

GLOBALIZATION AND KNOWLEDGE-BASED ECONOMY: AN ECONOMIC PERSPECTIVE FOR APPROACHING AND IMPLEMENTING KNOWLEDGE MANAGEMENT (KM) PRACTICES

FRAGOULI EVAGGELIA

Department of Economics, University of Athens

ABSTRACT

There are plenty of economic motivations and arguments for private companies to design, implement and develop Knowledge Management (KM) practices. The economic literature dealing with the main features of the economics of production and transmission of knowledge builds clearly an economic case for KM. KM is probably not just a fashionable managerial discourse but, above all, a social technology that is likely to have a positive impact on innovation and productivity. This paper examines the economic aspects of KM applications placing the main emphasis on KM influence on innovativeness and aims to clear the confusion proposing a specific approach to it. It proposes that the innovative capacity of a firm is dependent on the knowledge creation capacity that is influenced by intellectual capital. Here it is supposed that the capacity to adopt innovations implies a lighter process of knowledge creation, so needs a reinforcement of the prevailing old, existing knowledge and the generation of innovation needs a knowledge transformation of the prevailing old, existing knowledge. On the other hand, the intellectual capital – intellectual assets, by the triad: Human, Organizational and Relational capital, independently, or through interrelations, are determinant for the knowledge creation process reinforcing or transforming knowledge, so influence the organizational capacity to adopt or generate innovations. These innovations add to economic profit and competitive image of the firm. This paper is a literature review paper presenting a theoretical approach to the issues examined.

JEL Classification: F16, F23, J23

Keywords: Knowledge Management (KM), intellectual capital, innovation, economics

INTRODUCTION

During the last decade or so, Knowledge Management (KM) has been considered a set of management activities, aimed at designing and influencing processes of knowledge creation and integration including processes of sharing knowledge and it has emerged as one of the most influential new organizational practices. Numerous companies

have experimented with KM initiatives in order to improve their performance. At the same time, the literature on KM has virtually exploded KM (Nonaka *et al.*, 1995; Choo, 1998; Boisot, 1998; Krogh *et al.*, 2000, Easterby *et al.*, 2000 as cited in Foss *et al.*, 2007) would thus seem to be one of those areas, where managerial practice and the academic literature develop simultaneously and perhaps even co-evolve. On this basis KM is not much different from many other management fads of the recent decades, such as business process reengineering or total quality management that also promise to contribute to competitive advantage. The analogy goes further, for KM is also akin to these in that there is no clear disciplinary foundation of KM. Indeed, the underpinnings of KM are a mixed bag, ranging from Eastern philosophical traditions over ideas from organizational behavior to notions from information science. Strikingly, organizational economics plays no role in the disciplinary base of KM and the KM literature neglects the organizational economics as its peril. A basic proposition of organizational economics in this area is that the costs and the benefits of productive activities and therefore joint surplus is influenced by the incentives, property rights and ways of disseminating and processing information and knowledge that structure productive activities (Foss *et al.*, 2007).

However, in order to review the way practicing managers view the concept of KM, Chauvel and Despres (2002) underline the following definitions:

- KM is the explicit control and management of knowledge within an organization aimed at achieving the company's objectives' (Van der Spek R and Spijkervet, 1997)
- KM is the systematic and organized attempt to use knowledge (on customers, products, processes, competitors) within an organization to improve performance (KM Research Report, 2000, KPMG)
- KM is the formalization of, and access to, experience, knowledge and expertise that create new capabilities, lead to superior performance, encourage innovation, and enhance customer value (Beckman, 1997)
- KM is the correct use of information technology to capture data and information in order to manage the knowledge that is important in a company
- KM is the use of an infrastructure that provides the right information, to the right people, at the right time, regardless of their location, so they can make informed decisions (Chauvel *et al.*, 2002).

As information and knowledge become more important in the global economy, organizations are re-structuring themselves to better utilize these assets. Empowerment, flattening and decentralization of organizations, and a focus on innovation and continuous improvement are all hallmarks of the modern enterprise. Networked forms of organization are arising that draw in suppliers and customers, as well as workers, as knowledge sources and information processors. Due to the above, economic development practice must learn to utilize IT and knowledge creation tools.

THE ECONOMIC FRAMEWORK OF KNOWLEDGE MANAGEMENT

Knowledge Management (KM) is probably not just a fashionable managerial discourse but, above all, a social technology that is likely to have a positive impact on static efficiency, innovation and productivity (Foray, 2006). However the innovative capacity of a firm has been largely studied, there is no universal explanation for the determinants of the innovative behavior of the firm. Even the definition of innovation and innovativeness is vague and multiple as well as innovation and the adoption of innovation are often confused. After all there are two different phenomena with two different results. It is reasonable consider that the innovative capacity of a company is intimately bound to its ability to use intellectual capital or its knowledge resources. However, the connection is still no clear.

Knowledge Management Practices as an Economic Case

Some of the economic arguments about knowledge that can be used to build an economic case for implementing KM practices (Foray, 2006) are focused, for example, on the concepts of *learning by doing* where massive innovative activities occur 'on the floor' through the mechanism of learning by doing. In learning by doing, innovation is not the main goal but may nevertheless occur as a joint product of 'doing'. However, since it is a joint product and the main goal is to deliver a service or produce a good, the learning process can conflict with the normal performance which is expected from the worker. Thus, we have a case here for knowledge management as organizing proper conditions to manage this tension and to promote experimental learning in the daily operational context of a manufacturing plant or service operation. Also, on *Knowledge as a fixed cost* where the production of knowledge is like a fixed cost in the production of goods and services since a piece of knowledge does not need to be produced more than once. This makes an economic case for KM as a method seeking for some kind of 'optimal use' of knowledge. Additionally, on the concept that *knowledge is weekly persistent* where Hirsch (1952) found that when performance was resumed after an interruption occurred it was lower than the degree achieved prior the interruption. Also, the knowledge being derived from learning by doing quickly loses its value and if the stock of knowledge is not replenished by continuous production, it depreciates rapidly. This is a case for knowledge management as methods organizing explicit mechanisms to memorize and maintain the existing knowledge and minimize accidental 'uninventions'. On the concept that *Knowledge is not easy to transfer* where stickiness raises a number of issues in terms of the organization of knowledge production and the integration of pieces of knowledge that have been produced in different places. Finally, on the concept that *knowledge is tacit*. Typically, knowledge and expertise have a broad tacit dimension, meaning that they are neither articulated nor codified (Jarboe, 2001). Tacitness makes knowledge difficult to transport, memorize, recombine and learn. One solution, and this is again an economic case for KM, is to codify knowledge: the knowledge is made explicit with a view to inscribe it on a medium. This method should be adopted by KM

practitioners. This entails high fixed costs but all knowledge management operations can then be performed at a very low marginal cost. Codification, as a KM procedure, increases memory capacity of an organization and creates learning programs for the new workers (Foray, 2006).

The economic literature does not articulate any characteristic of knowledge as a commodity. In fact there is considerable evidence that 'organisational complements'—such as business processes, decision making structures, incentive systems, human capital, corporate culture and knowledge management—play an important role in the ability of a firm to realize value from its IT instruments (Brynjolfsson *et al.*, 2005). Acquiring and maintaining these organizational complements is a real cost to the firm but also a potential source of significant value when combined with appropriate technology investments. KM practices appear thus as an important complementary organizational capital playing a key role in increasing private and social returns knowledge management and IT investments. The deployment of It and the adoption of KM practices are mutually complementary with each makes the other more attractive (Foray, 2006).

There are, thus, plenty of economic motivations for private companies to design, implement and develop KM practices as KM can meet the new nature of business opportunities creating new information and knowledge-based enterprises, utilizing information and knowledge better in existing companies assisting as well business innovation and increase of human performance in workplace (Shaw, 2004).

Tacit, Formal Knowledge: Their Relation to Production and Skilled Workforce

To understand how knowledge management works and why it is important for economic development, it must be understood the *importance* of tacit knowledge. When KM practices are designed and implemented in the workplace should aim at capturing tacit knowledge of it. In the information age utilization of information and knowledge counts as much as its production. The ability to quickly utilize the knowledge and information is critical. Knowledge and information are not the same thing. Knowledge is information combined with experience, context, interpretation, and reflection. It is a high-value form of information that is ready to apply to decisions and actions (Davenport, *et al.*, 1998). Making decisions and solving problems involves much more than systematic and rational analysis. It involves 'making the gut choice'. It is a process of assessing a situation and acting. That part of knowledge base is intuitive and experiential. For example, the skilled carpenter knows just how a given variety of wood must be handled. To say what he 'knows' these things is not to claim that he could put his knowledge into words... The practitioner's knowledge of the medium is tacit. It is essential to the skilled practice: the carpenter uses what he knows with every stroke of his tools. The ability to develop and then utilize this tacit knowledge is what distinguishes an expert. This is not to downplay the importance of formal knowledge. Formal knowledge consists of the codified body of knowledge

upon which scientific and technological process is based. Access to this knowledge rests on the ability to read, write and reason mathematically-what is sometimes referred to as literacy and numeracy. Without these basic skills, it is next to impossible to operate successfully in today's economic environment. Both tacit and formal knowledge are needed. They interact. Related to tacit knowledge is the concept of social capital. Social capital is the interaction part of tacit knowledge. It is that web of relationships and connections by which tacit knowledge is shared within a community. There is a general agreement that organizational and community-based tacit knowledge is an important part of economic activity and tacit knowledge and social capital are also becoming important parts of the economic development process (Jarboe, *et al.*, 2001).

Tacit knowledge also plays a more direct role in the location of economic activity. Physical capital-the basis of production in an industrial economy-has become increasingly mobile. IT allows human resources to be utilized and shared across traditional boundaries of time and space. The information and knowledge ('intangibles') part of the economy will follow manufacturing toward footloose production. However, human and social capital is far less mobile than physical capital. However, codified knowledge is easily shared, especially given advanced IT, and the shared knowledge remains part of the local economic base. Nor does IT preclude or substitute for face-to-face interactions. Face-to-face contacts remain the most information intensive means of communications-an important factor in an information-rich economy. Tacit knowledge is needed to customize products and adapt to rapidly changing situations. In the service industries, the communication revolution is about using information from global sources to meet the needs of local customers. Tacit localized knowledge is combined with global resources. The result is a production system that is strongly rooted in its local market and local knowledge-based comparative advantage, while drawing upon resources from, and contributing resources to global networks (Jarboe, *et al.*, 2001).

Also, due to business changes because of the emergence of the information and knowledge age, there is a greater need for a skilled workforce. Access to the physical infrastructure is a necessary, but not sufficient condition for economic development. As one economic development specialist stated « Brainpower will be the dominant resource of the 21st century. ..», «people are the new products». Training and workforce development are at the top of every economic development agenda-national as well as local. The demand for workers with information technology skills and for employees with rich knowledge remains high. Local economic success requires going beyond luring in companies with technologically skilled workforce and knowledge. These changes present special challenges to policy makers and economic development practitioners. Those localities that successfully meet those challenges are better positioned to succeed in the information economy (Jarboe *et al.*, 2001).

Knowledge and Economic Clusters

Capturing tacit knowledge is one important economic development activity. Building social capital and means for sharing that knowledge is another. One economic development strategy that has arisen over the past few decades concerns the development of economic clusters (EDA, *Cluster-Based Economic Development*). Social capital and knowledge sharing play a crucial role in creating successful economic clusters (Jarboe, 2001).

The concept of information and knowledge as the key factor of production adds an extra dimension to the understanding of the process of economic clusters. What makes a successful cluster is the implicit sharing of knowledge and skills, especially tacit knowledge. Michael Porter (1995) points out that clusters represent 'critical masses of skill, information, relationships, and infrastructure in a given field'. Clusters are an efficient means of knowledge management as when it comes to the transfer of tacit knowledge there is no substitute for physically being. Jarboe (2001) cites in his study that geographic clustering of people, companies and institutions is a powerful mechanism for transferring and augmenting personal knowledge quickly. Also, Jarboe cites that, sharing knowledge, skills and experience is simply easier when the components of the learning network are in the same place. For example, one key to Silicon Valley's success was the formal and informal mechanisms for sharing information and ideas. In contrast, Boston's Route 128 did not have a similar networking model in place. This was the reason why Silicon Valley was able to successfully adapt to successive technological changes. Just as KM techniques are useful in capturing and sharing local tacit knowledge, they are also useful in building the social capital and information sharing mechanisms needed to create successful economic clusters. Additionally, they provide business benefits and they are part of the business infrastructure (Chauvel *et al.*, 2002).

Knowledge Management Intensity and Incentives

Kremp and Mairesse (2003) studied whether there is a relationship between KM intensity and outputs (either innovation or productivity). The evaluation of the economic impact of a new practice or a new technology is a difficult question since none can observe simultaneously the same firm with KM and without KM. Kremp and Mairesse studied 6000 firms searching for statistically significant correlations between an indicator of KM intensity and output and outcome variables (innovation, patent, labor productivity) in a cross section econometric study. They showed statistical and economic significance of the estimated impact of KM intensity. When KM intensity increases, the propensity a firm to innovate increases significantly as well as innovation intensity, patent propensity and patent intensity, claiming as well that these results remain statistically informative. Their tests and results about the relation between KM intensity and labor productivity provide the same positive effect of the new organizational practice on economic variables showing as well some detailed

evidence related to the general idea that intangibles like KM and other organizational complements play a crucial role in explaining the surge in productivity in OECD countries.

Another issue deals with the existence and identity of factors and incentives affecting the level of KM activities. For example, we apply here the case of employees who are encouraged-through some kind of reward mechanisms-to write, codify and share documents. Employees have to undertake the normal production task and the KM task and have to choose an effort level for each of these tasks. The firm's problem is to offer incentives to elicit the optimal level of effort. Incentive's theory in a multi-task setting shows that there is need for optimally balancing incentives across tasks, otherwise people will inefficiently allocate too much effort towards those tasks with the highest marginal return to them. From this general result, a KM practitioner can model optimal incentive structure for an effective implementation of KM practices.

KNOWLEDGE MANAGEMENT AND ECONOMIC INNOVATIONS: ECONOMIC INNOVATIONS EMERGE FROM SOCIAL NETWORKS

The creation of innovations plays a central role in business organizations and national economies (Kenney, 2001; Yliherva 2004 as cited in Taatila, 2008). In Finland the national economy is considered to be dependent on innovation, particularly technological and ICT innovations that create good opportunities for new entrepreneurs and commercial applications. The essential problem is: how can human, economic and technological development be linked together to create financial success? (Tuomi, 2002). What, then, is innovation? The term is used quite freely, and several actors display different aspects of the issue. Stahle *et al.*, (2004) define innovation as the 'sum of a new idea, implementation and value creation'. The European union defines innovation as the 'successful production, assimilation and exploitation of novelty in the economic and social spheres' (EU, 1995) Valikangas and Gibbert (2005) define it as 'explorative activities in an organization that are novel and/or nonconformistic'. The definition in Merriam-Webster's Collegiate Dictionary is the 'introduction of something new, or a new idea, method, or device'. Hicks, Dattero and Galup (2006) consider innovation as the fifth (highest) tier in knowledge management (KM) hierarchy presenting different types of knowledge and their relations:

- individual knowledge, i.e. knowledge contained within the mind of a person,
- facts, i.e. processed data in a context ready to be presented,
- solutions, i.e. clear instructions and authority to perform a task, and
- innovation, i.e. exploitation of knowledge-based resources.

Comparing this model to the process of producing economic innovations, the first three tiers fall within scientific discovery, while the fourth is the transition from scientific discovery to the incubation phase. Incubation, acceleration and globalization all come under the innovation tier.

To overcome the problems created by different approaches of the term 'innovation' the more closely defined term of 'economic innovation' is used instead (Taatila, Suomala, Siltala and Keskinen, 2006). From a business point of view, an innovation is primarily interesting for its positive financial effects: it either increases cash flow-for instance as a new product, a successful strategy or the ability to generate new markets (Dougherty, 1996)-or decreases costs-for example dye to a more efficient production process. Thus an economic innovation is something genuinely new that brings added financial value to the innovator (Haho, 2002; Stahle *et al.*, 2004).

The inclusion of the element of economic innovation in the five- tier KM model (Hicks *et al.*, 2006) would add a sixth tier, 'economic success', creating a 'six-tier economic KM hierarchy'. With this element, the six-tier economic KM hierarchy can be seen as a path from individual tacit knowledge to an economic innovation, via the knowledge enrichment process. The model displays a way to make clear how knowledge management can be used to create economic innovations, i.e. how to manage transitions from tier to tier, as well as actions within each tier. It seems that a large proportion of economic innovations are created by a pool of individuals in close proximity and with constant interaction- i.e. social networks. In parallel with the work of Myint *et al.*, (2005) on intellectual capital development in the Cambridge region, Wright *et al.*, (1998) have also shown the importance of social networks in new venture creation. Taatila (2008)with reference to Shane and Stuart (2002) showed that social networks are also important as a resource pool, in getting funding for innovation projects. Swan *et al.*, (1999) have shown that in order to produce innovations, knowledge management should be based on face-to-face interaction and sharing tacit knowledge, rather than on multiple IT systems. Similarly, Song *et al.*, (2007) have shown that fostering an organizational culture that is extensively interactive and supports open communication between work units makes the units more innovative. Both Swan *et al.*, (1999) and Song *et al.*, (2007) clearly illustrate the importance of social networks and interaction over formal managerial and IT systems in producing innovations. Thus, even though it could be argued that innovations are often based on technological development (Atkinson, 2007), it could also be said that individual innovation projects are affected by social networks on a more fundamental level.

Not all knowledge or all knowledge management practices lead to innovations. Kalling (2003) suggests that even though organizations produce large amounts of new knowledge, only a portion of it is utilized and an even smaller portion is capitalized on. Darroch (2005) has shown that there is a correlation between knowledge management practices (knowledge acquisition, knowledge dissemination and responsiveness to knowledge) and the development of incremental innovations within a firm. However, only responsiveness to knowledge had a direct impact on the financial performance of a company and thus an effect on economic innovations. Responsiveness to knowledge is described as responding to knowledge about customers, competitors and technology, being flexible and opportunistic in relation to readily changing products, processes and strategies, and having a well-developed

marketing function (Darroch, 2003). Darroch's (2005) results emphasize the importance of exploitation and execution rather than exploration in creating economic innovations. The big issue in economic success is not developing something radically new, but applying market knowledge to one's personal context. Based on the above, Knowledge management has a positive impact on the innovation mechanisms by:

- Improving cooperation between different scientific disciplines where the cross-fertilization of ideas can be increased, thus producing more and better innovations. The current situation produces innovations mainly from independent, academically oriented fields. This adds stability to the innovation projects as people do not want to move outside their original comfort zone of expertise, but keep on refining the same idea further and further.
- Using commercialization experts for building bridges between existing innovation projects. Sharing ideas and combined related projects might improve the quality of individual innovations. However, this might be difficult due to a fear of disclosing business secrets and losing intellectual properties.
- Involving the people who have created successful innovations in new potential ideas to build a feedback loop for the laboratories. Currently the feedback loop goes via consultants, and, although this is successful, injecting commercialization expertise directly into the research laboratories might open new doors for innovation (Taatila, 2008).

Finally, another issue is that a number of leading companies today are experimenting with a new way of organizing – the cellular form. Cellular organizations are built on the principles of entrepreneurship, self-organization, and member ownership. In the future, cellular organizations will be used in situations requiring continuous learning and innovation (Miles *et al.*, 1997) and knowledge management plays again a significant role. All the above mentioned issues reveal the context of KM that KM practitioners considering those as goals in designing KM activities, then, KM practices are organised based upon these and become more effective and results oriented for both individuals and organizations.

Competence as the Outcome of Knowledge Production

The change from a linear to an interactive view of innovation and knowledge production has also been a way to connect to each other innovation and the further development of competence. The innovation process may be described as a process of interactive learning in which those involved increase their competence though engaging in the innovation process. In economics, there are various approaches to competence-building and learning. One important contribution is arrow analysis of 'learning by doing' (1962 as cited in Lundvall, 2005) in which he demonstrated that the efficiency of a production unit engaged in producing complex systems grew with the

number of units already produced and argued that this reflected experience-based learning. Later, Rosenberg (1982 as cited in Lundvall, 2005) introduced 'learning by using' to explain why efficiency in complex systems increased over time. The concept of 'learning by interacting' points to how interaction between producers and users in innovation enhances the competence of both. Another analysis of Von Hippel and Tyre, 1995 as cited in Lundvall, 2005) of learning by doing focuses on how confronting new problems in the production process triggers searching and learning, which imply interaction between several parties as they seek solutions.

In most of the contributions in economic theory, learning is regarded as the unintended outcome of processes with a different aim than learning and increasing competence. Learning is seen as a side-effect of processes of production, use, marketing, or innovation. The management literature has a more instrumental perspective and points to the importance of establishing learning organizations (Senge, 1990 as cited in Lundvall, 2005). According to this literature, the way an organisation is structured will have a major effect on the rate of learning that takes place. The appropriate institutional structures may improve knowledge production in terms of competence building based on daily activities.

Through the analysis of innovation and competence-building comes out that a move towards learning organizations needs to be reflected in changes both in the firm's internal organization and in its inter-firm relationships. Within firms, the accelerating rate of change makes multi-level hierarchies and strict borders between functions and departments inefficient. It makes decentralization of responsibility to lower-level employees and formation of multi-functional teams a necessity. This is reflected in the increasing demand for workers who are at the same time skilful, flexible, co-operative and willing to shoulder responsibility. But in order to speed up the response to changes in markets and technologies relationships with suppliers, customers and knowledge institutions may need to become both more selective and more intense (Lundvall, 2005).

FACTORS THAT FOSTER THE IMPLEMENTATION OF KM PRACTICES THROUGH TECHNOLOGY

The gap between IT and business performance has grown with the shifting focus of business technology strategists and executives. Over the past two decades, their emphasis has shifted from *IT* (Hammer, 1990) to *information* (Evans and Wurster, 2002; Hopper, 1990; Huber, 1993; Malhotra, 1995) to *knowledge* (Holsapple and Singh, 2001; Holsapple, 2002) as the lever of competitive advantage. Research findings (Collins, 2001) demonstrate that many industry executives and most analysts have incorrectly presumed or pitched technology as the primary enabler of business performance. Knowledge management (KM) presents a viable alternative for delivering business performance as well as enterprise agility and adaptability (Strassmann, 2003).

The infrastructure issue is affecting all businesses. E-business is forcing companies to rearchitect all or part of their information technology (IT) infrastructures. Many companies can not afford to go back and completely architect critical systems (such as order fulfillment and product databases) from the bottom up because they greatly depend on existing infrastructure. More often business-process reengineering is done reactively. Beyond its disruptive effect on business operations, most IT managers and executives do not have enough time to take a holistic approach to the problem, so they tackle a specific problem with a definitive solution rather than completely overhaul the workflow that spans from a customer query to online catalogs to order processing (Malhotra, 2005).

Management and coordination of diverse technology architectures, data architectures, and system architectures poses obvious knowledge management challenges. Such challenges result from the need for integrating diverse technologies, computer programs, and data sources across internal business processes. These challenges are compound manifold by the concurrent need for simultaneously adapting enterprise architectures to keep up with changes in the external business environment. Often such adaptation requires upgrades and changes in existing technologies or their replacement with newer technologies. Going business enterprises often have too much (unprocessed) data and (processed) information and too many technologies. However, for most high-risk and high-return strategic decisions, timely information is often unavailable as more and more of such information is external in nature (Drucker, 1994). Also, internal information may often be hopelessly out of date with respect to evolving strategic needs. Cycles of restructuring and downsizing often leave little time or attention to ensure that the dominant business logic is kept in tune with changing competitive and strategic needs. As a result, most organisations of any size and scope are caught in “a double whammy of sorts”. They do not know what they know. In simple terms, they have incomplete knowledge of explicit and tacit data, information, and decision models available within the enterprise. Also, their survival may sometimes hinge on obsolescing what they know (Yuva, 2002). Often they may not know if the available data, information, and decision models are indeed up to speed with the radical discontinuous changes in the business environment (Malhotra, 2000a).

Although knowledge management (KM) activities are “all over the map” in terms of technology implementations, however, no one has asked the “big question”: *why?* Despite diverse propositions about “getting the right information to the right person at the right time” almost everyone neglects to ask what knowledge to manage and toward what end. Knowledge management practices should address properly both those questions during their application as well as during their design, so as to be successful and costly effective for the organisational investment on them. An other issue that is raised is the narrow focus of research on IT and innovation as ends rather than means for achieving sustainable business performance (Stewart, T. as cited in Malhotra, 2005). Knowledge management, primarily, has little to do with technology,

and computer based technology (CBT), which is only concerned with information or data and is nothing more than an enabler to facilitate the practice of KM (Holsapple, 2005).

Nowadays though, an organisation's performance and competitive standing suffer if it fails to effectively capture/preserve/generate/apply knowledge and make it flow appropriately within and beyond organization. This is done by augmenting innate human knowledge handling capabilities with information technology, computer-based technology. It is no coincidence that the 1990's dramatic rise in KM development, adoption, and prominence coincided with advances in CBT connectivity, and generally IT enterprise support (Holsapple and Singh, 2000). However, many challenges, but barriers as well, are raised in the issue of IT applications in knowledge management activities and practices that should be considered by KM practitioners.. Also, knowledge management practices, especially in sectors with rapid technological change needs to focus more on the process of learning than on locating and allocating a given set of knowledge assets (Lundvall, 2005)

CONCLUDING REMARKS

The shift to an information economy is creating new challenges for economic development. Productive capability is no longer completely dependent on capital and equipment; information and knowledge assets are increasingly important. The result is a new challenge to the practice of local economic development. In this information economy, success comes from harnessing the information and knowledge assets of a community and from helping local businesses succeed in the new environment. Knowledge Management (KM) can provide the tools to help economic development practitioners accomplish that task (Jarboe, et. al., 2001) .

KM is a set of techniques and tools to uncover and utilize information and knowledge assets-especially tacit knowledge. Knowledge management can be a powerful tool in economic development-but only if society can harness its power to the unique needs of economic development activities. The use of KM tools in economic development is just emerging. Companies and economic organizations need to learn and experiment with these tools and techniques. Economic development practitioners should be encouraged and supported in their efforts to use and tailor these tools to meet their own needs. A KM process should always be set up for understanding and sharing best KM practices.

Economic development organizations can use KM tools to enhance external communications of local companies including marketing and to promote internal communications within local businesses and help companies capture tacit knowledge. They can use those tools to uncover and develop local intellectual assets, including helping develop information products, and helping identify entrepreneurial and business opportunities. KM tools are also useful in developing local economic clusters.

Finally, these tools can be used to enhance external knowledge sharing among the economic development community and to share tacit and formal knowledge within organizations uncovering information, knowledge and entrepreneurial activities that can serve as the bases for future economic development (Jarboe *et al.*, 2001). KM tools and practices can provide the foundation upon which to build successful organizational and local information-age economy. However, applied economists in the area of innovation have to enlarge the scope of empirical material in order to link abstraction back to practices so as to inform properly managers in the private sector and policy makers about what are the aggregate economic impacts of new organizational and human resources practices. Also, economic research should focus on developing the indicators that would demonstrate (1) the extent to which KM is becoming a normal part of the business infrastructure, (2) the extent to which and ways through which it provides business benefits, and (3) the nature and level of the performance expectations the field is now facing.

REFERENCES

- Atkinson R. D., (2007), Deep Competitiveness, *Issues in Science & Technology*, **23**, 69-75.
- Brynjolfson E., and Hitt L., (2005), *Intangible Assets and the Economic Impact of Computers in Transforming Enterprises*, W. Button *et. al.*, Editors, MIT Press.
- Chauvel D., and Despres C., (2002), *Knowledge Management and the Management Development Function in European Business*, Working Paper, France, The European Center for Knowledge Management, pp. 1-24.
- Collins J., (2001), *Good to Great: Why Some Companies Make the Leap and Others Don't*, New York, Harper-Business.
- Drucker P. F., (1994), The Theory of Business, *Harvard Business Review*, September, pp. 95-104.
- EU, (1995), Green Paper on Innovation. December, 1995, [Online], European Commission.
- Evans P., and Wurster T. S., (2002), *Blown to Bits*, Boston, Harvard Business School Press.
- Darroch J., (2003), Developing a Measure of Knowledge Management Behaviours and Practices, *Journal of Knowledge Management*, **7**, 41-54.
- Darroch J., (2005), Knowledge Management, Innovation and Firm Performance, *Journal of Knowledge Management*, **9**, 101-115.
- Davenport T. H., David W. De Long, and Beers M., (1998), Successful Knowledge Management Projects, *Sloan Management Review*, p. 39.
- Foray D., (2006), 'Enriching the Indicator Base for the Economics of Knowledge', Blue Sky II Conference, Statistics Canada-Otawa 2006.
- Foss J. N., and Mahnke V., (2007), Knowledge Management: What Can Organizational Economics Contribute; Working Paper, DRUID (Danish Research Unit for Industrial Dynamics), [Online: www.druid.dk/wp/pdf_files/03].
- Jarboe K. P. and Alliance A., (2001), Knowledge Management as an Economic Development Strategy, *Reviews of Economic Development Literature and Practice*, **7**, pp. 1-36, U.S. Economic Development Administration.

- Haho P., (2002), Strategic and Operational Process Innovations in NPD Processes Applying Evolutionary Change Management, *4th International CINET 2002 Conference on Continuous Innovation in Business Processes and Network*, Espoo, September 2002, pp. 299-314.
- Hamer M., (1990), Reengineering Work: Don't Automate, *Harvard Business Review*, pp. 104-112.
- Hicks R. C., Dattero R., and Galup S. R., (2006), The Five-Tier Knowledge Management Hierarchy, *Journal of Knowledge Management*, **10**, 19-31.
- Hirsch W., (1952), Manufacturing Progress Functions, *Review of Economics and Statistics*, **34**.
- Holsapple C. W., and Singh M., (2001), The Knowledge Chain Model: Activities for Competitiveness, *Expert Systems with Applications*, **20**, pp. 77-98.
- Holsapple C. W., and Singh M., (2000), Toward a Unified View of Electronic Commerce, Electronic Business, and Collaborative Commerce: A Knowledge Management Approach, *Knowledge and Process Management*, **7**(3), pp. 151-164.
- Holsapple C. W., (2002), Knowledge and Its Attributes, In C. W. Holsapple (Eds.), *Handbook on Knowledge Management 1: Knowledge Matters*, pp. 165-188, Heidelberg: Springer-Verlag.
- Holsapple C. W., (2005), The Inseparability of Modern Knowledge Management and Computer-based Technology, *Journal of Knowledge Management*, **9**, pp. 42-52.
- Hopper M. D., (1990), Rattling SAMBRE-New Ways to Compete on Information, *Harvard Business Review* May/June, pp. 118-125.
- Huber R. L., (1993), How Continental Bank Outsourced Its 'Crown Jewels', *Harvard Business Review* January/February, pp. 121-129.
- Kalling T., (2003), Knowledge Management and the Occasional Links with Performance, *Journal of knowledge Management*, **7**, pp. 67-81.
- Kremp E., and Mairesse J., (2003), Knowledge Management, Innovation and Productivity: A Firm Level Exploration Based on French Manufacturing CIS3 Data, in Foray, D. and Gault, F., (Eds.), *Measuring Knowledge Management in the Business Sector*, OECD.
- Lundvall B. A., (2005), Knowledge Management in the Learning Economy, Working Paper, Danish Research Unit for Industrial Dynamics.
- Malhotra Y., (1995), Is Productivity and Outsourcing Policy: A Conceptual Framework and Empirical Analysis, In Proceedings of *Inaugural Americas Conference "Information Systems"* (Managerial Papers), Pittsburgh, PA, August 25-27.
- Malhotra Y., (2005), Integrating Knowledge Management Technologies in Organizational Business Processes: Getting Real Time Enterprises to Deliver Real Business Performance, *Journal of Knowledge Management*, **9**, pp. 7-28.
- Malhotra Y., (2000a), From Information Management to Knowledge Management: Beyond the High-Tech Hidebound' Systems, In K. Srikantaiah, & Koenig M. E. D., (Eds.), *Knowledge Management for the Information Professional*, pp. 37-61. Medford, NJ, Information Today Inc.
- Miles R., Show C., Mathews J., Miles G., and Coleman H., (1997), Organizing in the Knowledge Age: Anticipating the Cellular Form, *Academy of Management Executive*, **11**, pp. 7-18.
- Myint Y. M, Vyakarman S., and New M. J., (2005), The Effect of Social Capital in New Venture Creation: The Cambridge Technology Cluster, *Strategic Change*, **14**, pp. 165-177.
- Porter M., (1995), The Competitive Advantage of the Inner City, *Harvard Business Review*, May-June 1995.

- Shaw K., (2004), *The Human Resource Revolution: Is It a Productivity Driver?*, *Innovation Policy and the Economy*, **4**, The MIT press.
- Singh M., (2000), *Toward a Knowledge Management View of Electronic Business: Introduction and Investigation of the Knowledge Chain Model for Competitive Advantage*, Unpublished Ph.D Dissertaton, University of Kentucky, Lexington, KY.
- Song S., Nerur S., and Teng J. T. C., (2007), *An Exploratory Study of the Roles of Network Structure and Knowledge Processing Orientation in Work Unit Knowledge Management'*, *Database for Advances in Information Systems*, **38**, pp. 8-26.
- Strassmann P., (2003), *Enterprise Software End*, *Computerworld*, May, p. 35.
- Swan J., Newell S., Scarbrough H., and Hislop D., (1999), *Knowledge Management and Innovation: Networks and Networking*, *Journal of Knowledge Management*, **3**, pp. 262-275.
- Stahle P., Sotarauta M., and Poyhonen A., (2004), *Innovatiivisten Ymparistojen Ja Organisaatioiden Johtaminen*, Tulenaisuusvaliokunta, Teknologianarviointeja 19, Eduskunnan Kansilian Julkaisu, 6/2004, Helsinki.
- Taatila V., (2008), *Knowledge Management in Economic Innovation-Producing Social Networks in the Otaniemi Region*, Paper in the Proceedings of *The 8th European Conference on Knowledge Management*, Sep. 2008, Spain, pp. 965-971.
- Taatila V., Suomala J., Siltala R., and Keskinen S., (In Review), *What Happens to Social Networks After an Innovation Project?* *European Journal of Innovation Management*.
- Tuomi I., (2002), *Networks of Innovation, Change and Meaning in the Age of Internet*, Oxford University Press, New York.
- Valikangas L., and Gibbert M., (2005), *Boundary-Setting Strategies for Escaping Innovation Traps*, *MIT Sloan Management Review*, **46**, pp. 58-66.
- Yuva J., (2002), *Knowledge Management – The Supply Chain Nerve Center*, *Inside Supply Management*, July, pp. 34-43.



This document was created with the Win2PDF "print to PDF" printer available at <http://www.win2pdf.com>

This version of Win2PDF 10 is for evaluation and non-commercial use only.

This page will not be added after purchasing Win2PDF.

<http://www.win2pdf.com/purchase/>