The Shift in the Techno-socio-economic Paradigm and Regional Competitiveness

Vesa Harmaakorpi, Ilkka Kauranen, Arto Haikonen
Helsinki University of Technology
Lahti Center

Saimaankatu 11
FIN-15140 Lahti
tel. +3533525000
fax +35835250205

vesa.harmaakorpi@hut.fi
ilkka.kauranen@hut.fi
arto.haikonen@hut.fi

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Abstract:

During the last century, we lived through the change from the agricultural era to the industrial era. Nowadays, we are in the middle of the change from the industrial era to the information era. In the present study, the emerging techno-socio-economic paradigm is examined through several theory lenses. The basic questions defining regional competitiveness and economic success are considered. The present study lays a theoretical foundation for a sound indicator explaining regional competitiveness in the information era. In future research, the indicator will be empirically tested. The indicator's correlations with regional productivity, structural sustainability and economic growth indicators will be analysed using statistical data. The data will be gathered from 85 Finnish NUTS 4 regions.

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1 Introduction

1.1 Background

During the 1900s we lived thorough the shift from the agricultural era to the industrial era. Nowadays, we are in the middle of the shift from the industrial era to the information era. The new era has several definitions based on different theories. At one and the same time, we talk about information society (information technology changes the world), knowledge society (knowledge is the main productivity factor), learning society (learning ability becomes a dominantly critical factor), expert society (increasing importance of skilled people and experts), network society (networks are emphasised as a way of social organisation), post-industrial society (emphasis on services instead of industrial production), post-Fordist society (change in production paradigm), innovation society (innovation is the driving force of economic growth), post-modern society (modernisation leads to plurality of values and individualism), risk society (risks and uncertainty are increasing in society) and consumer society (consumer needs steer economic activities).

These definitions reflect the different points of view for assessing the development we have been experiencing in recent years. Each of these definitions emphasises different phenomena embedded in the change of present techno-economic paradigm, and each of them builds a foundation for the assessment of the requirements of the changing environment. Although the definitions and theories describing the present change are mostly very abstract, some concrete indicators can be determined to describe the phase of the changing process in society.

The changes in society should be assessed at the regional level, especially as the regional dimension is gaining in importance in the development policies at the European level. In the regional context, the question to first arise is, how the shift of the techno-economic paradigm appears at the regional level and what its effect is on the emerging regional disparities. Secondly, is it possible to evaluate, how the region's adaptability to the shift of the techno-economic paradigm correlates to its economical success.

1.2 Objectives of the Study

In the present study, the emerging techno-socio-economic paradigm is examined through several theory lenses. These theories give some indications of important matters concerning the adaptability of regions to the information era. The objective of the present study is to lay a theoretical foundation for a sound indicator explaining regional competitiveness in the information era. In future research the indicator will be empirically tested. The indicator's correlations with regional productivity, structural sustainability and economic growth indicators will be analysed using statistical data. The data will be gathered from 85 Finnish NUTS 4 regions.

2 Defining the Information Era

During the last century, we lived through the change from the agricultural era to the industrial era. Nowadays, we are in the middle of the change from the industrial era to the information era. The information era represents a new techno-socio-economic paradigm emerging mainly because of the development in the information technology. The emergence of a new era has produced very many theories and concepts describing it. We talk at one and the same time about

- information society (information technology changes the world)
- knowledge society (knowledge is the main productive factor)
- learning society (learning ability becomes a dominantly critical factor)
- expert society (increasing importance of skilled people and experts)
- network society (networks are emphasised as a way of social organisation)
- post-industrial society (emphasis on services instead of industrial production)
- post-Fordist society (change in production paradigm)
- innovation society (innovation is the driving force of economic growth)
- post-modern society (modernisation leads to plurality of values and individualism)
- risk society (risks and uncertainty are increasing in society)
- consumer society (consumer needs steer economic activities)

These frameworks reflect different points of view on the development phase we are currently experiencing and they represent an extensive and often overlapping portfolio of theoretical frameworks. Because of the limited scope of the present study, the following presentation of the frameworks will shed light on only the basic ideas underlying each of the frameworks. Following this, the main impacts of these ideas at the regional level are discussed.

2.1 Information society

Perhaps the most commonly used term of the current techno-socio-economic paradigm is that of 'information society' (see, for example, Webster 1995). The terms 'information economy' (see, for example, Porat 1977) and 'information age' (see, for example Castells 1996, 1997, 1998) are also related to this term. In the present paper, all of these frameworks are treated under the same concept of information society.

The concept of the information society emphasises information's central role in building economic wellbeing. Webster (1995), (see also Hautamäki 1996b), divides the theories of the information society into two main classes: continuity theories and revolution theories. The former emphasise the continuous development of society, whereas the latter suggest that the new era is radically different from the old ones. Probably both classes of theories have their pros and cons, but the latter theories often suggest that the leaps in societal development have often been shorter than thought, and that the leaps are strongly labelled by path dependency. In the present paper, we consider that the shift towards the information society is a continuous process with some changes that can be categorised as radical.

Castells (1996) emphasises the enormous transformation process from the industrial era to the information era due to the vast development in technologies. This change has enabled the emergence of the global information society. Consequently, special attention is given to technologies, especially those that enhance the production, processing and exchange of information. These technologies are termed 'information technologies' (Sokol 2003). Modern information technologies are strongly based on the digitalisation of text, pictures and voice. This digitalisation enables the easy transfer of information. The ever-increasing capacity of information

networks makes it possible to transfer huge amounts of information creating information superhighways.

In the regional context, the implications of the theories of the information society emphasise the regions' necessity to be connected to the information superhighways. It is important not just to assure the technical conditions of information networks, but social structures, as well. The development of information technologies and networks does not assure the quality of information running in the networks (Niiniluoto 1996). However, it is hard to imagine that any region would be prosperous, if information technologies and networks were not available and if they were not deeply embedded within the economic and social processes. Special attention should be paid to the regional absorption capacity of the information that is flowing in the existing worldwide superhighways.

2.2 Knowledge society

Information can be understood as a form of data, but knowledge can be defined as havinga deeper meaning: knowledge is something superior to information. Knowledge involves the understanding of how something works. Knowledge requires the understanding of relationships and behaviour. Knowledge is context dependent. Therefore, the concept "knowledge society" comprises a deeper meaning than the concept "information society". The essence of the knowledge society has been approached by many related concepts as well, such as knowledge economy, knowledge-driven economy, knowledge-intensive economy and knowledge-based economy (see, for example, Drucker, 1993; Giddens 2000; Cooke, 2002).

In any case, knowledge is claimed to be the most important production factor. (Lundvall and Johnson, 1994). Therefore, knowledge as an asset is a widely discussed topic in the context of economic development. The discussion often deals with the nature of knowledge and its meaning for development. The role of tacit and explicit knowledge has been investigated in many contexts (cf. Lundvall and Borras, 1999; Asheim, 1999; Schienstock and Hämäläinen, 2001). The discussion is fostered by the strong role of tacit knowledge in collective learning processes and by the present tendency to increasingly codify tacit knowledge (Maskell *et al.,* 1998).

Explicit knowledge is understood as easily codifiable, and therefore, easy to transfer with the modern technologies, making explicit knowledge, in principle, available everywhere. On the contrary, tacit knowledge cannot be transferred easily over distances, because it is not expressed in codified form. Therefore, tacit knowledge seems to be a more valuable asset in the regional context. However, a regional knowledge advantage is not based merely on the availability of tacit knowledge, since the local knowledge infrastructure also contains "sticky" codified (explicit) knowledge (Asheim, 1999). Sticky knowledge refers to codified knowledge that is generally based on a high level of individual skills and experiences, collective learning processes and a well developed institutional framework – making such knowledge very difficult to transfer between regions (de Castro and Jensen-Butler, 1993). We consider, however, that sticky knowledge and the more easily transferable explicit knowledge are not two separate categories, but that explicit knowledge is nearly always to some extent sticky. Only the level of stickiness varies. Scharmer (2001: 68-69) recently introduced the concept of "self-transcending" knowledge, or "tacit knowledge prior to its embodiment". Self-transcending knowledge implies the ability to sense the presence of potential, to see what does not yet exist. Such an ability is ordinarily associated with artists.

In a regional context, it is crucial to secure access to the codified knowledge and to develop a critical mass of sticky knowledge, tacit knowledge and self-transcending knowledge. Essential in this task is to have sufficient institutional thickness (Amin and Trift 1995), which contributes to knowledge creation. In this context, institutional thickness refers to both informal institutions (trust, norms etc.) and formal institutions (laws, universities, research centres, technology centres etc).

Another crucial task is to enhance regional knowledge creation and the effectiveness of the management systems involved, as well as the quality of the information in the system (Harmaakorpi, Melkas, Kivelä 2003).

2.3 Learning society

Learning has often been defined as the most important process in modern society. Lundvall and Johnson use the concept of "learning economy" when referring to the contemporary economy, which is dominated by the information technology-related techno-economic paradigm. In the learning economy, knowledge and learning are crucial competitiveness factors (Lundvall and Johnson, 1994). Learning is claimed to be the most important process in the world of today.

Lundvall and Borras define the learning economy as "an economy, where the ability to learn is decisive for the economic success of individuals, firms, regions and nations. Learning, in this context, does not just refer to the acquisition of information or access to the sources of information, but to the development of new areas of competence and new skills" (Lundvall and Borras, 1997: 29). In the concept of the learning economy, learning is placed even above knowledge in creating competitiveness since "… what really matters for economic performance is the ability to learn (and forget) and not the stock of knowledge" (Lundvall and Borras, 1999: 35). Kebir and Crevoisier (2002), see knowledge itself rather as a process than a stock. Indeed, we consider knowledge of learning to be the most essential skill at all levels. Knowledge of learning covers the knowledge of the importance of learning, the characteristics and the ways of learning, as well as limits and the drawbacks of learning, and the ways of dealing with the limits and drawbacks.

The learning economy emphasises the interactive and collective nature of learning. Collective learning is a process of dynamic and cumulative knowledge creation that has, due to its interactive character, numerous synergy advantages (Camagni, 1995). Synergy advantages emerge because of knowledge spill-overs and increasing trust in the collective learning process. An intensive process of interaction is included in the creation of new knowledge (Nonaka and Takeuchi, 1995; Nonaka *et al.,* 2000).

Learning through formal education and learning through research and development are essential in creating innovations. These types of learning are especially important in the case of radical innovations and in the case of linear innovation processes. Formal education searches for answers to questions like "know-what" and "know-why". Such knowledge is normally explicit in nature. However, in the cases of non-linear innovation processes and incremental innovations, the result is a consequence of different kinds of learning processes embedded in normal economic and social activities. Learning in these processes includes activities like learning-by-doing, learning-by-using and learning-by-interacting. All these types of learning involve many kinds of actors (Lundvall, 1992). Such processes often produce tacit knowledge giving answers to questions like "know-how" and "know-who".

In the regional context and in the framework of the learning economy, the concept "learning region" has emerged. Learning regions "function as collectors and repositories of knowledge and ideas, and provide an underlying environment or infrastructure which facilitates the flow of knowledge, ideas and learning. Learning regions are increasingly important sources of innovation and economic growth, and are vehicles for globalisation" (Florida 1995: 528). Clustering and networking are important factors in learning regions. However, "both concepts, clusters and networks, describe important organisational aspects that are closer to the issue of infrastructure than to that of innovation. The proximity of various companies does not in itself yield innovative results. Communication frequency between companies contained in vast networks does not guarantee innovation, either. Both concepts lack the sound foundation of the underlying resource: knowledge" (Nonaka and Reinmöller, 1998: 407). Thus, learning and knowledge creation are the driving force of innovations leading to the competitive advantage of regions.

2.4 Expert society

The structure of work has to be rethought in the information era. Different kinds of features in working life are gaining importance in creating prosperity on individual, regional, national and global level. In the present study the framework created by Robert Reich (Reich 1993) is used to describe the changes in the structure of work when the society changes towards the expert society. According to Reich, there are three different categories of work in the global expert society: routine production services, in-person services and symbol-analytic services. These categories include about 80% of the work done in the world. The people whose work does not fall into any these categories of work are mainly farmers and people using natural resources.

In the industrial era, the routine production services were important in creating economic growth. The routine production services are typically made in factories and involve many repetitions, checking etc. Also routine supervisory jobs and routine handling of information is included in this category of work. The importance of such work as a success factor is continuously decreasing, because routine production can increasingly be replaced by automation. In the global world whole factories, including much routine work, are transferred to places where the competitive edge is built on a cheap labour force. Therefore, the number of routine workers is continuously decreasing in the developed world.

In-person services comprise mainly relatively simple and repetitive work. However, they are not as directly involved in global competition as routine production services often are. People providing in-person services are in direct contact with the ultimate beneficiaries of their work. The immediate objects of these services are specific customers rather than flows of goods or data. Typical in-person service jobs are barbers, nurses and taxi-drivers. They are an essential part of regional development, but rarely form a competitive advantage for any region.

Symbol-analytic services are seen as the main source of competitive advantage in the information era. Such work includes problem solving, problem identifying and strategic-brokering activities. These activities require a high education and, in many cases, a high degree of creativity. Information technologies often are an essential part of symbol- analytic work. The work of symbol analysts can be traded globally, especially in a world having developed information superhighways. Symbol analysts are a mobile class of workers due their high educational level and fairly common global means of communication.

The people able to do symbol analytic work are needed for regional wellbeing. The agglomeration of skilled experts is a prerequisite for creating new business activities. Therefore, it is essential to be able to educate new symbol analysts and attract them from other regions. In some fast- growing regions (for example, the Helsinki region in Finland) there might also be a lack of employees in the two other categories of workers. However, symbol analysts lead the way to regional competitiveness and prosperity. Therefore, it is crucial to establish education units in the region, as well as to take care of the regional features attracting symbol analysts to the region.

2.5 Network society

Castells (1996, 1997, 1998) has formulated a systematic theory of the information era that takes into account the fundamental effects that information technologies have on the contemporary world. He has been interested in the emergence of a new social structure, which he labels a network society. The network society is defined as informational and global emphasising the importance of knowledge creation and international networks in creating economic wellbeing.

The concept of the network society refers to well-known mega-trend changes in social, economic and technological spheres of society. The globalisation process of economics, development of technology, reconstruction of political systems and the new values in people's social life create new demands and changes for all kinds of organisations in the private and public sectors. This reconstruction process of societies means that for social actors of all kinds it is a question of life and death to belong to global and regional networks.

In the network society, the change from the space of places to the space of flows is taking place. The places are seen as hubs and nodal points of a worldwide network. Therefore, the network society is far from placeless, but its operational logic is based on flows rather than on places. Castells (1996) categorises three layers of flows. The information technology infrastructure constitutes the first layer, the material support of the space of flows. i The nodes and hubs of the space constitute the second layer. The third layer refers to the spatial organisation of the dominant, managerial elites. The flows running in this system can be different in this system. Flows of technology, information, people, capital and firms are example of such flows.

Regions must attract essential global flows in order to stay successful in the competition between regions. The means to create attractiveness are manifold depending on the specific flows to be attracted. Regional economic development policies should emphasise such factors that are anticipated attract the desired flows. The flows can be, for example, certain kinds of people, technology, capital and companies. Important factors in this process are generally said to be, for example, a well-developed innovation system and a knowledge base, the quality of life and the quality of public decision processes of a region. An aspect to remember is, however, that while the network society enables easy access to the important flows worldwide, it increases the risk of losing the regional competitive advantage due, for example, to unwanted knowledge or technology diffusion to other regions.

2.6 Post-industrial society

The framework of post-industrial society has been greatly developed by Bell (1973). At first, Bell used the terms "knowledge society" and "information society", but finally he preferred the use of the term "post-industrial society". The starting point to Bell's theories was the notion of the size of the service sector continually taking over from the industrial sector. This occurred together with the notable expansion of science, research and development (R&D), business services, and the rising number of scientists, researchers, academics and professionals (Sokol 2003).

Bell predicted that industrial societies would undergo a massive transition resulting in an emergence of a post-industrial society that would be based on services. Accordingly, the post-industrial society has, in many writings, been called the service society. Within such a society, the important factors are not things like muscle power or energy, but information. The "decisive category" of services in the post-industrial society would be health, education, research and government. These are represented by the expansion of the "new intelligentsia – in universities, research organisations, professional organisations and governments" (Bell 1973: 15)

The framework of the post-industrial society emphasises the importance of service sector activities in regional economic growth. Some studies (see, for example, Vahverbeke and Cabus 2003) suggest that structural change towards an increase in the service sector has been especially fast in big and growing urban regions. It is, however, statistically difficult to verify, where the value added service activities happen. Often there are many knowledge intensive service activities included in high quality industrial production that cannot be separated in statistical analysis. However, knowledge intensive business services (KIBS) seem to play an important role in regional development. Therefore, services, such as computer, research and development (R&D) and training services, are among the economy's most rapidly growing sectors and play an important role in the regional innovation system (OECD 2000).

2.7 Post-Fordist society

The information era is changing the technological paradigm for production systems. We are experiencing the change from Fordism to post-Fordism. The Fordist production system had certain obvious characteristics. Typical of Fordism is a high share of standardised products for large markets (mass production). In Fordism, large corporations have a dominant role in organising production and innovation. Furthermore, there is a highly developed division of labour and a clear-cut separation of conception and execution (Tödtling 1994).

The post-Fordist production system can be described fairly well with the concept of flexible specialisation (Piore and Sabel 1984, Beccatini 1990, Pyke and Sengenberger 1992, etc.). This concept identifies flexible specialisation as an alternative to mass production. The paradigm change was made possible by the development in computerised production technologies enabling quick changes in markets and production structures. The framework of flexible specialisation has its roots in the theory of industrial districts (Marshall 1916) stressing the strong role of institutions and institutional networks in the shift from Fordist production systems to post-Fordist production systems.

The characteristics of post-Fordist production systems are (Tödtling 1994 citing Moulaert *et al.* 1988, Harvey 1990, Benko and Dunford 1991, Cooke and Morgan 1991):

- a diversification of consumer demand and, consequently, a lower standardisation of products
- use of flexible technologies, organisations, and labour practises
- a certain decentralisation of functions within large firms (bringing some of the higher-level functions back to the production level) and a bias towards horizontal instead of vertical information flows
- a more prominent role of small firms partly through vertical disintegration of large firms, creation spin-off firms and subcontracting relations with large firms
- an increasing importance of institutions as actors in economic development.

In a regional context, the post-Fordist framework focuses on regional production systems. The firms are increasingly seeking a competitive advantage by concentrating on their core competences and being part of company networks. Local production systems are orienting towards regional innovation systems (Cooke *et al.* 1997) enabling interactive learning and flexible specialisation. Essential things in the competitive post-Fordist regional production system are: many specialised small and medium-sized enterprises (SMEs), interaction between different companies and institutional infrastructure fostering the development of the production system.

2.8 Innovation society

In the present techno-economic paradigm, innovation is widely seen as a driving force of competitiveness. As Archibugi and Michie (1995: 1) put it, “the production and use of knowledge is at the core of value-added activities, and innovation is at the core of firms’ and nations’ strategies for growth”. The concept of innovation, however, has been understood in numerous ways during the last century. In the early stages of industrialisation, innovations were seen mostly as great leaps of knowledge achieved by talented individuals or research groups. With regard to this, Schumpeter (1942) created his theory of the heroic entrepreneur being the driving force of successful innovation. Innovations were largely seen to be linear processes. This has given its name to the concept of “linear model of innovation”.

Nowadays, however, innovation is seen as a social as much as a technical process. Innovations are seen to emerge as non-linear processes. They are considered to be deeply embedded in normal social and economic activities. Furthermore, innovations are seen as processes of interactive learning between firms and their environment (Lundvall, 1992; Asheim, 1999). The interactive and non-linear innovation model emphasises “the plurality of types of production system and innovation (science and engineering is only relevant to some sectors), "small" processes of economic co-ordination, informal practices, as well as formal institutions, and incremental, as well as large-scale, innovation and adjustment” (Storper and Scott, 1995: 519).

In non-linear innovation processes, multi-directional information flows are emphasised in creating and combining knowledge. Non-linear innovation is a consequence of many kinds of learning processes embedded in various ordinary economic activities. Many different kinds of actors are involved in innovation processes. The non-linear model assumes that innovations can be triggered by various causes. Instead of understanding innovation as a linear process, we have to take into account complicated feedback mechanisms and interactive relationships involving science, technology, learning, production, and demand (Edquist, 1997: 1).

The term "innovative capability" refers to the organisation’s ability to sense the changes in the environment and to exploit existing resources and competences, in order to create a competitive advantage by innovation activities (Teece and Pisano 1998). Innovative capability comprises many things, but one of the main points is increasing intra-firm, as well as inter-firm, interaction. In the regional context, an important success factor is the level of the regional innovative capability. The term 'regional innovative capability" refers to the ability of the regional innovation environment to (Kautonen and Sotarauta 1999)

- perceive and process the changes in the operational environment
- treat the available resources based on new information
- acquire totally new resources
- combine these resources with the competences aiming to increase competitiveness
- transmit and process information and knowledge in large networks.

Characterising innovation as a social, non-linear and interactive learning process raises the question of the role of socio-cultural structures in innovation processes (North, 1986 and 1990; Asheim, 1999). The socio-institutional environment where innovations emerge plays an essential role in successful innovation processes. From a regional point of view, innovation is often understood as a locally embedded process that takes place within the regional innovation system. The locally embedded process is formed of heterogeneous groups of different kinds of actors including representatives of firms, universities, technology centres and development organisations. It is regionally crucial to increase the capacity of these institutions enhancing regional innovative capability.

2.9 Post-modern society

In the information era, the post-modern society (for example, Garvin 1980; Bauman 1987, 1992, 1993; Lash 1990; Crook *et al.* 1992) is said to follow the modern society of the industrial era. According to these theories, post-modern is labelled especially by the rise of individualism and plurality of values. The world is said to have lost its faith in great tales; individuals prefer to construct their own small stories themselves. As a counterbalance to individualism, a new kind of communitarianism is emerging in post-modern society. People want to belong to communities where they feel accepted and can be creative. These communities are often characterised by temporality. Centre-periphery (at the regional, cultural and regional level) theories seem old-fashioned in the post-modern world. Centres are emerging in places where individuals are gathering and interacting (Hautamäki 1996a).

Bauman assesses postmodernism with three concepts: sociality, habit and self-assembly. Sociality replaces the word society, habitat replaces normative groups, and self-assembly replaces identity. These new concepts are reflecting the radical changes in society evoking a need for a new conceptual analysis. Modern sees the history of movement with a binding logical direction, where as the post-modern world is a world without direction and solid goals. (Jallinoja 1995.)

Bauman (1993: 240-241) describes the agents in modern and post-modern with the metaphor of pilgrims, tourists and vagabonds. Pilgrim is modern because he has a goal for his journey. Vagabond is post-modern because he is wandering from one place to another without a goal believing he will find something satisfactory in each place. The journey continues, because a vagabond always believes that there is some place offering something better. Post-modern frees the agents from the bonds of time: the past does not force and the future does not have a colonialising effect. Therefore, according to Bauman, futures research is impossible.

In a regional context, the theories of post-modernism raise questions at two levels: at the regional level and at the individual level. Firstly, it is tempting to assess a region as a subject in post-modern society. Are they vagabonds or pilgrims? Main-stream regional science is strongly opposing the suggestion that history does not matter. On the contrary, regions are considered to be strongly path-dependent (Maskell and Malmberg 1995; Teece *et. al.* 1997; Harmaakorpi and Pekkarinen 2003) limiting the available future paths. The post-modern theory also claims that it is impossible to forecast the future. In the world of today, it might be difficult, but we consider that it is worthwhile to practice futures research anyway. However, setting solid and rigid goals in the present turbulent world could be difficult and even dangerous. The regions in the post-modern society could be characterised as vagabonds being strongly dependent on their past, and having to continuously make new decisions under insecurity. This insecurity can be reduced by using resource-based futures research (Harmaakorpi and Pekkarinen 2003).

Secondly, post-modern individuals could be assessed as objects of regional policies. It is suggested that post-modern individuals are individualistic with a plural value basis. On the other hand, there is said to be a tendency towards communitarianism. These are the facts that should be considered in regional development. How could regions attract post-modern individuals who have high expertise? These individuals often belong to groupings like symbol analysts (Reich 1993) or creative class (Florida 2002). This places high demands on the plurality of regional services (culture, leisure activities, day-care, education) and on the chance to exercise individual choice in the different phases of life.

2.10 Risk society

Risk society is the famous definition of Beck (1986, 1992, 1996, 1997) of the contemporary world. Beck uses the terms the "first modern" or the "simple modern" to describe the industrial era. He uses the terms the "second modern" or the "reflexive modern" to describe the emerging information era. The risk society is caused by the development of the first modern (industrial modern). The first modern focuses on producing goods, causing increasingly social and societal risks. These risks cannot be handled in the first modern; the second modern meaning the process, where society is becoming aware of the risks produced. A clear border cannot be drawn between the first modern and the second modern. In some parts of society, reflexive modernisation has already gone quite far, whereas some parts are just beginning to ponder the questions related to it.

According to Beck, the Western world has focused on technological development, economic growth and the creation of the welfare state. Great trust has been placed in consumption and in increasing material security. This trajectory was seen to be fairly clear and problem-free. Some facts, like economic crises, mass unemployment, environmental problems and increasing crime have shaken the trust in basic structures and development trajectories. The risk society is

characteristically global. Many risks cannot be avoided on a national or regional basis. Many risks are also touching everybody regardless of, for example, class status. Many risks are like produced risks, uninsurable.

According to the theory of the risk society the risks we meet are increasingly global risks. But could the framework give some hints considering regional development? Although overall security and ecological sustainable development are global matters, there are considerable differences in these at the regional level. Regions are increasingly emphasising these aspects in their policies and strategies (see, for example, the strategy of the Lahti Region in Finland, MAST). It is, however, far more disputable, how much matters of security and ecology are affecting regional economic development.

2.11 Consumer society

The framework of the consumer society is underlining the power of consumer needs in steering economic activities. According to Toivonen, the modernisation of consumption has taken place in the 20th century in three phases (Toivonen 1998). The first phase started in the 1920s, when the wealthiest people could purchase cars, refrigerators, washing machines etc. The second phase started in the mid 1950s, when such items were becoming common among the middle and working classes. In addition, some new goods emerged, of which the penetration of television took place especially quickly. The third phase was in the 1980s, when more developed electronics, like videocassette recorders and microwave ovens almost simultaneously spread were diffused to all social classes. This penetration did not follow the Simmel's trickle down hypothesis (Simmel 1905). This hypothesis suggests that the upper classes adopt new habits of consumption first and this is followed by the lower classes.

Schulze (1992) describes the consumer society by the concept 'experience society'. According to Schulze, the modernisation process in the Western world has led to the affluent society, where the general standard of living has risen measured by any indicator. Furthermore, he makes a difference between choice and influencing. When our operational environment is restricted we try to influence the environment. When the limitations get looser we change from influencing to choice. Then our thoughts are directed inside us. The goals lay within ourselves. The goals are in the form of feelings, psychological processes and experiences. The society of choice is an experience society.

In the regional context, the individual in a region should be seen as consumers and clients instead being subservients as seen earlier. This places new demands on, for example, public and semi-public services: culture, health care, day care etc. Regional public service consumers make choices like any other consumers and they should be listened to. For a short time they might be satisfied even with a lower level of services, but in the long term low levels of service could be dangerous for regional development. When talking about consumption, there is an increasing temptation to consider things like brand and image. In many cases, it is suggested that fulfilling the needs of regional public service consumers leads to higher regional brands. A good regional brand, again, increases the chance of attracting experts and knowledge intensive firms, enabling regional economic growth.

3 Regional Disparities in the Information era

The world economy meets shifts in the techno-economic paradigm in certain cycles caused by leaps in technological development. This current cycle in the 21st century is often described as the fifth Kondratieff wave based on the development in technologies like microelectronics, digital telecommunications, biotechnology, robotics and information systems (Sokol 2003). The emergence and development of these technologies are underlying the assessment in the previous chapter. The success of the economic actors is strongly related to their adaptability to the emerging techno-economic environment. The competitiveness of these actors is based on their socio-economic starting point and their adjustment capacity on the changing techno-economic and socio-institutional paradigms (Schienstock and Hämäläinen 2001).

The question arises as to how regions adapt to these changes and how regions find prosperous trajectories in the turbulent environment. The first question to consider is whether a region is a reasonable unit to assess with terms like competitiveness. Krugman (1998) questions the whole idea of territorial competitiveness as being wrong and even dangerously misleading. According to Krugman, assessing competitiveness at the territorial level leads to incorrect interventions in markets resulting in detrimental allocations of resources. However, in a vast array of literature the regional level is strongly growing in importance as a reasonable entity in assessing economic growth and socio-institutional adjustment (see, for example, Florida 1995; Storper 1997, Scott 2000, Cooke *et al.* 1997, Camagni 2002). These theorists emphasise the meaning of the local business environment for the success of companies. Companies, being the real competitors in the global business forums are strongly embedded (see Granovetter 1985) in their territorial socio-institutional set-up. This fact affects them crucially when the companies are building their competitive advantage.

Concepts like the regional innovation system (Cooke *et al.* 1997), industrial districts (Becattini 1990), innovative milieu (Aydalot and Keeble 1998) or learning regions (Florida 1995) focus on the importance of positive externalities achieved by spatial agglomeration. The advantages of such externalities are based more on untraded interdependencies than on traded interdependencies (Storper 1997). These untraded interdependencies are very abstract and tacit referring to things like social capital, institutional efficiency and collective learning. They need a long time to develop and are, therefore, difficult to imitate forming a key factor in regional competitiveness and economic wellbeing.

The resurgence of regional economies (Storper 1997) or renaissance of regions (Törnqvist 1997), caused by regionally-related techno-economic aspects, has raised the question of regions as objects for an economic development policy. An increasing amount of resources and initiatives are directed towards enhancing regional development environments. It is essential under this policy environment, and during the shift of the techno-economic paradigm, that regions use the opportunities being offered by global mega-trends and, at the same time, create sustainable trajectories based on regional assets. The regions' development trajectories are, namely, strongly path dependent. Therefore, it is impossible to build any kind of sustainable regional strategies without a thorough assessment of regional assets and resource configurations (Scott 2000, Harmaakorpi and Pekkarinen 2003, Teece *et. al.* 1997). However, in order to avoid negative regional lock-ins caused by path dependency, it is worthwhile also assessing the opportunities being offered by the change of the techno-economic paradigm.

In the latest literature, the causes of regional disparities are strongly related to the framework of regional competitiveness or regional competitive advantage. Porter (1990) poses the question as follows "why do some nations succeed better than others?" Sub-national regions, defined earlier, are reasonable entities to assess asking the same question. In the modern world, regional success is widely considered to be based on the absolute competitive advantage rather than on

comparative competitive advantages (Camagni 2002). Building absolute competitiveness deals with non-price competitiveness rather than price competitiveness. Non-price competitiveness has to do with qualitative matters both in the concrete regional resource base and untraded interdependencies.

Regional competitiveness leading to regional success and wellbeing can be measured in many ways. However, when assessing sustainable regional competitiveness one indicator rises above the others: productivity. As Krugman (1994, 13) referring to competitiveness and economic growth puts it “productivity isn’t everything, but in the long run it is almost everything”. Porter comes to the same conclusion in his studies concerning the national level. He determines productivity and innovativeness to be the essential sources of competitiveness regardless of the assessed geographical entity (Porter 1998).

The present paper strongly suggests that using the regional level is reasonable in assessing economic success and questions related to economic development policy. Regional success is based on the region’s ability to create new paths based on its assets under the rules of the new techno-economic paradigm. The paths can be very different in nature and no patent regional recipes can be given. However, a region having some essential “information era features” available might find the creation of these paths easier. These features being abstract make it hard to measure them statistically in many cases. However, some resources needed that set the foundation for regional wellbeing can be embodied in statistical analysis. Sustainable regional competitiveness is a result of a competitive regional productivity level enabling a sustainable economic and structural development.

4 Conclusions

In this present paper, the current techno-socio-economic paradigm was examined through several theoretical and conceptual lenses. Based on the analysis, we make some more or less implicit suggestions of the factors influencing regional competitiveness in the information era. According to the theories examined, among the "information era features" enabling the improvement of regional competitiveness are

- The region is well connected with information superhighways
- There is a high level of research and development (R&D) in the region
- There is a high number of symbol analysts in the region
- The share of the information sector is high in the region
- The number of specialised and networked small and medium-sized enterprises (SME's) is high in the region
- The region's economic life is connected with global networks
- The region is a learning and innovative region
- The region can attract flows important to regional development
- The share of the knowledge intensive service sector is high
- There are enough innovation and learning fostering establishments in the region
- There is a multi-value atmosphere in the region
- The region can provide security for its inhabitants
- The region offers its inhabitants a possibility of choice and experience

Regional competitiveness leading to regional success and wellbeing can be measured in many ways. However, when assessing sustainable regional competitiveness one indicator rises above the others: productivity. Therefore, sustainable regional competitiveness is a result of a competitive regional productivity level enabling a sustainable economic and structural development.

Based on the theoretical foundation laid down n the present study, the next step is to build a new indicator explaining regional competitiveness in the information era. The indicator will take into consideration the factors listed above which influence regional competitiveness in the information era. In future research, the indicator will be empirically tested. The indicator's correlations with regional productivity, structural sustainability and economic growth indicators will be analysed using statistical data. The data will be gathered from 85 Finnish NUTS 4 regions.

REFERENCES

Amin A. and Trift N. (1995). Globalization, Institutional "Thickness" and the Local Economy. In Healey P, Cameron S, Davoudi S, Grahm S,& Madani Pour A (eds.). Managing Cities: The New Urban Context, 91–108. John Wiley & Sons Ltd.

Archibugi D. and Michie J. (1995). Technology and innovation. An introduction. Cambridge Journal of Economics, 19, 1-4.

Asheim B. (1999). Innovation, Social Capital and Regional Clusters: On the Importance of Co-operation, Interactive Learning and Localised Knowledge in Learning Economies. Paper presented at the European Regional Science Association 39th European Congress, Dublin, Ireland, August 23rd –27th 1999.

Aydalot P. and Keeble D. (eds). (1988). High Technology, Industry and Innovation Environments: the European Experience. London.

Bauman Z. (1987). Legislators and Interpreters. On Modernity, Post-Modernity, and Intellectuals. Cornell University Press. Ithaca.

Bauman Z. (1992). Informations of Postmodernity. Routedge, London/New York.

Bauman Z. (1993). Postmodern ethics. Blackwell, Oxford UK/Cambridge USA.

Beccatini G. (1990). The Marshallian industrial district as a socio economic notion. In Pyke F., Beccatini G. and Sengenberger W. (eds). Industrial Districts and Inter-Firm Cooperation in Italy: Geneva.

Beck, U. (1986). Risikogesellschaft. Auf dem Weg in eine andere Moderne. Suhrkamp, Frankfurt am Main.

Beck U. (1992). From industrial society to risk society: questions of survival, structure and ecological enlightenment. *Theory, Culture and Society 92*, vol.9, 97-123.

Beck U. (1994). The Reinvention of Politics: Towards a Theory of Reflexive Modernization. In Beck, U., Giddens, A. and Lash, S. (eds.) Reflexive modernization. Politics, tradition and aesthetics in the modern social order. Polity Press 1-55. Oxford, UK.

Beck U. (1996). World risk society as cosmopolitan society? Ecological questions in a framework of manufactured uncertainties. Theory Culture and Society 96. volume 13, 1-32.

Bell D. (1973). The Coming of Post-industrial Society. A Venture in Social Forecasting. Basic Books New York.

Benko G., and Dunford M. (1991). Structural change and its spatial organization of the productive system: an introduction. In Benko, G., and Dunford, M. (eds.) Industrial Change and Regional Development: The Transformation of New Industrial Spaces. Belhaven Press, London.

Gamagni R. (1995). Global Network and Local Milieu: Towards a Theory of Economic Space. In Conti S., Malecki E. and Oinas P. (eds*). The Industrial Enterprise and Its Environment: Spatial Perspectives*. Avebury, Aldershot.

Camagni R. (2002). On the concept of territorial competitiveness: sound or misleading? Urban Studies 39: 239-2411.

Castells M. (1996). The Information Age. Economy, Society and Culture. Volume I The Rise of the Network Society. Blackwell Publishers.

Castells M. (1997). The Information Age. Volume II The Power of Identity. Blackwell Publishers.

Castells M. (1998). The Information Age. End of Millennium. Blackwell Publishers.

Cooke P. (2002). Knowledge Economy. Clusters, Learning and co-operative advantage. Routledge, London.

Cooke P. and Morgan K. (1991). The network paradigm: New departures in corporate & regional development. Regional Industrial Research Report 8, Cardiff.

Cooke P, Uranga M, Etxebarria G. (1997). Regional Innovation Systems: Institutional and Organisational Dimensions. Research Policy, vol. 26, pp. 475-491.

Crook S, Pakulski J. and Waters M. (1992), Postmodernization, Change in Advanced Society. Sage, London.

de Castro E. And Jensen-Butler C. (1993). Flexibility, routine behaviour and neo-classical model in the analysis of regional growth. Aarhus (DK), Department of Political Science, University of Aarhus.

Drucker P. F. (1993). Post-capitalist society. Butterworth-Heinemann, Oxford.

Edqvist C. (1997). "Systems of Innovation Approaches – Their Emergence and Characteristics", in Edqvist C. (ed). *Systems of Innovation: Technologies, Institutions and Organizations, Chapter One*. Pinter Publishers, London and Washington.

Florida, R. (1995). Toward the Learning Region. Futures, Vol. 27, No. 5, pp 527-536. Elsevier.

Florida, R. (2002). The Rise of Creative Class. And how it is transforming work, leisure, community and every day life. Basic Books, New York.

Garvin H. (ed.) (1980). Romantism, Modernism, Postmodernism. Buckwell review, vol. 25, n. 2. Associated University Presses, Granbury.

Giddens A. (2000). The third way and its critics. Polity Press, Cambridge.

Granovetter M. (1985). Economic Action and Social Structure: The Problem of Embeddedness. American Journal Of Sociology, Volume 91: 481-510.

Harmaakorpi V, Melkas H. and Kivelä R. (2003). Knowledge Management and Information Quality in an Innovation Network of a Regional Innovation System. Paper presented at the Regional Studies Association International Conference, 12th –15th April, Pisa, Italy.

Harmaakorpi, V. and Pekkarinen, S. (2003). The Concept of Regional Development Platform and Regional Development Platform Method (RDPM) as a Tool for Regional Innovation Policy. Conference Report. 43rd Congress of the European Regional Science Association (ERSA). Jyväskylä, Finland, 27-31 August 2003.

Harvey, D. (1990). The Condition of Postmodernity: An Enquiry into the Origins of Cultural Change. Basil Blackwell, London.

Hautamäki A. (1996a). Individualismi on humanismia. In Hautamäki A., Lagerspetz E., Sihvola J., Siltala J. and Tarkki J. Yksilö modernin murroksessa. Gaudeamus, Tampere.

Hautamäki A. (ed.) (1996b). Suomi teollisen ja tietoyhteiskunnan murroksessa. Tietoyhteiskunnan sosiaaliset ja yhteiskunnalliset vaikutukset. Sitra 154. Helsinki.

Jallinoja R. (1995). Sosiologiaa postmodernisuudesta: Zygmund Bauman. In Rahkonen K. Sosiologisen teorian uusimmat virtaukset. Gaudeamus, Tampere.

Kautonen M. and Sotarauta M. (1999). Ei yliopistokaupunki ja alueellinen innovaatiojärjestelmä – Näkemyksiä Seinäjoen innovaatiokyvykkyydestä. In Sotarauta M. (ed). Kaupunkiseutujen kilpailukyky ja johtaminen tietoyhteiskunnassa. Suomen Kuntaliitto, Helsinki.

Kebir L. and Crevoisier O. (2002). Resources, Development and Territories. Conference Report. 42nd Congress of the European Regional Science Association (ERSA). Dortmund Germany, 27-31 August 2003.

Krugman P. (1994). The Age of Diminished Expectations. Cambridge, MA. The MIT Press

Krugman P. (1998). Pop Internationalism. MIT Press, Cambridge Ma.

Lash S. (1990). Sociology of Postmodernism. Routledge , London.

Lundvall B.-Å. (1992) National systems of innovations: Towards a theory of innovation and interactive learning. London Pinter Publishers.

Lundvall B-Å and Johnsson. (1994) The learning economy. Journal of Industry Studies, 1, 2, 23-42.

Lundvall B-Å and Borras S. (1999). The Globalising Learning Economy: Implications for Innovation Policy. Office for Official Publications of the European Communities, Luxembourg.

Marshall A. (1916). The Principles of Economics. Macmillan. London.

Maskell P, Eskelinen H, Hannibalsson I, Malmberg A and Vatne E. (1998) Competitiveness, localised learning and regional development. Specialisation and prosperity in small open economies, London/New York. Routledge.

Maskell P. and Malmberg A. (1995). Localised Learning and Industrial Competitiveness. Paper presented at Regional Studies Association Conference, Gothenburg, May 6th – 9th 1995.

Moulaert F, Swyngedouw E. and Wilson P. (1988). Spatial responses to Fordist and post-Fordist accumulation and regulation. Papers of the Regional Science Association, 64: 11-23.

Niiniluoto I. (1996). Mitä on olla eurooppalainen: In Niiniluoto I. and Löppönen P. (eds.) Euroopan henkinen tila ja tulevaisuus. WSOY, Juva.

Nonaka I. and Reinmöller P. (1998): The legacy of learning. Toward endogenous knowledge creation for Asian economic development. WZB Jahrbuch 1998: 401-433.

Nonaka I. and Takeuchi H. (1995). The Knowledge Creating Company. Oxford University Press.

Nonaka I, Toyama R. and Nagata A. (2000). A Firm as a Knowledge-Creating Entity: New Perspective on the Theory of a Firm, Industrial and Corporate Change. Vol. 9, 1-20.

North D. C. (1986). The new institutional economics. Journal of Institutional and Theoretical Economics 142, 2: 230-237.

North D. C. (1990). Institution, institutional change and economic performance. Cambridge University Press, Cambridge.

OECD (2000). A New Economy? The Changing Role of Innovation and Information Technology in Growth. Paris.

Piore M. J. and Sabel C. F. (1984) The second industrial divide. Basic Books, New York.

Porat M. U. (1977). The Information Economy. Definition and Measurement. Government Printing Office, Washington D.C.

Porter M. E. (1990). The Competitive Advantage of Nations. Free Press, New York.

Porter M. E. (1998). Clusters and the New Economics of Competition. Harvard Business Review, November-December: 77-90.

Pyke F. and Sengenberger W. (eds.) (1992). Industrial Districts and Local Economic Regeneration. International Institute for Labour Studies. Geneva.

Reich R. (1993) The Work of Nations. Preparing Ourselves for 21st Century Capitalism. Alfred A. Knopf, New York.

Scharmer C. O. (2001). Self-transcending knowledge: Organizing around Emerging Realities. In Nonaka I. and Teece D. (eds.) Managing Industrial Knowledge: Creation, Transfer and Utilization: 68-90. London, Sage Publications.

Schienstock, G. and Hämäläinen, T. (2001): Transformation of the Finnish innovation system. A network approach. Sitra Reports series 7. Hakapaino Oy. Helsinki.

Schulze, G. (1992). Die Erlebnisfgesellschaft. Kultursoziologie der Gegenwart. Campus, Frankfurt am Main.

Schumpeter, J. A. (1942). *The Theory of Economic Development*, Oxford University Press, London.

Scott, A.J. (2000). *Regions and World Economy. The Coming Shape of Global Production, Competition and Political Order.* Oxford University Press. New York.

Simmel, G. (1905). *Philosophie der Mode*, Berlin.

Sokol (2003). The 'Knowledge Economy' a critical view. . Paper presented at the Regional Studies Association International Conference, 12th –15th April, Pisa, Italy.

Storper M. and Scott A. J. (1995). The wealth of regions. Futures, 27, 5, 505-526.

Storper M. (1997). The Regional World. Territorial Development in a Global Economy. The Guilford Press, New York.

Teece D. and Pisano G. (1998). The Dynamic Capabilities of Firms: an Introduction. In Dosi G, Teese D. and Chytry J. (eds.). Technology, Organization, and Competitiveness: Perspectives on Industrial and Corporate Change. Oxford University Press, Oxford.

Teece D. J, Pisano G. and Shuen A. (1997). Dynamic Capabilities and Strategic Management. Strategic Management Journal, Volume number 18, No 7: 509-533.

Toivonen T. (1998). Kulutuksen trendejä 1800-luvun lopulta tulevaisuuteen. In Saksala, E., (ed.) Muutoksen sosiologia. Gummerus, Jyväskylä.

Tödtling F. (1994). The Uneven Landscape of Innovation Poles: Local Embeddedness and Global Networks. In Amin A. and Trift N. Globalization, Institutions and Regional Development in Europe. Oxford University Press. Oxford, New York,. Pages 68-90.

Törnqvist G. (1998). Renässans för regioner. SNS Förlag. Stockholm.

Vanhaverbeke and Cabus (2003). The path development of regions. The evolution of urbanized economic concentration areas in Flanders and Belgium. Paper presented at the Regional Studies Association International Conference, 12th –15th April, Pisa, Italy.

Webster F. (1995). Theories of the Information Society. Routledge, London and New York.