

Knowledge Management National Policies For Moving Towards Knowledge-Based Development: A Comparison Between Micro And Macro Level

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ABSTRACT

Knowledge management is a business model that embraces knowledge as an organizational asset to drive sustainable business advantage. Nowadays the leaders know that they are moving towards knowledge era very fast and they should align all activities in a way that knowledge management facilitates the competition in a better way. Developed countries also try to apply knowledge policies all over their governance to deploy knowledge management in a national level. Existing studies have derived their findings from single perspective, organizational level, or country level, or in a better way, micro or macro level and have not considered a mutual perspective to cover all requirements in a systematic way and compare the micro and macro level for knowledge management establishment. This paper is aimed to bridge this gap through a framework resulted from the analysis of the research data.

Keywords

Knowledge management, Knowledge society, Knowledge based development, qualitative research, National policies.

1.0 INTRODUCTION

Nowadays organizations have realized the importance of knowledge and knowledge management. The organizations know that machines, equipments, and building cannot count as the most important properties of the organization. It is clear that the most important

property of every organization is organizational knowledge and correct management of it will cause core competencies for the organization and also victory against the competitors (Akhavan, Jafari, & Fathian, 2005).

In a world of dynamic and discontinuous change, organizations are constantly seeking ways to adapt themselves to new conditions so that they are prepared to survive and flourish in a competitive marketplace (Albert, 1997). The proliferation of the *knowledge economy* (Castells, 1996), emphasizing the value of information as an enabler of competitive advantage, is naturally driving many companies to re-examine the ways they have treated their knowledge assets in the past and to identify ways in which they can exploit them more effectively in the future.

Both commercial and public organizations recognize the significance of being effective learning organizations and therefore there is a growing need for individuals who have the appropriate training and experience in the Knowledge Management function. Knowledge management creates a new working environment where knowledge and experience can easily be shared and also enables information and knowledge to emerge and flow to the right people at the right time so they can act more efficiently and effectively (Smith, 2001). Knowledge management is also known as a systematic, goal oriented application of measures to steer and control the tangible and intangible knowledge assets of organizations, with the aim of using existing knowledge inside and outside of these organizations to enable the creation of new knowledge, and generate value, innovation and improvement out of it (Wunram, 2000).

Meanwhile by the comparison of different definitions of 'knowledge management', the following aspects of

high relevance are resulted during knowledge management adoption (Wunram, 2000): Exploitation of existing knowledge, Creation of new knowledge, Process orientation, Goal orientation, Value orientation, Improvement orientation, and Innovation orientation.

Mathi (2004) identifies that the key success factors of implementing knowledge management in organizations are culture, KM organization, strategy, systems & IT infrastructure, effective & systematic processes and measures.

It is not surprising that knowledge and information management has emerged as one of the most popular strategic change management approaches in the dawn of the 21st century (Davenport & Prusak, 1998). Its supporters argue that organizations may achieve significant competitive advantages by analyzing the data and information that often remain unexploited in organizational systems and by transforming them into useful and actionable knowledge (Giaglis, 2002).

Knowledge has always been central in the functioning of society. However, in today's 'knowledge economy', organizations are increasingly aware of the need for a knowledge focus in their organizational strategies as they respond to changes in the environment. For many organizations this has meant that the character of knowledge has changed (Bell, 1999) towards a more objective, theoretical knowledge with a focus on the codification of knowledge into systems.

The discussion about globalization and the role of multinationals in this process has put forth two main streams of argumentation with quite contradictory positions. These are, firstly, the global effect approaches (Parker, 1998), which stress that globalization leads to denationalization and creates a uniform and homogeneous business culture all over the world with multinational companies acting as a vehicle of globalization, spreading 'best practice' in technologies, business systems etc. and developing global manufacturing strategies. Secondly, there is the idea of national business systems which stresses the role of national culture and institutions and their impact on the strategies and practices of multinational companies (Kristensen, 1996).

When we look at the characteristics of various societies that are the final major cause of the change of organizational forms, we encounter different national contexts or separate national business systems. Whitley (1996) determines three key dimensions by which business systems vary. The first one is the nature of firms whether they are profit-oriented or growth-oriented and focused or diversified. The second one is the nature of market organization in which whether firms are involved in networks, in associations, in alliances or not. The third one is the nature of work coordination and control in which whether decision-

making is centralized or not and tasks are expert-driven or not. These characteristics arise from the changing paradigm of societies towards the knowledge societies which includes some fundamental changes such as cultural conventions, the nature of state, the financial institutions, and the labor system.

Over the last decade, knowledge has been a key concern for practitioners across a wide range of sectors of the knowledge economy.

It is interesting to see the journey of Europe into the knowledge economy through an "ecology" lens. At a macro level therefore, we see the challenge for organizational leaders and regional planners to be to identify those conditions which, when aligned into the right ecology or environment, make innovation and co-creation possible, and to replicate those conditions to as many industry groups as possible.

At a micro or organizational level, the fundamental challenge ahead is to convince organizations of the need for a major cultural transformation of business, towards more open, inclusive, communicative and collaborative working environments, which encourage rich exchange between people, and provide the organizational and technological conditions necessary to make such exchanges possible (Mertins *et al.*, 2003).

A great deal has been written about approaches to promote knowledge management in general within the different corporations. In contrast, there is much less documentation on approaches that have been developed to present a mutual understanding the knowledge management efforts in macro and micro level. Available studies have explored this topic from single perspective, organizational level or country level and have not considered essential issues for both macro and micro level and do not present the necessities for KM adoption in the organizations towards KM establishment in the countries for moving towards knowledge based development.

In this way, the present research explores some important topics on experiences with knowledge management in some developed countries and also some successful organizations with the goals of highlighting strategies and approaches used to adopt knowledge management in micro and finally macro level. So, the main question of the paper is:

Research Question: *What are the critical issues in knowledge management adoption for micro and macro level?*

2.0 RESEARCH METHODOLOGY

This part of the research presents a basic description of the research methodology and also selection of the case studies (organizations and the countries) to be studied.

In the methodological approach for this study, the authors adopted a qualitative research design due to their need for rich data that could facilitate the generation of theoretical categories that could not derive satisfactorily from existing data (Locke, 2001).

In particular, due to the exploratory nature of this research and the interest of authors in identifying the main subjects, events, activities and influences that affect the progress of knowledge management efforts in micro and macro level (organization level and country level), they selected the Grounded Theory (GT) style of data interpretation, which was blended with the case study design

This research paradigm, which was based on an in-depth qualitative study, derives its theoretical insights from naturally occurring data including interviews or questionnaires (Marshall and Rossman, 1989). Especially, the researcher should intervene in the results of project on a matter of genuine concern to them on which they have a genuine need to take action. Research data and insight are gained alongside or on the back of the intervention.

GT is a holistic approach that discovers hidden concepts of the events and phenomenon and presents patterns of concepts and their relations through the basic elements and different stages (Glaser & Straus, 1967).

Within this general framework, data analysis for each case involved generating concepts through the process of coding which represents the operations by which data are broken down, conceptualized, and put back together in new ways. It is the central process by which theories are built from data (Strauss & Corbin, 1990).

Through grounded theory, concepts, phenomenon and any comments and experiences associated with KM have been analyzed in this paper through selected case studies. The main target was extracting main concepts through real case studies, those concepts which are able to present correct specifications from subject.

For this research, data from two successful countries in knowledge management adoption and also two successful organization in KM establishment (in another countries) were collected; France and Spain were our selected countries and Hewlett Packard and siemens were our selected organizations.

Such differences for case study selection might lead one to conclude that it is impossible to base a study on the views and experiences of each case from different locations. However, two strategic considerations and one very practical reason lie behind the choice.

Firstly, as different as the conditions may currently be

between these case studies, what they all have in common is the challenge of transformation in the knowledge era. For different companies located in different another countries, significant knowledge striving is a matter of survival. Therefore, exploring the implicit theories about knowledge management developed by managers in these organizations is a promising research strategy. Secondly, scholars conducting internationally comparative studies can choose between two strategies: the “similar” or the “different systems” design. The advantage of the “different systems” strategy is that it permits the inclusion of the greatest possible variation. Common elements or patterns found under such conditions promise to have a wide applicability in theory-building, whereas findings generated by studies of similar case studies cannot be assumed to be valid beyond their shared context (Przeworski & Teune, 1970).

The data analysis for the research consists of following stages:

- Accumulating different data;
- Developing an in-depth case history from the raw data that provided all the information;
- Open coding and subsequent axial and selective coding the in-depth case history for the characteristics and origin of knowledge management establishment in the case studies ; and
- Analyzing the pattern of relationships among the conceptual categories.

One of the steps of GT has been assigned to the extraction of concept and relations between them. In this step, through selected input data and by categorizing and combining them, main concepts are understood and their specifications distinguished.

Distinguishing the relations between concepts and axial and selective coding are the next stages of this step. Literature comparison with the results of each stage is the main mechanism of emerging and appearing new ideas and concepts.

Table (1): Specifications of the research

Methodology	Research type: qualitative Analysis method: grounded theory (GT)	
Input data	Case studies information: Micro level Hewlett Packard, siemens	Case studies information: Macro level France, Spain
Results	common concepts conceptual framework	

2.1 France (Macro case study)

It was around 1990 that knowledge management first began to attract any attention in France. Throughout the rest of the decade, interest in KM spread gradually, with a number of the larger companies from the energy, telecommunications and aerospace sectors joining the list of early adopters. However, it was only towards the late 1990s that the discipline really began to make an impact, driven by the attention afforded the discipline by members of the IT community and the bigger consultancy firms.

Nevertheless, the principles and practices of knowledge management have now permeated French industry as a whole, and are demanding the input of workers from across the spectrum of business roles, including HRM, IT, communications and general management.

The government itself has also demonstrated its awareness of the importance of knowledge and intellectual capital to the future of the French economy.

Yet for all the progress KM practitioners in France have made over the past ten years, there is still some way to go. In particular, while companies and individual workers have accepted the importance of both expertise and learning in their everyday activities, relatively few explicitly understand the concept of the 'knowledge worker' and the value of everyday experience. This is the next step for knowledge management in France. Having come so far so fast, though, there is little reason to expect the progression of understanding in the country to suffer any immediate interruption (Ballay, 2003).

2.2 Spain (Macro case study)

The larger consulting firms and companies in the IT sector are considered early KM pioneers in Spain. As knowledge management initially took off in Anglo-Saxon countries, larger multinational groups were at the forefront of Spanish KM adoption. These companies were influenced by four strong economic factors: globalisation, changes in market demands, scientific advances and technological development.

The KM industry in Spain started out with a technological approach through offering intranet solutions. However, the focus of KM is increasingly leaning towards more of a human resources approach. This is the result of many companies offering services related to change management, intellectual capital, and so on. Traditional HR consulting companies have extended their services to include knowledge management.

The impact on the public sector has been widespread. Many governments have put the issue of a knowledge-based economy on their agendas, but no clear impact

can be seen on the regional economies thus far. Individual projects are supported, but no unified knowledge-management policy is in place within European governments. Take up of KM in public sector organizations is overall slower than in the private sector, however this is because the public administration is generally slower to adopt new organizational models and solutions than the private sector. Knowledge management requires a push from the private towards the public sector.

There are many stakeholders in KM in Spain, ranging from academics to industry; therefore it is very difficult to identify just a few of them as leaders. In addition to this, the wide spectrum covered by KM and KM-related issues means that a lot of important KM work is being carried out in research as well as private companies.

There is a clear need for reference models. A reference model would allow the organizations to take control of the implementation process and not depend solely on the providers in their decision-making processes (Leeuwen, 2004).

2.3 Knowledge management at Hewlett Packard (Micro case study)

Hewlett-Packard (<http://www.hp.com>) is a large famous company which competes in many markets, including computers and peripheral equipment, test and measurement devices, electronic components, and medical devices.

HP is known for its relaxed, open culture. All employees, including the CEO, work in open cubicles. Many employees are technically-oriented engineers who enjoy learning and sharing their knowledge. The company is perceived as being somewhat benevolent to its employees, and fast growth has obviated the need for major layoffs. All employees participate in a profit sharing program.

The company is also known for its decentralized organizational structure and mode of operations. Business units that perform well have a very high degree of autonomy. There is little organized sharing of information, resources, or employees across units. HP managers feel that the strong business-specific focus brought by decentralization is a key factor in the firm's recent success. Although culturally open to sharing, few business units are willing to invest time or money in "leveraged" efforts that do not have an obvious and immediate payback for the unit. It is common, however, for employees to move from one business unit to another; this mobility makes possible some degree of informal knowledge transfer within HP.

In mid-1995 it became apparent that several knowledge management initiatives were underway in various HP

business units. Some had been in place for several years; others were just beginning. Noticing this phenomenon, Bob Walker, HP's CIO and Vice President, and Chuck Sieloff, Manager of Information Systems Services and Technology (ISST), decided to attempt to facilitate knowledge management at HP by holding a series of workshops on the topic. Their idea was to bring together a diverse group of people within the company who were already doing knowledge management in some form, or who were interested in getting started. The corporate ISST group had previously sponsored similar workshop initiatives in the areas of reengineering and organizational change management. Key objectives for the workshops included the facilitation of knowledge sharing through informal networking, and the establishment of common language and management frameworks for knowledge management. Walker and Sieloff appointed Joe Schneider, an ISST staff member who also focused on Web-based systems, to organize the workshops.

Bruce Karney is a member of the infrastructure team for the corporate education organization, part of HP's personnel function. Karney estimates that there are more than 2,000 educators or trainers distributed around HP, most of whom work within small groups and find it difficult to share knowledge. About two years ago, in response to complaints by the education community that, "we don't know what's going on," Karney began work on approaches to knowledge sharing for HP educators. He hoped to make the group more of a community; until this effort, it had no shared history, process, or tool set.

Schneider believes that the company has both internal expertise and external sources of knowledge on knowledge management. At the corporate level, Schneider is using the workshops as one mechanism to understand who needs this knowledge and how best to transfer it. He also wants to get the workshop participants involved in an ongoing knowledge management network that shares best practices and transfers emerging knowledge (Davenport, 1996).

2.4 Knowledge management at Siemens (Micro case study)

Siemens' Information and Communication Networks Division (<http://www.siemens.com>) is a global provider of telecommunication solutions, active in more than 100 countries. The company's traditional business used to be quite simple and straightforward, it dominated its home market by means of a close relationship with a regulated national telecom monopoly. Since mid-1990s, however, the market environment has undergone a massive transformation and the Siemens ICN business model has been superseded by wholesale market change.

The company was forced to rely more than ever on the

front lines of the organization, who are more knowledgeable about the latest developments. Sales people had to act more and more like consultants. Skills like business analysis, business development, network planning, outsourcing and so on were suddenly in high demand, albeit dispersed globally. Solution selling had become an important value-adding activity. Doing this right meant identifying best practices quickly, sharing them on a global scale and making sure that they were reused for profit in similar settings. The idea of ShareNet as "global knowledge sharing network" was born.

ShareNet covers both explicit and tacit knowledge of the sales value creation process including project know-how, technical and functional solution components, and the business environment. ShareNet has a strong focus on experience-based knowledge; you will rarely find official "brochureware" but rather personal statements, comments, field experience of sales projects or the real-life solution. In addition to structure questionnaires on the above mentioned topics, ShareNet provides less structured spaces such as chat rooms, community news, and discussion groups on special issues.

Related knowledge of any kind can be dynamically linked to, for instance, a sales project description, thus giving a comprehensive picture of the business. This includes other knowledge on ShareNet and any other web-based system with or outside Siemens. Furthermore, every contribution is "commentable" by the whole community, in a similar approach to the book reviews in online bookstores. Collaborating virtually via a website complements traditional ways of co-operation, like telephone conferences and personal meetings, and can be used to provide even richer exchange of knowledge and to build trust and a sense of teamwork among members of communities.

Although ShareNet is integrated in the daily work, it doesn't mean that no additional support is required. New roles were created to support and foster the development and operations of KM efforts in the organization. Every local company has at least one "ShareNet Manager", who is responsible for supporting the members in his organization and ensuring that ShareNet becomes and remains an integral part of their work, by training new users, fostering intra-organizational re-use, promoting the "philosophy" of ShareNet with all stakeholders in his country, and promoting success stories to attract more "power users". A global editor is the main contact partner for the ShareNet Managers, coaching them for success, triggering the content quality review process and serving as a community manager with regular news and updates.

The Siemens experience shows that combinations of individual and organizational measures drive

knowledge contributions.

Members reap benefits from ShareNet for their daily business, they save time, they receive a quick answer for a pressing problem and so on. As such, they have an inclination to give something back to the community.

Often, the real subject matter experts are not identifiable on a simple organizational chart. They work hidden somewhere in the world without much publicity. With their personalized contributions, ShareNet makes these “hidden champions” visible to the global organization and to the board, who regularly check the system to find and promote these experts.

Also a web-based incentive system has been developed. For any valuable contribution, members receive ShareNet “Shares” or bonus points, much like in an “air miles” system. Both contributors of knowledge, as well as re-users are rewarded for sharing their experiences. The shares can be redeemed for prizes that foster their individual knowledge, such as participation on an international conference or courses and seminars they want to attend even if these are not closely related with their day-to-day job (Pudlatz, 2002).

3.0 DISCUSSION: DEVELOPMENT OF THE CONCEPTUAL MODEL

By analyzing input data of selected case studies, some concepts were found for answering the main question of this research:

What are the critical issues in knowledge management adoption for micro and macro level?

Here we explain more about some important concepts. Case study name/s between the parentheses shows that the related concept has been extracted by case studies analysis. In the analysis the authors searched for some important concepts that were common or had a common sense making for understanding both the micro and macro level. It means that some common ideas were followed to extract common concepts of knowledge management adoption in macro and micro level.

Strategic planning is one of these common concepts which has been extracted through micro and macro case study analysis. Strategies show how we can reach objectives. Without a strategy there is no touchstone to assess what has changed and what the implications will be for the KM initiative. What it does mean is that the strategy should be concise, developed over a fairly period of time, and a process put in place to monitor the need for revisions to the strategy in the future. For being successful on implementing knowledge management system in the organization and at macro level in a country, knowledge efforts and knowledge

strategies should be aligned by organizational strategy completely and correctly. This concept was followed in both micro (Siemens) and macro (France) case studies analysis.

Success of every program and planning in the organization depends directly on CEO support and commitment. Of course a knowledge management program also needs CEO support for being successful in design and implementing phase. If we observe this concept through macro glasses, government support will be as the main supporting mechanism for knowledge management establishment in a country.

A common reference model and framework acts as a meaningful and practical guide to the context of KM initiatives (economic, technical, structural, socio-cultural) within the enterprise, and the interplay between these elements. Also a common reference model describes the most essential factors (assets, people, processes, tools) influencing the success or failure of a KM initiative, and their interdependent relationships. Typically, it is built up into a pictorial representation which serves as an aide-memoires for implementing KM, helping users to position individual KM initiatives within a wider context (Spain). In the other hand, we can see knowledge architecture in the micro level which acts such as an enabler for KM adoption in the organization. An organizational architecture can be defined as a complex, multi-dimensional construct expressing principles that guide how the organization is to be designed, that is, how the elements of the business model are actually organized and executed. Architecture can be studied from two views: descriptive view and prescriptive view. In descriptive view architecture describes how a design actually is in terms of its functional, operational or material manifestation and in prescriptive view architecture guides how a design should be accomplished (Babski & Carion, 2003). So knowledge architecture can be defined as a logically set of principles and standards which guides the engineering (high level design, detailed design, selection, construction, implementation, support, and management) of an organization’s knowledge management system infrastructure. So the companies which are to design their knowledge management system, should be really sensitive to construct their knowledge architecture correctly and robustly (Siemens).

The political and cultural surroundings are known from the analysis of knowledge culture because effective knowledge management cannot take place without extensive behavioral, cultural, and organizational change (Davenport & Prusak, 1998), there is a need to initiate according to changes. This especially aims at creating an environment where knowledge sharing is encouraged (France, Spain).

This arrangement clearly points out the interest of the management in culture openness and knowledge creation, especially regarding innovation, and the company has been successful with this. Since most knowledge processes are on a more or less voluntary basis and knowledge is to a large degree personal, there should be a culture of motivation, a sense of belonging, empowerment, trust and respect within an organization before people really start engaging themselves in developing, sharing and using knowledge. It requires a culture in which people are respected, based on the knowledge they have and the way they are putting it to use for the organization (HP, Siemens).

The process of "reengineering" involves the breaking of old, traditional ways of doing business and finding new and innovative ways, and from the redesigned processes, new rules emerge that determine how the processes will operate (Hammer, 1990). Considering BPR definition, usually the processes in the organizations have not been well designed. Now if we want to establish a knowledge management system on a weak foundation, knowledge efforts will be failed. So, BPR helps the organization to decentralize and define a value-oriented structure, in that case knowledge management system can be implemented correctly in the organization (Hewlett Packard).

While developing and implementing a KM solution, a country will usually embark on a change management process, by attempting to change some beliefs and behaviors of the infrastructures, the systems, the organizations, the management and the employees. The dimensions of this framework could therefore help a country's KM project leaders to check whether all relevant factors are addressed within the implementation and change processes (Spain).

Enacting change in the corporate environment, while often necessary, is always expensive. Overcoming the inertia of corporate culture, especially in larger corporations, and especially in large scales such as a country takes time, energy, and money. For this reason, any change such as implementing and establishment of knowledge management system needs investment and budget assignment (France, Spain).

Throughout Europe, public and private sectors communities are refocusing their activities to collaborate and compete through knowledge. This work item will assist both sides in identifying their readiness for KM, building the business case for KM, identifying and motivating key players, implementing KM successfully within and across their organizational boundaries and networks, and measuring the results of their efforts (Spain).

The idea of a learning organization is seen by many as a response to an increasingly unpredictable and dynamic business environment. A learning

organization is an organization creating, acquiring and transferring competence and being able to change its behavior according to new knowledge and views (Siemens, HP).

Organizational learning presents an organization that views its future competitive advantage as based on continuous learning and use of knowledge and an ability to adapt its behavior to changing circumstances and in a macro level moving towards learning society and learning country can be considered (France).

Human capital describes the value of the know-how and competencies of an organization's employees. An organization which systematically develops and attends its human capital is more likely to become a successful learning organization. Many employees can be considered as knowledge workers. Effective KM means for them creating an organization in which they can develop and use their talents. It provides an environment and in a larger scale, in a society in which it is fun to work and where they can learn and share with their colleagues, partners and clients (Spain).

Technology is one of the most important parts of a KM system. Especially information and communication technology plays a vital role as the important infrastructure of KM initiatives. Search engines, categorizers, portals, expertise location and visualization are some KM tools that are highly dependent to technology (HP, Siemens). The IT infrastructures in a country such as communication links and networking facilities should be considered too in information and communication policies during knowledge management establishment in a country (Spain).

The other important concept in KM adoption is community of practice. Community of practice (CoP) is an informal, self-organized, collaboration of people, within or between organizations, who share common practices, interests or aims. When the CoP proves useful to its members over time, they may formalize its status by adopting a group name and a regular system of interchange through enabling tools (HP, Siemens) which can be applied in a larger scale such as a society as the network of experts. These networks can be formed as scientific committees, communities of practice, knowledge teams and knowledge centers in the country.

For spreading knowledge policies and totality of knowledge in the organization, employees should become completely and deeply familiar with knowledge concepts. So, educations and training programs (HP) are very important for the organizations in a country which is to conduct knowledge management (France, Spain). Different publications about KM (France), conferences and seminars (France), academic research about knowledge management, and finally benchmarking from the other successful plans (France) are the other methods of training for enabling

knowledge management master plan in a country. A framework can be conceptualized through findings of this research which can demonstrate the main factors of knowledge management establishment in micro and macro level. This framework also shows the relationships and different patterns of knowledge management dimensions for an organization and a country as it has been shown in figure 1. It also compares micro and macro level when applying knowledge management.

The left side of the framework is related to knowledge management establishment at micro level (in the organizations) and the right side shows the essential issues at macro level. Organizational strategy should be aligned with knowledge strategies in the organizations and the necessities of knowledge society should be considered during strategic planning at macro level. CEO support and commitment is an important factor and this support should be deployed all over the organization. This kind of support will be changed into government support at macro level. The governments should support both public and private sectors in all over the country. The culture plays a vital role in knowledge management establishment at both micro and macro level. Organizational behavior and values are some important cultural factors in the organizations and the shared vision should be considered in culture of society in addition to the other factors. The organizations may start some business process reengineering towards process orientation and reinforcing value added activities.

Also a change management program is necessary which should be aligned according to government policies for knowledge management establishment at macro level. The anthologies can help the organizations towards a systematic knowledge architecture which is very crucial in knowledge management activities in the organizations as above mentioned for directing knowledge efforts. At macro perspective, a common reference model can be considered as a common point to lead all related activities about KM adoption in a country.

Although information technology in the organizations are some tools for improving and accelerating knowledge efforts, it is considered from the perspective of infrastructure development at macro level according to ICT policies in the country. Knowledge sharing between the human resources is also as important as the other factors that can be implemented by the relevant tools, such as communities of practice at micro level and networking of all these communities at larger scales (macro level).

4.0 CONCLUSION

The importance of knowledge management is clear to every organization and nowadays, many companies search for the main reasons and factors for being

successful in knowledge management system design and implementation through their organization. Nowadays mature governments have understood the importance of knowledge and management of it for knowledge based development, so the related activities are led by top levels and ranks in those countries especially in advanced and developed countries. Nowadays mature governments have understood the importance of knowledge and management of it for knowledge based development, so the related activities are led by top levels and ranks in those countries especially in advanced and developed countries. In this paper, the dimensions of knowledge management at both micro and macro level were explored and the critical success factors of knowledge management master plan in the knowledge era were extracted and a framework was developed. This framework also shows a comparison between micro and macro level and the relations in a clearway.

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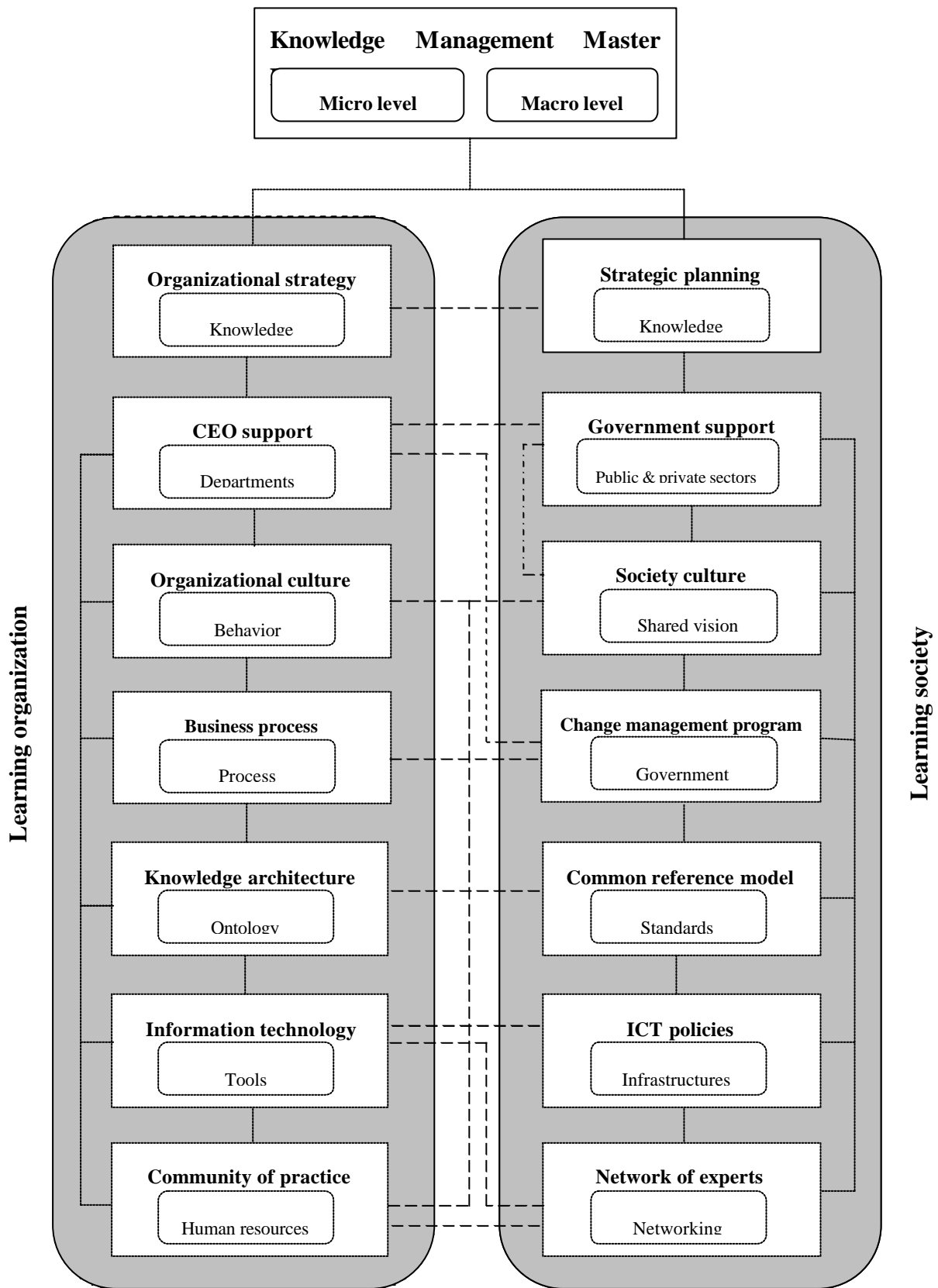


Figure 1: Main factors of knowledge management establishment at micro and macro level