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Information and Knowledge Society: Some Futuristic Perspectives

Usha Mujoo Munshi[1], Jean-Louis Ermine[2]*

[1]Librarian, Indian Institute of Public Administration, New Delhi, India
[2]Professor, TEM Research Centre, Telecom Business School, France
[1]email: umunshi@gmail.com
[2]email: jean-louis.ermine@it-sudparis.eu

ABSTRACT

The Information and Knowledge Society theme is emerging from strategic problems occurring in the real world such as, massive intergenerational knowledge transfers, serious risks of knowledge loss with massive retirements, development of competitiveness based on innovation, knowledge based economy, political and social problems due to cognitive divide, massive intrusion in the social community of ICT, and so on. The present paper is based on the deliberations of an international brainstorming seminar on Mobilising the Information and Knowledge Society (IKS), with Indo-French crossed perspectives as the initial funnelling concepts relating to the core issue of IKS. Endeavours have been made in this paper to highlight the critical issues that would eventually form basis for conducting research and addressing some of the challenges rising during the seminar and have been included in this paper. The paper also projects the possible risks associated with the knowledge crash. Finally attempts have also been made to identify the core concepts of IKS along with their characteristics.

The understanding of these concepts is essential for initiating key projects around these frameworks. These concepts being the core ones need to be addressed by the KM community involved in the research and creation of tools for managing knowledge both tacit and implicit. We hope these building blocks will give a start to a common language and a shared understanding of what is an Information and Knowledge Society. Thus, would facilitate the research and scholarly community to develop mechanisms and protocols for envisioning a true information and knowledge society that is inclusive, people centric and development oriented.

Keywords: Information Society, Knowledge Society, Futuristic, Perspectives

1. INTRODUCTION

The Information and Knowledge Society rests on researches combining ICT, multimedia and cognitive science, and others. This theme is emerging from strategic problems occurring in the real world such as, massive intergenerational knowledge

*Corresponding author

transfers, serious risks of knowledge loss with massive retirements, development of competitiveness based on innovation, knowledge based economy, political and social problems due to cognitive divide, massive intrusion in the social community of ICT, and so on. No global attention has been paid, up to now, to the relationships between those numerous problems that are however separately studied in multiple research perspectives. A common originality linking these programmes is the questions that they are obliged to ask regarding the future of our societies and so regarding the visions one has of those societies – conceptual perspectives- and to participate through the production of programmes to the development of the global framework that is essential of this future. The interest for the new theme of Knowledge Society, related to Information Society, appears to be imposing. It appears as an emerging and strategic topic for the near future in India too, as it is for other countries in the world.

A seminar "Mobilising the Information and Knowledge Society: Crossed Perspectives" was organised by IIPA on June 21-22, 2010 in Delhi, India in an Indo-French perspective (http://iipalibrary.in/ikso/index.html). It was a brainstorming seminar with experts of various domains, to provide a comprehensive methodology to carefully analyse the Knowledge Society challenges, from a societal point of view to a technological point of view. Hence, it is contemplated that a cutting edge collaborative programme, across regions on these subjects, mixing Social Sciences and Engineering and Technological Sciences would be a fruitful project in the long term. The present brainstorming session was the first step towards this direction that could be a beginning to a long term project. This project, called the IKSO (International Knowledge Society Observatory) project, has a lot of interest for researchers, as well as policy makers the world over with a large possible crossed fertilisation. Thus, collecting some material on these crossed points of views was of great interest for researchers all over the world.

2. INFORMATION AND KNOWLEDGE SOCIETY (IKS): PRESENT STUDY

The present work is based on the extensive discussions held during the international brainstorming sessions and thus represents the gist of the deliberations that would eventually form basis for a broad framework for the future endeavours in this direction. The present document has been divided into several subsets based on their relevance to IKS and the issues and challenges to envision a true knowledge society that is inclusive, people centric and development oriented. Thus, the entire study has been divided into four broad frameworks that are discussed in the proceeding section of this document.

3. FUTURISTIC PERSPECTIVES-IKS

As indicated above the futuristic perspectives given here are based on a general set of 4 frameworks. These include:

- Knowledge Framework
- Knowledge Value Chain Framework
- Knowledge Processes Framework
- Knowledge Risks Framework

We hope these frameworks will be, for the IKSO project, a funnelling set of concepts leading to defining and operating the Information and Knowledge Society.

3.1. THE KNOWLEDGE FRAMEWORK FOR KNOWLEDGE SOCIETY

The Knowledge Society is related to deep and strategic problems in national and international organisations, as Knowledge Crash, Knowledge Economy and Knowledge Management, and of Information Society and Technology. It can be seen (Figure 1), in the present framework that we are trying to evolve a mechanism to address the subject through several points of view, such as:

- Knowledge as a fundamental resource for social development (Knowledge Society)
- Knowledge as an economic good for prosperity and competitiveness (Knowledge Economy)
- Knowledge as an organisational capital (Knowledge Management)
- Knowledge as a strategic risk for societies and firms (Knowledge Crash)
- Knowledge sharing and capitalisation supported by Social Information Systems (Information Society and Technology)

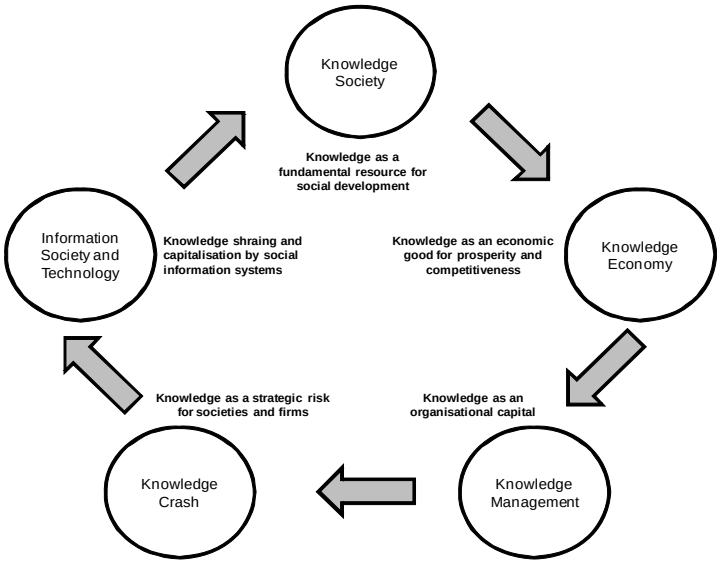

Figure 1 : The Knowledge Framework for Knowledge Society

3.1.1. About knowledge society

The recent debate on "Knowledge Societies" give a new vision of our societies where Knowledge becomes the fundamental resource for socio-economical development, as it was notified by the famous European "Lisbon Process" in 2000 and also in WSIS (World Summit on Information Society). The development of that "Knowledge Society" implies important transformation in the social and economical networks, and no one knows precisely the consequences: evolution of the social link, role of elderly people, building of new "virtual territories" …

The revolution of "Information Society", started in the 1990s, has now been enlarged in a new framework concerning Information and Knowledge. The Information Society era has failed in the sense that it has provided only technical solutions worldwide and not the adequate environment for the different societies to create intellectual wealth for a sustainable and harmonious development. Hence, came the Knowledge Society era.

All the questions on the digital or the cognitive divide are tightly related to those problems.

3.1.2. About knowledge economy

Knowledge is henceforth considered as a new source of wealth and a "new" asset within firms and organisations. This dimension is an issue for the "Economics of Knowledge" in which knowledge is considered as a fundamental immaterial asset of the firm, and as one of its main strategic resources. However, its management gives rise to numerous problems because of its characteristics; since knowledge is hardly controllable (involuntary spill over), and on the contrary difficult to access and share. It is an inexhaustible resource and is not destroyed by its usage. It accumulates in the organisation, and it is through this process of accumulation and its exploitation and dissemination that takes place for the development of the firm. So, some of the key questions that arise are, what are the issues of management of this asset today, how to manage and how to protect knowledge in the best possible manner, how to measure this immaterial asset, how to value the knowledge of the firm? and so on.

3.1.3. About knowledge management

From a more managerial perspective, Knowledge Management is a growing issue in companies, with the objectives of formalising and transferring specific knowledge and know-how in the organisation, capitalising and operating this knowledge to increase organisational performance. There are also, in that domain, important challenges, for instance, what are the best organisations for Knowledge Management, how to manage communities of practice, how to stimulate innovation

through KM, what are the best strategies for KM, how to manage knowledge in an extended enterprise, and so on.

3.1.4. About knowledge crash

Knowledge society is especially impacted by a phenomenon, "Population ageing", reinforced in developed countries by the "Baby Boom" phenomenon, which is a phenomenon that is surprisingly quite new and irreversible in the history of mankind. Every country, every organisation (public, private, international and so on) is concerned. This phenomenon is worrying a lot of international, national, regional and local social groups, regarding the social, economical, cultural and political consequences. It will certainly change many things for investments, consumers, job markets, pensions, taxes, health, families, real estate, emigration and immigration and so on.

A consequence of population ageing is, of course, ageing of the working population. Employment policies (especially for seniors) will greatly change. If nothing is done, the number of retired people will grow rapidly in the next ten to fifteen years, and conversely the number of employed people will stay constant. This situation will be particularly true for many developed countries. According to the OECD's study, this will pose a great threat to the prosperity and the competitiveness of countries.

Related to competitiveness, population ageing raises an unexpected problem. We now know that we have entered the "Knowledge Economy" where the main competitive advantage is an intangible asset in organisations (private or public), called "knowledge", the definition and the status of which is still being discussed. The massive retirement of a lot of employees is also accompanied by the loss of a lot of knowledge and know-how. The "Knowledge Management" discipline says that nearly 70% of useful knowledge in companies is tacit. That means that knowledge and know-how are compiled in the employees' brains and are very little elicited by using information bases, documents and databases. There is also a theoretical difficulty to elicit this kind of tacit knowledge. If this knowledge, which is not well known, is critical in order to carry out some processes in the organisation, its loss must be considered as a major risk for this organisation. One must say that, nowadays, very few organisations in the world are considering this risk, called "Knowledge Crash".

Information systems, especially recent developments on the web technology (social networks, web 2.0, content management systems and others) are extraordinary vectors for fostering knowledge sharing within organisations, hence a tool against Knowledge Crash. Those "socio-technical" tools are the future backbone of the emerging Knowledge Society.

3.2. THE KNOWLEDGE VALUE CHAIN FRAMEWORK

Knowledge is impossible to define as a strict concept. What is important is "Knowledge in action" for Knowledge Societies, that is to say how Knowledge brings added value to a company, a social group or a society.

Bringing added value with Knowledge is a complex process that mobilises basic building blocks organised in what can be called a Knowledge Value Chain. This Knowledge Value Chain has often been used during the seminar deliberations.

It is based on the famous DIKW chain (Data, Information, Knowledge, Wisdom), where wisdom is not seen as a "philosophical" concept, but an operational organisational concept. Some well known definition may be given:

- Data are defined as raw facts, and learning about data as the process of accumulating facts
- Information is defined as meaningful, useful data, and learning about information (second level of learning) as the process of giving form to data
- Knowledge is defined as a justified belief that is a resource for an entity's capacity for effective action
- Competency is defined as a standardised requirement for an individual to properly perform a specific job
- Capability is defined as a high level of competency at an organisational level to perform actions. It is a sum of expertise and capacity

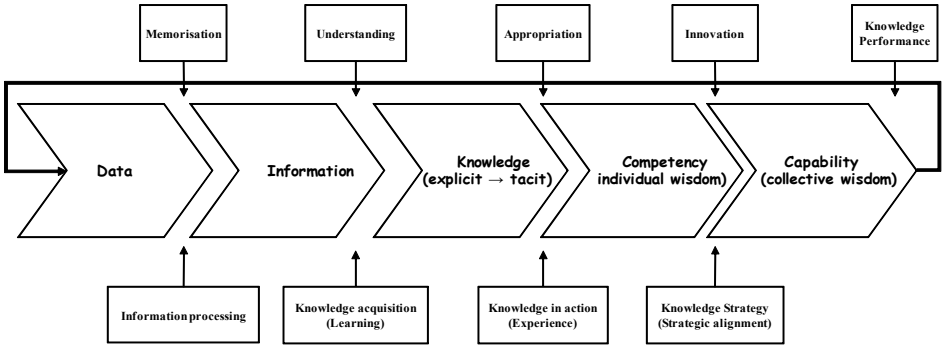

Figure 2: The Knowledge Value Chain

Implementing a Knowledge Value Chain in organisations, companies or knowledge societies is a very big challenge. It is made up of successive transformation processes, each one of them having their own objectives, methodologies and tools.

3.2.1. From Data to Information: This is a very wide domain of information processing and the basis of information technology. The benefit for the organisation is the capacity of memorisation.

3.2.2. From Information to Knowledge: Information is data with a special meaning in a given context. So learning (in a very general meaning) is the way to give sense to information in a given context. The benefit for the organisation is the capacity of comprehension.

3.2.3. From Knowledge to Competency: It is putting knowledge in practice by an action and reflection process which leads to people with more skills and expertise. It aims at giving the capacity of understanding for decision, justification, intuition, and adaptation.

3.2.4. From Competency to Capability: It needs a Knowledge Strategy, aligned to the strategy of the organisation, or a global strategy for a society. The means to transform individual competencies into a collective capability are for instance transformational leadership, change management, organisational culture and structure, knowledge transfer and so on. It leads to a real capacity of organisational innovation and then to the ultimate value creation.

3.3. THE KNOWLEDGE PROCESSES FRAMEWORK

Implementing practical solutions for building knowledge societies requires operational processes.

There are 6 types of processes:

3.3.1. Knowledge Creation: It is of course the most important, as it accumulates the knowledge capital which is the "raison de vivre" of any knowledge based organisation.

3.3.2. Knowledge Codification: It is about capturing tacit knowledge, which is a very complex problem, because such knowledge lays in the brain of the knowledge holders without their conscious awareness about it.

3.3.3. Knowledge Sharing: Once you have identified a Knowledge Corpus and built a knowledge repository, sharing that knowledge within a community is not really a standard task. It requires a lot of effort from building the community to implement access infrastructures.

3.3.4. Knowledge dissemination: Access to knowledge for majority of people (at least the concerned ones: the right information to the right people) has been coined as "the last mile" problem, which implies IT infrastructures and design processes.

3.3.5. Knowledge identification (analysis and structuring). It is of course a basic question: what is the relevant knowledge to create a Knowledge Society? The question of what are the basic knowledge needs is quite often raised.

3.3.6. Knowledge evaluation: In order to perform good knowledge processes, it is now necessary to have different grids of evaluation.

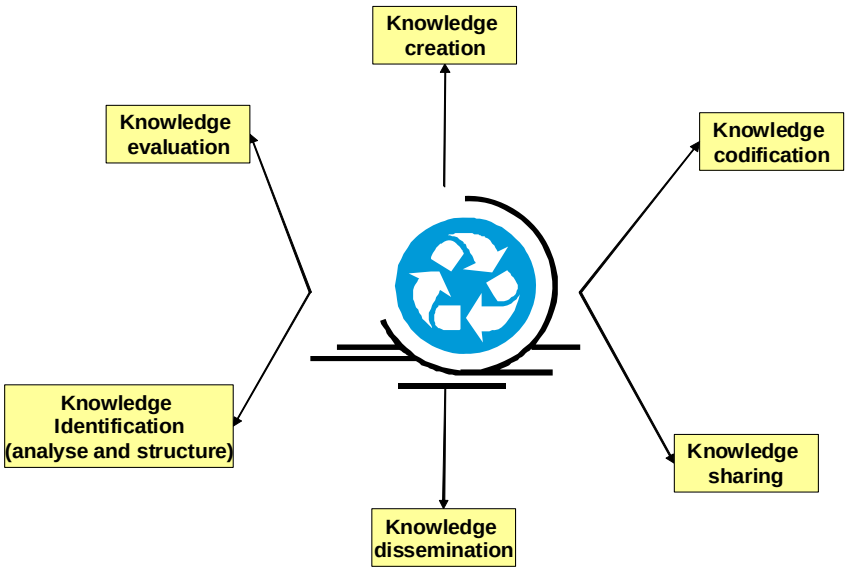

Figure 3: The Knowledge Processes

3.4. THE KNOWLEDGE RISKS FRAMEWORK

Building a Knowledge Society, like implementing Knowledge Management processes in an organisation, requires Risk Assessment. But the nature of the risks is not well known, and the levels of risks are also not well perceived. A special focus must be put on that topic.

There are different levels of perceptions for Knowledge Risks, and people do not assess the adequate risk level. There is often confusion between "Knowledge Gap", caused by too slow replacement of knowledge, "Knowledge Loss", caused by loss of organisational memory and "Knowledge Crash" caused by rapid loss of a strategic capability of an organisation. The Knowledge Crash can be prevented by setting up a Knowledge Management policy, in the corporate world as well as in the society itself.

Different kinds of risks can be differentiated as indicated in the following paragraphs:

3.4.1 Operational risks, due to the way the knowledge processes are implemented: Security, privacy, authenticity.

3.4.2 Socio-political risks due to the way the knowledge corpus is used: social disintegration, risk of monopoly (Knowledge access to a few people).

Cognitive risks. Little attention is paid to that kind of risk, but they seem to be real and likely to occur. This is a risk of cognitive distortion due to massive use of virtual worlds, digitalised exchanges, and so on. It has already been experienced for individuals, but it might be in a major collective risk the future.

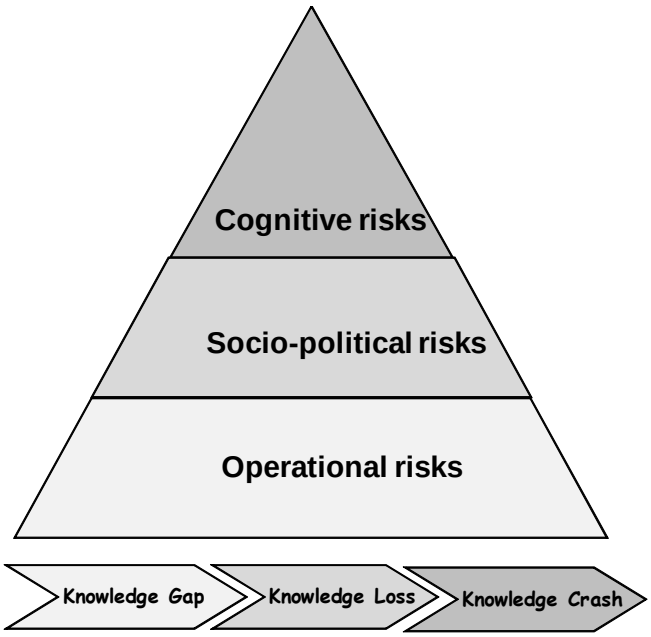

Figure 4: The Knowledge Risks

4. CONCLUSION

In this document, an attempt has been made to focus on the four fundamental frameworks as a basis for the IKSO project. Endeavour has been made here to highlight the key parameters associated with these broad frameworks that would lay basis for the understanding of various concepts essential for initiating key projects around these frameworks. These concepts being the core ones need to be addressed by the KM community involved in the research and creation of tools for managing knowledge both tacit and implicit. We hope these building blocks will give a start to a common language and a shared understanding of what is an Information and Knowledge Society. Hence, this would facilitate the research and scholarly community to develop mechanisms and protocols for envisioning a true information and knowledge society that is inclusive, people centric and development oriented.

About the Authors

Jean-Louis Ermine has a PhD in fundamental mathematics at the University Denis Diderot of Paris, and a National Research Director Title in computer science at the University of Bordeaux. He worked in the French Atomic Energy Commission (CEA) as a KM expert for more than 10 years. Since 2003, he is professor at the

national public organisation "Institut TELECOM" where he is now Director for Innovation at TELECOM Business School. He has written 4 books and more than 100 articles in peer-reviewed journals and conferences. He is president of the French Knowledge Management Club since 1999, an association rallying a lot of French speaking companies. He is Expert for UN (UIT, AIEA) since 2003. He is also the chairman of the French Speaking Congress in Knowledge Management (GeCSO) since 2008, and the president of the French speaking Knowledge Management Society. He has been project leader or advisor in numerous research or industrial KM projects in public or private companies in France (Industry, Energy, Transport, Defence, Bank, SMEs …) and abroad (Sonatrach (Algeria), Hydro-Québec, Public Administration (Canada), IPEN (Brazil), National Nuclear Safety Authorities (Asia)…)

Dr. Usha Mujoo Munshi, a Fulbright Scholar is currently with Indian Institute of Public Administration (IIPA), where she is heading the Library. Prior to joining IIPA, she has served at many prestigious organisations like INSDOC, Council of scientific & Industrial Research, New Delhi, Indian National Science Academy, New Delhi and Indian Statistical Institute, Kolkata. She has over 155 research publications and a few books to her credit, besides a number of other publications. Her latest publication christened "Multimedia Information Extraction and Digital Heritage Preservation" brought out by World scientific is a detailed & distinctive anthology on various facets of the research issues in the area contributed by the world experts and already available in the market since October 2011. Recipient of several national and international awards that includes Raizada Memorial Award 1994 for Young Information Scientist of the Society of Information Science (SIS); SIS Fellowship in 1999; Fulbright Scholar in 1996-97. ASSIST International Best Paper Award by ASSIST, USA in 2002. In 2009, Dr. Munshi obtained post of DEA (directeur d'études associé), an academic recognition given to her by Fondation Maison des sciences de l`homme, Paris, (France). She is the first person in the area of Information Science and technology to receive this recognition. She is on the editorial board of a few national/international journals in the area of Information science and technology. Acting as a member of various national and international committees and has been nominated as a member for the Steering Committee of IAP (Inter Academy Panel) and Task force on Digital Resources- US National Academy of Sciences, USA.