tr>
<tr>
<td>Austria</td>
<td>8.2</td>
<td>71</td>
</tr>
<tr>
<td>Portugal</td>
<td>7.8</td>
<td>6</td>
</tr>
<tr>
<td>Spain</td>
<td>7.1</td>
<td>31</td>
</tr>
<tr>
<td>Finland</td>
<td>6.9</td>
<td>78</td>
</tr>
<tr>
<td>Great Britain</td>
<td>6.7</td>
<td>49</td>
</tr>
<tr>
<td>Ireland</td>
<td>6.4</td>
<td>24</td>
</tr>
<tr>
<td>Luxemburg</td>
<td>5.9</td>
<td>50</td>
</tr>
</tbody>
</table>

However the depression at the beginning of the 90’s and the pan-European developments in health care, such as the aging of the population, has led to the search for cost containment and cost effectiveness. Either the expensive investments or the resources are not necessarily being used optimally. It has been accepted that costs are rising too fast and are too high. New solutions and structures therefore must be found.

There have also been many accusations made against the effectiveness of public services including health care. Most often they are aimed at the slowness and costs of public health services. In addition accusations have been made that the organization of health care services is too complicated, including the funding system basis. Table 3 shows the satisfaction of health services in different European Union (EU) countries. Noteworthy is that in Finland, where health related expenses are among the lowest in EU countries, the satisfaction for health services is highest. Sweden and Denmark also have a relatively high degree of satisfaction whilst having health expenses which are slightly under average (8.55). Of the Nordic countries, Norway is not included in this list because it is not member of EU. Since most of the services in Scandinavia are offered by public sector (e.g. almost 80% in Finland) the results can be seen to reflect the high satisfaction in public health services. The organization is heavy but the output is at least satisfactory.

In Finland and Sweden there have been attempts to move towards a more market-oriented health care system. For example, the changes in legislation in Finland during the mid-1990s enabled municipalities to purchase health care services from any provider, including private service providers. This move towards a pure purchaser-provider system meant that the municipalities no longer had to produce services themselves. They could make cost comparison between their own health care organization and other public or private providers and select the most superior service. This entailed a search for the most cost-effective organization. In the municipality interest, the lower costs in one area meant better services in others, or a decrease in municipal tax. Health and social care constitutes the largest costs for the communities and also for the state. The largest savings are thus also expected from these areas.

These changes aimed to ensure the improved effectiveness of public organizations through increased competition between private and public health care providers. Therefore the changes can also be seen to act as a deterrent towards municipality health care organizations. However, in order to realize a competitive position between private and public health care organizations, one must to look the public sector as a supplier of the services, not as an owner of public health care resources.

The purchaser-provider system has not yet gained large succession. The health care area in Finland, as in all places where it is mainly publicly financed, is very sensitive to radical changes.

The price of the technology or specialist knowledge is the main determinant when municipalities make external purchasing decisions. Defining the right price for the services makes the situation even more problematic. In private health care, the prices of the products have been defined precisely on the basis of production costs. The public sector is operating on one-year budget basis where only the total costs of all services supplied are under control. There has not thus far been the need for any detailed definitions for costs of single services. However, this is essential information in the new situation where the local government makes decisions based on the price of the services. Definition of the costs and prices is seen as relatively complicated and it is still in its early stages.

4. The evolving role of ICT in the health care competition

One of the key areas in developing public health care recently has been information technology. A decade ago the use of information system played a trivial role. The fast adoption of ICT has been the result of several changes in legislation and also the increased supply of ICT tools for the area.

Earlier systems were mostly developed for a supportive role and mainly produced information for the purpose of state government statistics. ICT had no role in the local internal operational or strategic management. There was actually no perceived need for a long-term management because the organizations were operating in a one-year budget cycle. The state was supporting the municipalities on the basis of the last year expenditure, meaning the more they spent the more they got the subsequent year. The state subsidies were also allocated for certain purposes such as health care without considering regional differences. The system failed to support long-term planning or effectiveness.

After the introduction of the new Local Government Act that came into force in Finland in 1995 and strengthened the self-government of the municipalities, the effectiveness also became in the interest of the local government. Simultaneously the municipalities were struggling with serious economic problems that arose at the beginning of the decade. These were the two main issues that launched the effectiveness discussion in Finnish health care, making the history of economical perspective in public health care fairly short. The same pattern of development was also seen in Swedish health care in 1995 when national priorities of health service provision were issued.

The municipality health care organizations became aware of the precariousness of their existence, at least at the present scale. They had to be effective to maintain their role as a main provider of the health care services. There were reductions of employees even to the extent that the organizations could barely take care of its basic functions.

The role of ICTs started to grow in the middle of the 90’s. It seems that the smaller municipalities have taken the threat of private sector competition more seriously than larger cities: - they were the first to implement electronic patient record systems.

5. Theoretical background: resource-based - approach

The area of health care has used more or less appropriate management theories designed for the business area. The aspects of business, where profits are not calculated and the effective use of resources is a key issues, have not been very strongly presented. The theories have been applied in a somewhat inapplicable and alien environment. In the wide area of management theories, the most fashionable in the Finnish health care environments today are sourcing theories and process thinking. However using these two alone gives fairly
narrow insight into the possibilities in developing the health care management environment.

One of the main issues in the health care in Finland and also elsewhere in Europe is effectiveness. It is seen that the money allocated to the industry cannot increase, but at the same time the demands for the health services are expected to explode. The need for more effective use of existing resources is growing. Therefore the resource-based approach is highly pertinent. If private and public sector are seen as competitors the resource allocation in public sector needs to be highlighted.

The resource-based approach assumes that a firm’s competitive advantage lies in the bundles of service-creating resources that can be exploited, rather than in the product market combinations chosen for the deployment of these resources. This definition applies well to public health care. According to Penrose [12], a resource can be viewed as a source for providing an array of services for the clientele of the company. Resources are usually obtainable in discrete amounts. Barney [3] defines a firm’s resources as including all assets, capabilities, organizational processes, firm attributes, information, and knowledge that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness. He classifies them into three categories: physical capital resources, human capital resources and organizational capital resources. The resource-based approach does not include issues from cost accounting.

According to Kangas [8] the resource-based approach takes the value chain logic [13] a step further by examining the attributes that resources identified by value chain analysis must posses in order to be sources of sustained competitive advantage. Barney [3] identified the following four indicators of a firm’s resources that generate sustained competitive advantage:

- Value: Can the firm’s resources respond to environmental opportunities and/or threats?
- Rareness: How many competing firms already possess these valuable resources
- Imitability: Are these resources costly to imitate?
- Supportive organizational arrangements: Do organizational arrangements support and exploit resources?

These indicators cannot be adopted straightforwardly to public and private sector competition since the role of public sector is also social. Although municipalities are free to acquire services freely, they are forced to arrange those services which cannot be acquired from outside. Those are usually such unprofitable services that private sector do not want to take up. For example, rareness or imitability must therefore be seen only on those parts of services that can be placed under competition. Rare services, which do not suit the private sector profitable environment, cannot be seen as providing competitive advantage in the public sector.

The resource-based approach is described in the classics of Amit and Schoemaker [2].

“For managers the challenge is to identify, develop and deploy resources and capabilities in a way that profices the firm with a sustainable competitive advantage and, thereby, a superior return on capital.”

If the words “competitive advantage” are replaced with the words “superior service for customers”, this definition is also perfectly suitable to public administration. The public should get superior service with minimal resource usage, thereby saving input money (i.e. taxes). [15].

In line with our discussion above, the resource-based approach stresses the effective use of input resources (for example tax money), but puts less emphasis on the equity capital and return on it. In general, the resource-based approach moves more in the world of concrete resources than in the world of accounting.

6. Applying resources in health care

6.1 Recourses in health care

For health care, we define the valuable resources as in Table 4. The resources defined are based on our experience from the ICT evaluation research project in which we worked during the year 2000. The project is described in chapter 6.3. The list is not a complete list of resources, rather a list of issues that the authors found the most important in health care, and which we also paid closest attention to in our latest research project. We have also separated public special and public primary health care since they are organizationally differentiated. In order to differentiate the importance of the resources in the different sectors of health care, we give them values 1 (of little value) to 5 (utmost value) for three different sectors in health care:

- Public special health care
- Public primary health care
- Private health care

Although numerical, the scale is nominal, not arithmetic. 5 does not mean five times more valuable resources than 1.

In the tradition-laden public service field the difference between basic and specialized services is clear, whereas in the private sector the demarcation line is virtually nonexistent. The private health care sector is very scattered and competes with both sectors of the public health care. Our discussion focuses mainly on the middle-size general doctor house, which is typical in the private sector.
Table 4. Valuable resources for health care (based on researchers empirical findings)

<table>
<thead>
<tr>
<th></th>
<th>Public special health care</th>
<th>Public primary health care</th>
<th>Private health care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workforce</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality</td>
<td>5</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Amount</td>
<td>3</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Operational procedures</td>
<td>3</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Know-how</td>
<td>5</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Premises</td>
<td>5</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Specialized equipment</td>
<td>5</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Goodwill</td>
<td>5</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Trust</td>
<td>5</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Brand</td>
<td>3</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Finance</td>
<td>3</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>

Care taking is basically human service work, so workforce is a key production factor and resource for the industry. As with any resource, workforce has the dimensions of quantity and quality. However, in health care the strict professional hierarchy makes this differentiation greatly needed. We start from the fact that the highest performing professionals are still in the public university hospitals, with the other sectors operating with slightly lower qualifications. With regard to quantity, we consider primary health care as more labor intensive than special health care or private health care.

Operational procedures are integrated with the business processes and external interactions of the organization. Operational procedures are more important the more routinized the organizational activity is, and the larger the masses that go through the system. With this in mind, we consider operational procedures as the most important issue for primary health care.

By the term "Know-how" we refer to the hidden, implicit and tactic knowledge owned and controlled by workers. Know-how is gained over a period of years through individual and organizational learning. Know-how might focus on the basic operations and core competencies, in our case about health-care, but is also needed in supporting activities, such as market intelligence or financial management. The authors assess that public special health care has the best know-how as related to health-care, whereas the private side is stronger on the market activities. In both, primary health care is seen to lags behind slightly.

Premises are needed to room activities. Special health care needs very specialized premises such as operation rooms and intensive stations, in addition to catering for the patients need for long-time stays in the hospital, meaning this resource is the most valuable for them. Primary health care handles masses of patients and is therefore in the need of room. Private sector suffers less from these factors, so premises are not such a valuable resource for them.

Specialized equipment is needed for special health care. The private sector is in the intersection of primary and special care. The most expensive equipment is usually a privilege of university hospitals and the wealthiest private hospitals.

“Goodwill” is the amount of general acceptance enjoyed by the industry and the actors in it from the customers. As can be seen in Table 2, the case of the Finnish health care sector, which so far mainly operated by public actors, enjoys wide customer acceptance. However, this is not always and absolutely the case. The private sector - as an alternative source of services under high market forces - is most dependent on goodwill. For special care, customer acceptance is similarly a key point. Primary health care of course benefits from goodwill but can continue even without goodwill.

Trust is seen as a core resource in the modern information society [1, 10, 18]. The wider the service alternatives, the more important the role that trust plays. In monopoly services, trust is advantageous but not a necessity. In such an environment, special and private health care sector especially fight for customer trust.

Branding is traditionally connected to grocery goods. However, brands have a key function in the case of other products and services too. They help the users to identify the product or service they want, and they serve as proofs of quality both in technical and intangible aspects. Clearly branding would be of use in the health care sector.

Typically, private companies have been eager to build brands, but public authorities are weak in this aspect. The same is true for health care. However, in the future, strong brands owned both by private and public organizations, will strongly affect the flow of customers in the health care.

Finally, finance is a scarce resource even in today's capital-rich world. This is especially the case for the
6.2 Influence of ICT to the resources

In the section we will discuss the development of the relative importance of these resources as ICTs develop. The impacts of ICT are of course multiple and run in many directions, so the authors attempt to highlight the most visible and meaningful trends. We are aware that arguments that support different conclusions also exist.

With regard to the workforce, labor will increasingly be replicated using other production factors, such as information and technology. It must of course be noted that health care remains a heavily personal service oriented industry.

Information systems do not work without rigid business processes and well-thought-out operational procedures. Automation requires first structuration. In this respect, operational procedures will gain in importance as ICTs proceed.

Information systems can contain a lot of knowledge, and as they drive the process of turning implicit knowledge into explicit knowledge [11], the relative value of personal-bound hidden knowledge is set to decrease.

Premises are the single biggest resource of health care organizations as measured in classical capital terms. ICT will lead to increased speed of operations, which means that hospital durations will shorten. Capital investments may also turn increasingly to ICT at the cost of mortar.

Goodwill will gain in importance. As the monopolies of the public sector vanish anyway, public opinion gains in value. Information technology further drives this development because with modern ICT the mechanism for formulating and communicating public acceptance gains in efficiency.

In the health care sector, people entrust their very lives to the system. As the market weakens the boundaries of time and location, care-taking relationships are free to establish themselves between parties who may not yet even know each other. In such an environment, trust is of increased value.

This trend for trust is also true for branding. Among different offering that may look the same – for example on the Net - the customers can easily select the one with a strong brand name.

Finally, finance is a key lubricant for the whole system. ICT is known to be an area of high capital investment. The trend towards placing a price tag upon data, information and knowledge is increasing the importance of solid finance.

Table 5. Changes in the value of resources for health care because of ICT

<table>
<thead>
<tr>
<th>Resource</th>
<th>Decreases</th>
<th>Increases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workforce</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operational procedures</td>
<td></td>
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<tr>
<td>Know-how</td>
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<td>Brand</td>
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<tr>
<td>Finance</td>
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</tbody>
</table>

Based on our simple "mathematics" presented in Tables 4 and 5, we should now be ready to calculate which sectors of health care are going to be winners or losers as new ICTs are being introduced. Needless to say, the effects are not so simple and straightforward, and we content ourselves with analyzing the situation in the three health care sectors.

The private health care sector will be most likely to be able to attract customers because of its strong position according to the "intangible" resources such as goodwill, trust and brand: a role that we expect to see grow in the future information society. Health care will turn towards specialization and national or even international markets [6], where care relationships are developed based on information on the Web. Here issues such as goodwill, trust and brand play a key role. Investments into modern ICT are substantial and the private sector might be better able to meet these challenges than the public health sector, where pressures are felt to stick to the core functions of health care. As the health-care industry must turn into increased customer orientation, the private sector might also have an advantage, not least because of its established marketing functions and the financial transaction procedures, which are more, sophisticated than those used in the public sector.

Public special health care will have to pay a lot of attention to keeping its professional lead. In the networked world, knowledge will be implemented in networks, and is easily accessible to anyone. Already we are often seeing cases where the patients know more about their own diseases than do the doctors taking care of them. As information will cost money in the future, the private sector may have be better placed to subscribe to different data sources because of their better financial position, which will further erode the position of public special health care. Through the introduction of ICT, the classical resources where the public sector has an advantage such as premises and big number of staff will decrease in importance. One key for success for the public special health care might be a superior position in
exceptionally large equipment investments, where national scale finance and a big customer base is a necessity. This is true for many types of medical equipment, plus for example supercomputing and high-speed backbone networks for data transfer.

The private primary health care will be under severe pressures because of disadvantages in intangible resources and finance. The key survival factor for public primary health care will be the ability to handle large masses effectively and with satisfying quality. For many industrial organizations, ICT has been the resource enabling this position. However, the authors see no indication that the role of the public primary health care would be strengthened at the cost of the other players in the future information society.

To summarize, ICT drives us towards a networked world. In such an environment, the monopoly-like public health care will have difficulties, and the more flexible private organizations are going to gain an advantage.

6.3 Use of the resources in public and private sector. Case: Primus

The authors conducted evaluation research of the large information system implementation project called Primus during the year 2000. The project was executed in the public sector health care department in Turku, the fifth largest city of Finland. The Primus includes four subprojects: electronic patient record system, data communications network to all city health care units, health care process development and development projects. During the project, 800 users in 440 workstations began using the new patient record systems in about hundred different units around the city’s health care department. The total investment of the project was around 9 000 000 $.

The research project was divided in two parts. In the first part we evaluated the process, which lead to the implementation ICT. We focused on management and strategic issues, negotiations, sourcing decisions, supportive issues (training) and technical solutions: aspects that were essential in the planning process of the project. In the second part we evaluated the results of the project. The goals included the economics of the project, end user and patient satisfaction in order to assess how the project has influenced to the activities of the organization. These two parts were overlapping in some cases.

During the evaluation project we also did some comparative research with a local private health care clinic. The clinic is the largest private clinic in the city and only two years previous had acquired the information systems for clinical use. It has 130 workstations in six offices.

In this section we are reflecting the valuable resources for health care described earlier (Table 4) with the empirical findings from our evaluation project. We initiate a discussion of the meaning of the ICT for the public sector and private sector and evaluate which resources are important to the organizations.

The workforce of the organization plays an essential role both in quality and in volume. The quality is dependent upon earlier work experience, education and the training in the organization. In table 5 we suggest that the use of ICT decreases the need for the workforce. This is usually the goal when implementing the ICT but it can also mean restructuring the workforce, as was the case in our project. The need for supportive functions should decrease but the need for the pure clinical work can remain the same. The possible increase of clinical staff of course has a positive influence on the quality of treatments.

In the competition between private and public sector it could be seen that the public sector gains more benefits from the ICT when considering the size of the workforce. For example, in our case the public sector had 104 health centers around the city and the mobility of information was poor. After implementing information systems, the generation and management possibilities of information increased considerably. Everybody had access to the information and everybody could add information to the system. There was no longer the need for a complex organizational system to maintain and distribute the information. The private sector is very seldom so decentralized. Additionally, in our private sector case there were only six offices in which the distribution of information was already minimal before the introduction of ICT. Public sector usually also takes care those cases which require higher workforce input (e.g. geriatric patients and other bedpatients) and in those cases the implementation of ICT can improve service, such as home care.

ICT can contribute significant value to the use of knowledge in the public primary health care. The organizations are usually large and multi-professional so the distribution of knowledge is problematic. Therefore hidden knowledge has emerged as constituting a large part of the total knowledge. In the private and special health care the use of knowledge has been more centralized, meaning the management of information have been less problematic. In public primary care the ICT is therefore set to have more value than in two others. The hidden knowledge can be stored in the information systems.

The special health care is the most dependent on having adequate premises. The complicated treatments require operation rooms and healing from the operation almost always involved a bed. There is also a problem with regard to the arrangements for the operations. Quite frequently when the patient comes to the ward he has to wait days before having the operation. The premises are
then in a state of ineffective use. In the primary health care the treatments do not usually need recovering time in the health centers and the private health care usually have smaller operation rooms facilities or bed units. The ICT is probably going to improve the logistics of treatments and therefore the greatest advantage will be realized in the special treatments. Improvements in the logistics of our primary health care have not yet been realized, but it is clear that when the ICT is developed further, the possibilities to shorten the waiting time especially and also healing time in the ward are going to improve. Therefore the value for premises is set to decrease.

Based on the previous resource of premises the development is towards home care. Although communication tools for this purpose are still under development, there are several examples of technological observation and communication equipment already in use. The special health care has always been highly dependent upon special equipment and ICT is going to further increase this relationship. There are different dimensions dependent on effective equipment such as premises, goodwill and brand. This is very much the case also in the private sector. The public primary health care has been the most labor-intensive area and therefore the technology has not played the key role there. Yet the ICT can have a relatively substantial effect in that field also because the ICT is expected to restructure the work processes towards more clinical work from the supportive tasks.

The fact that public health care has the dominant role in health care in Finland and also in most European countries has had an influence upon the development of goodwill. But when the share of private sector increases the goodwill is going to be more important. The special health care and especially the private sector are dependent of customer’s goodwill. The public sector is probably going to benefit the most from ICT since it’s acceptance has been relatively high even now, and when the information technology is implemented the acceptance is set to increase.

Similar to the importance of goodwill, trust has not been the key area of interest in the public sector because its monopoly role. However, as in table x we can see that people in Finland seem to be the most satisfied with the services of health care compared to other EU countries. This reflects also the trust in the public health services. Trust is the most important resource for the private sector because it is purely business driven and dependent upon its customers. The public special health care has to undertake complicated operations so trust is also an important issue at least from a psychological perspective. In our case we made an extensive survey about customers opinions of public health services and the effect of information systems on those services. We received an almost surprisingly positive result about how customers see the effect of information systems in public health services. The opinions expressed that the clinicians work was faster and information security was good, for example, clearly showed that ICT had positive influence. Therefore the biggest winner in the perspective of trust seems to be public health care, but another question which must be asked is whether it need this trust to maintain the almost monopoly situation on the industry.

The brand has similar emphasis to trust on the public and private sector. The most dependent upon branding is the private sector. We found an interesting viewpoint from our public sector case. The organization with which we did the research had planned to implement the information systems for some ten years before the decision was finally made. At the same stage of this ten year period this resulted in the staff beginning to anticipate the installation of the new system and starting to feel slightly embarrassed that they were still using manual systems. The staff therefore felt that their brand was damaged because they did not yet have electronic systems. Of course the patients are those who decide whose brand is strong and whose is weak, but the image that the staff has can also affect the services offered and through that the brand is ultimately affected. Therefore one could conclude that the weakest organization, public sector primary care benefits the most for the ICT, but it is not so dependent for the brand as private and special health care.

Finance of the ICT resources should be related to the results of the investments. In the public sector, issues such as productivity have not been very important so far. Surprisingly, when we discussed this with the manager of the private health care company, the effects of the ICT were not in close control there either. The difficulties in tracking the cost and effects of ICT in the service sector are of course substantial and time consuming and the results are often not unambiguous. However, the investments are going to take a large share from other investments (clinical) and the role of finance is going to increase in all sectors.

7. Conclusions

In our analysis we have come to the conclusion that capable public health care sector has been one key ingredient in the Nordic welfare society. Private services have always challenged the public sector and by doing so acted as catalysts for better quality even in the public sector. The private services have also acted as a safety valve for the whole system.

However, through more extensive use of ICT the balance is threatened. The private sector is better equipped to navigate and act in the networked economy - both mentally and in real terms - and more easily finds the needed resources from the market.
The authors used the resource-based approach to understand the situation. We felt comfortable when working with the approach and could easily identify critical resources for the health care organizations. However, we cannot be certain that all the critical resources were identified. Further work along this line must clearly continue.

Our case analysis manifested the difficulties faced by a public organization in adjusting itself to a modern ICT environment. However, contrary to many expectations, the critical shortcomings are not in the technical side, but at the side of the organizational maturity, especially as it comes to critical resources such as knowledge, customer acceptance and trust.

To come back to our research questions:

- What is the interplay between privatization and computerization processes in the health care sector?

We conclude the following. These two processes run simultaneously, and would occur independent as well. However, combined they will cause effects that are greater than the sum of the individual effects. Computerization is a disruptive activity in any context, and so too in health care. It will change the rules of the game and challenge existing power structures. In the Nordic countries, where the public sector has been so dominant, the only viable direction is towards more privatization.

- What impact does increased use of ICT have on the balance between the public and private health care sector?

Increased computerization drives increased privatization. The reasons for this are multiple, among others being the networked society way of organizing activities: organizations must concentrate on core capabilities. With this in mind, the public health care, with its more scarce mental and financial resources than the private sector, must leave out many activities to be taken care by the private sector.

- Which is the outcome of the whole for the Nordic welfare societies?

The authors feel that modern ICT will bring in benefits that allow us to continue with the welfare society tradition. Leaving the issue without management intervention will lead in any case to less than maximal benefits and even to malfunctions. With this in mind, ICT management should gain a more visible role in health care organizations than has been the case to date.

8. References


