

**EXPLORING KNOWLEDGE MANAGEMENT AND ITS EFFECT ON
INNOVATION WITH RESPECT TO HUMAN RESOURCES
MANAGEMENT: EVIDENCE FROM EGYPT**

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I. Chapter one: Introduction

A. Introduction

Good is no longer good enough. No person or company should be satisfied to stay where they are no matter how successful they now seem to be. To be able to survive in today's competitive environment, every company/organization has to excel. In order to do so, an organization needs to focus on all parts of the organization, optimizing the use and effectiveness of all its resources. These resources play an important role in any organization's innovation process which in turn leads to organizational success. Information, data, knowledge as well as the human capital are examples of any organization's resources. Human capital is considered nowadays to be the engine of any organizational success. Managers nowadays have to consider that the most valuable human attributes should be developed because they are one of the most important assets of many corporations. Having discussed the importance of human capital briefly, knowledge is a complementary resource to human capital since part of this knowledge (tacit) is embodied in individuals working for any organization. In our current world, knowledge has become one of the most significant production resources. The existence and success of a growing number of organizations strongly depends on their capability of exclusively using their knowledge for profit generation. To add, it is worth mentioning that in order for this knowledge to be fully utilized, it has to be managed. Knowledge Management was born of the need to achieve better productivity and efficiencies in business. Improving the management of knowledge resources within the business organization produces greater productivity and efficiency. Knowledge is considered as an economic driver in today's economy. This evolution has been enhanced by the development of information and communication technologies (ICTs) that have reduced the cost of gathering and disseminating knowledge.

The question that arises is as follows: "does this acquired knowledge stay idle? Or it plays an important role in the innovation process?" The answer to that question is very simple. Due to the fast changing business world of today, innovation has become the basis/mainstay of every organization. The complexity of the

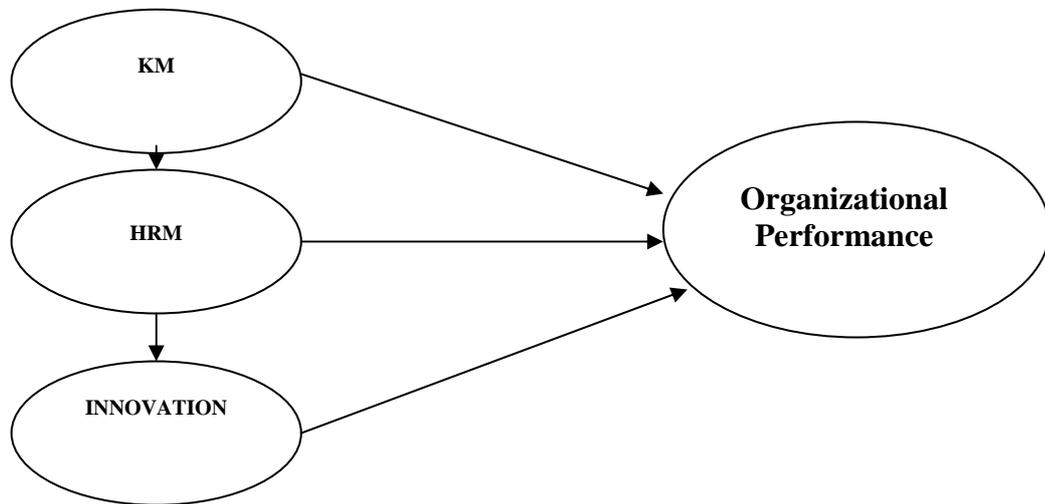
innovation process has been increased as well by the growth in the amount of knowledge available to organizations as a basis for innovation. The latter is extremely dependent on the availability of needed knowledge and as a result the complexity created by the explosion of richness and reach of knowledge has to be identified and well managed to ensure success of innovation (Adams and Lamont, 2003; Du Plessis, 2007).

The aim of this thesis is to address the importance of managing knowledge resources, human resources as well the role that knowledge (which depends on human capital) plays in successful innovation. The management process plays a crucial role in the ability of business organizations to change, adapt, and seize new opportunities as they compete in this fast-changing global environment. The question that arises is “Why?” This is due to the fact that business change is happening quickly and the rate of change is rapidly increasing. This change is increasingly more global in scope, fueled by the use and proliferation of many technological advances like the Internet and Intranet in the studied case. Having already read that managing knowledge resources is a necessity for managing change in a developed business organization, it is worth saying that managing knowledge has proven to be essential for all organizations to provide the resiliency necessary to adapt their business models faster to meet the shifting sands of the turbulent markets.

B. Research Purpose

Due to the fact that little clarity exists in current literature, this thesis aims to clarify the role of knowledge management as well as human resource management in the innovation process. Human capital and, in particular, human resource management, are today considered key elements of successful innovation, since the human element is involved in the whole innovation process (Galbraith, 1984; Daniel Jime´nez-Jime´nez and Raquel Sanz-Valle 2005). In addition to that, according to Hassan and Al Hawari (2003), innovation is considered to be an important part of the organizational performance and every company’s innovative

capacity depends highly on its ability to take advantage of its knowledge asset. Below is a visual representation of the above mentioned:



As it can be seen from the above figure and based on existing literature in these areas, managing human capital as well as knowledge and innovation is an interactive and dynamic process which leads to organizational performance. This will be fully explained in the coming chapters in light of existing literature.

C. Research Questions

What is the role that Human Resource Management plays in managing knowledge as well as Innovation?

What is the role of Knowledge Management in successful innovation processes in organizations?

D. Limitations

There are many aspects within this research area and due to time limitations; I will only focus on some of them. In the research purpose section, having mentioned “human resources management”, not all areas in this discipline will be covered in my thesis. Therefore, this paper will be focusing on the part that deals with the

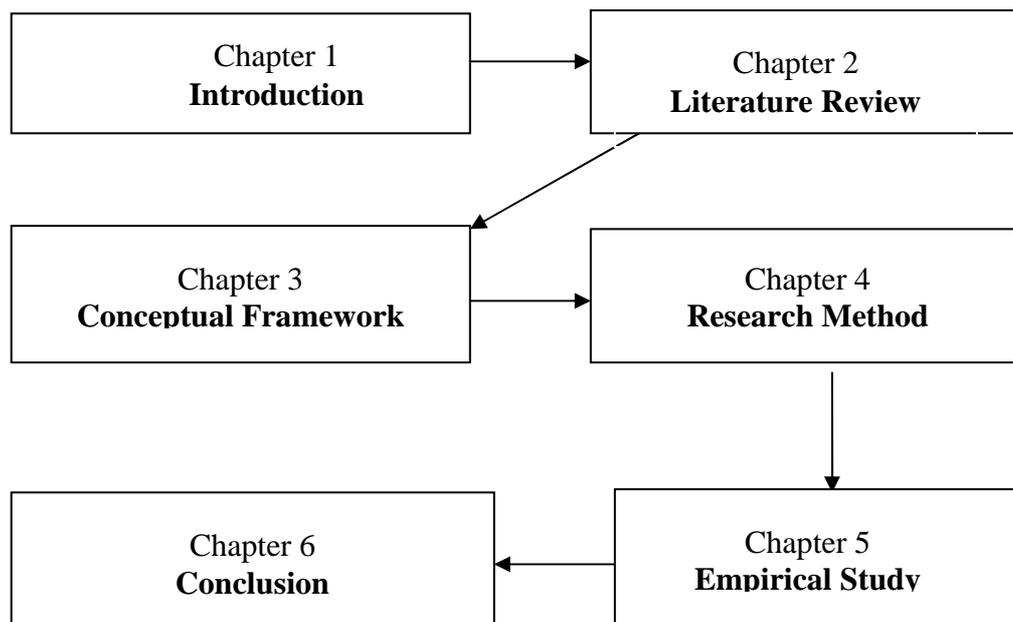
investment in human capital since they are considered nowadays as one of the real sources of future competitiveness (Leonard Barton, 1995).

Being aware of the importance of culture in organizational success, this paper will not be exploring this area due to limited resources.

To add, having mentioned “innovation” in the research purpose, due to limited research, some aspects will not be covered. Among these, are innovation systems. Since the latter is an important aspect in innovation, it is worth mentioning and explaining the role that it plays in innovation processes.

E. Disposition of the thesis

This study is divided into six chapters. By now the content of the first chapter is already presented and familiar to the reader, consequently, the coming chapters will be introduced. The below figure visualizes the outline of the study.



The next chapter provides the reader with an overview of the literature related the research questions of the study, on previous research within the area of knowledge and innovation management.

II. Literature Review

In the second chapter of this thesis, theories related to this study will be discussed. Earlier studies within this research purpose area in terms of KM and its relation with HRM and INNOVATION will be reviewed.

A. Knowledge Management

1. Knowledge Taxonomy

Nowadays, knowledge has become one of the critical driving forces for business success. Organizations are becoming more knowledge intensive; they are hiring “minds” more than “hands”, and the needs for leveraging knowledge are increasing. Harrington (2005) defines knowledge as a mix of experiences, practices, traditions, values, contextual information, expert insight, and a sound intuition that provides an environment and framework for evaluation and incorporating new experiences and information. In today’s economy, knowledge is increasingly recognized as a key organizational asset and its creation, dissemination and application as a critical source of competitive advantage (e.g. Harrington, 2005; Hicks, Dattero and Galup, 2007; Squier and Snyman, 2004; Kim, 1997, El-Hawari and Hassan, 2003 and Darroch, 2005). This process is often seen as requiring the use of a combination of core skills and competencies in information as well as in human resource management, including the creation and maintenance of organizational structures and cultures that facilitate organizational, team and individual learning and the sharing of knowledge and information (Lundvall and Nielson, 2007). In addition to that, and according to different researchers, knowledge is defined as the power to act and make decisions (Kantner, 1999), information in context, together with an understanding to how to make use of it (Davenport and Prusak, 1997), professional expertise and information made actionable in a way that adds value to the enterprise (Vail, 1999).

2. Knowledge Classification

Having defined knowledge, it is worth mentioning that knowledge can be divided into two categories: tacit knowledge explicit knowledge (Nonaka and Takeuchi, 1995).

Tacit knowledge, or individual knowledge according to Lundvall and Nielson 2007, is referred to as soft knowledge (Harrington 2005). In other words, it is formed around intangible factors in individual's experiences and action (Galup, Dattero and Hicks 2007). According to Lundvall and Nielson 2007, since the long-term economic success of firms increasingly reflect the capability to adapt change (flexibility) and the capability to impose change (innovation) tacit knowledge remains vital for economic success. Tacit knowledge is more difficult than explicit knowledge to create, capture, codify, communicate and transfer because is it highly intellectually energy intensive (Walker and Finegan, 2007).

Tacit knowledge can also be collective. Collective tacit knowledge also tends to grow in importance nowadays especially in fields where the rate of innovation and knowledge creation is very high. Organizations undertaking innovation processes are shifting their attention towards this type of knowledge (Lundvall and Neilson, 2005).

Having defined tacit knowledge and stressed on its importance, it is also worth mentioning that explicit knowledge is also important. In fact, explicit knowledge complements tacit knowledge. Explicit knowledge is codified in and communicated. According to Shin, Holden and Schmidt 2001, explicit knowledge "can be articulated in formal language including grammatical statements, mathematical expressions, specifications, manuals, and so forth. "Explicit knowledge often does not have an accompanying explanation of the context of that knowledge. While explicit knowledge may be conveniently available, it is of less value than sound tacit knowledge because tacit knowledge embeds context" (Walker and Finegan, 2007). In other words, a knowledge sharing environment should be created in order to facilitate the diffusion and codification of such knowledge. This will be fully covered and explained in the coming sections.

Although there is recognition that the knowledge society and knowledge economy have arrived and that knowledge is the key business assets, organizations are still in the early stages of understanding the implications of knowledge management (Therin, 2002).

What works for one company will not work for another because organizational knowledge is most often subjective. The one-size – fits – all mentality, coupled with the tendency to focus in technology rather than people and processes, has obscured the real benefits that KM can bring, according to Walker and Finegan, 2007. It does not help that knowledge means different things and often involves different kinds of technologies at different organizations. As a result, organizations should be focusing more in managing their knowledge assets since it drives innovation.

3. Knowledge Management

Recalling the definition of knowledge, knowledge may be embodied in individuals, organizations, or built into artifacts. Much knowledge is collective rather than individual and it may be embedded in networks in organizations (Lundvall and Nielson, 2007). To be able to diffuse this knowledge within the organization, knowledge has to be managed. According to Nonaka and Konno 1998, knowledge management (KM) is a method for simplifying and improving the process of sharing, distributing, creating, and understanding company knowledge. In other words, the knowledge management movement is an attempt by organizations to capture, codify, organize, and redistribute the firm's tacit forms of intellectual capital or knowledge and make them explicit (Rothberg and Ericson , 2005). To add, KM is the process of creating, capturing, and using knowledge to enhance organizational performance, such as documenting and codifying knowledge and disseminating it through databases and other communication channels (Bassi, 1997). In addition to that, KM focuses on “systematic and innovative methods, practices, and tools for managing the generation, acquisition, exchange, protection, distribution, and utilization of knowledge, intellectual capital and intangible assets” (Monatana, 2000; Lin and

Lee, 2004). Finally, and according to Davenport and Prusak (2000), KM is substantially a human interaction exercise with information and communication technologies (ICT) as providing a supportive and facilitative role. They also add by suggesting that KM is made of 1/3 technology and 2/3 of people. This shows the importance of human capital.

In line with the above, it is worth mentioning that the goal of KM is not to manage all existing knowledge in the organization. On the contrary, KM is about managing the knowledge that is needed and that is more important as well. KM involves getting the right information to the right people at the right time, and helping people in creating and sharing knowledge as well as acting in ways that will measurably improve individual and organizational performance (Bose, 2004 and Walker and Finegan, 2007).

According to Bose (2004), knowledge management consists of the following three components:

- ✓ People (human capital): who create, share and use knowledge, and who collectively comprise the organizational culture that nurtures and stimulates knowledge sharing.
- ✓ Process: the methods to acquire, create, organize, share and transfer knowledge.
- ✓ Technology: the mechanisms that store and provide access to data, information and knowledge created by people in various locations.

A big challenge related to implementing a KMS is in transforming knowledge held by individuals, including process's and behaviors knowledge into a consistent technological format that can be easily shared among all the workers in the organization (Harrington 2005).

4. Shift towards "2nd Generation of KM"

A very large proportion of the literature on KM and organizational learning is developed by, and aimed at, commercial businesses and firms. Many organizations in the corporate sector look to KM as a solution to the new challenges of the information age. Knowledge and information are becoming

crucial core assets for businesses, who have to learn to handle these assets in new ways. Traditional accounting and monitoring systems designed to deal with tangible inputs and outputs are no longer adequate. Instead, organizations now find that they have to share information internally more efficiently and learn to adapt more quickly to external circumstances in order to retain their competitive advantage. In response to this situation, the 'first generation' of KM strategies aimed to improve knowledge sharing within organizations (McElroy, 2003). The first generation of KM was very focused on information technology and systems; technical tools were used to collect and codify existing knowledge in order to make the organization run more smoothly.

A 'second generation' of KM strategies has now emerged, which focuses more on organizational processes and the creation of new knowledge in order to keep the organization one step ahead of its competitors (Chris Carter and Harry Scarbrough, 2001). For example, the most successful organizations are shifting from strategies based on prediction to strategies based on anticipation of surprises (Savage, 2000). They are shifting from management based on compliance to management based on self-control and self-organization. They are also shifting from utilization of already known knowledge to the creation of new knowledge, from pure 'technology' KM applications to also include 'process' applications (Binney, 2001). When and how these shifts should be undertaken depends on the type of organization in question.

KM was an ingratiating measure which aims at organization adaptability, existence and competition. It contains development process of organization and looks for organic integration of data information handles and ability of invention and creation. KM is an extension and development of information management, a combination form of information managements and human resources management, products of mutual function about administration, information and recognition sciences (McElroy, 2003). KM takes knowledge as object, human beings as center, information technology as method, knowledge accumulation, communication and share as contents, knowledge innovation as direct goal, organization and society contingency, competition, development as final end and in charge of organization and society resources, which serves for strategy goal of existence and development about organization and society (Binney, 2001).

The remarkable feature in knowledge economy era is that knowledge becomes the most important strategy resource to push society to develop. Knowledge appears dispersal and non-order because of knowledge explosion, which is difficult to obtain knowledge and utilization for people (Carter and Scarbrough, 2001). Therefore, we must attach importance to KM if knowledge can be utilized efficiently. It is no exaggeration to say that KM is motive force in society. Who pay great attention to and do well in knowledge management, someone can win advantage in competition (Gloet, 2000). Advanced countries and excellent enterprises pay universal attention to KM, possess advanced management idea, methods, technology and system and get abundant achievements and precious experiences, which brings exploitation and utilization of knowledge resources, thriving vigor, and success of operation. All display the great meaning of knowledge management.

Having clarified the first and second generation knowledge management as well as on the importance of knowledge in today's economy, the following section will add by addressing the importance of knowledge and knowledge management in innovation. The following section will be focusing on the role of KM in the management of innovation since this is where the role of KM and its implications for human resources presents the greatest challenge to current management practice.

5. Why do we need Knowledge Management for Innovation?

Having defined knowledge management according to several authors, this section will be exploring the role that KM plays on promoting successful innovations in organizations.

The first basic driver for knowledge management's role in innovation in today's business environment is to create, build and maintain competitive advantage through the utilization of knowledge and through collaboration practices (Du Plessis, 2007). Sveiby and Simons (2002) emphasized the

importance of a collaborative climate as an effective major factor for knowledge work. They also pointed out the fact collaboration and resultant effective teams play a major role in generating knowledge in organizations. Anantatmula (2007) adds to the mentioned earlier by mentioning that building and sustaining an innovation program has become complex due to changes in customer needs, extensive competitive pressure and rapid technological advancement. I have to add, that organizations find it difficult to internalize and share knowledge inside and outside the organization. However, they are trying to loosen organizational boundaries to ensure successful innovations as well as staying competitive. Therefore, according to Du Plessis (2007), knowledge management is the solution to these problems. According to her, KM can facilitate collaboration within and outside the organization. "Close collaborative relationships can provide access to the processes other organizations use that could be applied in different contexts. Acquiring knowledge and skills through collaboration is considered to be an effective and efficient way of successful innovation" (Du Plessis, 2007).

The second driver of the role of KM in innovation is that knowledge is considered as a resource used to reduce the complexity in innovation processes and managing knowledge as a resource will consequently be of significant importance (Du Plessis, 2007). Innovation is extremely dependent on the availability of knowledge and therefore the complexity created by the explosion of richness and reach of knowledge has to be recognized and managed (Nonaka and Takeuchi, 1995; Shani et al., 2003). According to Shani et al 2003 and Gloet and Terziovski, 2004, the rise in the amount of available knowledge to be used in the organization seems to add increased complexity to the design and development of new products. Therefore, knowledge management and knowledge intensive units (that are considered as strategic in nature) in the organizations can address the issue of complexity (Shani et al, 2003; Du Plessis, 2007).

Several authors are in line with the above mentioned. Among these are Cavusgil, Calantone and Zhao, 2003, Sveiby & Simons (2002), Anantatmula (2007) and Du Plessis (2007). These authors share the same vision on the fact that KM is a mechanism through which innovation complexity can be addressed. According to them, it assists in managing new knowledge created through the innovation

process as well as existing knowledge as a resource used as input to the innovation process. Cavusgil, Calantone & Zhao, (2003); Goh (2005); Nonaka and Takeuchi, 1995; Lundvall and Nielson, 2007 and Ju, Li & Lee (2006) agree on the fact that firms that make good use of existing knowledge and create knowledge rapidly and effectively are able to innovate faster and successfully than those who stay still.

Knowledge integration, both internally and externally to the organization to be available and accessible, is the last driver of applying KM to the benefit of innovation processes (Du Plessis, 2007). Knowledge integration helps firms to combine internal and external knowledge through communication and systems integration. Grant (1996b) takes knowledge as integrated within the organization in order to create KM capability. In other words, the integration of knowledge can be enhanced by creating good communication channels. This implies that knowledge can be exchanged, shared, evolved, refined and made available anytime for every member of the organization (Du Plessis 2007 and Ju, Li and Lee, 2006). Furthermore, Therin (2002) and Grant (1996b) state that when a firm is capable of reconfiguring, acquiring and integrating existing knowledge with new knowledge through KM, the firm should be good at producing processes and product innovations. Thus knowledge integration via knowledge management platforms, tools and processes must therefore facilitate reflection and dialogue to allow personal and organizational learning and innovation. This in turn requires loosening boundaries within the organization by assuring linkability, adaptability and dynamic representation of needed business information and knowledge (Du Plessis, 2007). Badi & Sharif (2003); Du Plessis (2007); Chen et al, 2004 and Ju, Li & Lee (2006), stress on the importance of knowledge management in integrating knowledge within the organization. According to them, without effective information and knowledge management that drives knowledge integration, which in turns strengthens innovation, organizations could be not making use of knowledge as an innovation resource.

To conclude, and based on the above mentioned, one can say that KM have a distinctive contribution in the development of sustainable competitive

advantage through innovation. While information and knowledge management systems alone do not possess the qualities required to provide organizations with sustainable competitive advantage, knowledge management systems coupled with other firm resources (HRM for e.g.) is the key to developing and maintaining sustainable competitive advantage through product and process innovation (Du Plessis, 2007).

6. The role of Knowledge Management in Innovation

The first role that KM plays in innovation is enabling the sharing and codification of tacit knowledge (Du Plessis, 2007). Anantatmula (2007) is in line with Du Plessis in the fact that unless individual knowledge is shared with other individuals and groups, the knowledge is likely to have limited impact on organizational effectiveness. This underlines the importance of sharing tacit knowledge. Tacit knowledge sharing is critical for organizations who are building innovative capability (Cavusgil, Calantone and Zhao, 2003). According to these authors, high innovation potential firms employ a “learning by doing” effect that is difficult to replicate as well as being bought by in the market.

Significant amount of innovations and improvements are originated through “learning-by-doing”. That is, people and organizations, primarily firms, can learn how to use/improve/produce things by the very process of doing them. This is done through informal activities of solving production problems, meeting specific customers’ requirements, overcoming various sorts of bottlenecks (Figueiredo, 2006 and Lundvall and Nielson, 2007). Gathering tacit knowledge from customers and suppliers is a valuable source for organizations plays a significant role in innovation programs (Kim, 1998). Du Plessis (2007) adds by mentioning that such knowledge is a valuable resource for successful organizational innovations due to the scarcity of such knowledge that is an input for innovation processes.

Although having mentioned and talked about the importance of such knowledge in innovation process, it is important to mention that if this sort of knowledge is not then converted in explicit format, knowledge sharing would be difficult. Knowledge management can make tacit knowledge accessible through an

understanding of what tacit knowledge is available (Du Plessis 2007, Kim 1998 and Nonaka and Takeuchi 1995). This can be done, for example, through applications indicating who maintains such knowledge.

Explicit knowledge is the second role of KM in innovation. Although explicit knowledge does not play such a dominant role as tacit knowledge in innovation processes due to the fact that explicit knowledge about innovations is easily accessible to competitors, explicit knowledge is also an important component of innovation (Du Plessis, 2007; Walker & Finegan, 2007). Knowledge management plays an important role in making explicit knowledge available for recombination into new and innovative ideas. Knowledge management, according to Harrington (2005) and Goh (2005), provides the tools, processes and platforms to make sure that knowledge is available and accessible. These authors add by mentioning that KM can ensure that explicit knowledge which is used in innovation processes is gathered internally and externally. This is done by implementing platforms and systems that makes knowledge available to every worker in the organization.

Collaboration is the third role that KM plays in Innovation (Du Plessis, 2007; Nonaka and Takeuchi, 2005; Harrington, 2005 and Kim 1998). Du Plessis (2007) defines collaboration as “the ability of customers, suppliers and employees to form knowledge sharing communities within and across organizational boundaries, that can work together to achieve a shared business objective, resulting to all community benefits”. An increasing number of enterprises are now viewing the collective knowledge of their employees as a key competitive tool from which innovation can emerge, and are encouraging, supporting and rewarding collaboration between people (Soliman and Spooner, 2000). Squier and Snyman (2004) extend this definition by stressing on the importance of crating a knowledge sharing environment. The creation of such environment is done by first identifying organizational barriers and second, by persuading people that they can gain from sharing knowledge (Bonfield, 1999). That would in turn lead to successful innovation in the organization.

Internal and external collaboration plays an important role in transferring tacit knowledge and building collective know-how (Cavusgil *et al.* 2003 and Du Plessis, 2007). These authors add by mentioning that “the stronger the relationship between collaboration partners, the more tacit knowledge will be transferred”. To add, knowledge networks also play an important role in the innovation process. Knowledge networks are defined as “organizational arrangements that involve actors with different capabilities and that are concerned with knowledge flows and the coordination of learning and innovation” (Orsenigo, 2001). Knowledge networks are about acquisition, combination, generation, exchange and transfer of complementary and heterogeneous forms of knowledge contributing to innovation (Dantas and Bell, 2006).

Knowledge integration is the last role that KM plays in innovation. Knowledge integration is about managing various activities in the knowledge management lifecycle, which consists of the phases of creation, gathering, sharing, leveraging of knowledge” (Dantas and Bell, 2006 and Galup, Dattero and Hicks, 2007). Without effective information and knowledge management that drives knowledge integration, which in turns strengthens innovation, organizations could be not making use of knowledge as an innovation resource (Baddi and Sharif, 2003 and Lundvall and Nielson, 2007).

To sum up the above section and to make it clearer to reader how knowledge management plays a crucial role in innovation, the study refers to perhaps the most influential framework for knowledge creation developed by Nonaka and Takeuchi (1995) in their studies of knowledge creation and use in Japanese companies. Nonaka and Takeuchi (1995) distinguish, as mentioned earlier, between two types of knowledge, explicit and tacit. Having already provided a clear definition about these two terms in the previous sections, it is of no use to repeat it here.

7. Knowledge Creation framework by Nonaka and Takeuchi (1995)

Nonaka and Takeuchi (1995) offer a SECI model of knowledge creation illustrated in the below figure. At its core are conversion processes between tacit and explicit knowledge that result in a cycle of knowledge creation. Conversion involves four processes: socialization, externalization, combination, and internalization, all of which convert between tacit and/or explicit knowledge.

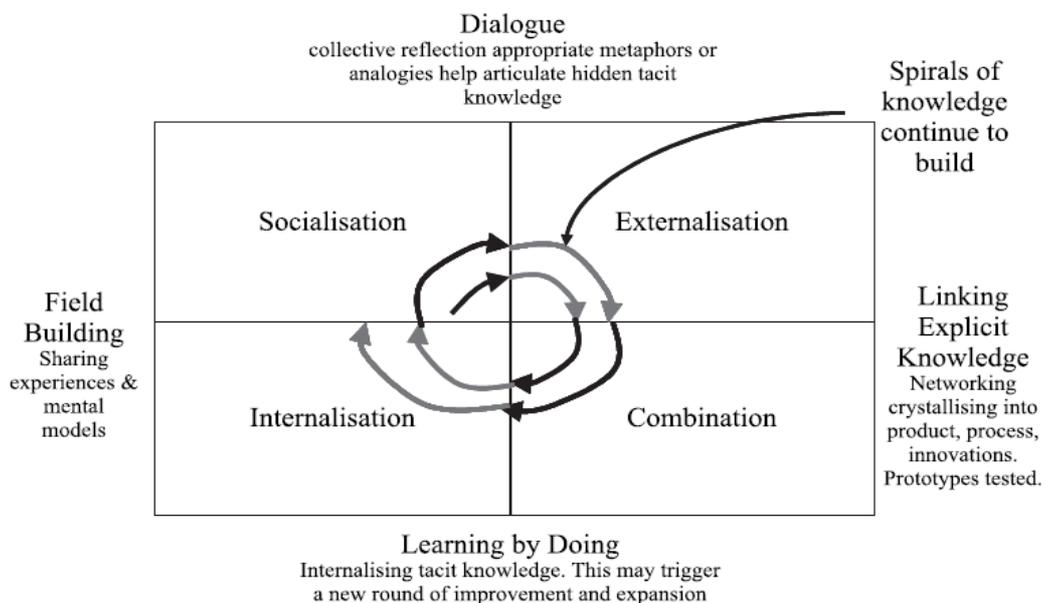


Figure: Knowledge Management model or the so called SECI cycle of knowledge creation (Nonaka and Takeuchi, 1995)

Socialization is the process by which synthesized knowledge is created through the sharing of experiences between people as they develop shared mental models and technical skills. Since it is fundamentally experiential, it connects people through their tacit knowledge (Walker and Finegan, 2007). To add, socialization occurs between product developers and customers. Interactions with customers before product development and after market introduction are, in fact, a never-ending process of sharing tacit knowledge and creating ideas for improvement (Nonaka and Takeuchi, 1995).

On the job training is a good example of socialization suggested by Nonaka and Takeuchi.

Externalization comes next, as tacit knowledge is made explicit. Here, the creation of conceptual knowledge occurs through knowledge articulation in a communication process that uses language in dialogue and collective reflection. The uses of expressions of communication are often inadequate, inconsistent, and insufficient (Walker and Finegan, 2007). They leave gaps between images and expression, while promoting reflection and interaction. This therefore triggers dialogue.

The externalization mode of knowledge conversion is typically seen in the process of concept creation.

The next process is **combination**, where explicit knowledge is transformed through its integration by adding, combining and categorizing knowledge (Walker and Finegan, 2007). This integration of knowledge is also seen as a systemizing process. This mode of knowledge conversion involves combining different bodies of explicit knowledge. Individual's exchange and combine knowledge through such media as documents, meetings, telephone conversations, or computerized communication networks (Nonaka and Takeuchi, 1995).

Finally, in the next process explicit knowledge is made tacit by its **internalization**. This is a learning process, which occurs through the behavioral development of operational knowledge. It uses explicit knowledge, like manuals or story telling, where appropriate (Walker and Finegan, 2007). According to Nonaka and Takeuchi (1995), internalization is a process related to "learning-by-doing". When experiences through socialization, externalization and combination are internalized into individuals' tacit knowledge bases in the form of shared mental models or technical know-how, they become valuable assets (Nonaka and Takeuchi, 1995).

Having stressed the importance of knowledge and several types of knowledge conversions, the following section will be adding by addressing the subject of Human resource. The latter is a major component in generating knowledge as well as developing successful innovations.

B. Human Resources Management

As we have seen from the above sections in this thesis, one can say that knowledge and knowledge management are driving forces of innovation and organizational performance. The question that can arise from such an argument is as follows: “what is the source of that knowledge? Who are the bearers of knowledge?” Human beings are an important source of knowledge. Knowledge originates and resides in human beings Organizations cannot create knowledge without individuals (Nonaka and Takeuchi, 1995 and Anantatmula, 2007). “Employees” in organizations are no longer considered as “laborers” who only contribute their manpower (Lin and Kuo, 2007). Employees are nowadays referred to as “intellectual capital” (Carneiro, 2000 and Gloet and Terziovski, 2004). Individual human beings are the ultimate knowledge creators and bearers (organizations do not think by themselves, although they may have “knowledge enabling” contexts and “memory” systems) (Oltra, 2005). In this age of knowledge-based economies, qualified human resources are the key to business success, since good investment on human resource will lead to successful knowledge generation. According to Lin and Kuo, 2007, in order to improve the quality of human capital, the importance of Human Resource Management (HRM) strategies cannot be ignored. Hence, organizations nowadays have to work hard on developing human resources strategies, in line with business strategies, driving innovation and organizational success.

The aim of this section is to analyze the extent of the contribution of Human Resource Management (HRM) activities towards an organizational level of KM practices. These activities are seen as particularly important in managing people in organization and their impact on the developments of innovations. I will be analyzing it in light of the below six areas suggested by Goh and Yahya (2002):

1. Selection methods,
2. Training,
3. Decision-making,
4. Career systems,

5. Performance appraisal; and
6. Reward and compensation.

1. What is “Human Resource Management”?

Different definitions of that term exist. But straight forward definitions of human resource management are difficult to find. A typical definition of HRM is that it is about the management of the organization’s employees (Carneiro, 2000). HRM can be defined as strategic personnel management emphasizing the acquisition, organization and motivation of human resources (Armstrong, 2000 and Carneiro, 2000). Svetlik and Costea (2007) hold that understanding HRM depends highly on the perspective taken: HRM could be conceived as traditional personnel management, as a fusion of personnel management and industrial relations, as a resource-based employment relationship or as a part of strategic managerial function. With respect to this, HRM involves managing employees, their interpersonal relations and relations with the organization. All in all, human resource management (HRM) is the strategic and coherent approach to the management of an organization's most valued intellectual assets - the people working there who individually and collectively contribute to the achievement of the objectives of the business (Carneiro, 2000; Jimenez and Sanz-Valle, 2005; wikipedia.org).

Having defined HRM and stressed on the importance of human capital, it is worth studying the latter. Human capital, as mentioned above, is one the crucial assets of any organizational success. Human beings, or employees, are the bearers and creators of knowledge that helps in having successful innovations which in turns might or might not lead to organizational success (Galbraith, 1984; and Jimenez- Jimenez Sanz-Valle, 2005). The latter depends on how innovation processes are managed. This will be more elaborated in the last section of this chapter. Coming back to the scope of this section, employees create knowledge (Nonaka and Takeuchi, 1995). An organization cannot create knowledge without individuals. Hence organizations should be working on improving investing in its human capital. Managers should become aware that the great challenge is settled

on the efforts to innovate, to exploit technological advances, competitors' failures, industry opportunities, and the investment in knowledge processes and employees. Hence, organizations should develop the ability to stimulate employees in order to obtain better effective levels in what concerns knowledge creation and generation as well as innovation (Carneiro, 2000). To stimulate the development of creative skills, management should point out some directions, according to Carneiro (2000), to the most important intellectual asset of the organization (employees):

- ✓ To assist employees in creation and using knowledge (Yahya and Goh, 2002);
- ✓ to be able to define objectives of each task in a systemic network in order to share knowledge and available information with others through the establishment of appropriate networks(Yahya and Goh, 2002);
- ✓ to increase the level of individual commitment;
- ✓ to be entirely aware of the amount of resources (equipment, software, materials, assistance) that they are going to need; and
- ✓ to ask for answers, creativity, and innovative solutions.

2. The relationship between KM and HRM

As we all know that the rapid change and growth in technology has led to an economy where competitive advantage is increasingly based on the successful application of knowledge (Lengnick- Hall and Lengnick-Hall, 2003 and Gloet, 2006). Knowledge, with its intangible aspects, is nowadays becoming a crucial characteristic of economic activities, as opposed to tangibles such as goods, services or production processes (Darroch, 2005). The rise of the knowledge economy has seen a proliferation of information and communication technologies, joined with greater organizational complexity. This will in turn lead to radical changes within HRM in order to be able to meet the changing demands in knowledge. Traditional HRM functioned under narrow operational boundaries; in the knowledge economy the role of HRM needs to expand, looking both within

and outside the organization (Gloet, 2006). The traditional focus on managing people has been broadened to managing organizational capabilities, managing relationships and managing learning and knowledge (Lengnick-Hall and Lengnick-Hall, 2003, Darroch, 2005). The role of HRM is also expanding to focus on developing themes and creating environments contributing to learning, as well as to the acquisition, sharing and dissemination of knowledge within organizations.

According to Gloet (2006) and Gloet and Terziovski (2004), a revitalization of the HRM function to respond to the demands of the knowledge economy and to develop linkages with KM requires major changes across four key practices areas: Roles, Responsibilities, Strategic focus and Learning focus.

- ✓ **Roles:** According to the above mentioned authors, HRM's role will be focused more on human capital steward, knowledge facilitator, relationship builder and rapid deployment specialist. The human capital steward recognizes the value of intellectual capital, must ensure that human capital is available, effective and that it will grow in value; this means brokering the services of knowledge workers. The knowledge facilitator places emphasis on learning and development, the effective management of knowledge and creating environments conducive to knowledge creation, sharing and dissemination. The relationship builder focuses on creating and sustaining networks and communities of practice, of joining together people in various parts of the supply chain in new ways. The rapid deployment specialist faces the challenge of rapidly changing markets where information, business processes and organizational design can be combined in different ways to meet ever changing dynamic business needs.

- ✓ **Relationship:** HRM in the knowledge economy should reflect a responsibility for developing and sustaining organizational capabilities through activities that overlap with traditional business functions such as strategy formulation and implementation, finance and marketing, as well as new functions such as KM. This requires developing new

relationships that reflect a shared responsibility among managers, employees, customers and suppliers for HRM (Lengnick-Hall and Lengnick-Hall, 2003; Soliman and Spooner, 2000; Yahya and Goh, 2002).

- ✓ **Strategic Focus:** in today's knowledge economy, a primary focus of HRM should be on the development of human capital and the management of knowledge. HRM's focus should be more towards creating and developing the organizational capabilities that form part of contemporary KM strategies geared to creating wealth from intellectual capital while maintaining a commitment to sustainability imperatives.

- ✓ **Learning:** An essential aspect in the knowledge economy is the need for learning. The role of HRM is also expanding to focus on developing themes and creating environments contributing to learning, as well as to the acquisition, sharing and dissemination of knowledge within organizations. This includes creating and sustaining learning environments and nurturing communities of practice. The new role for HRM includes managing intellectual capital and developing human capital within the organization. All in all, organizations should be focusing more on developing learning environments for the generation and creation of knowledge through lessons learned and surfacing knowledge, know-how, learning by doing. In addition to that, Lengnick-Hall and Lengnick-Hall (2003) and Gloet (2004) see HRM as fundamental in developing and sustaining a learning focus through facilitating continuous learning, identifying sources of employee knowledge, understanding the mediators that facilitate knowledge sharing and making information available to employees.

To sum this section up, HRM does play an important role in managing knowledge. The question then is "Does KM play an important role in HRM?" The following

section will be answering that question and will be concluding as well by presenting a visual representation of the link between HRM, KM and Innovation.

3. The meeting of HRM, KM and Innovation

One of the important implications of KM in relation to the innovation process is the emphasis that it places on the role of human resource management (HRM) factors. While often ignored in the existing literature, the influence of HRM factors on the innovation process is brought into a sharper process if we view that process as the intersection of two flows; the flow of knowledge and the flow of people (Scarbrough, 2003). While earlier sections of this thesis highlighted the importance of knowledge flows to the innovation process, the initial focus here is on the flow of people and management's influence on that flow as expressed in HRM policy and practice.

Six areas suggested by Goh and Yahya (2002) and Scarbrough (2003) will be used to explain the relation between HRM, KM and Innovation processes:

1. **Selection methods**: selection methods are seen as an important influence on the development of the project teams which are often an integral feature of the innovation process. Selection of individuals with both appropriate skills and appropriate attitudes has been identified as crucial to the project team's ability to integrate knowledge from diverse sources (Nonaka and Takeuchi, 1995). New forms of selection which are more dynamically related to the interests, careers and attitudes of employees Scarbrough (2003). New electronic ways of identifying and up-dating employee competencies may be an important ingredient here.
2. **Training**, the broad application of training in order to develop the employee skills and knowledge needed for innovation. Training programs should be implemented for employees to be able to acquire new knowledge and apply it in the workplace. Some studies have found evidence for a positive relationship between the amount of training that the

firm provides to its employees and innovation (Jimenez-Jimenez and Sanz-Valle, 2005).

3. **Decision-making**, it does have a significant influence on KM. In other words, organizations should involve its employees in making decisions. Every employee should be free to report his decision to his manager and that will in turn be reported to the top management. This will lead to the involvement of all employees in the organization and will also lead to sharing knowledge within the organization.
4. **Career systems**, career systems may reward the individualistic acquisition of knowledge by a few star performers, but may equally be designed to promote the sharing of knowledge among wider communities of practice (Brown and Duguid, 1991). They may also involve a move away from traditional managerial hierarchies. Thus, long-term achievement within a particular discipline may be rewarded by promoting individuals to senior expert positions within a “dual career” system.
5. **Reward and compensation**: compensation strategies aimed at promoting knowledge-sharing are an increasingly prevalent ingredient in the innovation process. Compensation for knowledge-sharing can be both tangible (bonuses or one-off rewards) and intangible (status and recognition). Team innovation award should be also given to groups coming up with the most innovative idea.

Schuler and Jackson’s model is a good one to include since the above areas are covered in his model. This model adds to the above mentioned by pointing out the main point in each activity.

	Miles and Snow's model	Schuler and Jackson's model
<i>Recruitment and selection</i>	Emphasis: "buy" Hiring almost exclusively from outside the organisation Selection may involve pre-employment psychological testing Very little employment security given Little if any socialisation taking place within the organisation	External sources of recruitment Technical and research competencies High employment security
<i>Training</i>	Skill identification and acquisition Limited training programmes	Broad application Employees are responsible for learning Jobs that allow employees to develop skills that can be used in other positions in the firm
<i>Development and internal career opportunities</i> <i>Performance appraisal</i>	Very little use of internal career ladders Results-oriented procedure Identification of staffing needs Division/corporate performance evaluations	Broad career paths Mandatory competency growth Process and results criteria Performance appraisals that are more likely to reflect longer-term and group-based achievements
<i>Compensation</i>	Cross-sectional comparisons Oriented toward performance External competitiveness Total compensation heavily oriented towards incentives and driven by recruitment needs	Many incentives Internal equity Low pay rates but employees are allowed to be stockholders and have more freedom to choose the mix of components that make up their package Team innovation awards
<i>Other HRM practices</i>	Low employee participation Implicit job analysis Job enrichment	Competency-based pay High employee participation Implicit job analysis Job enrichment Cross-functional teams Communication: feedback on new product sales

Source: Daniel Jimenez-Jimenez and Raquel Sanz-Valle (2005)

The implications of these HRM factors for the management of knowledge and innovation are profound. Where such factors are linked to the firm's business strategy, they may represent a powerful means of aligning employee skills and behavior with the flows of knowledge needed to develop innovations.

As mentioned in the beginning, "does innovation have to be managed?" the answer to that question will be elaborated in the coming section.

C. Innovation

Before defining innovation, it is worth discussing its importance in today's world economy as well as the competitiveness of every organization. Innovation is an important part of organizational performance and a company's innovative capacity may be dependent on upon its ability to take advantage of its knowledge assets (Aramburu and Rivera, 2006). To add, innovation fuels organizational growth, drives future success, and it is the engine that allows businesses to sustain their viability in a global economy (Gaynor, 2002). In line with the above mentioned, Du Plessis 2007 and Goh2005, agree with the fact that innovation is extremely dependent on the availability of knowledge and therefore the complexity created by the explosion of richness and reach of knowledge has to be identified and managed to ensure successful innovation as well as firm performance. To sum up, knowledge, human capital and innovation are the main engine that drives to organizational success and in turn leads to excellent market performance. This will be more elaborated in the following chapter entitled "conceptual framework" that will shed light on the framework that will be used in my study, coupled with my empirical study, to prove that effective use of knowledge and human capital will lead to successful innovation processes which will in turn lead to excellent market performance.

Having talked about the importance of innovation in today's economy, let's now define innovation. Numerous definitions of innovation exist. Innovation is about change. In other words, innovation is about introducing new ideas/concepts in the shape of a process or a product (Chen and Lin, 2007). However, most definitions share common themes relating to managing human capital and knowledge as well. According to Gloet and Terziovski 2004, knowledge may be turned to into new products or services that will play a crucial role in firm's competitive advantages. Livingstone et al (1998) defined innovation as "new products or processes that increase value, including anything from patents and newly developed products to creative use of information and effective human resource management systems". My definition of innovation is in line with the above mentioned definitions. Innovation, is the creation of products and services that adds value to the organization with effective use of its resources. These resources are human capital

and knowledge without forgetting the role of technology in facilitating knowledge sharing in the innovation process. According to Therin 2002, “when a firm has the ability to acquire knowledge and integrate existing knowledge, the firm should be good at producing process or product innovation”. To sum up, and extending the above definitions, Lundvall and Nielson (2007) defines innovation processes as a process of interactive learning in which those involved increase their competence through engaging in the innovation process. Interactive learning takes the form of the below:

- ✓ “Learning by using” to explain why efficiency in using complex systems increased over time (the users were airline companies introducing new models) (Kim, 1998).
- ✓ “Learning by interacting” points to how interaction between producers and users in innovation enhances the competence of both (Lundvall, 2007).
- ✓ “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 (von Hippel and Tyre, 1995, Kim, 1998).

1. Seven Innovation Rules

Having defined innovation in the previous section, it is important to address the issue of setting rules for innovation processes inside any company. As mentioned in the above section, although every company has its unique combination of innovation strategy, which of course has to be in line with its business strategy, there exist some rules of innovation that need to be followed. The main goal of these rules is to help top managers to focus on the parts of innovation that need attention (Davila, Epstein and Shelton, chap 1). This implies that a periodic diagnostic need to be implemented in order to make sure that innovation is well managed inside the organization. As a result, companies will be able to audit their performance and maintain the right mix of innovation needed for growth.

As mentioned in Chapter 1 of “Making Innovation Work”, the seven rules of innovation are as follows:

1. Exert strong leadership on the portfolio decisions and encourage truly significant value creation.
2. Integrate innovation into the company's basic business mentality.
3. Align the amount and type of innovation to the company's business; select a "Play to Win" or a "Play not to Lose" innovation strategy.
4. Manage the natural tension between creativity and value capture so that the company generates successful new ideas and gains the maximum return on its investment.
5. Neutralize organizational antibodies that kill off good ideas because they are different from the norm.
6. Recognize that the fundamental building blocks of innovation are networks that include people and knowledge, both inside and outside the organization.
7. Create the right metrics and incentives for innovation

Having listed the seven innovation rules, it is essential to explain them briefly by linking them to how management plays important role in innovation.

It is not surprising that “leadership” is the first innovation rule. People and the process of managing them are the main important aspect in any organization (Davila, Epstein and Shelton, Chap 1). That being said, managers should of course exert some power over people in organization, while giving them chances to freely express their ideas that would serve as input in the innovation process. As a result, “innovation and innovation management depends on the leadership at the top” (Davila, Epstein and Shelton, p. 13). The senior management team have to responsible for choosing the right people and creating a balanced portfolio of incremental, semi-radical and radical innovation.

The second rule is about integrating innovation into the company's basic business mentality. This is where management plays an important role. “Innovation is not a rabbit you pull from a hat on special occasions, it must be managed and become

an integral part of the way a company operates everyday” (Davila, Epstein and Shelton, p11).

The third rule of innovation is about aligning the amount and type of innovation to the company’s business. Managers in the organization have to bear aware of the fact that by select a "Play to Win" or a "Play not to Lose" innovation strategy, the amount and type of innovation have to be aligned to the company’s strategy (Davila, Epstein and Shelton, p 15, 16).

The fourth and fifth rule can be explained together. Managing the natural tension between creativity and value capture is the role of management in any organization. Having said that, innovation management is about managing creativity and so that the company generates successful new ideas and gains the maximum return on its investment. By doing so, organizations have to neutralize organizational antibodies that kill off good ideas because they are different from the norm. That would lead to a successful and well managed innovation process.

The sixth rule is about creating networks inside and outside the organization. Managers in any organization/company should recognize that the fundamental building blocks of innovation are networks (Davila, Epstein and Shelton, chap1, p24). These networks include people and knowledge, both inside and outside the organization, and of course these networks have to be well managed. This implies that having a good and successful innovation process should be well managed or it would lead to a failure.

The final rule is about creating the right metrics and incentives for innovation. “People react to positive and negative stimuli, and your company’s innovation is no exception” (Davila, Epstein and Shelton, p. 12). The needed level of innovation will only be achieved if people have the proper rewards.

To sum up, having listed and discussed the seven innovation rules, the following section will be covering how to manage innovation through the creation of systems, referred to as “Innovation Systems”. This topic will be fully covered in the following part.

2. Innovation systems

Having a strategy in innovation as well as a good structure of your organization to enable innovation to thrive, are not the only two components that lead to a successful innovation. Systems are the next important elements to be considered. Systems have to be adequate and well managed. It is the management systems that are the mechanisms that to a great extent will make innovation happen.

According to Davila, Epstein and Shelton, innovation systems are referred to as “established policies, procedures, and information mechanisms that facilitate the innovation process within and across organizations” (Davila, Epstein and Shelton, p 120). They can also be referred to as “management innovation systems”. They are the mechanisms by which innovation (and other tasks of organizations) gets done”. In addition to that, they determine the shape of daily interaction between people in the organization. As a result, organizations should design and implement innovation systems while bearing in mind that they are crucial for the success of their innovation strategy. To add, innovation systems fulfill five important roles in any organizations that contribute to the success of any innovation process. (Davila, Epstein and Shelton, p, 121). According to the author, the below are the roles:

- ✓ **Efficiency**, which is in terms of moving ideas from concept to the market in a timely manner and with efficient use of resources.
- ✓ **Communication**, which is important to establish internally and externally
- ✓ **Coordination**, which acts to facilitate the activities of the projects and the teams.
- ✓ **Learning**, which is a crucial component in any innovation process. Therefore a system that explicitly identifies and acts upon knowledge accumulation is necessary.
- ✓ **Alignment** is necessary in order for the parts and people to function together.

As mentioned above, the first role of innovation systems is to increase efficiency of the innovation process. The system implemented needs to move great ideas from “concept” to the “commercialization” phase effectively and efficiently (Davila, Epstein and Shelton, p 121). The second role of innovation systems is to create lines/channels of communication not only inside the company but outside as well (Davila, Epstein and Shelton, p. 122). Managers should work on creating a boundaryless organization where communication can be shared inside the organization. In other words, communication of specialized knowledge necessary to innovation process should flow easily. This will lead to the success of innovation process.

The third role of innovation systems is coordination between projects and team with minimum efforts. This role is linked to the above. By having good communication channels, this will facilitate the coordination between different departments within the organization as well as the organization’s value chain (i.e, suppliers, customers...) (Davila, Epstein and Shelton, p.123).

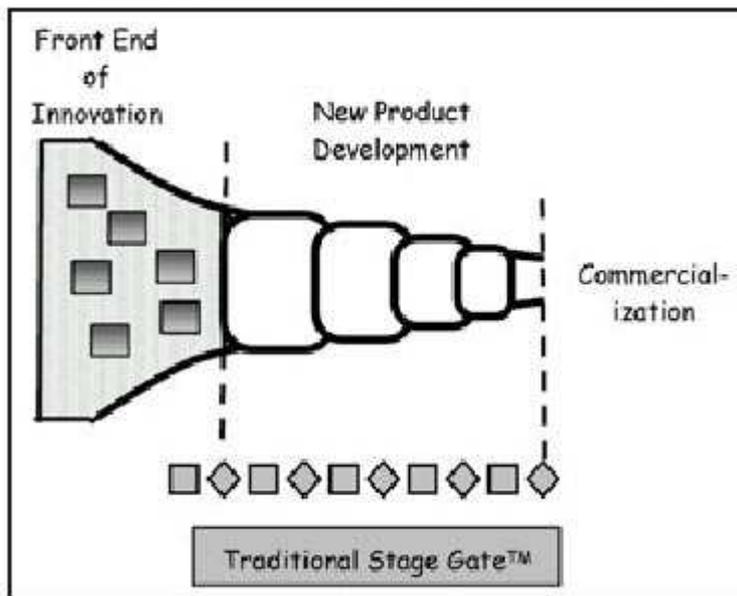
The fourth role is learning. “Systems establish a discipline to manage the knowledge that is constantly created in innovation. Systems can capture the information on the innovation performance throughout the life of the initiative (ideas through commercialization) and make it available to the innovation team and management” (Davila, Epstein and Shelton, p.123). Therefore, a system that explicitly identifies and acts upon knowledge accumulation is necessary.

The last role of innovation systems is the most important one in every organization. It is about aligning the innovation strategy to the business strategy. “People throughout the organization need to understand the company strategy and its implication for operations” (Davila, Epstein and Shelton, p. 124). Managers nowadays cannot rely on informal ways of communication to achieve that alignment. “A system is needed to ensure consistency of message and inclusiveness. Innovation systems also align organizational objectives with personal objectives” (Davila, Epstein and Shelton, p.124). Information about the innovation performance needs to be communicated and compared to the innovation objectives. This “allows people in the organization to assess how their actions fit the organization’s innovation objectives” (Davila, Epstein and Shelton, p. 124). To sum up, properly systems designed properly can help bring together

the right people along with the right knowledge to have a successful innovation process.

Having defined the roles of the innovation systems, the process of choosing and designing innovation system comes next. The author, sheds light on the later by illustrating a funnel framework for innovation (see diagram below).

Exhibit 1: Traditional Model of Front End of Innovation



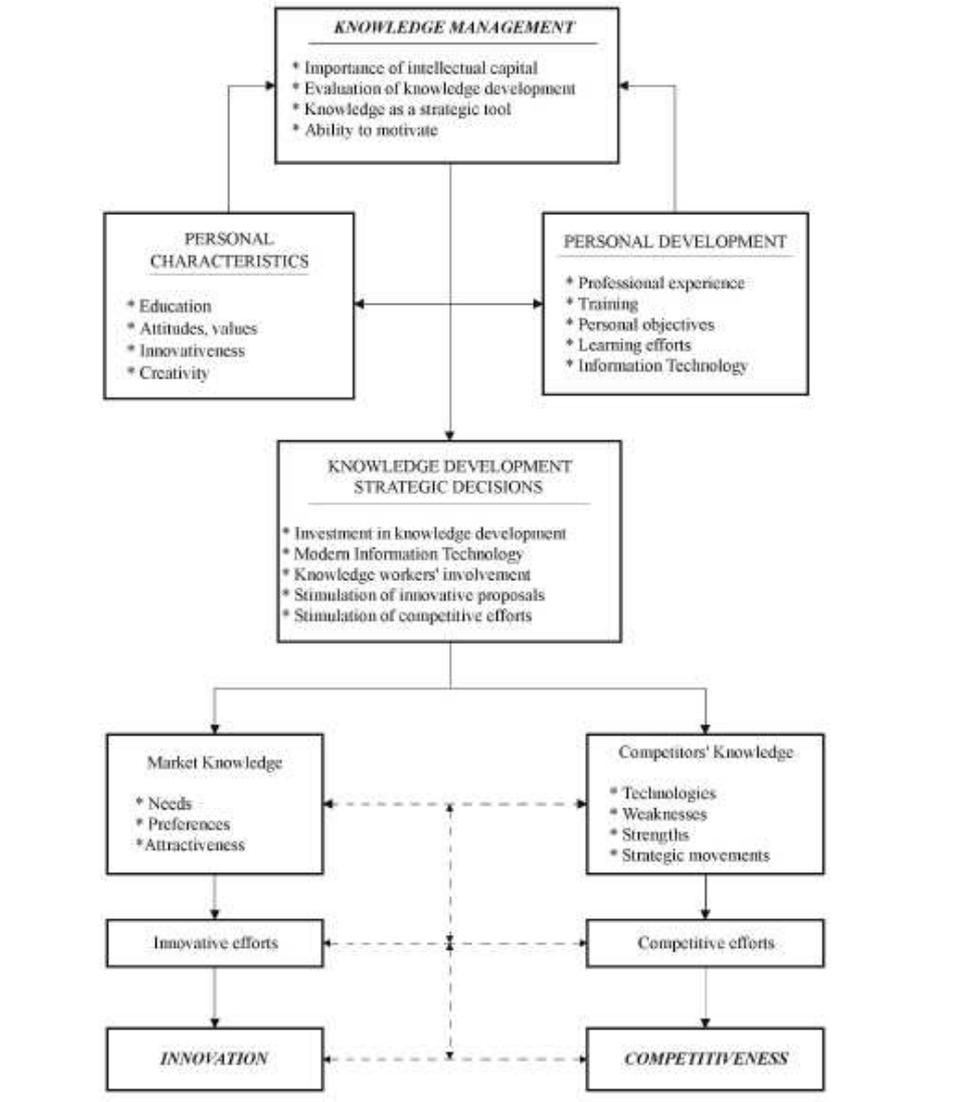
Management systems play an important role in the innovation process. According to the author, the below three stages are the important ones:

1. Ideation, generating ideas and moving them across the organization (which is referred to in the diagram as “Front End of Innovation”).
2. Funding decisions, where selected innovations receive initial funding to move ahead or are disclosed (which is referred to in the diagram as “New Product Development”).
3. Execution, which relates to commercialization.

By looking at the above stages, one may think that innovation does not happen that easily. Innovation, to be successful, has to be managed. So managers nowadays should shift their attention to how to manage innovation within the organization.

III. Chapter 3: Theoretical Framework

This chapter will be showing the conceptual frameworks that will be used later in the thesis to accompany the empirical findings. Adding to the below framework, Nonaka and Takeuchi model of knowledge conversion, introduced earlier, will be used as well.



Source: Carneiro, 2000. "How does Knowledge Management influence innovation and competitiveness?"

The above framework emphasizes that innovation and competitiveness can be a function of the KM. This model takes into account numerous determinants (determinant factors) of the relationships among various fields. The top part of the

model shows the most common factors that usually define management's attitudes and deals with the following questions (Carneiro, 2000):

- ✓ How important is intellectual capital?
- ✓ Is training one of the important aspects of knowledge generation?
- ✓ Is knowledge considered as a strategic tool and economic asset?
- ✓ Are managers prepared to motivate knowledge development?
- ✓ Are managers able to stimulate the potential capacities of their human capital? Is human capital stimulated to deliver the needed knowledge?

As mentioned earlier in the thesis, KM has to deal with two important aspects:

- ✓ **Personal characteristics** of its human capital. This includes: education, innovativeness, creativity and attitudes and values (Harrington, 2005; Lundvall and Nielson, 2007 and Leonard-Barton, 1995)
- ✓ **Personal development** of its human capital. This include: professional experience, training, learning efforts, in formation technology and personal efforts (Lin and Kuo, 2007; Scarbrough, 2003)

According to the above mentioned, the most important aspect of KM is personal development. Managers' attention must be focused on personal development. To obtain an effective knowledge level, investment in knowledge development is needed. Managers should improve their ability to motivate human capital (workers) to attain higher knowledge levels, because the arousal of this set of intellectual needs may be caused by external stimuli (Carneiro, 2000). Motivations should be intensified, because they should impel human capital to increase their knowledge levels. In addition to that, managers should encourage its human capital (workers) to dig for market knowledge. In other words, it is managers' role to inform its human capital to be closer to customers' needs and desire. This movement will be decisive in terms of innovation and can contribute to a stronger competitiveness.

IV. Chapter 4: Research Methodology

This chapter will be briefly presenting the type of research method that was used to write my thesis as well as the data collection method. Limitations were already mentioned in the beginning of the thesis; this is why they are not included in this chapter.

A. Research Design

Before we start talking about the reason for which the case study approach was the one that the case was built on, let us look at the different visions about what a case study is meant to be. According to Yin, a “case study is defined as a research strategy, an empirical inquiry that investigates a phenomenon within its real-life context” (Wikipedia & Yin, 2002). “Case study research means single- and multiple case studies, can include quantitative evidence, relies on multiple sources of evidence and benefits from the prior development of theoretical propositions” (Wikipedia 2006). To add, Yin notes that case studies should not be mixed up with qualitative research and points out that they can be based on any mix of quantitative and qualitative evidence (Yin, 2002). This is also supported by another author which is Lamnek 2005. He defines the case study approach as "a research approach, situated between concrete data taking technique and methodological paradigm" (Lamnek, 2005).

This thesis has been based on the research case study model of Yin (2004). Although this method of research has received its fair share of criticism, arguing it is a weaker approach (less quantifiable and objective) to conducting research when compared to other means, it has its merits when doing exploratory research. In my case, I wished to present what the literature has to say about my topic and apply it to my primary research conducted at Etisalat.

The reason behind choosing this method is to explore how Etisalat has succeeded to be innovative through the use of its knowledge assets. In addition to that, I have chosen this method to show how successful this company is investing in its human capital to get the most of its knowledge workers.

B. Data Collection

According to Yin (1994) there are six sources of evidence that can be the focus of data collection for case studies: documentations, archives, interviews, direct observations and physical artefacts.

Due to the fact that this research is conducted as a qualitative and not as a quantitative case study, archival records cannot be used. Physical artefacts, documentations and direct observations are as well ruled out due to the limited resources. This leaves the choices with just one source of evidence, which were interviews.

According to Yin (1994), there are three kinds of question methods: Questionnaires, telephone interviews and personal interviews.

The type of interview that was used in the thesis was telephone interview. When conducting the interview for my thesis respondents included managers of several departments inside the company. I have chosen this type of interview due to time and resources limitations. Emails were sent to inform the interviewee with the topic of my thesis. No questions were sent before hand. This was done intentionally so that they can talk freely without being tied with specific questions. Of course, they were interrupted when I needed additional information as well as clarifications. The interview lasted almost four hours in total.

V. Chapter 4: Etisalat¹

A. Background of the company in study

Ranked by the Middle East magazine as the 6th largest company in the region in terms of capitalization and revenues, Etisalat is also 140th in the Financial Times Top 500 Corporations in the world in terms of market capitalization. Etisalat operates in 14 countries with a combined population of over 446 million, some among which are UAE Pakistan Saudi Arabia Sudan and Egypt.

Etisalat Egypt is a subsidiary of Etisalat U.A.E., the sole telecommunications services provider in the United Arab Emirates, and the first 3.5G network operator in Egypt. In November 2007, Etisalat upgraded to 3.75G which is the marketing term for HSUPA (High Speed Uplink Packet access). The Uplink channel carries information from the mobile terminal to the network such as file uploading, e-mail attachments and user response in interactive games. HSUPA is an enhancement of 3.5G networks that increases upload speeds. Current handsets support up to 1.4 Mbps. HSDPA stands for High Speed Downlink Packet access. A Downlink channel carries information from the network to the mobile terminal such as video and music downloads. Etisalat is the first mobile operator in Egypt to offer Downlink speeds up to 7.2 Mbps which is two times faster than 3.5G downlink speeds. It is currently available in specific locations in Cairo and outside Cairo and expected to be available where there is 3G network by the end of November 2007.

The incumbent was bought based on a consortium lead by Etisalat U.A.E. in July 2006. Joining the consortium were:

- ⊗ The Egyptian National Post Authority with a 20 % share,
- ⊗ National Bank of Egypt with a 10% share,
- ⊗ Al Nabodah Investment Company with a 1.5% share,

¹ The content of this chapter is taken directly from the answers of the interview that was conducted. Additional information from any other sources was not added.

- ⊗ Technical Investment Company with a 1.5% share; and
- ⊗ Commercial International Bank with a 1% share.

Etisalat Misr is one of 14 service providers managed by Etisalat in the Middle East, Asia and Africa. Etisalat currently has access to a potential market of over 400 million subscribers and today Etisalat services over 32 million subscribers including the total number of fixed-line, Internet, mobile and television from each of its subsidiaries.

1. Network and coverage:

Being the sole 3.75G network in Egypt has given Etisalat its edge in the market providing faster connection and state-of-the-art equipment and technology. Although the incumbent is still new in the market, network coverage has extended to make sure there is coverage in all major cities including Cairo, Alexandria, Zagazig, Tanta, Sharm el Sheikh, Luxor and many more. Etisalat has set a goal to reach full network coverage in all of Egypt, whether there are inhabitants in that area or not, by the end of 2008.

2. The assets of ETISLAT

The company's intangible assets or intellectual capital is divided into the following:

- ✓ Human assets (skills, knowledge and experience)
- ✓ Organizational capital (systems, processes, databases)
- ✓ Customer assets (number, quality and depth of relationship)
- ✓ Intellectual property (patents, copyrights, trademarks, etc)
- ✓ Financial capital (assets and liabilities).

Having listed the company's assets, when the chairman and vice president of the company were asked about the most important asset of the company, they referred to people, who are bearers of knowledge, as their greatest asset. They also said

that according to them, people working for the company are no longer called employees but knowledge workers.

Building on the above, according to the two managers, knowledge is referred as a key organizational asset and its creation, dissemination and application as a critical source of competitive advantage. In addition to that, knowledge is seen as requiring the use of a combination of core skills and competencies in information as well as in human resource management, including the creation and maintenance of organizational structures and cultures that facilitate organizational, team and individual learning and the sharing of knowledge and information.

Knowledge management, according to them, is referred to as the process of managing that knowledge and making it accessible to the whole organization. In addition to that, KM facilitates knowledge sharing among people in the organization.

Etisalat's knowledge includes, on the one hand, its **specific knowledge** that differentiates it from the competitors. This specific knowledge characterizes Etisalat's capability to design, produce, sell, and support its products and services. On the other hand, the **individual and collective skills** that characterizes its capabilities to act, in accordance with circumstances, and to evolve and to be able to be successful in the market. According to the interviewee, the above mentioned types of knowledge can be summarized into two main categories: "know-how" and "skills".

The first category, which they refer to as "know-how", is represented in the company's experience and culture. In addition to that, it is always marked by the circumstances of its creation. According to the interviewee, this type of knowledge is often explicit, formalized and specialized. Skills, which are the second category, are considered as a very important asset that contributes to the success of the company. This type of knowledge is often implicit, i.e. found in knowledge workers in Etisalat. It is acquired with practice, adaptable and often transmitted orally and tacitly. Here comes the importance of two factors: technology, that plays a crucial role in making this knowledge accessible to every knowledge worker in Etisalat, and the "refresh of knowledge" which is done by several methods. Among these methods are training and development and many other techniques that will be fully explained later in this section.

To summarize the above mentioned, the key success factors for Etisalat's future prosperity are people (which are referred to as knowledge workers) and knowledge. Knowledge according to the interviewee can take different forms. Among them, are knowledge of customers, knowledge of markets, knowledge in people who can strike venture alliances deals, expert in specific technologies and many others. The challenge is how to maximize knowledge assets. The question that arises is as follows: "what are the strategies that Etisalat adopts to create future wealth and maximize return on its knowledge assets?"

When this question was asked, the interviewee replied by mentioning that there are two main needs of strategy. The first need focuses on making known and accessible knowledge that already exists. This is known as the revitalization of existing knowledge. This is done through different types of technologies. In Etisalat, intranet and databases plays a crucial role in keeping everyone connected in the company. This type of technology facilitates "knowledge sharing" among knowledge workers in Etisalat Egypt.

The second major and most important need is that of innovation. Innovation, according to the interviewee, is the creation of knowledge and revitalizing existing knowledge and commercializing it as valuable products and services. They added by mentioning that innovation or coming up with new ideas is what differentiate Etisalat Egypt from its competitors. The challenge, according to them, is to convert creative ideas into products and services or improved business processes, doing it faster and better than competitors. This can be done easily if the company invests a lot in its knowledge workers. Companies have to provide a climate where innovation can thrive. Indeed, what differentiates Etisalat Egypt from its competitors is its high investment in its knowledge workers as well as making available collaborative technologies. The following section will be fully showing how Etisalat sets its strategy to ensure that knowledge workers will be able to provide it with the needed knowledge, without forgetting to stress on the importance of Etisalat's investment in its knowledge workers.

3. The strategy of Etisalat

Having mentioned above that for every company to succeed or to innovate, it has to set a strategy on how to invest on human capital. The latter has to be in line with the business strategy. From my interview, seven concepts came to the fore. All of them share the same objective: “high investment in human capital leads to innovation and outstanding organizational performance”.

✓ **Recruitment based on personal characteristics.** Etisalat Egypt needs workers with different skills and perspectives, values and attitudes, resulting in different recruitment and selection strategies. The focus is on the employment of ‘smart’ and resilient people who are innovative and curious and have the ability to work in teams or groups with the aim of sharing expertise. In other words, Etisalat selects the “right” people to be placed in the “right” place. Etisalat hires people with creative ideas. The selection process is done after testing their capabilities.

Furthermore, knowledge workers are allowed to go beyond their job description. By doing so, Etisalat ensures to be one of the leading telecommunication companies in the market.

✓ **Retaining knowledge and knowledge workers.** The Human Resource department in Etisalat Egypt plays an important role in developing strategies, measures and policies to retain particular knowledge workers and their knowledge. Etisalat sets to itself a challenge by doing so. The challenge is the creation of an intellectually stimulating and challenging working environment, focusing on continuous learning, innovation and the intellectual growth and development of employees. Another challenge is implementing effective knowledge transfer methods e.g. intranet connecting all branches of Etisalat in the Middle East and many others that will be referred to in the section entitled “Process”.

✓ **Sharing knowledge within a trusting environment**. According to the interviewee, knowledge sharing does not come naturally, but within a safe and trusting environment, the spontaneous sharing of knowledge will occur more readily. As a result, this led Etisalat Egypt to establish an alignment between the overriding culture and the behavior of sharing. According to the company, time, opportunities, structures, policies, and procedures are established and aligned with the aim to connect people and encourage them to start talking to one another. Due to the volume of knowledge that knowledge workers in Etisalat possess, it needs to be extracted and validated and this should ideally take place within a setting where people trust one another.

✓ **Training and development**. Etisalat strategy focuses on learning, development and innovation; this requires developing and training workers for a different working environment. As knowledge workers furthermore require different skills in the knowledge organization and need to be trained and developed in what, when, how and where to share, access and use knowledge, Etisalat provides all needed sources of development and training. Among these are, learning from other either via observation, learning from experience (sharing of lessons learned and best ways of task performance), learning from experts, mentorship programs and storytelling.

✓ **Information Technology**. In Etisalat Egypt processes and procedures are developed to connect people with one another to enable knowledge sharing and to ensure that knowledge and its management eventually becomes part of organizational business processes, requiring the optimal alignment of people, technology and business processes.

B. Four Conditions enabling Knowledge Creation and Innovation

It may seem easy to create and share knowledge inside the organization. In reality, it is not as easy as people think. According to managers in Etisalat, the below conditions are set to enable knowledge sharing as well as knowledge creation.

- ✓ **Awareness of the target of Etisalat.** Knowledge workers are aware of the goal of the company as well as its target. In other words, workers in Etisalat Egypt are informed of the target that the company sets every quarter. This is done so that everyone in the company moves towards the success of that target. To add, this will lead to high commitment from the workers' side as they will be responsible to achieve the set goal.

- ✓ **Autonomy or “free employees” according to the managers.** What is meant by autonomy is that every employee in the company is free to do whatever he wants but bearing in mind the set goal by the company. In other words, employees are encouraged to act in the best way they think as long as it will lead to the achievement of the set target. In addition, knowledge workers in the company go beyond their job description in the sense that they do more than what they are asked for. This prevents being “strangled” by the managers in the company. Creativity is also welcomed as it is one of the most important criteria for selecting knowledge workers in Etisalat Misr.

- ✓ **Compensation and Rewards.** As mentioned in the “limitation” section, the aim of my thesis is not to be fully elaborating the reward system in Etisalat. Etisalat, like any company, have a structured rewards system that is adapted according to the type of project knowledge workers are involved in. According to the interviewee, the compensation structure of Etisalat embodies

respect for the contribution of each individual to the whole organization. Among them is what is called “profit share”. As every knowledge worker is involved in the achievement of the target set by the company, they are rewarded for their performance.

- ✓ **Investment in Human Capital.** What is meant by investing in human capital or knowledge workers is that Etisalat does what it can to enrich the knowledge of its workers. The following section will be detailing how Etisalat invests in its knowledge workers.

C. Investment in Human Capital (Knowledge Workers).

As mentioned earlier, Etisalat Egypt seizes every opportunity to enrich the knowledge of its knowledge workers. This process is also referred to as knowledge integration. The output of knowledge integration is learning since knowledge workers learn by acquiring knowledge from inside the organization and outside of it as well. Knowledge integration takes two forms: one internally and the other externally.

1. Internal Sources of knowledge

- ⊗ ***Lectures from experts (sessions).*** Experts in the communication field are invited to the premises to share their experience with knowledge workers in Etisalat.

- ⊗ ***Expatriates sent to Etisalat Misr.*** Managers are sent to Etisalat Misr in a regular basis to bring in the knowledge and experience that they possess. This leads to a radical increase in the performance of the organization since these expatriates have an asset that makes them different than other knowledge workers in Etisalat Misr.

☼ **Online Discussion with knowledge workers.** Since there is an intranet system that connects all knowledge workers in Etisalat Misr to Etisalat the mother company, any doubts are figured out by discussing it online with managers and other people in the organization. In other words, knowledge workers have the possibility to discuss any issue or topic that they need online.

2. External sources of knowledge (knowledge pull, pulling expertise from outside).

☼ **Knowledge Sharing Events.** Etisalat Misr sets events every week so that people can get together and share their expertise. It is done through face to face contact since the latter is important in the knowledge sharing process.

☼ **Universities.** Etisalat Misr encourages its knowledge workers to attend graduate schools to enrich their knowledge. This has of course some guidelines and rules that they have to abide by.

☼ **Training centers.** These are also another type of external knowledge. Knowledge workers are sent to training centers to be trained on the latest technology for example or even for a new course that is current in the market. It is worth mentioning that they are sent to centers to learn more and to enrich their knowledge in their field.

☼ **Training at the Mother Company.** Knowledge workers are sent to the mother company for training since it is the most important source of knowledge that Etisalat Misr relies on. Since Etisalat is the mother company, this means that all

types of needed information will be available there with high standard of accuracy and completeness. To add, Etisalat has a training system called “school”. Knowledge workers sent there are evaluated based on their performance during the “school” period and that in turn affects their remuneration.

D. Collaboration and Communication tools in the Innovation Process

For knowledge to be useful and manageable, collaboration, communication and coordination has to be enhanced. This is where technology plays a prominent role. As mentioned in the “literature review” section, Knowledge management is a combination of people and technology. This means that for KM to be successful, people and technology has to play a crucial role. This section will be addressing the importance of technology knowledge sharing, creation and dissemination. Collaborative technologies have the most impact on sharing and disseminate knowledge in Etisalat Egypt. The below technologies are the ones used in Etisalat Egypt. These technologies connect people to information, but more importantly people to people.

- ✓ **Internet/ Intranet**. Etisalat Misr has an intranet that connects its knowledge workers to knowledge workers in the mother company. This makes it easy for them to access any information, any where, at any time. Etisalat Misr’s online intranet provides a wealth of information to all users in the company. This is not simple as it might seem, this information has to be edited and well managed. One cannot ignore the role of knowledge editors who make knowledge available. In Etisalat Misr thanks to its technicians and knowledge editors, the information remains all the time well structured and available anytime for those who are in need of it.

- ✓ **Lotus Notes and Outlook.** This is also another type of technology that Etisalat uses to connect its knowledge workers. It is an email system where contact information about all knowledge workers in Etisalat is saved. This in turn facilitates to get the type of information needed from the person who has that needed information.

- ✓ **Video Conferencing.** As mentioned in the beginning, Etisalat Misr is a subsidiary of Etisalat the mother company located in the United Arab Emirates. To cross the geographical boundaries, Etisalat (the mother company) has set a video conferencing system that makes it easy for all knowledge workers to get needed information from experts in the mother company. According to them, this is the most important type of technology that they rely on when needing assistance or information from experts in the mother company. In addition to that, according to them, it facilitates to have a face to face conversation and discussion for dispersed knowledge workers in Etisalat Misr. Many needed information is accessible anytime instead of flying to the mother company.

E. The road to Innovation through Knowledge Management

This section will be showing how innovation happens when knowledge is well managed inside Etisalat. This will be done by using Nonaka and Takeuchi's SECI model. As mentioned in the previous chapter entitled "innovation", innovation is the creation of products and services that adds value to the organization with effective use of its resources. These resources are human capital and knowledge without forgetting the role of technology if facilitating knowledge sharing in the innovation process. Having already discussed the role of each of these resources, this section is mainly aimed at showing how the interaction of these resources leads to innovation.

The below are phases that the company went through to come up with the 3G (third generation) service by combining its resources: human capital and knowledge.

First Phase: The Sharing Process of Tacit Knowledge

As the title mentions, this phase is consisted of sharing tacit knowledge of knowledge workers involved in the project. Knowledge workers socialize their tacit knowledge they swap stories about contexts and experiences and thus expand their repertoire of how to use that knowledge. This is done by informal meetings organized outside or inside the organization so that everyone can contribute with the knowledge he/she possess. Furthermore, knowledge workers are proximate physically and can hear and observe how other colleagues involved in other projected acted. So apprentices work with other experienced knowledge workers help new knowledge workers to learn not just through language but by observation, imitation and practice. This is referred to by the interviewee as “on the job training (OJT)”.

Another alternative is the brainstorming process. Each knowledge worker is invited to come up with creative ideas related to the project in process and sharing what he/she has come up with with the rest of the knowledge workers who are also involved in project. This process is referred to as ideation, which is generating ideas and spreading them across the organization. But to effect that, teams are formed. This is done to ensure that the knowledge that is being shared is well managed and organized.

Second Phase: Turning Tacit Knowledge to Explicit Concepts

This phase is concerned with creating an explicit concept from the shared knowledge in the first phase. It is the output of phase 1. This phase involves turning value-added tacit knowledge into an explicit form often through metaphors for example “it is like this . . .” when designing or planning the project

in process using existing knowledge in a novel way. This includes documentation, explanation or recording the cumulative experience of the situation under consideration. In other words, in this phase shared knowledge is verbalized into words and phrases and finally turned to explicit concepts.

This process is the same as the externalization mode referred to by Nonaka and Takeuchi. Training programs that take place during the first day of entrance for new knowledge workers in the company show the first phase of this process. Furthermore, preparing papers, magazines, catalogs, new and reviewed repair charts, besides the use of ICT tools (mentioned earlier) help Etisalat Egypt to document and express their current tacit knowledge and its translation into comprehensible forms that can be understood by everyone else in the company. When asked about the management of such process, the answer was that it is completely under control and that there exist predefined rules for this matter.

Third Phase: Combining explicit with explicit knowledge

Phase 2 makes knowledge combination to occur where the new knowledge is combined with existing knowledge stocks to make the result explicit. After systemizing concepts into knowledge systems in Etisalat, it has to be nourished with additional knowledge. This is done by combining different bodies of explicit knowledge. The knowledge exchanged in the socialization process is combined with other types of knowledge like documents, media, meetings and telephone conversation to enrich Etisalat's organizational knowledge. By capturing and integrating new explicit knowledge from what was gathered either by reports from top management information software and knowledge workers experiences which might also involve collecting external knowledge from inside and outside the company and combining such data together they get ready for the next phase. To add to that, existing information in Etisalat is sorted, edited and categorized. As a result, it facilitates easy access to knowledge since it is well organized and stored in systems available to everyone in the organization. This is facilitated by the intranet that links all members of the organization together with the mother company.

Fourth Phase: Turning explicit knowledge to tacit

This phase is the process of embodying explicit knowledge as tacit knowledge. It is also similar to the “learning by doing” concept. Learning by doing, training, and exercises allow knowledge workers to access the knowledge realm of the group involved in the project as well as the entire organization. This concept is employed in Etisalat. Since it triggers searching and learning, knowledge workers interact with several parties involved in the project in process.

As known, for explicit knowledge to become tacit, it helps if the knowledge is verbalized or diagrammed or stored into documents. This is the case in Etisalat. Documentation helps knowledge workers internalize what they experienced. This in turn enriches their tacit knowledge. To add, documents and manuals facilitates the transfer of explicit knowledge (which was originally tacit) to other knowledge workers. This helps them re-experience what other knowledge workers have experienced. As mentioned by the interviewee, the 3G is not the only innovation they have come up with. There are several other innovations that witnessed high market performance. Knowledge workers involved in the 3G project had access to documentations of old projects. This has contributed a lot to the success of the new project since they have re-experienced what was experienced in the old projects.

The above mentioned phases are not independent of each other, but their interaction is a spiral process and a dynamic one as well. In other words, these phases are a non-ending process in the sense that they are alimented by additional knowledge at any point of time when needed of course. The below table summarizes the above mentioned phases:

Modes of knowledge transfer

<u>Socialization</u>	<u>Externalization</u>	<u>Combination</u>	<u>Internalization</u>
<ul style="list-style-type: none"> • Informal interaction • Proximity or observation • OJT 	<ul style="list-style-type: none"> • Documentation • Renew charts • Publishing new ideas 	<ul style="list-style-type: none"> • Combining gathered data systematically • Indirect dissemination and diffusion 	<ul style="list-style-type: none"> • Learning by doing • Experiences embodied into action

Having presented the above phases as well as ways that Etisalat undertakes to invest on its human capital, the question that arises is as follows: “what is the fruit of all that?”. The answer is so simple. The fruit of all this is as follows while bearing in mind that the below is also a sign of outstanding organizational performance:

- ❁ **High market share:** Etisalat Egypt has currently more than 3 million subscribers from the 24 million mobile subscribers in Egypt. This number was achieved in around 6 months since their launch of the 3G generation.

- ❁ **Winning of 3G license:** Etisalat Egypt won the license to operate 3G and 2G services in July 2006, for EGP16.7 billion (USD2.9 billion), making the company the first to offer 3G services in the Egyptian market. The operator, which paid almost US\$3bn for its mobile license in 2006, had been planning to launch commercial services in February this year, but was forced to delay after encountering technical problems in its network rollout. At its launch, Etisalat said that it had installed 760 base stations, many of them capable of providing 3G services. Indeed, Etisalat is the first operator to offer commercial 3G services in Egypt, a fact that it hopes will give it an edge on its competition, Vodafone Egypt and Mobinil.

- ❁ **Increase in the number of subscribers:** compared to its competitors in the market, the number of subscribers has increased. It reached over 2 million subscribers.

- ❁ **The birth of 3.75 G:** 3.75G is the marketing term for HSUPA (High Speed Uplink Packet access). The Uplink channel carries information from the mobile terminal to the network such as file uploading, e-mail attachments and user response in interactive games with a speed of 2 MB/S. HSUPA is an enhancement of 3.5G networks that increases upload speeds. Current handsets support up to 1.4 Mbps. As the first HSPA network in Egypt, the Etisalat Misr provides innovative services and is dedicated to enriching communications and life of the Egyptians.

The benefits of that 3.75G technology are that subscribers can:

- ✿ video-call;
- ✿ watch live TV;
- ✿ have access to high-speed internet connection and download;
- ✿ have access to a mobile portal built exclusively for Etisalat subscribers.
- ✿ 3.75G is the latest technology that encapsulates some protocols like UMTS, HSDPA and HSUPA.

VI. Chapter 5: Conclusion

This section will be first summarizing the main important findings of the studied company then stating general conclusions that can be drawn from the study along with implications for management and future research.

This thesis has contributed to deepening the understanding of the role on knowledge management in innovation processes. The findings suggest that:

- For companies to gain competitive advantage, knowledge management has to be implemented. Organizations these days realize that if they want to stay competitive that is not possible without digging for knowledge and using it for profit generation.
- The studied company tries to centralize the source of information distribution by implementing and making available communication technology to facilitate knowledge dissemination, integration and sharing among knowledge workers in the organization.
- The study found out that the company uses existing information to create the necessary knowledge in different ways. To add, the studied company uses internal and external sources of knowledge in creating successful innovations. This is considered as a building block in all the innovation processes that take place in organizations nowadays.
- Investing in human capital is another area where the studied company showed great importance. Such investment contributes a lot to the success of innovations in the organization as well as outstanding organizational performance, since human capital is considered as part of an organization's resources.

A. General Conclusion

Going back to the research purpose of the study mentioned in the beginning of my thesis which try to analyze the “Knowledge management and its effects on innovation with respect to human resources management”. It could be seen that the study has been beneficial regarding the different activities gyrating around the studied company in terms of managing their information and converting them to significant knowledge for thriving innovation. The study coincided with the majority of literature selected for consideration. Etisalat Egypt stated that knowledge management has not only helped in becoming innovative but also to be the leading telecom company in Egypt. In this regard, Etisalat Egypt focused on gathering information from both inside and outside the organization. The research has justified and highlighted that Etisalat Egypt is a true example of an organization that has been able to pull knowledge from external and internal sources and use it in one of its projects to deliver significant benefits to its clients.

The findings are in line with the fact presented in the theories that knowledge management definitively involves applying the collective knowledge and abilities on the entire workforce as well as those involved in developing the 3.75 G. It involves getting the right piece of information to the right people at the right time, and helping people crate and share knowledge and act in ways that improved individual and organizational learning processes as well as the company’s performance. This emphasizes the fact that people are the major and most important component of knowledge management since they are the main resources of knowledge in today’s organizations. And to be able to get the most out of knowledge workers, companies have to invest in them.

It is also worth mentioning that technology is the second component of knowledge management since it links all pieces of information as well as knowledge workers. Furthermore, thanks to Etisalat’s means of communication or collaborative technologies such as Lotus Notes, Videoconferencing and many others mentioned earlier, it has been able to be one of the leading telecom companies in the Middle East. As mentioned earlier in the thesis, human capital coupled with collaborative

technologies lead to successful innovations. Indeed, the studied company revealed that by investing in human capital without forgetting the availability of collaborative technologies, it achieved its target which is the birth of the 3.75 G.

Nonaka and Takeuchi's framework of knowledge conversion has been used to show the phases that Etisalat went through to come up with its new service: the 3.75 G. Regarding that model, in addition to explicit knowledge, tacit knowledge of experts would be transferred to new staffs by training courses although this is not the only mean of acquiring knowledge. The study has showed several means of knowledge acquisitions that plays a prominent role in all phases of innovation: ideation, funding decisions and commercialization.

B. Implications for management

The findings highlight many facts that can be seen as tips for companies wondering about ways to manage their knowledge as well as investing in their knowledge workers. While the choice to managing company's sources of knowledge shows outstanding business performance, it also presents significant new management challenges. Some of these that may be faced by the company's decisions to manage their knowledge such as training and the usage of external sources of knowledge, selecting the right process for utilizing what has been collected, customizing knowledge to be used in different circumstances, creating formal spaces for knowledge dissemination, but these are not limited to what have been mentioned in the sense that other aspects have to be taken in mind such as culture and proper leadership.

The concept of knowledge management and its effect on innovation is not new, but the combination of using KM differs from one company to the other. The studied company had a view on KM emphasizing on the importance of technology while keeping the organizational atmosphere open for most informal and formal interaction between knowledge workers. In this regard as the study showed that by sharing knowledge formally or informally coupled with a good investment in human capital, the company's market performance is outstanding.

C. Future Research

This section will be shedding light on the areas that should be studied more deeply. Future research should focus on exploring the below areas:

- Further research should be done on different organizations in the same industry. This type of study is referred to as a comparative study. It would be interesting to explore how different companies in the same industry employ different or same KM strategies. In addition to that, future research should examine the differences among industries, and measure accurately the relative importance of the factors that affect personal characteristics and the development of knowledge inside the organization.
- **Reward systems**. Future research should be exploring the different types of rewards given to employees as a result of their contribution to the project in process. As this area plays an important role in motivating people and enhancing them to perform well, it should be given lots of attention.
- **Interviewees**. As the respondents of this study only consist of senior managers of the studied company, the generalizations from the study should be limited to similar groups. To have a complete view of the covered subjects, future studies should be targeting employees or knowledge workers from different departments within the organization.
- **Culture**. Due to limited resources, the cultural aspect of the study was not covered. As a result, future studies should be exploring more this area. As we all know, organizations that have a culture that supports and encourages innovation should attempt to understand what it is about their culture that gives them a competitive advantage and develop and nurture those cultural attributes. Culture is referred to as the beliefs, values, and attributes pervasive in the organization and results in a language, symbols, and habits of behavior and thought.

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