

Juhani Pekkola  
Research Director  
Ph.D Adjunct Professor

Social and Health Care  
Kymenlaakso University of Applied Sciences [www.kyamk.fi](http://www.kyamk.fi)

[juhani.pekkola@kyamk.fi](mailto:juhani.pekkola@kyamk.fi)  
Mobile + 358 44 702 8439  
Fax + 358 5 230 2432

## **Telework type of work organisation and the structure of Intellectual Capital in two modern Finnish companies at the beginning of 3rd millennium**

### Abstract

The format of standard accounting model in companies is ca. 400 years old and based on material, tangible, wealth. The concept of Intellectual Capital (IC) was introduced in 1969 by Kenneth Galbraith. He considered IC as a dynamic but not a visible matter, which is connected with accumulation of value. The idea of IC is to describe the whole, real value in company, that is: generate the complete asset by combining material and immaterial wealth.

There is no holistic definition of IC. The focus lies in studying the functions and impacts of various factors within intangibles. Many companies have built Intellectual Capital Accounts of their own. When the knowledge intensity increases in economy, it is all the more reasonable to study the functions of organisations by using IC-theory in connection to the work organisation. The nature of talent, actions, strategy, resources and the needs of the customers define the substance of IC. Therefore, every workplace should estimate its own IC-model.

Telework refers to the formulation working environments and working time by using information and organizational technologies. It is reasonable to understand "work place" in four dimensions; as a physical, social, virtual and mental working environment. The first three are conceptual environments in which the production of ideas and thoughts can be supported in mental – individual and shared – consciousness. Telework comprises the use of human talent and motivation which is boosted with technology (Engelbart 1962) and synchronical and asynchronical time concepts. Telework as a model of work organisation is neutral. That is, from the economical or social point of view, the consequences of telework applications may lead to positive or negative direction. Goals, business strategy, organisational applications and nature of management have an impact on these outcomes.

In two Finnish companies the elements of efficiency and drawbacks of telework were defined in empirical case studies. At the same time, the nature of telework was studied in concepts of business strategies and business environment. On the basis of this information, a theoretical and empirical telework related model of IC was generated. The main elements of this model are human- and structural capital. The latter is divided into customer- and organisational capital. Organisational capital consists of innovation- and process capital. Both the positive and negative elements of telework are demonstrated in this IC-model.

## Great expectations notwithstanding

**It has become customary to write that "despite the great expectations, telework realized not in anticipated manner." This refers to some estimates made in the 1980s and 1990s about the complete transfer of work from traditional workplace to home. Usually, such texts convey the intention that telework "did not succeed". How should this be interpreted?**

People live in the world of series of changes, moving in different directions. At every moment, many ideas differing from or even contradicting each other are true at the same time. However, in their everyday flurry people expect to have just one, preferably simple solution. It is the task of social scientists, especially those focusing on working life, to explain how ideas can appear to be contradictory and still be true at the same time. When describing social world scientifically, one has to be careful in his fascination of research materials, scientific definitions and the results of previous studies so as not to be cornered by the uncomfortably complex "reality" that defines all categorical statements.

In 1990s, it became common to start using computers to assist people's work. The expansion of the Internet led to radical changes in the documentation, storage and search of information. At the same time, the information aspect of work became dominant, and all the more often the work tasks were related to creating and distributing information. The tasks no longer required much physical performance but they became psychologically more demanding.

Especially managerial employees suddenly had more alternatives as to where to do their work. Experts still have their desks and work stations but they also work at home, during conferences, at their customers' facilities, during commute, and even in their spare time while travelling or staying at their summer cottages. This is made possible by the information technology tools and networks. In addition to the three-dimensional surroundings of our workplace, we also work in a social and virtual environment.

The employees now have the chance, even responsibility, to be flexible about the place where they do their work. As early as in 2004, 40 % of the Finnish employees occasionally worked outside their workplace, and 25 % occasionally worked from home. The use of computer technologies no longer classifies workers. The forms of telework have become routine for managerial employees, and the practices are spreading among all levels of employee positions.

Usually, telework is seldom explicitly agreed upon by the employee and the employer and therefore it may appear "invisible". The arrangements are unofficial and often based on expert autonomy, that is, the employees' possibility to organize their work independent of the employer. The employees working from home or while travelling do not consider themselves to be teleworkers, they are simply working in a convenient way. Also, the surveys determining the amount of telework on the basis of – missing - official and formal agreements, or a high number of teleworking hours, increase the invisibility of telework. The internal prerequisites and administrative decisions of such surveys significantly constrain the study which then fails to meet the quantity criteria. The lack of supporting survey reports has led to the conclusion that telework does not exist. Because of this approach, the unofficial or unidentified work arrangements pass unnoticed. As far as the social sciences are concerned, the situation is further complicated by the fact that the unofficial nature of telework is often a deliberate choice, and may have very interesting reasons. Therefore, it is essential to study the concepts of working time and workplaces in all their diversity.

After 25 years, the apparent forms of telework are quite different from the forecast made in the 1980s. There exists a wider variety of working hours and workplaces. The transition has not been into full-time home-based work, but into technologically, even organizationally, supported working environments. The expectations may have been great, but the changes in organizing work were more extensive than expected. However, the expectations were not directed at the paradigmatical changes in the way people work. Therefore, they could not be met. This is why new hypotheses are needed.

Satu Ojala (2009) has conducted pioneering research in the field of “distributed work”, defined terminology and determined the relations between terms, and illustrated the dimensions in which the various forms of work are structured. One cannot help but agree with the statement she and Sullivan (2003) made: “The different forms of work should be assessed on the basis of the collected materials without preconceived constraints, and it is important to create and operationalize a framework for unprejudiced research.

## 1. The Concept of Telework

According to Glaser and Strauss, a concept is a structure of the conceived features. Evidence is a theoretical generalization of the nature of a system, it forms the foundation for categories and describes the concept. The concept proper is unchangeable, although its essential characteristics may have different interpretations over time. It has its meaning which relates to time, more specifically, the theoretical-practical way of thinking in which it was created. (Glaser & Strauss; 1967, 23., compare; Björkegren & Rapp; 1999, 163.)

The definition and usage of the concept of telework is inseparable from the context. The content of the definition is determined by what the term telework refers to, for example, physical distance, varying working hours and places, or participation and presence in a work process. Scientists have used telework to generally describe context in its different stages. Telework, eWork, and presence refer to the idea of being present in a process which is progressing in different places. The core content in the organization of telework relates to the facilitation of this participation, whether it emerges from an individual or organizational initiative.

Ignoring here the terminology relating to the history of the definition of telework, the term –telework– itself and the concepts of eWork and presence can be given a common operative definition:

**The concepts of telework, eWork and telepresence are considered as a whole to which the term *telework* refers. Telework seeks to create temporal and spacial arrangements to facilitate working methods that foster an innovative environment in order to produce knowledge. This may be done in physical, virtual or social platforms or spaces as long as they are used to support psychological or conscious individual or group processes to create knowledge. To this end, the physical, social, and technological factors of working and business environments should be interrelated in ways that improve thinking and innovating.**

## 2. Knowledge Economy and Intellectual Capital

The concept of *intellectual capital* was first used by John Kenneth Galbraith in 1969. He considered it as a dynamic but invisible factor to which the accumulation of value in business applications related. (Campbell & Grantham; 1998, 171.) There is no comprehensive definition of intellectual capital but the term relates to the factors involved in the production of knowledge whose operative functions are interpreted in parallel.

Stewart regards information and knowledge as public commodities that can be used without being consumed. The number of users has no effect on the production costs. An item containing knowledge is accessible within the limits of physical and economical realities but the knowledge the item conveys is not restricted by these limits. The use of knowledge is often controlled by the consumer, not the producer. Also, knowledge can exist in several places simultaneously. It can be divided but no longer returned to the sender. Knowledge is time-sensitive. It is valuable because it can be found in abundance and refined, and made more concise. The initial production costs of knowledge are usually high but reproduction and distribution is inexpensive.<sup>1</sup> (Stewart; 1997, 169-173.)

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<sup>1</sup> Prior to the economic bubble of the millennium, the knowledge economy was sometimes viewed with hyper-optimistic expectations: Stewart claims that the principles of the traditional economic theory did not apply to the knowledge economy. Demand and supply will not

Knowledge as a product brings new qualities to business operations in relation to product development, distribution and production organization. In the world of network co-operation, the roles of the producer and consumer are becoming more versatile. Nevertheless, it is still imperative to find relevant market or application areas for the produced knowledge, and the distribution of knowledge has its cost. Especially, customer-specific knowledge cannot be produced endlessly or without expenses. The production of knowledge may also blow out of proportion resulting in what is called information fatigue when it becomes difficult to interpret and process information. Stewart also has admitted the problem of knowledge overflow (ibid. 130.) (Pekkola; 2002, 137.)

The criticism towards the so called new economy is founded in the relation between power and efficiency. Virtual organizations and markets offer an ideal environment to make the production processes qualitatively more flexible. However, control maintenance, lack of trust, and the problems in generating knowledge or the asymmetry of knowledge hinder virtualization and the applications of telework. (Etzioni; 1977, Pekkola; 1993, 97-100, 246-248, 255-258., Gareis & Mentrup; 1, 2001.). An attempt to solve the problem has been a network organization where technology is used to improve internal flexibility and create long-term relations of trust. (On the e-Work Frontier...)

How then could the operations of workplaces be modeled amidst the increasing knowledge intensiveness? What are the strategies that are directed at the personnel and the organization of work, and what are the trends that relate to intellectual capital?

### **3. Structure of Intellectual Capital**

The facts pointing at the growing role of human factors in economy include, for example, virtual working spaces, networking operations partially based on social competence, flexibility expectations, work processes based on independent and responsible consideration, and the transfer of supervisory functions to the workers. (Suomi & Pekkola; 1999.) The theory of intellectual capital has aimed to explain the significance of human and social factors in business.

#### **3.1. Concept of Knowledge in the Theory of Intellectual Capital**

Sveiby constructs his theory of intellectual capital upon the arguments about human nature and knowledge: people are the only active operators in business life, and they create the internal and external structure of business enterprises to manifest themselves. (Sveiby; 1997, 8.) Knowledge is a resource that will qualitatively grow and become more significant when shared. The production of knowledge is a synergetic process serving the customers' needs but also changing the system

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determine the nature of production through price mechanisms because the roles of the buyer and seller, or the producer and consumer are intermixed. Also, the logic of marginal utilities in diminishing investments is inapplicable to knowledge production. Rather, excessive production may increase the profits. Knowledge production has significant returns to scale, and its networking benefits will lead to better usability and higher market value as the number of users grows. The wide-spread usage of a production model based on knowledge production will lead to a standard to which the competitors are forced to adjust. (Stewart; 1997, 173-177.)

where knowledge is originated. (ibid. 22.) Sveiby regards knowledge as a process and describes information as compressed knowledge served to the customer. He emphasizes the significance of competent customer-oriented networks of employees in the production of knowledge and core business operations. (ibid. 24-28.)

Sveiby refers to Shannon's theory (1959) of the entropy of information and views knowledge as non-entropic by nature. The contents of information are defined by the recipient, not the sender<sup>2</sup>. He considers information significant only if it is part of the knowledge forming process. There are many ways to deliver knowledge by means of task performance, and according to Sveiby, the administrative and expert approaches differ from each other. The bitter "power struggles" are often an element of a knowledge-intensive organization. (Sveiby; 1997, 40-50.)

Sveiby says knowledge is tacit, referring to the uniqueness of the search of profound knowledge, the dual character of knowledge as a public and private entity, and the attachment of knowledge to prevailing practices. He describes knowledge as a socially constructed phenomenon manifested in the language. (ibid. 30.) On the other hand, Stewart emphasizes the contextuality of knowledge. It is useless unless it relates to an existing strategy. (Stewart; 1997, 70.) Sveiby regards competence both as an individual and socially related quality, and defines knowledge as an ability to function. Competence may lead to expertise manifested in creating one's own rules of operation, and breaking conventional norms. He regards knowledge as an individual operative hierarchy developing from an ability to competence, and further to expertise. (Sveiby; 1997, 29-39.)

### 3.2. Knowledge Production Paradigms

Sveiby claims that work and production can be organized according to an industrial model based on the utilization of "materialistic" instruments. In the evaluation of knowledge-intensive organizations, this mainly refers to the paradigms related to informatization and knowledge production. (Sveiby; 1997, 130.) (Figure 1.) In informatized production, knowledge is a by-product, whereas within knowledge-based strategies knowledge and knowledge-production are sold as an independent process. In his discussion about the instrumental value of knowledge in the generation of operations, Sveiby summarizes the elements of knowledge control as follows:

**Figure 1. The Principles of Knowledge Control**

Knowledge is the capacity to act	Knowledge cannot be controlled – only the space where it was created	Information is knowledge made visible
This ability increases when it is used	Shared knowledge is doubled knowledge	...but a major portion is lost in conversion...
People have an infinite ability to create knowledge	The sharing of knowledge is based on trust	The benefits of information are dependent on the use of knowledge

(Sveiby; 1 Sept 2000.)

### 3.3. Intellectual Capital And Knowledge-Intensive Organization

The principles of the accounting system are 500 years old, and the balance sheet model currently in use was introduced in the 1860s. According to Stewart, it is suitable for the evaluation of industrial companies and the monitoring of the visible balance sheet. However, it fails to recognize several other value-creating factors. In knowledge-intensive organizations, the traditional balance sheet is rendered irrelevant because the production costs are generated by research and development, human capital, and services. (Stewart; 1997, 58-59.) A Danish survey concluded that the benefits gained by evaluating intellectual capital relate to

<sup>2</sup> Sveiby even goes as far as to describe information as meaningless and of low value.

the identification of the actual resources, the possibility of different parties to assess the company strategy, and the increase of the company's market value and the investors' interest. (Intellectual Capital Accounts.)

Stewart cites Klein and Prusak's definition of intellectual capital as being "intellectual material that has been reached and attached to a product in a value-adding way", and describes intellectual capital in this way: Intelligence is converted to resource when freely moving intellect is usefully organized. This requires that it is given a structured form (mailing list, database, agenda, process description); it can be described, divided, utilized, and attached as a part of something that could not have existed if knowledge had been left scattered. Intellectual capital is compressed useful knowledge.<sup>3</sup> (Stewart; 1997, 67.)

### **Human Capital**

Human capital aims to bring innovations to an organization, and it is manifested in products and services whose production should be promoted by the business process. Stewart is well aware of the twofold nature of the way human capital grows. On the one hand, an organization increasingly uses human competence, on the other, people gain more knowledge than the organization needs. In order to better utilize people's knowledge, the company should develop methods to make private knowledge common and tacit knowledge explicit. (Stewart; 1997, 86-89.)<sup>4</sup>

### **Structural Capital**

Stewart signifies the importance of the company and context in the production of knowledge. The knowledge necessary for business operations can be created in an environment where the motives of structural capital development are constituted by quick distribution of information, the growth of collective knowledge, quicker management level decision making, and the growth of employees' productivity. From the customer's point of view, it is important to organize the resources and flow of information. Information networks can help achieve this goal by establishing bulletin boards, discussion forums, www-systems, and educational programmes. Stewart claims that the accumulation of information and wisdom produces knowledge and is, per se, a significant economically beneficial factor. The information networks enable a quicker and more extensive distribution of expert knowledge, and they support worldwide operations. (Stewart; 1997, 108, 110-113, 124.)

Stewart views structural capital as a substance of economic operations. Also, he considers an excess of information as the greatest problem in controlling the structures, and warns against making unreasonable investments in knowledge. By this he means that discrete pieces of knowledge and expertise should not be stored within an organization unless they are structured in a way that utilizes their integration and synergetic qualities, and benefits customers. Intellectual work is rarely routine since the transactions are unique. It is impossible to predict exactly what kind of knowledge should be obtained. Intellectual capital serves two purposes: it can codify the transfer of knowledge resources and, on the other hand, it can link people to data, experts, and knowledge producing units. (Stewart; 1997, 128-132.)

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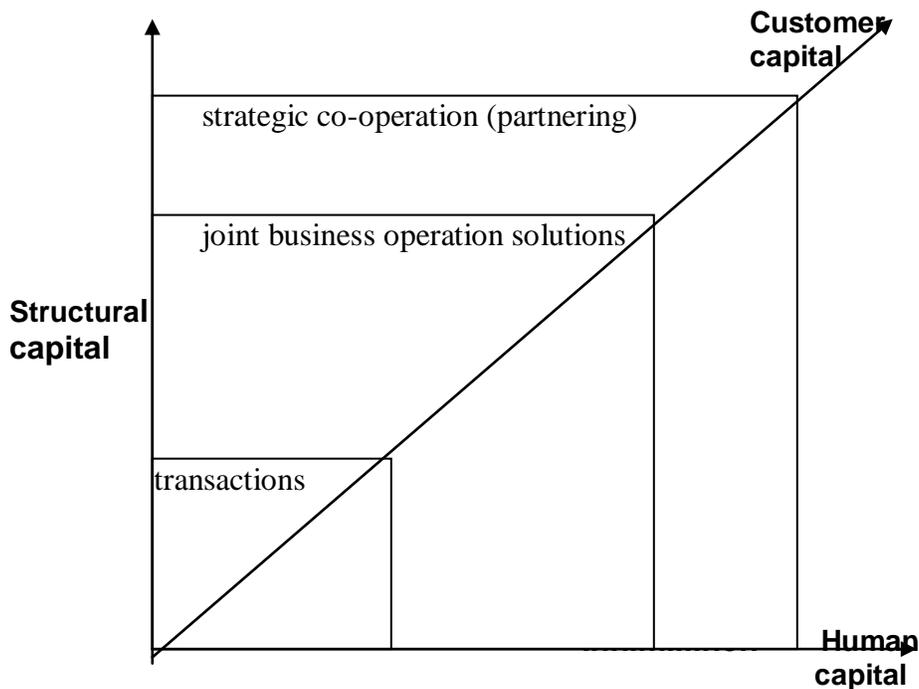
<sup>3</sup> Cf: Intellectual capital is the command of such knowledge, applied experience, organization technology, customer relations, and competence that provide Skandia with a competitive edge on the market. (Edvinson & Malone; 1997, 44.)

<sup>4</sup> Stewart also manages to problematize the importance of education. He reckons the varying significance of educational strategies among the personnel categories, and a general irrelevance of education. According to Stewart, the relationship between human capital and education should not be assessed based on the variety of **knowledge** elements but the capacity it creates for innovation production. (Stewart; 1997, 93-95.)

## Customer Capital

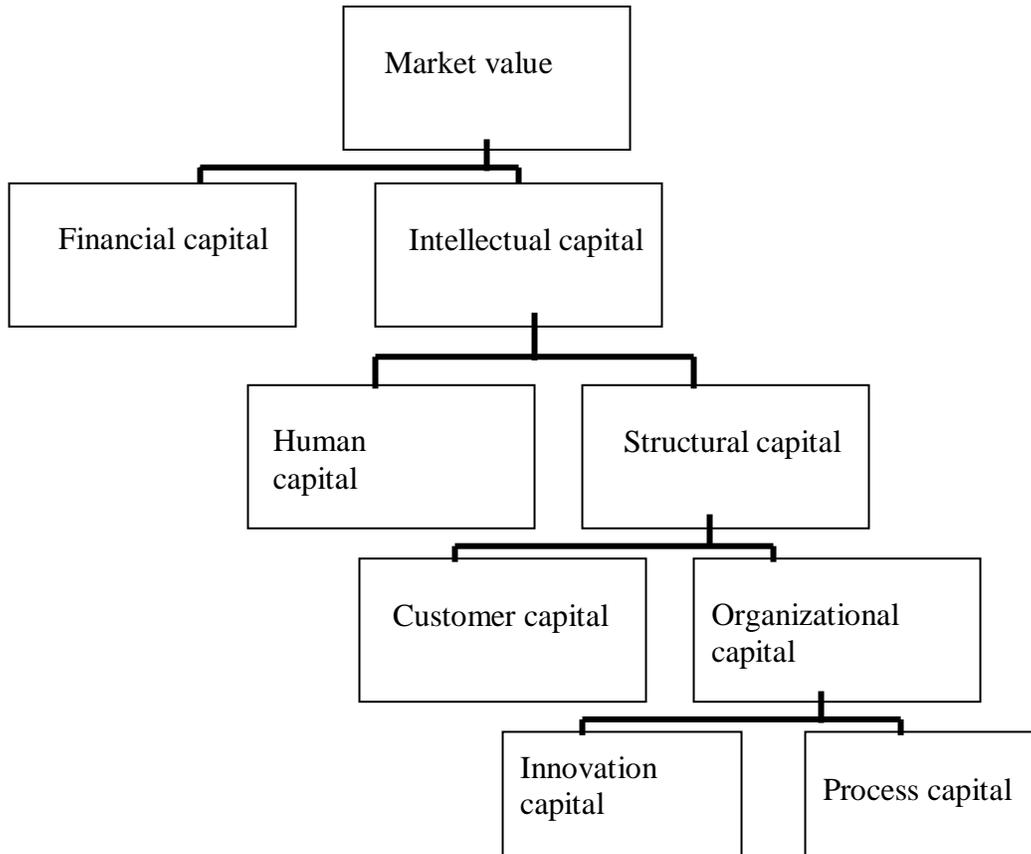
The most important aspect of customer capital are the networks that are aware of the customer's needs. (Stewart; 1997, 144-145.) It is sensible for organizations to establish electronic platforms for mutual contact in order to support the quick distribution and growth of information. Stewart regards the empowerment of customers, provision of individualized service, and profit sharing as business strategies. These strategies can be achieved if all the complementary functions of organizations co-operate in the shift from pure buy-sell operations to operative co-operation. (Stewart; 1997, 149-161.) (Figure 2.)

**Figure 2. Integration of Business Operations as Intellectual Capital Functions**



Stewart; 1997; 158.

Intellectual capital consists of human and structural capital. The management is responsible for integrating the products of human capital into structural capital. In contrast to structural capital, human capital cannot be owned by a company. By evaluating and developing intellectual capital, a company seeks to improve its market position. Skandia limited considers intellectual capital, alongside with values and technology, to be one of the three major factors facilitating development into an intellectual organization. (Edvinsson & Malone; 1997, 45-48.) (Figure 3.)

**Figure 3. Value Description Model of Skandia**

(Edvinsson & Malone; 1997, 52.)

#### 4. Intellectual Capital and Telework

The discussion on intellectual capital ( IC ) relates to telework especially concerning knowledge control. Sveiby's notion of focusing on the space where knowledge is created refers to the conceptual organization of operations and work. Telework can be regarded as a special case of this approach. Structural capital contains the technological equipment and systems that enhance operations. In part, telework is based on information technology, thus the special features of information systems can be utilized. A third common interest for telework and customer capital are the platforms for mutual contact between organizations. The maintenance of customer relationships is said to be a particularly emphasized motive for telework.

In early literature concerning intellectual capital, there are only few references to telework, or any other unorthodox form of work organization.<sup>5</sup> The personnel is seen as operationally positioned, and the tensions between the personnel categories are regarded as static elements dictated by the organization structure and professional competence. (Sveiby; 1997, 53-63.) This approach makes it difficult to realize the opportunities for change. The analysis of the nature of intellectual capital is affected not only by social issues, but also aspects concerning ethics. (Koskinen, 2000, 80.)

<sup>5</sup> The article by Campbell ja Grantham (1998) is an exception. Despite the title, it relates to the general discussion on the theory of intellectual capital and the operational abilities of a company. The article concludes with an emphasis on the importance of customer relationships.

The problem with IC framework of reference is the lack of focus on operational spaces. Apart from Sveiby, at the beginning of the millennium there were no studies into the nature of work in a virtual or conscious space, or into the concept of time as an organic process factor.

The efficiency factors of telework are essential qualities of structural capital. They are related to the internal structure of the organization, customer relationships, and operations in the chains of added value. Knowledge does not exist irrespective of space (Stewart; 1997, 171.) but is manifested in mental space. This enables the processing of knowledge in virtual, physical and social spaces.

Intellectual capital is in relation to the production of paradigmatic change. Innovation is a change in a way people think and act. The organization of work on the basis of virtual and mental space promotes the organization's ability to produce innovations and wide-ranging conceptual changes that, in turn, will help adjust to the chains of added value and create networks. Telework is a way to enhance the production of innovations and ideas with added value.

As a form of work organization improving and facilitating task completion, telework should conform to the methods intellectual companies are using. According to the theory of IC, knowledge production should be escalated within the organization, especially in the customer and strategic partner networks. As far as it is understood as eWork, or work in the networks, these activities are extremely relevant in respect to telework.

## **5. Intellectual Capital And the Benefits And Disadvantages of Telework**

Telework is a neutral form of work organization. Its applications may be either beneficial or disadvantageous with respect to the employees, the organization or environment. From the perspective of business operations, telework serves as a means of adaptation to the frequent changes in the organization and environment. In Finland, an essential element of telework is that the workers take responsibility for their task performance and become their own supervisors. Telework enables the choice of an innovative undisturbed work environment, the use of physical and virtual spaces, and the utilization of network applications. The most significant benefits of telework relate to individual working practices, the organization of workplace and working hours, and the combining of work and personal interests. (Pekkola; 2002, 232-236.)

The major disadvantage of telework is the increased number of working hours. Typically, this occurs when the personal responsibility or supervisory functions, and the lack of control from within and outside the organization lead to changes in standard working hours. (Aitta; 2000, 156-157.) Another disadvantage for managerial employees might be the general increase of quantitative labour market flexibility. Also, a potential problem arises if telework and its output share are not agreed upon by contracts. Other disadvantages are considered minor, although they are significant at an individual level.

When the benefits and disadvantages of telework are placed within the framework of the theory of intellectual capital, the focus is mainly on innovation and process capitals because the benefits are primarily obtained by individual employees. When work is organized in the forms of telework, it usually occurs independently of the company's or organization's business strategy. The efficiency factors of telework are not absolute but relate to the nature of the business strategy and the developing stages of product and process innovation. Basically, the more comprehensive and integrated the policy of telework is, the more beneficial it will be. Fundamentally, the efficiency factors are associated with promoting human activities.

At an individual level, the benefits obtained in the area of innovation capital become apparent in the pacing of work and in the utilization of suitable working environments. The production of innovations and ideas with added value is supported by expanding task processing

and eliminating disturbances. Disturbances include the norm to increase working hours, the blurring of working and free time, as well as the quantitative labour market flexibility concerning expert positions.

The sphere of process capital includes the independence of work, decentralization of work organization, flexible use of human resources, the increase of employee input, and the utilization of technological efficiency factors. A disadvantage is the potential friction among the employees.

The benefits of organizational capital include, for example, the principle of emphasizing the quantity and quality of the performed tasks, and the utilization of employee and even customer premises. Potentially, the lack of sufficient negotiation and contract practices in respect to telework may cause problems.

In the sphere of customer capital, benefit is gained by maintaining customer orientation in telework, and directing operations towards value chains. Networks may contain parts that are common to several organizations, which is typically beneficial for teleworkers.

Benefits provided by the sphere of structural capital include the adaptation to organizational changes, utilization of network applications, and temporal and spatial adjustability of work processes. However, the use of networks is constrained by the costs.

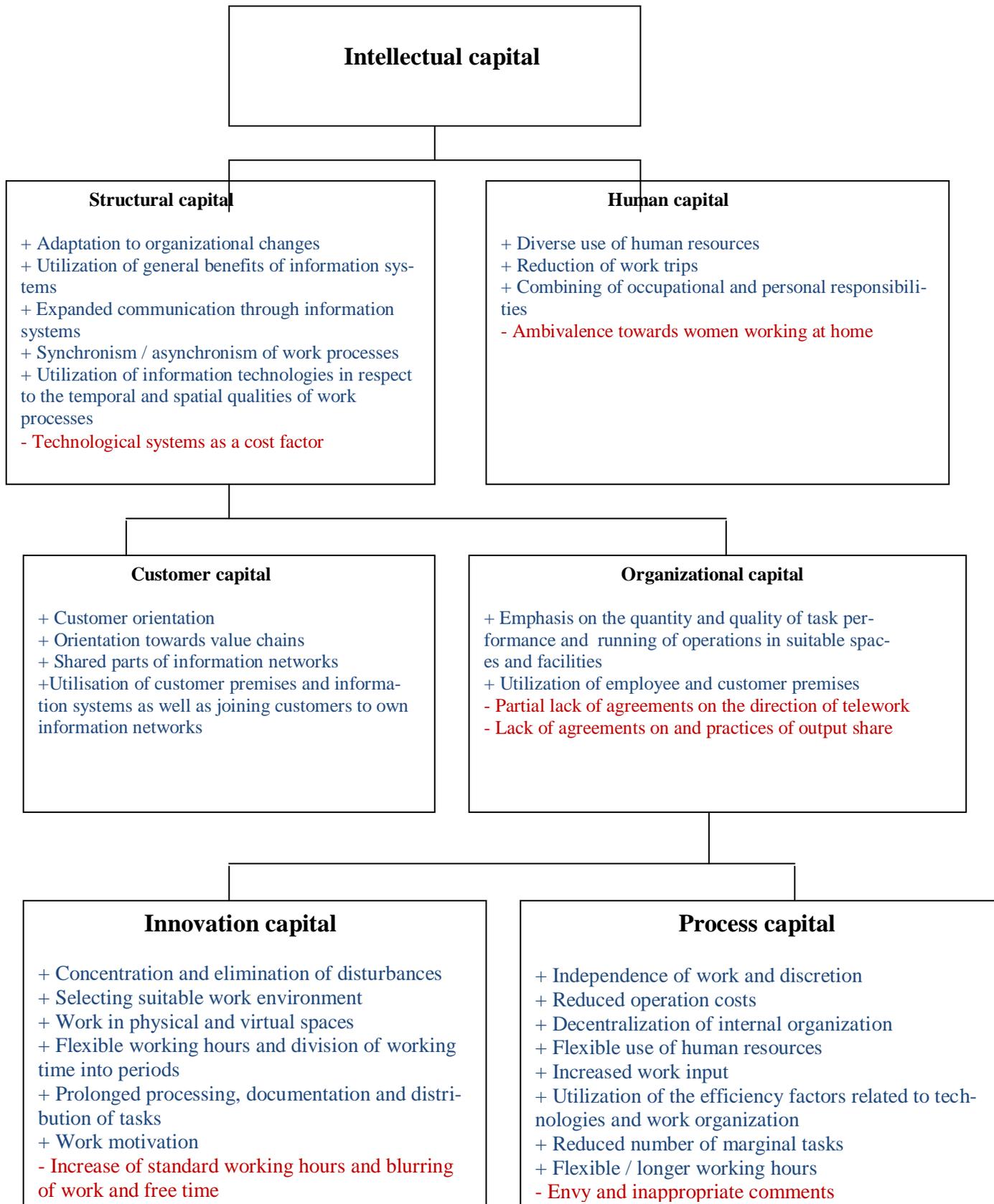
Human capital enables an extensive use of human resources and the combining of occupational and personal responsibilities through telework. The employees can choose not to commute or travel in business and thus reduce their impact on business expenses and environment, as well as rationalize their working hours. (Figure 4.)

Irrespective of formal status, lower white collar employees can innovatively organize their work through professional development. This is especially benefitting female workers. (Cf. Sveiby; 1997, 53-63.) On the other hand, this also relates to the use of human capital or how competence is utilized and increased in the sphere of organizational capital, and in the processes and innovations closely associated with it.

The efficiency of telework is dependent on the distribution and production of new knowledge and innovations. Participation in a social process enables participation in a higher number of more diverse processes than would be otherwise possible. It also makes it possible to select the suitable processes and people participating in them. Telework offers tools for cooperation with several other people, while providing an environment for undisturbed individual concentration. The organization of work facilitates concentration on individual and social levels. Efficiency at work equals to being present in a social structure in such a way that more space is created for individual and shared thinking. Produced efficiency is a process innovation.

In terms of intellectual capital, telework requires that the structure of the working spaces must support the production of ideas and innovations. The relationship between human and structural capital is essentially important. The elements of structural capital must enable the realization of human capital. Human capital is not an independent part of intellectual capital, but the functions of human capital, such as education and well-being, become apparent in the ways human capabilities are expressed (present) in work processes, whether within an organization or in relation to customers or other external actors. Finally, innovation and process capitals are derivative of organization and customer capital.

**Figure 4. Intellectual Capital And the Benefits And Disadvantages of Telework**



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