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Knowledge Management and the Readiness of Organizations in the Information and Communications Technology Industry in Egypt

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Approval

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Declaration

This is to certify that:

1. The thesis comprises only my original work towards the MBA degree.

2. Due acknowledgment has been made in the text to all other material used.

     Student's Signature

Abstract

This thesis is discussing the readiness of organizations to implement a knowledge management model or strategy giving it a competitive edge over other market players in the ICT industry in the Egyptian market. Population was a mix of new hires, experienced employees, and middle managers. It starts by giving a rigorous explanation of knowledge management followed by a thorough discussion of the success variables controlling it. It then moves into discussing the different frameworks used to measure the readiness of ICT organizations to implement this specific type of management. This is followed by a study and a description of the Egyptian ICT industry. The hypothesis in this research is built on a model that was previously used in a different study which was modified to suit a different sector in a different country. There are four main pillars on which that hypothesis is built: context, content, process, and individual attributes. The hypothesis assumes that any one of these four pillars affects positively in showing the readiness of an organization in implementing a knowledge management strategy. The study was focused on two organizations in the ICT industry, which are Orange Business Services (OBS) and Egan, Marino Corporation (EMC). Results were positive for both companies and the hypothesis was met. Results differ in a positive way, as population answers on the survey show how much each pillar differs from the two organizations.

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Chapter 1: Introduction

There are many definitions for Knowledge Management (KM) but the following one by the Gartner Group is quite unique and to the point as mention by Hicks, Dattero, and Galup (2006): "Knowledge management promotes an integrated approach to identifying, capturing, retrieving, sharing, and evaluating an enterprise's information assets. These information assets may include databases, documents, policies and procedures, as well as the un-captured tacit expertise and experience stored in individual workers' heads (Hicks, Dattero, and Galup 2006)." Another significant elaboration on Knowledge Management is introduced by (Gavrilova & Andreeva, 2012) were they stated that contemporary management theory view knowledge as one of the key sources for the creation and maintenance of sustainable competitive advantage in a post industrial economy. Accordingly comes the question that faces all organizations on how they can ensure to extract as much value as possible from their knowledge in either forms, conceptual and empirical viewpoints as mentioned by Gavrilova and Andreeva (2012).

Another viewpoint of Knowledge Management is introduced by (Gao, Li, and Clarke, 2008) were they mentioned that knowledge is an important issue for business organizations. There have been a number of different perspectives from which researchers and practitioners have approached the management of knowledge. While the acquisition, transmission, and use of knowledge has always been an important part of human affairs to relate knowledge to twenty-first century business organizations. Knowledge, as we move into the knowledge society, as the key resource for individual firms and the key driver of competitive advantage for developed nations, competing in knowledge-based industries, living with knowledge communities and societies.

In general knowledge is divided into 2 major types, the explicit and the tacit knowledge. The explicit knowledge is what can be embodied in a code or a language and as a consequence it can be verbalized and communicated, processed, transmitted and stored easily (Alwis & Hartmann 2008). On the other hand the tacit knowledge is a personal and hard to formalize, its rooted in action, procedures, commitment, values and emotions (Alwis & Hartmann 2008). Tacit knowledge is the less familiar, unconventional

form of knowledge (Alwis & Hartmann 2008). Tacit knowledge cannot be codified or communicated in a well-known language like the explicit knowledge.

Moving to another part of this research which is Innovation in knowledge management and how it can be a role player for the organization using knowledge management techniques in introducing and gaining the competitive advantage in the market. Innovation requires creating new knowledge or combining existing knowledge in a novel way (Piispanen & Kajanus, 2012). The capability of a firm to innovate is expanded by broader knowledge base and cost and risk sharing through cooperation with other subjects (Piispanen & Kajanus, 2012). Firms need considerable in-house capabilities to recognize and evaluate the new knowledge and technology and thereafter to negotiate and adopt this technology (Piispanen & Kajanus, 2012).

From the knowledge management perspective, innovation is considered a dynamic capability that represents the application of explicit and tacit knowledge assets in obtaining new products and processes. In order to innovate firms require the use of existing knowledge assets or the acquisition of new ones. Therefore, innovations differ in the content of basic knowledge that they require, which in turn influences the way that innovation is developed (internally or externally), the cost of implementation and its effectiveness (Perez, Diaz & Rodriguez, 2012). Perez, Diaz and Rodriguez (2012) mentioned that some authors suggest that on many occasions organizations prefer external recruitment of experienced staff than training employees internally because of the fear of not being able to provide them the proper training. Thus the extent to which businesses innovate successfully would depend on their capacity to plan ahead, to have a clear strategy and to manage strategically.

Newman and Conrad (1999) mentioned that knowledge management is a discipline that seeks to improve the performance of individuals and organizations by maintaining and leveraging the present and future value of knowledge assets. Knowledge management systems incorporate both human and automated activities and their associated artifacts. It was mentioned that knowledge is a resource that is capable of gaining competitive advantage for organizations using it in the right way, this was explicitly mentioned as "Unlike other resources, the value of knowledge increases instead

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of decreases when used. As a result, knowledge management faces a significant challenge: the more knowledge is used, the more valuable it becomes for the people and the organization(s) involved. Knowledge management is 'to identify, manage, and value items that the organization knows or could know: skills and experience of people, archives, documents, relations with clients, suppliers and other persons and materials often contained in electronic databases' (Smits and de Moor 2004)".

According to what is introduced above in regards to knowledge management, there are always variables/factors that ensure the success of knowledge management. Not only variables/factors, there are also instruments that can be used to measure up the level of success of the knowledge management approach used by the organization. Alazmi and Zairi (2003) mentioned that there are critical success factors (CSFs) that should be taken into consideration when applying the knowledge management strategy, which will "provides the company with some sustainable competitive advantage through the continued creation of knowledge, maintenance of current knowledge resources, and creating an environment in which the knowledge management function can survive and grow. From these factors, we see that some of them are more important than others (Alazmi and Zairi 2003)". In regards to the instruments that can be used to measure knowledge management systems and its usefulness, it was mentioned by Kulkarni, Ravindran, and Freeze (2006-7) that knowledge management success model that incorporates the quality of available knowledge and KM systems built to share and reuse knowledge such as determinants of users' perception of usefulness and user satisfaction with an organization's KM practices. Perceived usefulness and user satisfaction, in turn, affect knowledge use, which is a measure of how well knowledge sharing and reuse activities are internalized by an organization.

The ICT industry in Egypt "has been a driving force in attracting new foreign direct investment to Egypt, and crucial in nurturing knowledge and innovation in order to raise growth, competitiveness, and employment. Cairo was ranked in fourth position in the United Nations Conference on Trade and Development's (UNCTAD"s) top 10 emerging cities in 2010 for global services outsourcing. Moreover, Egypt provides well-developed telecoms and communication networks. Telecoms services and infrastructure

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have witnessed extensive expansion and modernization over the years. Egypt is witnessing an Internet boom, with strong support from the government, which hopes to turn the country into an ICT hub. The government has taken significant steps over the years to encourage technology and foster a culture of innovation. The number of patents granted to the country by the US Patent and Trademark Office (USPTO) was 20 in 2010, up from two in 2008 (Datamonitor 2012)".

Chapter 2: Literature Review

2.1 Knowledge Management

Will taking a knowledge and knowledge management approach help to fill the gaps and open up new possibilities? Discussions about knowledge resonate with those of quality in the past. What is it? How can we measure it? How can we improve it in some form? Is it necessary for all those active within organizations to engage with it or is it the preserve of the expert few? The debate range from the philosophical, just as was the case with quality, to the highly practical. Any reading of the knowledge management literature shows that the same questions are being addressed about knowledge and the use of knowledge (Armistead, 1999). Knowledge management is discussed in a number of ways, including the economic level which predicts a knowledge age to follow, and an industrial age where knowledge becomes the limiting resource, rather than financial capital. The level of the firm with a knowledge- based view proposes a shift from a focus on resources, as in the resource-based view of the firm (Armistead, 1999). The latter perspective focused at a strategic level on the notion of core competences which might give the firm sustained advantage over its competitors through their use in processes. The meanings of knowledge and of organizational learning are aired (Leonard and Straus, 1997; Leonard- Barton, 1995), and measurement of knowledge as intellectual property or assets is advocated as an important component of management control systems for future organizations (Armistead, 1999).

In Armistead (1999) discussion about knowledge management processes he divided them into 3 major parts that will be discussed below in details. These processes are known as: Knowledge Creation Process, Knowledge Transfer Process, and Knowledge Embedding Process.

2.1.1 Armistead knowledge management processes.

2.1.1.1 The knowledge creation process. Requires innovative individuals, more often than not working in teams. These are networks of experts with access to knowledge technologies including those for knowledge capture, storage and transfer. Outputs from knowledge creation are in the problem-solving domain for unknown problems and new

knowledge, for instance in terms of process improvement. Measures of the success of knowledge creation need to include assessment of the reliability of the knowledge, the extent to which it solves a problem, timeliness, acceptability within the organization and readiness to exploit it should it lead to new opportunities, the cost of exploitation and potential value. Measures may also be in very concrete terms for research and development as the number of new patents. These ideas are illustrated on the micro scale by Ian Norton, a Unilever scientist/inventor who has broken the Unilever record for the number of patents associated with one individual. He ascribes his success to having a mind which likes to cross scientific borders. ``It's about being able to connect pieces of information from totally different areas (Armistead, 1999).

Figure 1 - Armistead,(1999) Knowledge Creation Process
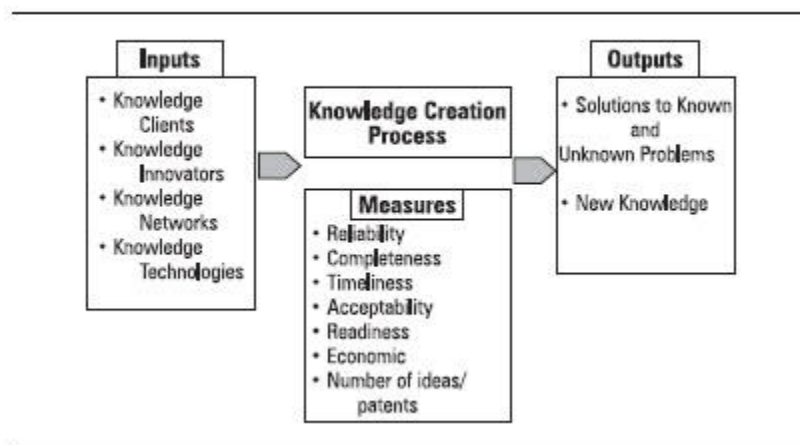
2.1.1.2 The knowledge transfer process. Has some of the aspects of creation in the sense of input being sources of existing knowledge. However emphasis is given to the role of individuals who facilitate the access and transfer of knowledge. They can often be identified at the hubs of groups or as individuals within networks and have been given different names, including knowledge brokers, gatekeeper, pulse takers. Knowledge transfer processes are also important in supporting organizational effectiveness in the field of best practice, where there is a close association with knowledge embedding processes. Measures of success for knowledge transfer are concerned with the reliability of knowledge its timeliness, completeness and accessibility. Lastly there are measures of and cost of transfer. Many of the examples in the knowledge management literature are

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concerned with these transfer processes. The notions of communities of practice encourages the trust required for individuals to share knowledge with colleagues (Armistead, 1999).

Figure 2 - Armistead,(1999) Knowledge Transfer Process
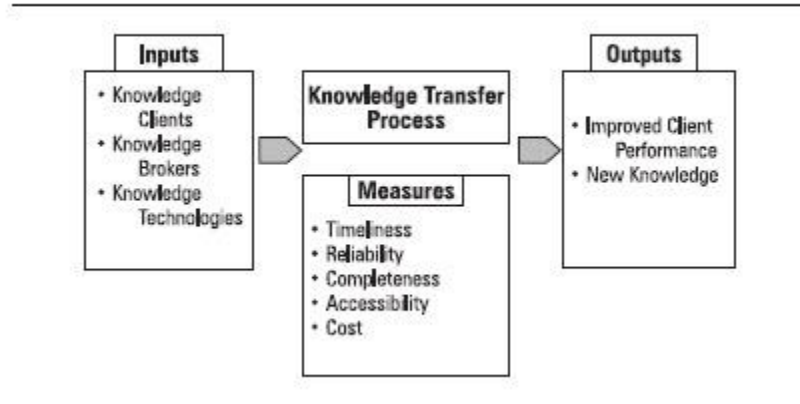
2.1.1.3 The knowledge embedding process. The knowledge embedding process is concerned with organizational effectiveness through the incorporation of knowledge into the fabric of the organizational process and into its products and services. In the latter case this is through the effect on customers. In a negative sense embedding might be seen as a way of reducing the mobility of knowledge through the loss of individuals to the organization, occurring through ``downsizing'' individuals with highly marketable knowledge. An alternative view of embedding as benefiting knowledge in use is greater productivity from the use of the knowledge, and the development of process practice through the incorporation of best practice through benchmarking. The embedding process inputs access to knowledge through creation capture and transfer processes, with the will to use it through knowledge exploiters. Outputs from the process are in the domains of product- and process-designed learning in key stakeholder groups of employees, suppliers and customers. Measures for the process are concerned with learning at individual and organizational level, protection of the value of knowledge and the potential for knowledge productivity (Armistead, 1999).

Figure 3 - Armistead,(1999) Knowledge Embedding Process
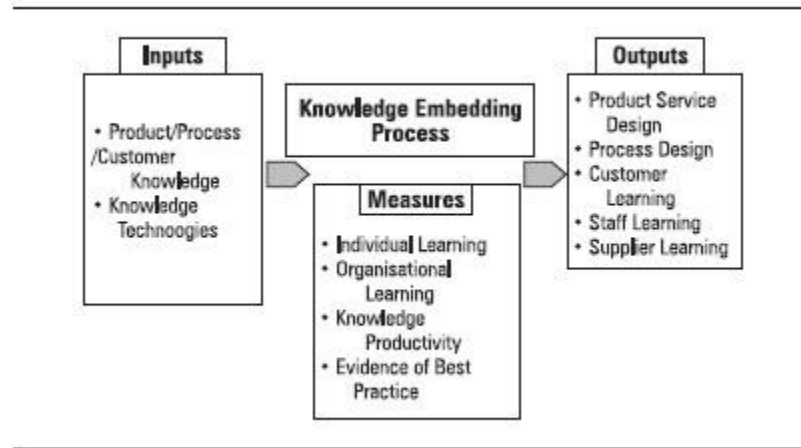
2.1.2 Intellectual capital. Intellectual Capital is another criteria that falls in the Knowledge Management area where it is mentioned to be the management of intellectual capital controlled by the company (Martensson, 2000). The team intellectual capital is known to be the possession of knowledge, applied experience, organizational technology, customer relationships, and professional skills that provide the competitive edge in the market (Martensson, 2000). In Martensson (2000) article he mentioned that Roos et al. (1997) suggest that ``intellectual capital'' can be traced to two streams of thought, strategy and measurement. Within the strategic area, the focus is on studying the creation and use of knowledge and the relationship between knowledge and success or value creation. Measurement focuses on the need to develop new information systems, measuring non-financial data alongside the traditional financial ones. Below is a diagram showing the roots of intellectual capital.

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Figure 4 - Martensson (2000) Intellectual Capital Roots
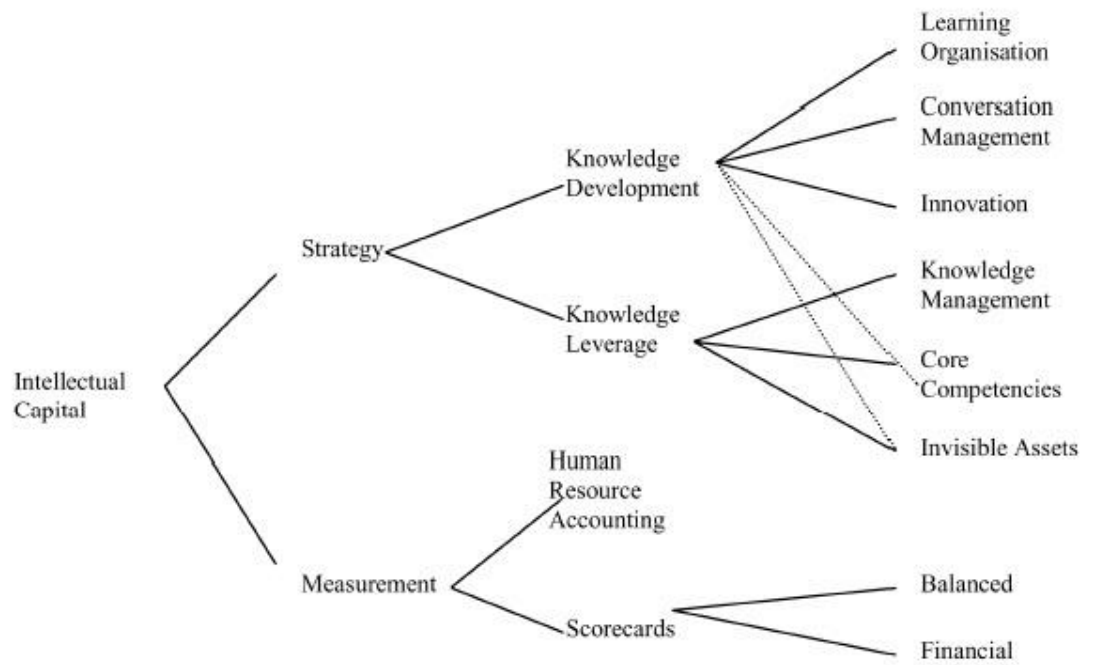
Source: Roos *et al.*, 1997

2.1.3 Learning organizations. A learning organization is a keyword for achieving the points discussed above, learning organization is defined as "Garvin (1993) defined a "learning organization" as one that is not only capable of creating, acquiring, and transferring knowledge, but also able to modify its behavior to replicate new knowledge and insights (Ajmal, Kekale, and Takala 2009)". They mentioned clearly that there is a clear correlation between the objectives of knowledge management and the concept of a learning organization (Ajmal, Kekale, and Takala, 2009). In the same reach by Ajmal, Kekale, and Takala (2009) they provided a diagram that shows how knowledge is created and utilized inside organizations, this diagram is designed by Liebowitz (2005). The below diagram simply says "that learning is affected by context, culture, value systems, and individual perceptions. Moreover, management initiatives and benchmarking standards determine how such learned knowledge is utilized in the organization (Ajmal, Kekale, and Takala 2009)". From all the above it can be easily concluded and stated as mentioned by (Liebowitz 1999) that 80% of knowledge

management is concerned with people and process/culture, and that only 20% is concerned with technology (Ajmal, Kekale, and Takala 2009).

Figure 5 - Ajmal, Kekale, and Takala (2009) Knowledge Management Model

Source: Liebowitz (2005)
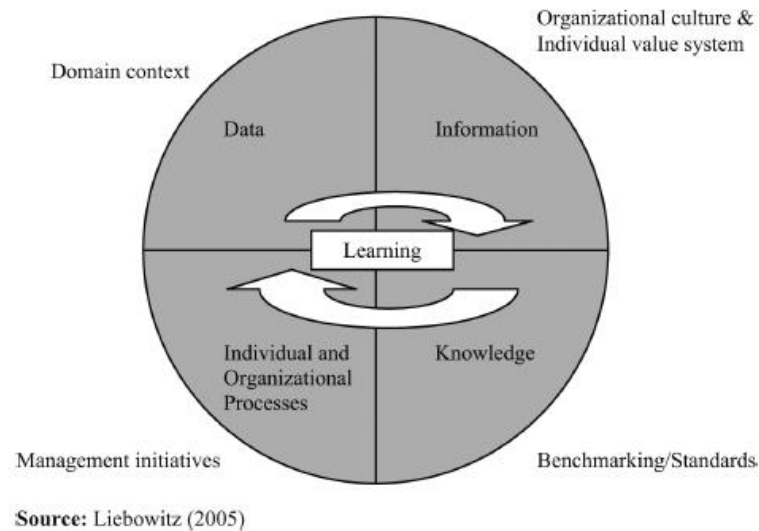
In the same article by Martensson (2000) he mentioned that according to DiMattia and Oder (1997) argue that the growth of ``knowledge management'' has emerged from two fundamental shifts: downsizing and technological development. Accordingly the word Knowledge has emerged and became the main essential part of Knowledge Management. To map the domains of knowledge, traits of the concept knowledge have been put forward based on the stream of research reviewed. The question of the nature of knowledge is extremely challenging. Although philosophers have been discussing the issue for several hundred years, the search for a formal definition continues. The definitions appearing in the literature range from studying knowledge from a broad perspective to more sophisticated definitions. The present review has resulted in two definitions of knowledge (Martensson, 2000).

2.1.4 Martensson knowledge characteristics. Martensson (2000) has mentioned 4 major characteristics for Knowledge, these characteristics are:

Knowledge cannot easily be stored. Knowledge is something that resides in people's minds rather than in computers. Unlike raw material, knowledge usually is not coded, audited, inventoried, and stacked in a warehouse for employees to use as needed. It is scattered, messy, and easy to lose. Knowledge in terms of 12 qualities: knowledge is messy; it is self-organizing; it seeks community; it travels on language; it is slippery; it likes looseness; it experiments; it does not grow forever; it is a social phenomenon; it evolves organically; it is multi-modal; and it is multi-dimensional (Martensson, 2000).

Information has little value and will not become knowledge until it is processed by the human mind. Knowledge involves the processing, creation, or use of information in the mind of the individual. Although information I not knowledge, it is an important aspect of knowledge. The process begins with facts and data, which are organized and structured to produce general information. The next stage involves organizing and filtering this information to meet the requirements of a specific community of users, producing contextual information. Next, individuals assimilate the contextual information and transform it into knowledge. This transformation process is affected by individuals' experiences, attitudes, and the context in which they work. The final stage of the continuum is behavior; unless information and knowledge lead to an informed decision or action, the whole process becomes invalidated (Martensson, 2000).

Knowledge should be studied in context. Knowledge is information combined with experience, context, interpretation, reflection, and perspective that adds a new level of insight. Knowledge becomes meaningful when it is seen in the larger context of our culture, which evolves out of our beliefs and philosophy (Martensson, 2000).
The final characteristic is that **knowledge is ineffectual if it is not used**. Knowledge is a high-value form of information that is ready to be applied to decisions and actions. Knowledge is defined as the capacity to act on information and thereby make it valuable (Martensson, 2000).

2.1.5 Explicit & tacit knowledge. Getting into more details regarding knowledge after explaining its characteristics, it was mentioned in the introduction that knowledge is divided into 2 main types which are the explicit knowledge and the tacit knowledge. In Martensson (2000) both explicit and tacit knowledge were defines as follows: Explicit knowledge; is documented and public, structured, fixed-content, externalized, and conscious. Explicit knowledge is what can be captured and shared through information technology (Martensson, 2000). Tacit knowledge; resides in the human mind, behavior, and perception. Tacit knowledge evolves from people's interactions and requires skill and practice (Martensson, 2000).

Nonaka and Takeuchi suggest that tacit knowledge is hidden and thus cannot be easily represented via electronics (Martensson, 2000). Tacit refers to hunches, intuitions and insights, it is personal, undocumented, context sensitive, dynamically created and derived, internalized and experience-based (Martensson, 2000). Nonaka and Takeuchi mean that knowledge is the product of the interaction of explicit and tacit knowledge (Martensson, 2000). The process of creating knowledge results in a spiraling of knowledge acquisition (Martensson, 2000). It starts with people sharing their internal tacit knowledge by socializing with others or by capturing it in digital or analogue form(Martensson, 2000). Other people then internalize the shared knowledge, and that process creates new knowledge(Martensson, 2000). These people, with the newly created knowledge, then share this knowledge with others, and the process begins again (Martensson, 2000).

Nonaka et al. and other authors such as Kikoski and Kikoski describe explicit knowledge as what can be embodied in a code or a language and as a consequence it can be verbalized and communicated, processed, transmitted and stored relatively easily. It is public and most widely known and the conventional form of knowledge which can be found in books, journals and mass media such as newspapers, television internet etc. It is the sort of knowledge we are aware of using and it can be shared in the form of data, scientific formulae, manuals and such like. Patents are an ideal example of explicit knowledge in a business context (Alwis & Hartmann, 2008).

In contrast, tacit knowledge is personal and hard to formalize – it is rooted in action, procedures, commitment, values and emotions etc. (Alwis & Hartmann, 2008). Tacit knowledge is the less familiar, unconventional form of knowledge (Alwis & Hartmann, 2008). It is the knowledge of which we are not conscious. Tacit knowledge is not codified, it is not communicated in a ''language'', it is acquired by sharing experiences, by observation and imitation (Alwis & Hartmann, 2008). Tacit and explicit knowledge are complementary, which means both types of knowledge are essential to knowledge creation (Alwis & Hartmann, 2008). Explicit knowledge without tacit insight quickly loses its meaning. Knowledge is created through interactions between tacit and explicit knowledge and not from either tacit or explicit knowledge alone (Alwis & Hartmann, 2008). Competitive advantage will only be gained if companies value their tacit knowledge, as explicit knowledge can be known by others as well (Alwis & Hartmann, 2008). Tacit knowledge creates the learning curve for others to follow and provides competitive advantage for future successful companies (Alwis & Hartmann, 2008).

Newman and Conrad (1999) divided knowledge into 3 different artifacts, they used the term artifact because it "does not specify the form of the artifact (e.g. information, transformation, metadata or meta-knowledge) but it is very specific as to the process that gave rise to the artifact. This makes the term valuable for explaining such things as the importance of knowledge artifact retention, establishing provenance and enabling reusability (Newman and Conrad 1999)". The 3 different artifacts are:

Explicit Knowledge Artifacts. "These are knowledge artifacts that have been articulated in such a way that they can be directly and completely transferred from one person to another. This normally means that they have been codified so it is possible to touch, see, hear, feel and manipulate them (e.g. books, reports, data files, newsreels, audio cassettes and other physical forms) (Newman and Conrad 1999)".

Implicit Knowledge Artifacts. "These are knowledge artifacts whose meaning is not explicitly captured, but can be inferred; in effect, the codification process is incomplete.

Explicit artifacts can be interpreted totally on their content. Interpreters of implicit artifacts must rely on previously retained knowledge (Newman and Conrad 1999)".

Tacit Knowledge Artifacts. "These may be the most insidious and powerful of the three. Michael Polanyi referred to tacit knowledge as "knowing more than we can say" (Polanyi 1966). Simply stated, tacit artifacts are those that defy expression and codification. This is not to say that tacit knowledge artifacts are without influence. The most vivid example is the old saw about what would happen to the centipede if she were to stop and think about how to walk (Newman and Conrad 1999)".

To create and evaluate Tacit knowledge Alwis and Hartmann (2008) mentioned that Nonaka el at in 2000 developed a spiral model of knowledge called the SECI Process which stands for (Socialization, Externalization, Combination, and Internalization). Below is a diagram that shows how this model is shifting and jumping between both explicit and tacit knowledge. The diagram contains the following:

Socialization (from tacit knowledge to tacit knowledge); (Alwis & Hartmann, 2008)

Externalization (from tacit knowledge to explicit knowledge); (Alwis & Hartmann, 2008)

Combination (from explicit knowledge to explicit knowledge); (Alwis & Hartmann, 2008)

Internalization (from explicit knowledge to tacit knowledge) (Alwis & Hartmann, 2008)

Figure 6 - Alwis & Hartmann (2008)The SECI Process Model

Source: Nonaka *et al.* (2000, p. 12)
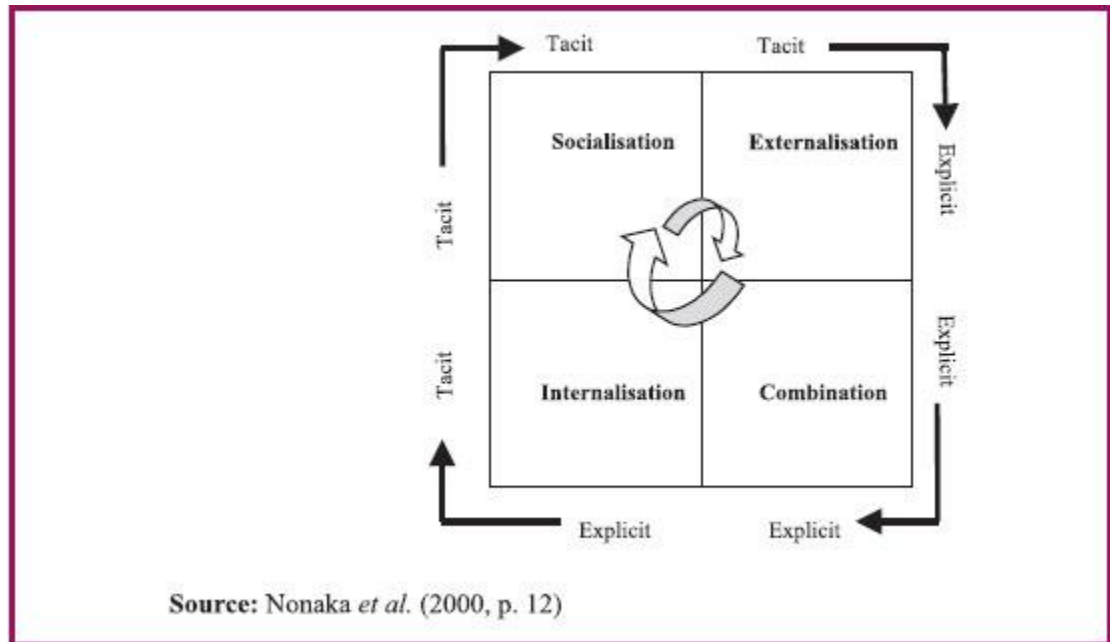
To clearly explain the SECI model and to define each process of the model in details, the below diagram shows a more detailed information about this model which is created by Nonaka el al. (2000):

Figure 7 - Nonaka el al. (2000) Detailed SECI Model
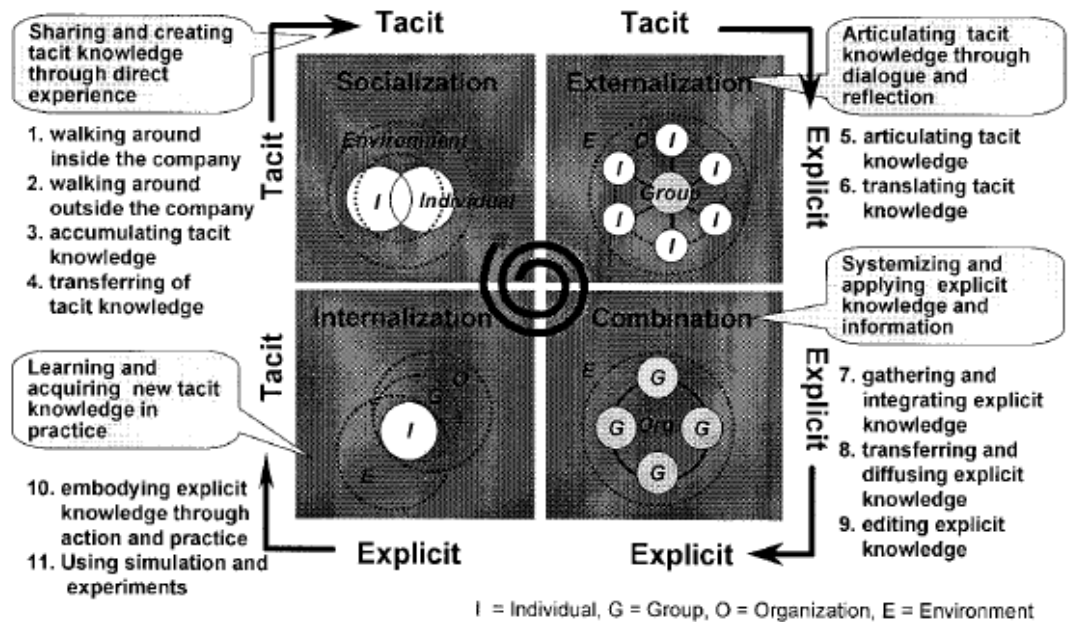
Socialization: "Knowledge creation starts with Socialization, which is the process of converting new tacit knowledge through shared experiences in day-to-day social interaction. Since tacit knowledge is difficult to formalize and often time and space-specific, tacit knowledge can be acquired only through shared direct experience, such as spending time together or living in the same environment, typically a traditional apprenticeship where apprentices learn the tacit knowledge needed in their craft through hands-on experiences. One can share the tacit knowledge of customers, suppliers, and even competitors by empathizing with them through shared experience. Thus, routines are part of tacit knowledge because they are developed in close interaction over time (Nonaka and Toyama 2003)".

Externalization: "Tacit knowledge is made explicit so that it can be shared by others to become the basis of new knowledge such as concepts, images, and written documents. During the externalization stage, individuals use their discursive consciousness and try to rationalize and articulate the world that surrounds them. Here, dialogue is an effective method to articulate one's tacit knowledge and share the articulated knowledge with others. Through dialogues among individuals, contradictions between one's tacit knowledge and the structure, or contradictions among tacit knowledge of individuals are made explicit and synthesized. To make a hidden concept or mechanism explicit out of accumulated tacit knowledge, abduction or reproduction is effective rather than induction or deduction. The sequential use of metaphor, analogy, and model is a basic method in abduction (Lawson, 1998). In addition to the movement from hidden to the surface, these methods enable actors to create linkages between the surface and deeper domains of social reality (Nonaka and Toyama 2003)".

Combination: "Explicit knowledge is collected from inside or outside the organization and then combined, edited, or processed to form more complex and systematic explicit knowledge through the Combination process. The new explicit knowledge is then disseminated among the members of the organization. Creative use of computerized communication networks and large-scale databases can facilitate this mode of knowledge conversion. The combination mode of knowledge conversion can also include the

'breakdown' of concepts. Breaking down a concept, such as a corporate vision, into operationalized business or product concepts also creates systemic, explicit knowledge. Here, contradictions are solved through logic rather than synthesized. Rationalism is an effective method to combine, edit, and break down explicit knowledge (Nonaka and Toyama 2003)".

Internalization: "Explicit knowledge created and shared throughout an organization is then converted into tacit knowledge by individuals through the Internalization process. This stage can be understood as praxis, where knowledge is applied and used in practical situations and becomes the base for new routines. Thus, explicit knowledge, such as product concepts or manufacturing procedures, has to be actualized through action, practice, and reflection so that it can really become knowledge of one's own. For example, training programs can help trainees to understand an organization and themselves. By reading documents or manuals about their jobs and the organization, and by reflecting upon them, trainees can internalize the explicit knowledge written in such documents to enrich their tacit knowledge base. Explicit knowledge can also be embodied through simulations or experiments. Pragmatism of learning-by-doing is an effective method to test, modify, and embody explicit knowledge as one's own tacit knowledge. Internalized knowledge affects the human agency and the structure, as it changes the action of human agency and how it views the structure. The synthesis of individuals and the environment occurs at this level as well (Nonaka and Toyama 2003)".

Basically tacit knowledge is based on an insight from an individual that is difficult to explain or codify as mentioned before. In order to express this tacit knowledge in a company, the knowledge management or process should be central and important in the company. As per Alwis and Hartmann (2008) making personal knowledge available to others should be the central activity of the knowledge and innovation creating company. It takes place continuously and at all levels of the organization. Through these interactions an organization creates a knowledge process, called knowledge conversion (Alwis & Hartmann, 2008). This is how clearly the SECI model is designed to achieve. "It is important to note that the movement through the four modes of knowledge

conversion forms a spiral, not a circle. In the spiral of knowledge creation, the interaction between tacit and explicit knowledge is amplified through the four modes of knowledge conversion. The spiral becomes larger in scale as it moves up the ontological levels. Knowledge created through the SECI process can trigger a new spiral of knowledge creation, expanding horizontally and vertically as it moves through communities of interaction that transcend sectional, departmental, divisional, and even organizational boundaries (Nonaka and Toyama 2003)".

Knowledge created through this spiral process can generate a new spiral of knowledge creation, increasing horizontally and vertically through organizations. This interactive spiral process takes place both intra- and inter-organizationally (Alwis & Hartmann, 2008). Alwis and Hartmann (2008) mentioned that Rudiger and Vanini (1998, p. 473) maintain that the only way to recognize the subject of tacit knowledge is via personal contacts with external organizations or inside organizations, and it is therefore the duty of the management to support and afford these contacts. A conclusion was reached regarding tacit knowledge which states that a climate of openness and trust amongst organization members is the basic condition that allows tacit knowledge to be created, shared and used in the innovation process (Alwis & Hartmann, 2008). Sharing tacit knowledge will be more successful in informal settings than in formal ones. Therefore, it is important for the management of organizations to cultivate a commitment to motivate the creation of tacit knowledge, and to create an atmosphere in which organization members in an organization feel safe in sharing their knowledge (Alwis & Hartmann, 2008).

Alwis and Hartmann (2008) linked learning with tacit knowledge in the following context; They emphasizes that learning is particularly crucial in relation to difficult-to-acquire tacit knowledge, which may explain why tacit knowledge is often identified as being derived primarily from in-house capability and efforts. Tacit knowledge can be activated by generating new scientific knowledge, (learning-to-learn), by incorporating new knowledge in the design of a new product. It can further be activated in the process of learning new production methods and improving existing technology through minor improvements based on learning-by-doing, and based on learning-by-using once the new

product or process is being employed internally in the organization or by external consumers (Alwis & Hartmann, 2008).

     2.1.6 Knowledge management. Talking about knowledge management Hicks, Dattero and Galup (2006) introduced the so called five-tier knowledge management hierarchy. They mentioned that To derive a hierarchy suitable for KM research, we extend the knowledge hierarchy by adding a new personal knowledge class consisting of two tiers – the individual tier and the innovation tier. As individuals create, use, and maintain all of the tiers of the codified knowledge class, we will position the individual tier as the foundation of our hierarchy. We add innovation as the highest level because it integrates all of the other tiers, using strategy to exploit both personal and codified knowledge assets (Hicks, Dattero & Galup 2006). Accordingly the five-tier knowledge management hierarchy classifications are; individual tier, facts tier, influences tier, solution tier, and innovation tier according to Hicks, Dattero and Galup (2006). The definition for each tier is as follows:

Individual knowledge: is defined as knowledge contained only in the mind of a person (Hicks, Dattero & Galup 2006). The role of the individual tier is to create, use, and maintain all tiers of knowledge. The individual tier contains or may use the facts, influences, and solutions that are stored only in the mind of each individual, and not in any book, computer, or other shared media. It can be located computationally with a ''Yellow Pages'' system but cannot be stored, integrated, or retained (Hicks, Dattero & Galup 2006).

Facts: are defined as atomic attribute values about the domain (Hicks, Dattero & Galup 2006). The role of the facts tier in KM is to provide raw data for higher-level KM tiers. Much of the Codified data about the company is contained in documents, which are discussed in the influences tier, and stored in databases at the facts tier. Data warehouses and data marts are constructed with the purpose of creating influences for decision-making, while transaction databases contain most of the accessible facts about the company and its business. Many software programs exist that focus on the analysis of data housed in databases (Hicks, Dattero & Galup 2006).

Influences: are defined as data in context that has been processed and/or prepared for presentation (Hicks, Dattero & Galup 2006). The role of the influence tier is to assist people in making decisions. Influence is defined as integrated data put in context, often through presentation or processing. In this tier, data is processed by learning systems, decision support systems (DSS), reports, knowledge pooling, and knowledge directory systems to influence decisions. The influence tier consists of three subclasses: computer-assisted decision making, cooperative influence creation, and computer assisted influence dissemination (Hicks, Dattero & Galup 2006).

Solutions: are defined as clear instructions and authority to perform a task (Hicks, Dattero & Galup 2006). The role of the solution tier is to make decisions and execute them. As defined in this paper, the solution tier is defined as a shareable source that contains a complete solution for a specific task and the authority to act. This implies a complete, verified solution for the decision-making context combined with local data. Expert systems are an example of a solution tier system, as these systems contain all of the knowledge necessary to solve a problem, access to local data, and the ability to make and execute a decision (Hicks, Dattero & Galup 2006).

Innovation: is defined as the exploitation of knowledge-based resources (Hicks, Dattero & Galup 2006). Innovation occurs when knowledge from any tier is combined with strategy, facilitating a process reengineering, increasing corporate efficiency, increasing corporate effectiveness, or creating knowledge based goods or services (Hicks, Dattero & Galup 2006).

Below is a diagram showing the five different tiers for knowledge management that were just discussed above.

Figure 8 - Hicks, Dattero & Galup (2006) Five Tier Knowledge Management Hierarchy

INNOVATION
Reengineering
Knowledge-based
   goods and services

SOLUTIONS
Intelligent Systems
Best Practices

INFLUENCES
Decision Support Systems
Learning Systems
Yellow Pages
Reports

FACTS
Documents
Databases
Data Warehouses

INDIVIDUAL
Human Mind
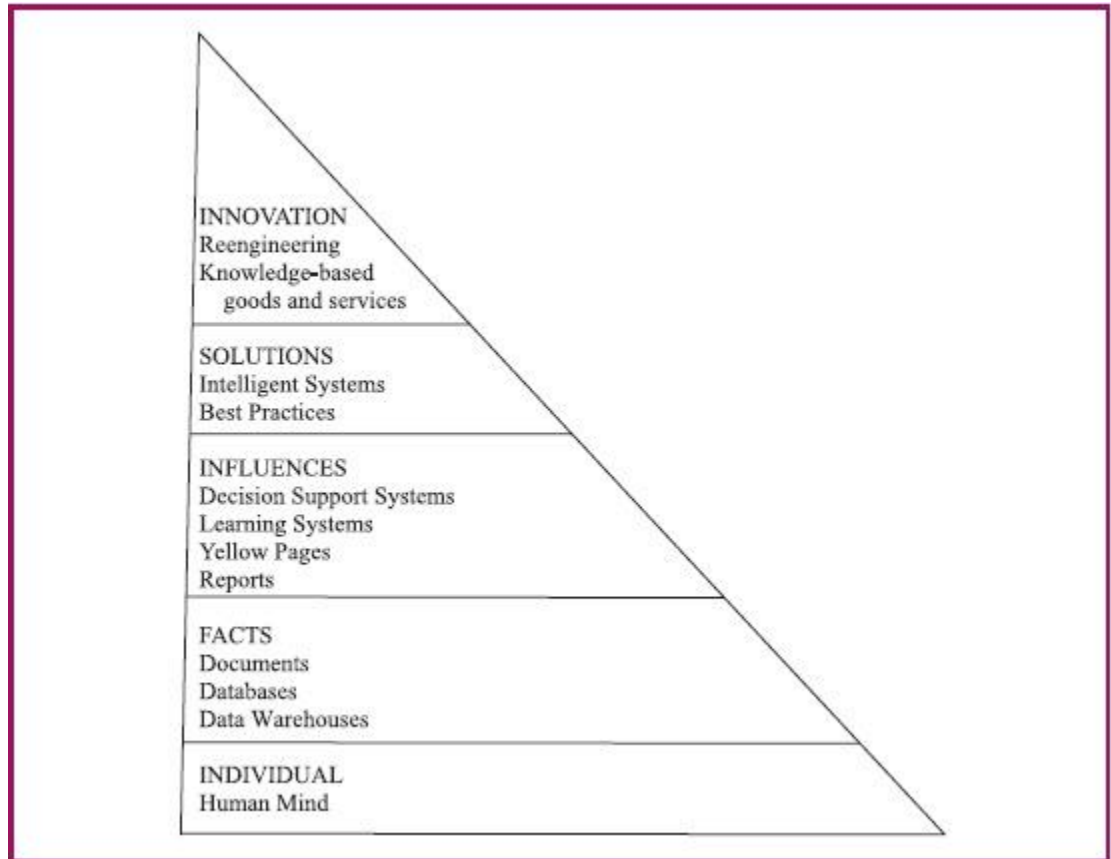
One of the most important techniques that can be used is how to elicit knowledge from individuals, in other words how to elicit tacit knowledge. According to Gavrilova and Andreeva (2012), they mentioned that knowledge elicitation is depending on the roles of an expert and an analyst. An expert is an individual who possesses valuable knowledge that is of interest to an organization, and thus needs to be elicited. In terms of knowledge management, the majority of employees can be labeled as ''experts'', as long as they possess some knowledge that is of value to an organization. The second role, the analyst, is a person who is responsible for eliciting knowledge from an expert. An analyst is indeed a key figure from the knowledge engineering perspective, as he/she has special skills and knowledge that enable him/her to elicit knowledge from the expert. An analyst also has a mandate from an organization to spend time and effort on knowledge

elicitation, and holds responsibility for the success of this task. Therefore, the analyst acts as an intermediary between an expert and his knowledge, on the one side, and an organization (a knowledge base and/or individual members of the organization) on the other side, the goal being to facilitate knowledge transfer between these two sides (Gavrilova & Andreeva 2012). Introducing the role of analyst not only allows compensating for the lack of some of the characteristics of a knowledge owner (expert). It also opens the way to a number of knowledge elicitation methods that cannot be exercised by an expert solely on his/her own and require some type of collaboration with another, motivated and skilled, individual (Gavrilova & Andreeva 2012).

According to Gavrilova and Andreeva (2012) there are three different elicitation techniques that can be used to extract the tacit knowledge from individuals in the companies and enterprises that can be used afterwards in innovation process of the companies and enterprises. There three different elicitation techniques are:

Analyst-leading methods: interview is a specific form of communication between the analyst and the expert, where the analyst asks a number of questions prepared in advance in order to gain a better understanding of a specific knowledge area. The interview may have different levels of organization (structured, unstructured, semi-structured) that gives the analyst different levels of freedom. Interview is the most popular technique because of its apparent simplicity of conducting. However, experience shows that best practices in interviewing need years of training and practical fieldwork. The main mistakes are based on the short and superficial stage of preparation to this method of knowledge elicitation. Due to their character, interviews are generally aimed at elicitation of explicit knowledge from individuals (Gavrilova & Andreeva 2012).

Expert-leading methods: expert-leading methods can be split into individual-focused and collective methods. Individual-focused methods are observation and storytelling (lecturing), while collective methods include round-table and brainstorming. The observation method implies that the analyst is located in direct proximity to the expert, observing closely his professional activities or their imitation (Gavrilova & Andreeva 2012).

Expert-analyst collaboration methods: expert-analyst collaboration methods include role-playing games and verbal protocols. These methods require active positions by both the analyst and the expert (Gavrilova & Andreeva 2012). The role game is a simulation of the professional activity, and implies the participation of several experts. The game is played according to a given scenario; all roles are assigned in advance, and each role has a description and performance valuation matrix. Expert games, like any business games, need an extraordinary amount of professional maturity from the analyst. The game design, scenario and preparation are creative work, but this stage is really time-consuming. However, the result may be outstanding as the game activates the experts' minds and reveals their tacit and implicit decision-making procedures (Gavrilova & Andreeva 2012).

The three different elicitation techniques explained above are summarized in the diagram below.

Figure 9 - Gavrilova & Andreeva (2012) Knowledge Elicitation Techniques
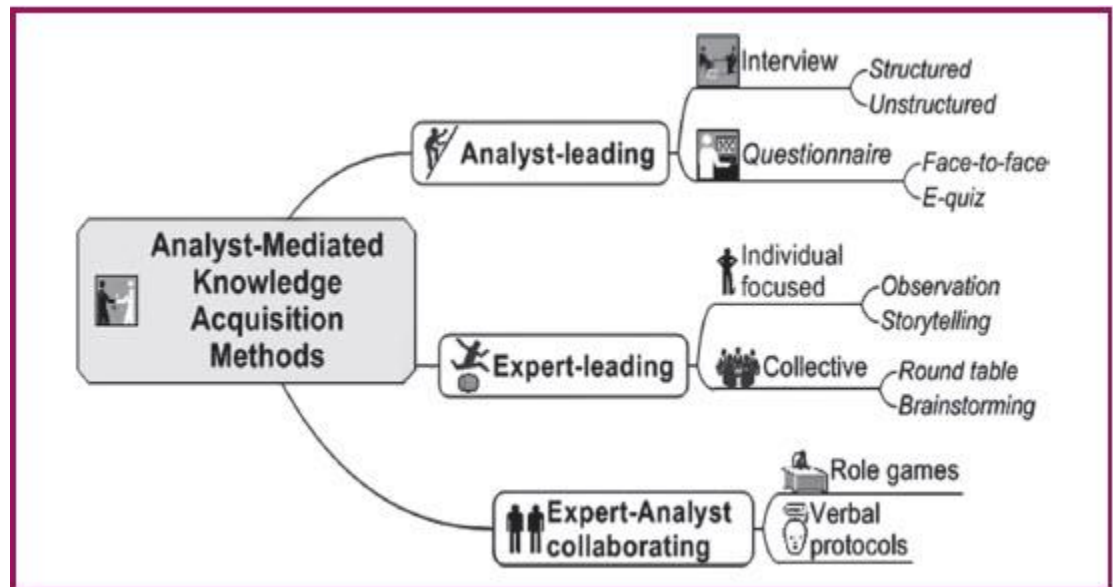
Newman and Conrad (1999) categorized 3 type of Agents that are in the organization that is using knowledge management to be able to action and exhibit all the behaviors with the knowledge flow. Thee 3 type of Agents are:

Individual Agents. These agents sit at the center of almost every knowledge flow. For most analysts, the individual (human) serves as the prototypical active force for affecting change. In this paper, the term individual is used in the collective sense and is not meant to imply that every specific individual is capable of the full range of behaviors attributed to this class of agent.

Automated Agents. These agents can include any human construct that is capable of retaining, transferring or transforming knowledge artifacts. They are not exclusively computerized processes, as is often assumed in discussions of knowledge management. A conventional camera that encodes a representation of the visual world through chemical changes to the surface of a film could act as an automated agent, supporting knowledge creation and capture.

Organizational Agents. These agents exist in situations in which knowledge retention and transfer cannot be fully attributed to individuals or specific automated agents. In these cases, the organization itself serves as an agent in the retention and dissemination of knowledge. As with tacit knowledge artifacts, current tools and concepts do not account very well for the roles of organizational agents in knowledge flows.

These 3 type of Agents are having the same characteristics and roles as the ones mentioned in the research of Gavrilova & Andreeva (2012). In a nutshell "Knowledge artifacts do not perform actions and make decisions. Actions and decisions are undertaken by agents: people, organizations, or in some cases, technology. Agents carry out all the actions and exhibit all the behaviors within a knowledge flow (Newman and Conrad 1999)".

The SECI process cannot be used with the Agents that are used for the elicitation of the tacit knowledge, so there must be a way or a process that is used to deliver the needs of the space and the physical context needed to have a successful knowledge model. Nonaka and Toyama (2003) introduced in their research the so called Knowledge Creating Place and they give it the name of "BA". "The conceptualization of BA is

extended to cover the interdependent interaction between agents and structures. Thus, BA is a continuously created generative mechanism that explains the potentialities and tendencies that either hinder or stimulate knowledge creative activities (Nonaka and Toyama 2003)". Building on the concept that was originally proposed by the Japanese philosopher Kitaro Nishida (1921, 1970), we define BA as a shared context in motion, in which knowledge is shared, created, and utilized (Nonaka and Toyama 2003). Ba provides the energy, quality, and places to perform the individual knowledge conversions and to move along the knowledge spiral (Nonaka and Toyama 2003). In other words, BA is a phenomenological time and space where knowledge, as 'a stream of meaning' emerges (Nonaka and Toyama 2003). New knowledge is created out of existing knowledge through the change of meanings and contexts (Nonaka and Toyama 2003).

Although it is easier to consider BA as a physical space such as a meeting room, BA should be understood as a multiple interacting mechanism explaining tendencies for interactions that occur at a specific time and space. Ba can emerge in individuals, working groups, project teams, informal circles, temporary meetings, virtual space such as e-mail groups, and at the front-line contact with the customer. Ba is an existential place where participants share their contexts and create new meanings through interactions (Nonaka and Toyama 2003). Participants of BA bring in their own contexts, and through interactions with others and the environment, the contexts of BA, participants, and the environment change (Nonaka and Toyama 2003).

Figure 10 - Nonaka and Toyama (2003) The BA Model
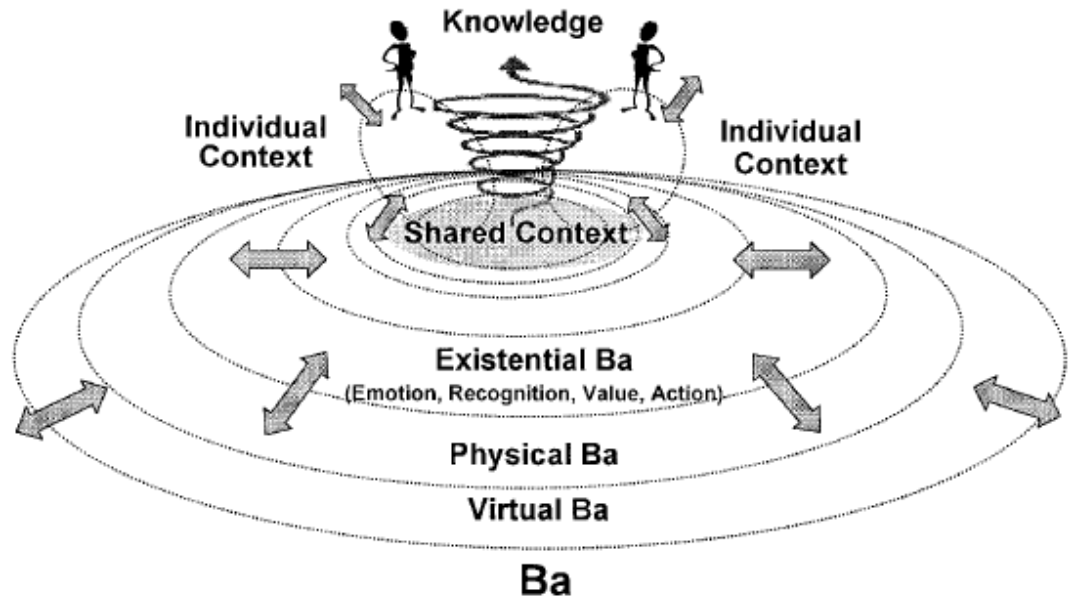
In brief this how BA model works, it is a way of organizing that is based on the meaning it creates, rather than a form of organization such as hierarchy or network (Nonaka and Toyama 2003). A firm can be viewed as an organic configuration of various BA, where people interact with each other and the environment based on the knowledge they have and the meaning they create (Nonaka Toyama 2003). and When we see a firm as an organic configuration of BA instead of an organizational structure, we can see what kind of knowledge should and can be created, who are the 'right people' with embedded knowledge, and what kind of interactions are needed among them to create knowledge without being restricted by the existing organization structure (Nonaka and Toyama 2003). BA is a place where new knowledge is created, the boundary of BA is fluid and can be changed quickly, as it is set by the participants, the membership of BA is not fixed; participants come and go (Nonaka and Toyama 2003). Ba is created, functions, and disappears according to need, BA has a 'here and now' quality as does an emerging, relationship, and is constantly moving as the contexts of participants and/or the membership of BA change (Nonaka and Toyama 2003).

BA needs energy to become an active BA where knowledge is created, It is contradictions and dialectic thinking and acting to synthesize such contradictions that produces a good BA (Nonaka and Toyama 2003). By definition, BA involves various contradictions (Nonaka and Toyama 2003). Ba requires multiple contexts, and yet, a shared context is necessary for a BA to exist (Nonaka and Toyama 2003). A good BA needs participants of BA with multi-viewpoints so that they can bring in various contexts, and a shared context among them has to be fostered (Nonaka and Toyama 2003). For that, BA needs to be a self-organizing place with its own intention, direction, or mission (Nonaka and Toyama 2003). BA sets a boundary for interactions among individuals, and yet the boundary is open (Nonaka and Toyama 2003). As there are endless possibilities to one's own contexts, a certain boundary is required for a meaningful shared context to emerge (Nonaka and Toyama 2003). It should be protected from the contexts outside so that it can grow its own context (Nonaka and Toyama 2003). Yet, BA is still an open place where participants with their own contexts can come and go, so that BA as shared context can continuously evolve (Nonaka and Toyama 2003). For a BA to create and maintain energy, the boundary of BA should be kept permeable, so that it can protect the BA from outside influence and let necessary contexts in at the same time (Nonaka and Toyama 2003). Nonaka and Toyama (2003) stressed on the boundaries created by BA, they mentioned that BA is not limited to a boundary of a single organization rather it can be created across a the whole network of the organization. Ba can be built as a joint venture with a supplier, an alliance with a competitor, or an interactive relationship with customers, universities, local communities, or the government (Nonaka and Toyama 2003). Organizational members transcend the boundary by participating in BA, and further transcend the boundary of BA, when BA is connected to other BA (Nonaka and Toyama 2003). The below diagram that was provided by Nonaka and Toyama (2003) summarize this paragraph and shows how the boundaries of BA is open and can really be very beneficial if used correctly.

Figure 11 - Nonaka and Toyama (2003) BA Boundaries
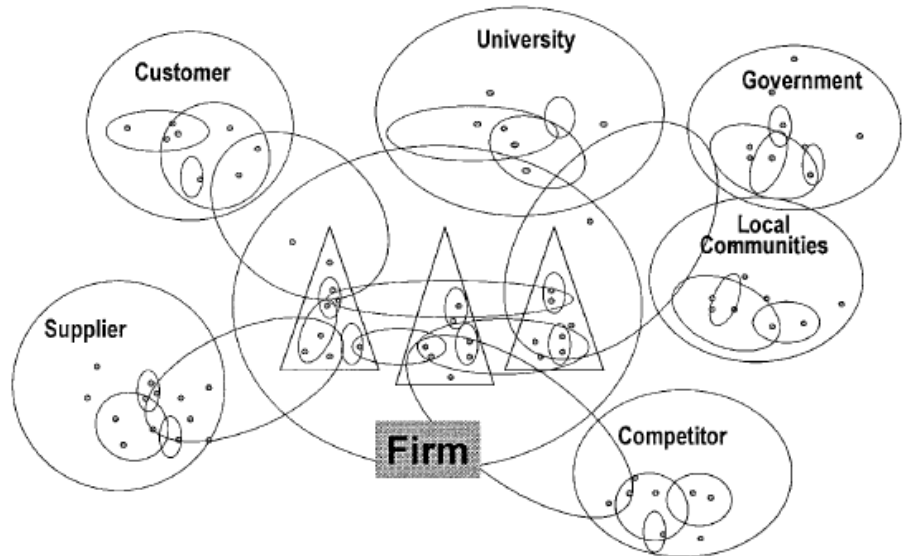
Therefore, the process for sharing or tapping into the knowledge pool must be simple, straightforward and efficient (Alazmi and Zairi 2003). Otherwise, people will be discouraged from contributing to, or tapping into, an enterprise's overall body of knowledge (Alazmi and Zairi 2003). In addition, successful business managers have to capture data from numerous internal and external production systems, databases, and resources to be competitive, they must also analyze, divide, associate, and compare the raw data; transform it into meaningful business information; and convert the meaningful business information into useful knowledge (Alazmi and Zairi 2003). Organizations should recognize the information needs of the enterprise with their overall business strategy; also, they must update the information and sustain the ability to identify and fill knowledge gaps by using the proper technology in their enterprise (Alazmi and Zairi 2003).

2.2 Knowledge Management Success Variables

A big portion of the researches that are tackling the variables/success factors for knowledge management depends mainly on the culture of the organization, and how the organization plays a role in making the use of knowledge successful or not. These variables/success factors are either being already used by an organization or the organization is ready to implement knowledge management techniques to gain a competitive advantage in its area of interest. Alazmi and Zairi (2003) created a summary to find out the important variables/success factors for knowledge management implementation, this summary emphasizes the diverse perspective of variables/success factors from the authors point of view. "These factors are aimed at creating a KM environment that provides the company with some sustainable competitive advantage through the continued creation of knowledge, maintenance of current knowledge resources, and creating an environment in which the knowledge management function can survive and grow. From these factors, we see that some of them are more important than others. So we classified these factors under nine categories (Alazmi and Zairi 2003)". "Therefore, organizations must take into account these factors in order to exploit, as much as possible, the knowledge management advantage, as well as how people learn, how they implement what they learn, and how they share their knowledge. Undoubtedly, all of these factors are very important and organizations must take account of all of these factors to exploit the competitive KM advantage as much as possible (Alazmi and Zairi 2003)".

2.2.1 Alazmi and Zairi variables/success factors. In the below table Alazmi and Zairi (2003) categorized 9 different variables/success factors for knowledge management implementation according to the deep research they did from different authors. They gathered their definitions and explanation on these variables/success factors and came out with the 9 factors they believe are the variables/success factors. The 9 variables/success factors categorized by Alazmi and Zairi (2003) are; Training, Sharing, Culture, Transferring, Top-Management Supported, Technology Infrastructure, Creating, Knowledge Strategy, & Knowledge Infrastructure.

Figure 12 - Alazmi and Zairi (2003) Variable/Success Factors

Authors	CSFs
Wiig (1996)	(1) Knowledge assets—to be applied or exploited—must be nurtured, preserved, and used to the largest extent possible by both individuals and organizations. (2) Knowledge-related processes—to create, build, compile, organize, transform, transfer, pool, apply, and safeguard knowledge—must be carefully and explicitly managed in all affected areas.
Davenport *et al.* (1998)	(1) Link to economic performance or industry value. (2) Technical and organizational infrastructure. (3) Standard, flexible knowledge structure. (4) Knowledge-friendly culture. (5) Clear purpose and language. (6) Change in motivational practices. (7) Multiple channels for knowledge transfer. (8) Senior management support.
Davenport & Prusak (1998)	(1) Technology (network). (2) Knowledge creation and dissemination. (3) Knowledge sharing. (4) Electronic repositories of knowledge. (5) Training, culture and leadership. (6) Issues of trust. (7) Knowledge infrastructure.
Morey (1998)	(1) Available (if knowledge exists, available for retrieval). (2) Accurate in retrieval (if available, knowledge retrieved.). (3) Effective (knowledge retrieved useful and correct). (4) Accessible (knowledge available during time of need).
Trussler (1998)	(1) Appropriate infrastructure. (2) Leadership and strategic (management commitment). (3) Creating motivation to share. (4) Find right people and data.. (5) Culture. (6) Technology. (Network.) (7) Available to collaborators. (Transferring.) (8) Training and learning.
Finneran (1999)	(1) Creation of culture. (2) Sharing of information and knowledge. (3) Creative knowledge. (4) Workers' buy-ins (90% of the success of KM is involved with gaining buy-in of knowledge users and encouraging knowledge sharing).
Liebowitz (1999)	(1) KM strategy with support from senior leadership. (2) Chief Knowledge Officer (CKO). (3) Knowledge intologies and knowledge repositories to serve as organizational/corporate memories in core competencies. (4) KM systems and tools. (Technology.) (5) Incentive to motivate employees to share knowledge. (6) Supportive culture for KM.

Manasco (1999)	(1) Knowing community.
	(2) Creating context.
	(3) Overseeing content.
	(4) Supporting infrastructure (proper technology).
	(5) Enhancing process (creating and sharing knowledge).
Bassi (2000)	(1) People learn (how, what).
	(2) People implement (how).
	(3) Sharing.
Choi (2000)	(1) Employee training.
	(2) Employee involvement.
	(3) Teamwork.
	(4) Employee empowerment.
	(5) Top-management leadership and commitment.
	(6) Organization constraints.
	(7) Information systems infrastructure.
	(8) Egalitarian climate, benchmarking.
	(9) Knowledge structure.
Skyrme (2000)	(1) Top management support.
	(2) Clear and explicit links to business strategy.
	(3) Knowledgeable about knowledge.
	(4) Compelling vision and architecture.
	(5) Knowledge leadership and champions.
	(6) Systematic knowledge processes (supported by specialists in information management (librarians) but close partnership between users and providers of information).
	(7) Well-developed knowledge infrastructure (hard and soft).
	(8) Appropriate bottom line measures.
	(9) Creation of culture that supports innovation, learning and knowledge.
	(10) Technical infrastructure that supports knowledge work.
Skyrme & Amidon (2000)	(1) Strong link to a business imperative.
	(2) Compelling vision and architecture.
	(3) Knowledge leadership.
	(4) Knowledge creating and sharing culture.
	(5) Continuous learning.
	(6) Well-developed technology infrastructure.
	(7) Systematic knowledge processes.
Steele (2000)	(1) Staff must buy into the new model.
	(2) Lines of communication must be kept open.
	(3) Sharing information.
	(4) Writing weekly updates.
	(5) Management supporting.
Haxel (2001)	(1) Knowledge structured.
	(2) Knowledge organized (goal is to share and apply knowledge faster and more efficiently than your competitors).
Heising (2001)	(1) Store experiences from experts.
	(2) Exiting e-mail culture (culture corporate).
	(3) Senior management support.
	(4) IT director business-focused and business process-oriented.
	(5) Integrated among KM processes (create, store, distribute, apply knowledge).
	(6) KM tasks must be combined with daily work tasks and integrated into daily business processes.

Figure 13 - Alazmi and Zairi (2003) Variable/Success Factors Categories

Authors	Training	Sharing	Culture	Transferring	Top – Management supported	Technology Infrastructure	Creating	Knowledge strategy	Knowledge Infrastructure
Wiig (1996)		*		*		*	*		
Davenport et al. (1998)			*		*	*		*	*
Davenport & Prusak. (1998)	*	*	*	*	*	*	*		*
Morey (1998)						*			
Trussler (1998)	*	*	*	*	*	*			*
Finneran (1999)		*	*				*		
Liebowitz (1999)		*	*		*	*		*	
Manasco (1999)		*				*	*		
Bassi (2000)	*	*				*			
Choi (2000)	*	*		*	*			*	
Skyrme (2000)	*	*	*		*			*	
Skyrme & Amidon (2000)	*				*	*		*	
Steele (2000)		*			*	*		*	
Haxel (2001)		*						*	
Heisıng (2001			*	*	*	*	*		
Total	**6**	**11**	**6**	**4**	**9**	**10**	**4**	**7**	**3**

2.2.2 Al-Alawi, Al-Marzooqi, and Mohammed variables/success factors. Building up on the variable/success factors that are summarized above, "Knowledge sharing is critical to a firm's success as it leads to faster knowledge deployment to portions of the organization that can greatly benefit from it (Al-Alawi, Al-Marzooqi, and Mohammed 2007)". Al-Alawi, Al-Marzooqi, and Mohammed (2007) mentioned that organizational culture consist of six major categories, which are: information systems, people, process, leadership, reward system and organization structure. Accordingly "Each organization has its unique culture, which develops overtime to reflect the organization's identity in two dimensions: visible and invisible. The visible dimension of culture is reflected in the espoused values, philosophy and mission of the firm while the invisible dimension lies in the unspoken set of values that guide employees' actions and perceptions in the organization (Al-Alawi, Al-Marzooqi, and Mohammed 2007)".

Figure 14 - Al-Alawi, Al-Marzooqi, and Mohammed (2007) Organizational Culture Framework

Source: Gupta and Govindarajan (2000)
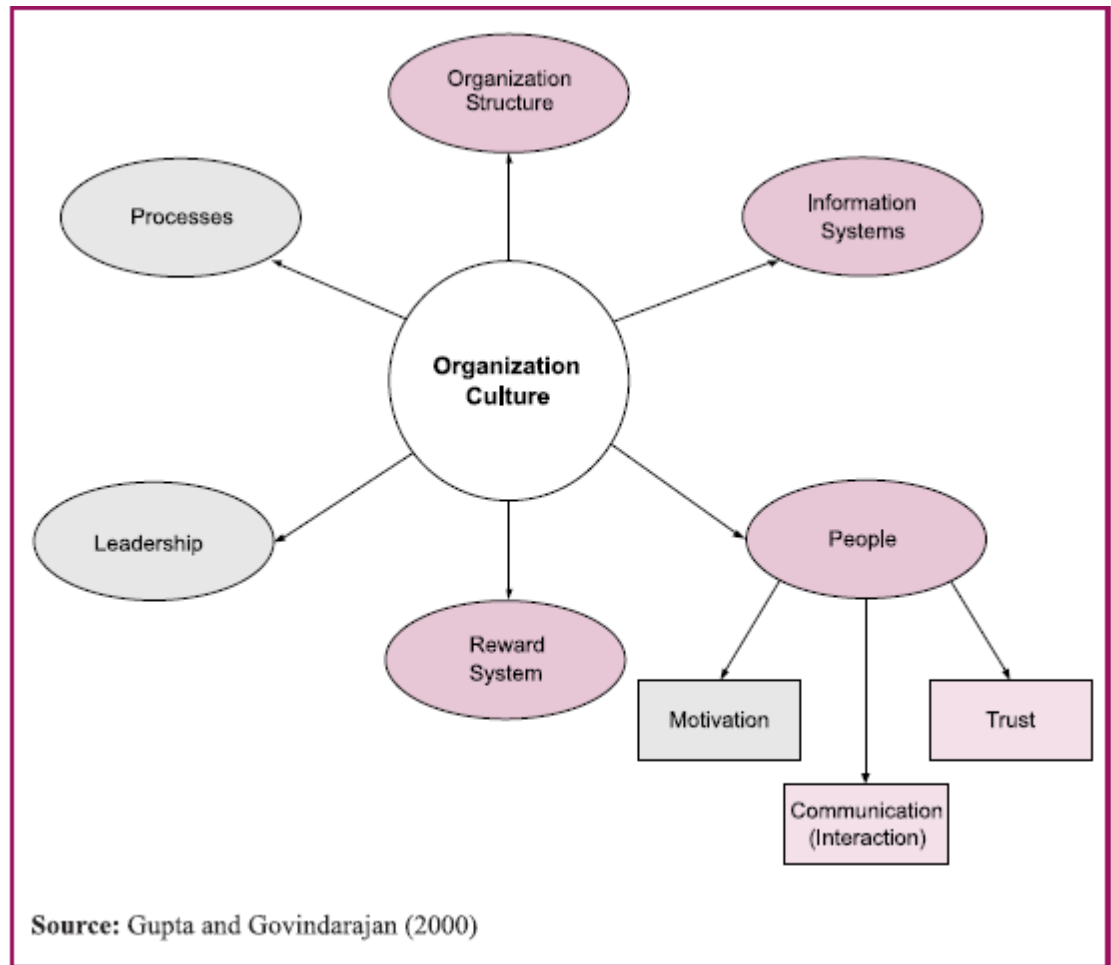
From figure-14 above it shows the factors that received the strongest emphasizes from previous researches that influence on the success of knowledge sharing (Al-Alawi, Al-Marzooqi, and Mohammed 2007). These factors are; **trust**, **communication between staff**, **information system**, **reward system**, and **organization structure**.

Trust: "Interpersonal trust or trust between co-workers is an extremely essential attribute in organizational culture, which is believed to have a strong influence over knowledge sharing. Interpersonal trust is known as an individual or a group's expectancy in the reliability of the promise or actions of other individuals or groups. Team members require the existence of trust in order to respond openly and share their knowledge (Al-Alawi, Al-Marzooqi, and Mohammed 2007)".

Communication between staff: "Communication here refers to human interaction through oral conversations and the use of body language while communicating. Human interaction is greatly enhanced by the existence of social networking in the workplace. This form of communication is fundamental in encouraging knowledge transfer (Al-Alawi, Al-Marzooqi, and Mohammed 2007)".

Information systems: "The term information systems is used to refer to an arrangement of people, data and processes that interact to support daily operations, problem solving and decision making in organizations. Organizations use different information systems to facilitate knowledge sharing through creating or acquiring knowledge repositories, where employees share expertise electronically and access to shared experience becomes possible to other staff (Al-Alawi, Al-Marzooqi, and Mohammed 2007)".

Reward system: "Employees need a strong motivator in order to share knowledge. It is unrealistic to assume that all employees are willing to easily offer knowledge without considering what may be gained or lost as a result of this action. Managers must consider the importance of collaboration and sharing best practices when designing reward systems. The idea is to introduce processes in which sharing information and horizontal communication are encouraged and indeed rewarded. Such rewards must be based on group rather than individual performance (Al-Alawi, Al-Marzooqi, and Mohammed 2007)".

Organization structure: "Traditional organization structures are usually characterized by complicated layers and lines of responsibility with certain details of information reporting procedures. Nowadays, most managers realize the disadvantages of bureaucratic structures in slowing the processes and raising constraints on information flow. In addition, such procedures often consume great amount of time in order for knowledge to filter through every level (Al-Alawi, Al-Marzooqi, and Mohammed 2007)".

2.2.3 Knowledge Strategy variable/success factor. Another variable/success factor is knowledge strategy, "To explain the relation between knowledge and strategy, the organization must formulate its strategic plan, identify the knowledge required for strategy implementation and compare it with the existing knowledge in order to specify the strategic knowledge gap (Dadashkarimi and Asl 2013)". Organization deals with two kinds of knowledge management strategy: first, coding strategy where knowledge is coded and saved in databases; and second, personalization strategy where personal interaction is necessary and information technology is merely a tool for communication (Dadashkarimi and Asl 2013). Tacit knowledge management is called management personalization strategy, organizations which adopt such a strategy offer specialized products and services to meet special customers' needs (Dadashkarimi and Asl 2013). Measures related to knowledge management will create a competitive advantage when they are consistent with the organization strategic processes (Dadashkarimi and Asl 2013). This consistency will be resulted through different strategies, these strategies are namely coding strategy, personalization strategy, intellectual properties strategic management, etc. (Dadashkarimi and Asl 2013). Each of these strategies has a particular duty, that is, coding strategy through IT, personalization strategy through team founding and intellectual properties strategic management through utilizing knowledge based properties will focus the organization general orientation on knowledge (Dadashkarimi and Asl 2013). So it is reasonable to expect that coordination between knowledge management strategy and organization performance improves strategies effectiveness and creates a competitive advantage (Dadashkarimi and Asl 2013). Accordingly both Dadashkarimi and Asl (2013) provided in their research the so called the phases of knowledge management life cycle, they introduced the life cycle based on different visions of authors. The life cycle will play a role in the knowledge strategy that will be applied in the organization.

Figure 15 - Dadashkarimi and Asl (2013) Knowledge Management Life Cycle

Model	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6
Despres and chauvel	Creation	Mapping	Storing	Sharing/transmission	Re-usage	Evolution/inference
Gartner group	Creation	Organization	Capturing	Access	Usage	-
Davenport and prusal	Generation	-	Encoding	Transmission		-
Nissen	Capturing	Organization	Formalization	Distribution	Usage	-
Amalgamated	Creation	Organization	Formalization	Distribution	Usage	Evolution/inference

Gupta and Sharma (2004)

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2.2.4 Akhavan and Zahedi variable/success factors. Akhavan and Zahedi (2014) have introduced variable/success factors for knowledge management that are somehow the same as the ones mentioned above. They used these factors in various cases and tested them to see which factors will be the most efficient ones in the various case studies they tested. These factors are:

Figure 16 - Akhavan and Zahedi (2014) Variable/Success Factors

Education Schemes, Knowledge Structure, Rewards and Incentives, Knowledge Sharing, Transparency, Knowledge Strategy, Trust, Familiarity with Knowledge Management, Information Technology, Personal Outcome, Storing Knowledge, Coordination, Knowledge Recognition, Organization-wide Culture, and Senior Management Support.

According to the results of the six case studies run by Akhavan and Zahedi (2014), they reached out that there are nine effective variables/success factors that can play a role in achieving a successful knowledge management strategy or model. These factors are:

Knowledge Structure: "It is the base construct of the organization to guide in designing the processes and procedures. It attends to different dimensions related to basic issues around the firm. Knowledge structure specifies how a business model should be followed and operated. Knowledge structure can be also defined as a set of guidelines, standards and logics that engineers the knowledge management processes. Establishment of knowledge structure is of high importance, demanding significant level of accuracy, appropriateness, and consistency in order to be able to respond to the business requirements and objectives (Akhavan and Zahedi 2014)".

Knowledge Sharing: "Knowledge sharing is used to implement knowledge management processes in the organization. Knowledge sharing can be stimulated through events, or regular scheduling for employees. Actually, it is important to provide the necessary facilities and sufficient time gaps in order to make knowledge sharing as a routine procedure inside the organization. Regularity of meetings or occasions could be aligned

by the projects' special points. For instance, the starting and ending of each phase can be assumed as among the most valuable times to make use of the achieved data by different individuals inside the firm. Also, having daily or weekly meetings can lead the team to provide all the gathered information without issues such as forgetting, etc., can help the projects in hand to benefit from the experiences of employees during their processes. Furthermore, senior managers need to provide a proper atmosphere inside the organization in order to facilitate knowledge sharing among the staff. An inspiring, transparent, trustful environment can definitely encourage the employees to share their knowledge (Akhavan and Zahedi 2014)".

Knowledge Strategy: "One of the most important branches of the corporate strategy is knowledge strategy. It can help the organization to succeed in knowledge management. Clear, well-aligned and well-defined strategy can be employed more quickly and effectively. Knowledge sharing offers an organizational construct that can be benefited from knowledge capabilities and resources to proceed toward success. Knowledge needs organizational support to be connected to corporate strategy (Akhavan and Zahedi 2014)".

Senior Management Support: "Each project needs the presence of management not only during crisis, but also according to the requirements of different parts of the organization. This presence should be followed by support and useful integration in order to provide the demanded facilities and requirements for the success of a project (Akhavan and Zahedi 2014)".

Education Schemes: "To direct the knowledge towards the organizational objectives, employees should be trained in recording their information and analyzing and providing a proper report to transfer a useful format of knowledge to others. Pre scheduled schemes can help the staff to become competent to work under knowledge strategy and benefit the organization in this regard (Akhavan and Zahedi 2014)".

Personal Outcome: "Personal outcome can provide a good influence on knowledge sharing. While organizational outcome has low impact, the group outcome with a sense of being part of community plays a significant role. Personal outcome could intrinsically encourage and run individuals to proceed quicker and more efficiently (Akhavan and Zahedi 2014)".

IT: "Not only in the mentioned cases, but also among many other papers that we reviewed, there are many researches focused on the impact of IT on knowledge management. IT has affected knowledge management very significantly and many advances in knowledge management are achieved through system improvements using IT tools. There are many misunderstandings regarding IT applications for knowledge management. Many organizations consider IT as the process of investing in expensive IT software. The result has been unfortunate with considerable losses. In fact, IT should be integrated into the knowledge structure and employees as well as managers should be aware of its impacts, and also have to know how it works. Overall, it is an undeniable fact that IT influences the success of knowledge management in temporary organizations (Akhavan and Zahedi 2014)".

Organization-Wide Culture: "As culture is important in all types of actions taken inside the organization, it should be noticed that it plays an important role in the correct and effective implementation of knowledge management. knowledge management needs an appropriate preparation of the employees in terms of their attitudes, ideas, behaviors, etc. The organization should be configured in such a way that knowledge sharing under a rich organization-wide culture is encouraged. It becomes even more significant when knowledge sharing is mainly dependent on the interests and intentions of the staff to be convinced to share their knowledge. Good organization-wide culture might be able to guarantee such an outcome. Respect, trust, transparency, motivation, sensing as a united team, can be appropriate specifications of a prosperous culture (Akhavan and Zahedi 2014)".

Storing Knowledge: "First, the employees should be encouraged to express their obtained information. Then, the information should be recorded, categorized and stored for future access. Large databases and organized methods of storing are needed. If an organization does not provide easy-to-use system for drawing the knowledge out of individuals, they might not be interested to share their information. Moreover, if the system could not be accessed conveniently, storing could not benefit the organization (Akhavan and Zahedi 2014)".

From the nine important factors above, "a conceptual framework was drawn and the critical factors have been placed at different levels in the framework. Flashes show the flow of knowledge within the KM system. The overall items emphasize the management of knowledge in temporary organizations (Akhavan and Zahedi 2014)".

Figure 17 - Akhavan and Zahedi (2014) Conceptual Framework
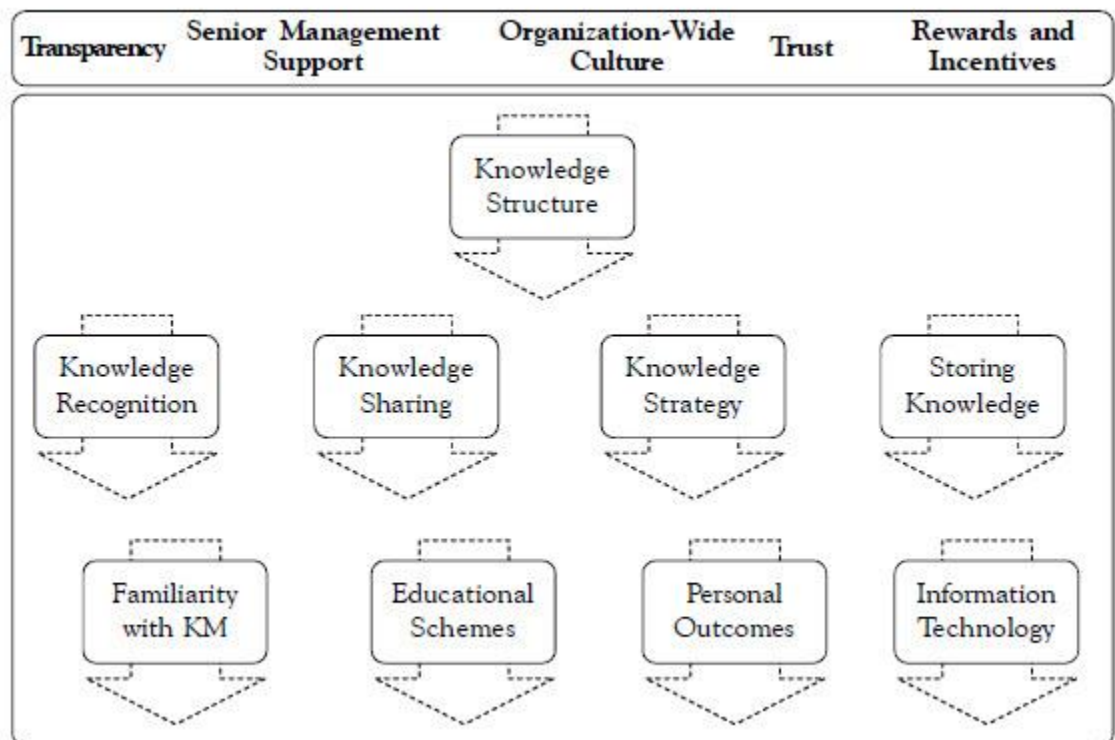
Knowledge structure is the key point to start, it generally emphasizes on KM by a well-defined approach, integrates and forms the most beneficial and influential factors

with respect to successful knowledge management (Akhavan and Zahedi 2014). Moreover, it establishes a balance between different factors in order to enable the organization to design the required processes and facilities as well as corporate strategies to make sure that a knowledge management initiative would flow in a well-structured organization from knowledge management perspective (Akhavan and Zahedi 2014). After knowledge structure, knowledge strategy clarifies the road map that should be delineated towards organizational objectives, it is highly unlikely to assess the improvements and deviations in the process of KM without knowledge strategy. Strategy should be flexible (Akhavan and Zahedi 2014). As a matter of fact, whenever the need for revision is recognized, the strategy should be capable of changing fast to become well-suited with the new environment (Akhavan and Zahedi 2014). Therefore, there should be constant monitoring over the changes inside the firm to make knowledge management viable to succeed (Akhavan and Zahedi 2014). Knowledge recognition is another vital factor for successful knowledge management (Akhavan and Zahedi 2014). For identifying and capturing the right knowledge, it should be stored systematically for easier access (Akhavan and Zahedi 2014). The other important factor, knowledge sharing should become an exercise among individuals in order to store the information inside the organization and enhance level of learning (Akhavan and Zahedi 2014).

Akhavan and Zahedi (2014) mentioned that the second layer includes the factors that are of medium importance. They are supported by the above-mentioned factors. Additionally, KM cannot be done without their effective presence. IT, familiarity with KM, educational schemes and personal outcomes are the factors essential to have a successful KM initiative, they obviously facilitate the process and benefit the organization to quicken the procedure (Akhavan and Zahedi 2014). In addition to the two mentioned levels, there is another level, which is located above the framework and effects on all the processes occurring in other levels (Akhavan and Zahedi 2014). "These are factors central to successful strategies in all types of firms and of course in temporary organizations (Akhavan and Zahedi 2014)". Some of the most effective ones are organization-wide culture, transparency, rewards and incentives, senior management support, and trust (Akhavan and Zahedi 2014).

In conclusion, "Organizations need to construct suitable knowledge structure and set their knowledge strategies based on that. Strategies should be aligned in such a way so as to enable and inspire knowledge sharing among employees. There are some other items for facilitation of knowledge sharing such as organization-wide culture. Also well-designed plans for rewards and incentives can demonstrate an organizational will to gather knowledge from the staff. Educational schemes should be placed in knowledge strategies. They guide the individuals to observe and express their information in the most efficient way. IT can help the organizations to better lead their programs and provide more advanced tools for staff to gather their data and establish a more useful knowledge system throughout the organization (Akhavan and Zahedi 2014)".

2.3 Frameworks to Measure Knowledge Management

Measuring of knowledge management can be divided into two categories, the first category is **measuring the effectiveness of a framework or a model used in implementing knowledge management strategy**. the second category is **measuring the readiness of the organization to implement knowledge management strategy**, this of course will be examining the variables/success factors that are in the organization to assess if they are enough to start the knowledge management strategy or not. In the below paragraphs, different frameworks and models will be discussed and explained that will express how effectiveness and readiness can be measured.

2.3.1 Framework measuring the effectiveness of a model.

2.3.1.1 The characterization framework. Newman and Conrad (1999) introduced a framework called "The Characterization Framework". This framework "allows a given tool to be described in terms of its interactions with the various elements of knowledge flows and their associated subtypes (Newman and Conrad 1999) ". "The framework's theoretical roots focus on the role of knowledge in complex systems and fundamental knowledge interactions. This focus provides a solid foundation that can be built upon, applied and adapted to different (Newman and Conrad 1999)". "So, while this framework can be used to do highly formalized analysis, it also works for simpler, back-of-the-envelope analysis, or even to sort out a couple of facts. It works for engineers and psychologists and can be used to discuss and describe information policies in neutral language that is neither business-centric nor technology-centric (Newman and Conrad 1999)". The important thing is to keep it simple. By using the framework, you will learn more about your problem and make explicit other things you had known implicitly or even tacitly. As new facts become apparent, the tendency might be to start drilling deeper and deeper into a facet of the problem. It will not take long to realize that the deeper you go, the more interrelated that particular facet becomes with the other areas of the framework. Before you know it, the problem will have become very complex (Newman and Conrad 1999)".

Figure 18 – Newman and Conrad (1999) The Characterization Framework

Tool				Activity Phase				Activity Level			Agent Type			Artifact Type			Focus		
Name	Practice	Method	Technology	Creation	Retention	Transfer	Utilization	High-level Process	Mid-level Process	Decision or Action	Individual	Automated	Organizational	Explicit	Implicit	Tacit	Agent	Artifact	Process

A quick explanation on the activity phase, this phase is based on the General Knowledge model introduced by Newman and Conrad (1999). This model "sequences the activity areas in a deterministic fashion. In reality, though, all but the most rigorously automated knowledge flows comprise complex systems that are built mostly from asynchronous processes. The model is valuable precisely because it relates the individual, highly dynamic behaviors and processes to general activity areas and, by association, to each other. Various theories of learning, problem solving and cognition may imply specific activity patterns, but they are usually not required to organize the key relationships and dependencies among the activity areas. The model allows analysts to trace individual knowledge flows by helping them to examine and understand how knowledge enables specific actions an (Newman and Conrad 1999)".

Figure 19 - Newman and Conrad (1999) The General Knowledge Model
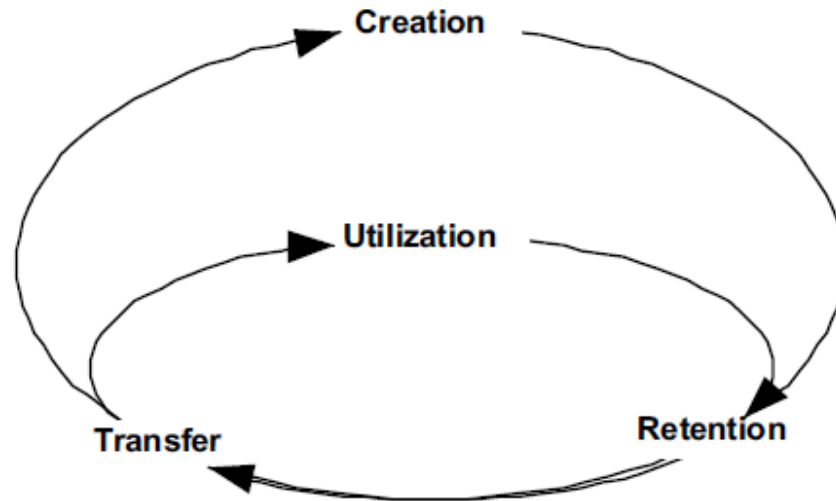
The explanation of this model is as follows:

Knowledge Creation. This comprises activities associated with the entry of new knowledge into the system, and includes knowledge development, discovery and capture.

Knowledge Retention. This includes all activities that preserve knowledge and allow it to remain in the system once introduced. It also includes those activities that maintain the viability of knowledge within the system.

Knowledge Transfer. This refers to activities associated with the flow of knowledge from one party to another. This includes communication, translation, conversion, filtering and rendering.

Knowledge Utilization. This includes the activities and events connected with the application of knowledge to business processes.

Coming back to the characterization framework, below are various options that this framework can be used in for measuring the effectiveness of knowledge management used in different situations:

Classification of Knowledge Management Tools: "It helps individuals identify and differentiate among the roles different tools can play in a knowledge management system. One of the easiest ways to evaluate a tool is to describe its characteristics in terms of its interactions with each of the element subtypes of the framework (Newman and Conrad 1999)".

Identifying Knowledge Flow Elements: "Underlying the application of the framework in tool classification is the ability to use the framework to identify and classify the individual elements of knowledge flows and their supporting knowledge management systems (i.e. agents, artifacts and behaviors). In effect, the framework provides a way to subdivide knowledge flows into more manageable components (Newman and Conrad 1999)".

Analyzing Knowledge Flows & Identify Gaps: "Because the framework illuminates the nature of the relationships among knowledge flow elements, it allows analysts to take the myriad of data points associated with complex knowledge flows and put them into a structure in which the relationships and dependencies become far more apparent (or even explicit). This structuring process, in turn, helps illuminate both patterns and the gaps that result from missing or unarticulated elements (Newman and Conrad 1999)".

Another framework that is introduced by Smits and de Moor (2004), it is called "The Knowledge Governance Framework". Briefly knowledge governance "is related to the total set of control, coordination and management activities in an organization, linking business objectives to knowledge resources. The knowledge governance framework is based on the following five conceptual building Smits and de Moor (2004)".

Knowledge resources & knowledge development: "knowledge is created in a continuous cycle, the well-known SECI (Socialization – Externalization – Combination - Internalization) model of cyclical knowledge creation, distinguishing between tacit and explicit knowledge that are continuously converted in a social learning process Smits and de Moor (2004)".

Knowledge management: "define knowledge management as 'purposeful interventions of knowledge development to realize sufficient knowledge availability at the time and place where the organization needs it Smits and de Moor (2004)".

Aspects to measure on knowledge management: measuring knowledge development processes (Smits and de Moor 2004).

Indicators: as per Smits and de Moor (2004) they let the community members themselves to define which indicators are effective and efficient.

Diagnosis & feedback: "After indicator values have been measured, diagnostic processes can be conducted to compare actual values with benchmark or target values. To conceptualize systemic breakdowns in the knowledge creation process Smits and de Moor (2004)".

2.3.1.2 The knowledge governance framework. The knowledge governance framework is defined by Smits and de Moore (2004), as the process of controlling knowledge resources and knowledge development resulting in achieving the organizational objectives. "Knowledge development typically occurs in communities, where people work in a mix of project and other activities. Communities of practice (CoP) are playing an increasingly important role in modern, knowledge-intensive organizations. CoP foster knowledge development and creative interactions amongst highly specialized experts and help to channel their efforts to where they are most needed. In this way, CoP are a key element in knowledge development Smits and de Moor (2004)". The Knowledge Governance Framework defines the organizational and

management context of knowledge resources and distinguishes between three levels of KM in the organization, based on the temporal scope and organizational level that governs it (Smits and de Moore 2004).

Figure 20 – Smits and de Moore (2004) The Knowledge Governance Framework
SLC = Social Learning Cycle
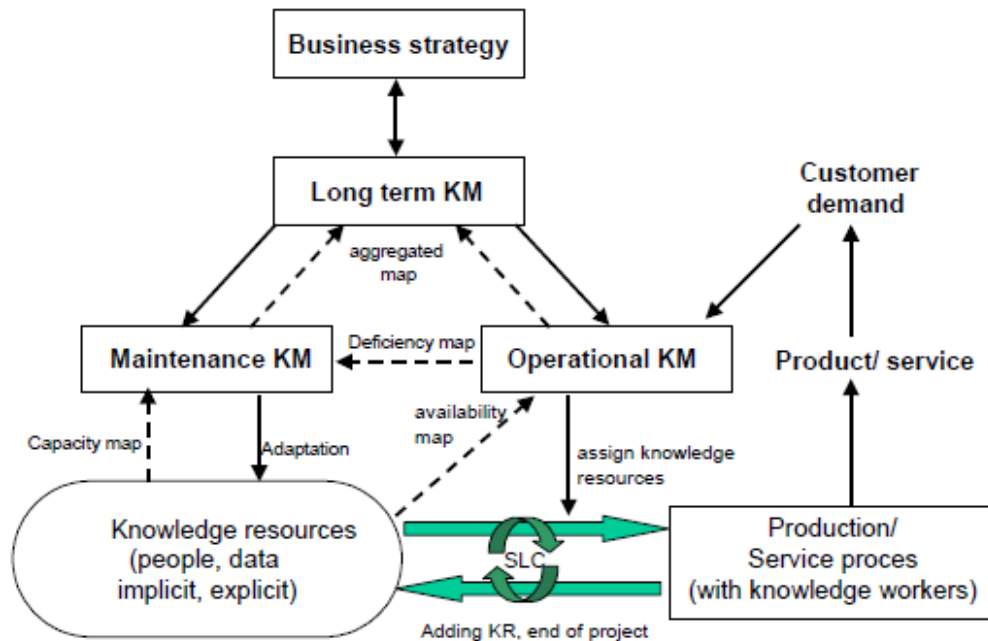
Figure 20 "shows -at the bottom- the knowledge resources and knowledge development in an organization. The central part of figure 20 shows the three levels of operational, maintenance, and long-term knowledge management, their relations, and the relations with organizational context (customer needs; products and services of the organization; business strategies). Relations between the three levels consist of indicators (in reports or 'maps') and corrective actions. A map is a collection of relevant indicators of knowledge resources to be used in a knowledge management process. Figure 20 also shows examples of indicators Smits and de Moor (2004)". Below is the explanation of each building block of knowledge management mentioned in the figure above.

Operational Knowledge Management: "An operational knowledge manager takes care of the customer demand for knowledge-intensive products or services and forms a project

team consisting of knowledge resources and specialized employees who will implement these orders. A customer need can be a request for financial services (an 'investment fund') or an information system to manage insurance claims (by insurance intermediaries). After a request has been received, operational KM needs an availability map, an up-to-date overview of the free and available knowledge resources to be able to create optimal project teams. If there are differences between the actual needs of Operational KM and the available resources, the gaps will be communicated to Maintenance KM, for instance in the form of a deficiency map Smits and de Moore (2004)".

Maintenance Knowledge Management: "A maintenance knowledge manager aims to maintain an optimal level of knowledge resources by comparing the capacity map (all or part of the total set of knowledge resources present in the organization) with the deficiency maps and long term plans. As a result, the knowledge resources may be adapted, for example by training or hiring human resources or buying, developing knowledge products, stimulate social learning, and linking to other resources. Operational and maintenance knowledge management are represented as one function. All types of knowledge management will be executed by multiple persons and departments in most organizations Smits and de Moore (2004)".

Long-Term Knowledge Management: "A long-term knowledge manager evaluates maintenance and operational knowledge management, based on reports, indicators, business objectives and strategies, so that a long-term plan can be made. These plans are communicated to the other knowledge management processes and contain the knowledge management objectives to be reached and the costs and profits that will be realized. Many organizations claim that knowledge resources are the core building blocks for creating customer value, and that knowledge and competences ought to be explicitly managed. The firm's strategy is the most important context to guide knowledge management Smits and de Moore (2004)".

2.3.1.3 The IS model/framework. Tackling another instrument/model that is used to measure up the effectiveness of knowledge management usage in an organization. This instrument or model is created by the authors of the research by combining variables of knowledge management and creating a model after testing their hypothesis, which reach them to find out a good combinations and relationships that will lead to a good measurement of the knowledge management effectiveness. "We examine a knowledge management (KM) success model that incorporates the quality of available knowledge and KM systems built to share and reuse knowledge such as determinants of users' perception of usefulness and user satisfaction with an organization's KM practices. Perceived usefulness and user satisfaction, in turn, affect knowledge use, which in our model is a measure of how well knowledge sharing and reuse activities are internalized by an organization (Kulkarni, Ravindran, and Freeze 2006-7)". "It provides more than anecdotal evidence of factors that determine successful KM system implementations. Unlike earlier studies that only deal with knowledge-sharing incentives or quality of shared knowledge, we present and empirically validate an integrated model that includes knowledge sharing and knowledge quality and their links to the desired outcome— namely, knowledge reuse (Kulkarni, Ravindran, and Freeze 2006-7)".

Kulkarni, Ravindran, and Freeze (2006-7) based their study on Information System (IS) model that was already defined in previous researches, they used ideas and constructs from the IS model which was a success as per previous researchers mentioned. In a nutshell, IS model "a taxonomy of six IS success categories (Information Quality, System Quality, IS Use, User Satisfaction, Individual Impact, and Organizational Impact) from a comprehensive review of different IS success measures and proposed a model including "temporal and causal" interdependencies between these categories (Kulkarni, Ravindran, and Freeze 2006-7)". "In making the change from information to knowledge, IS researchers have recognized that knowledge is a multidimensional construct with more complex characteristics than those of information. One perspective defines knowledge as an object to be stored, manipulated, and so on; another extends this concept by emphasizing organization of knowledge to facilitate access; and a third goes further by viewing knowledge as a process of simultaneously knowing and acting, as in applying expertise (Kulkarni, Ravindran, and Freeze 2006-7)". "We extend this narrow context to

a setting where a firm augments the KM system implementation with management and organizational support factors (in line with the ensemble view of the IT artifact). Deploying a KM system is a part of an overall KM initiative. It may involve structural/procedural changes in an organization to facilitate knowledge sharing and use. It may be geared toward upgrading the knowledge content itself (documenting insights gained from prior successes and failures, purchasing external research reports, and so on) (Kulkarni, Ravindran, and Freeze 2006-7)".

Figure 21 - Kulkarni, Ravindran, and Freeze (2066-7) The IS Model
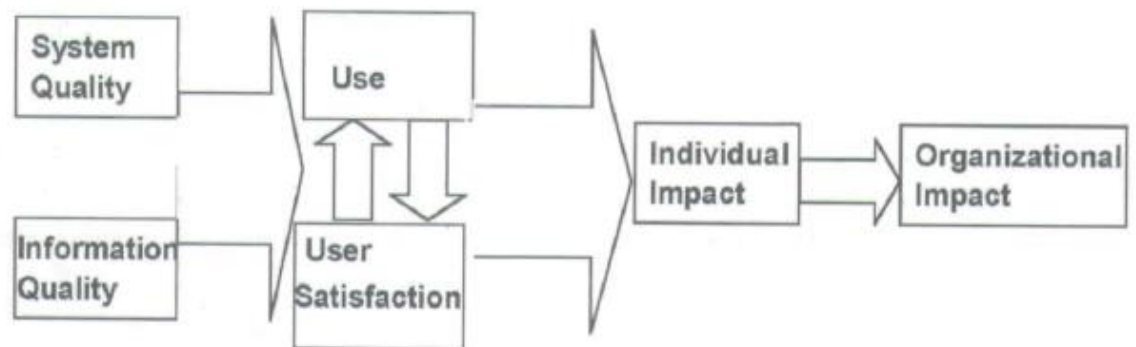
The below figure is transformed Knowledge Management success model. A brief explanation of the model as stated by Kulkarni, Ravindran, and Freeze (2006-7). "We use the term knowledge sharing to mean both contributing to and using available knowledge. Perceived Usefulness of Knowledge Sharing is an appropriate and practical intermediate measure of success in the context of knowledge. The difference is that in the IS success model, Perceived Usefulness is an indicator tied to a particular system. In our model, Perceived Usefulness of Knowledge Sharing is an overall measure of usefulness of KM initiatives, not tied to a single system. We attempt to capture the quality of knowledge in a construct called Knowledge Content Quality. This is the quality of information residing in the electronic repositories, and includes the quality of documents, reports, lessons learned, and so forth, in structured and unstructured formats. Analogous to Information Quality in the IS success model, the Knowledge Content Quality measure in our model is designed to be a much broader construct capturing the richness and diversity of knowledge as compared to information and is explained further in the next section. If the quality of knowledge content is high, then a knowledge worker is more likely to perceive

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that KM initiatives contribute to enhanced job performance, hence the belief that
Knowledge Content Quality leads to Perceived Usefulness of Knowledge Sharing
(Kulkarni, Ravindran, and Freeze 2006-7)".

**Figure 22 - Kulkarni, Ravindran, and Freeze (2006-7) Knowledge Management
Success Model**
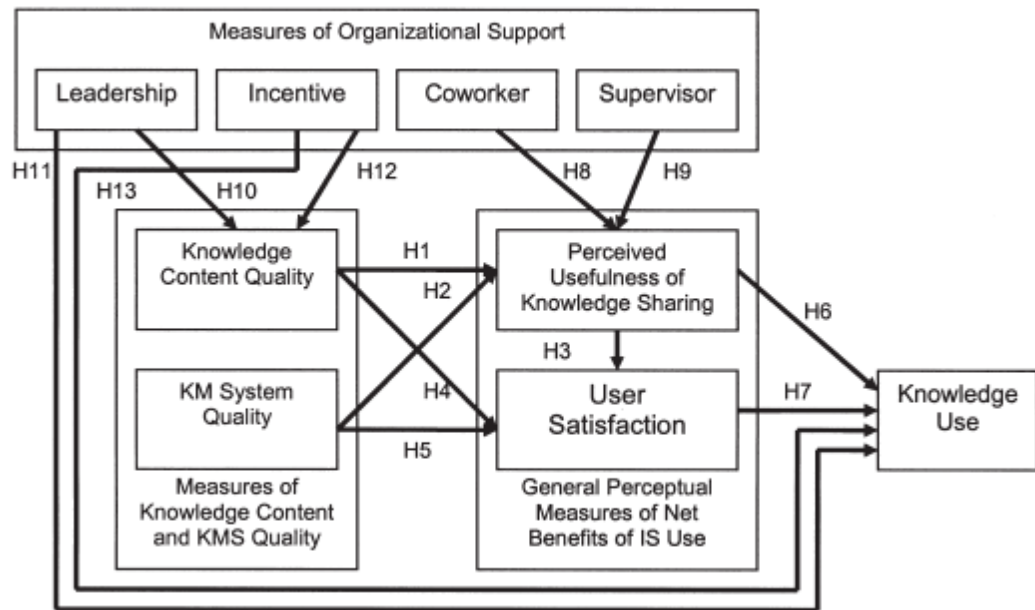
The definitions of the building blocks above are as follows:

Table 1 - Definitions of the Building Blocks

Explicit knowledge use	Degree to which a knowledge worker believes he or she has incorporated procedures for the capture and use of knowledge of various types into decision making activities, routine and otherwise.

Table 1 - Definitions of the Building Blocks (continued)

Perceived usefulness of knowledge sharing	Subjective evaluation of the extent to which the person believes that contributing to and using available and knowledge-sharing capabilities existing within the organization improve his or her job performance, productivity, effectiveness, ease of doing the job, and so on.
User satisfaction	Subjective evaluation of the various outcomes due to the knowledge sharing/retrieval capabilities existing within the organization, including ease of getting the information/ knowledge needed, satisfaction with the access to knowledge, adequacy of the information/knowledge to meet one's needs.
Knowledge content quality	Quality of knowledge of various kinds, including its relevance, accuracy, timeliness, applicability, comprehensibility, presentation formats, extent of insight, availability of expertise and advice, and so on.

Table 1 - Definitions of the Building Blocks (continued)

KM system	Any system that automates the input, storage, transfer, and retrieval of knowledge. These may include contextual taxonomy for knowledge (meta knowledge), systems for capturing various types of knowledge from useful lessons learned, systems for classifying knowledge documents, systems for locating the relevant experts, technology to facilitate sharing of expertise (groupware, videoconferencing, and so on), repositories for structured as well as unstructured information, and so on.
KM system quality	Quality of KM systems described above. Includes accessibility (from anywhere/anytime), ease of use for retrieval as well as input, output flexibility to meet the needs, search capability, documentation, and so on.
Organizational support	
Supervisor Coworker	Supervisor and coworker support is a subjective measure of the extent of encouragement provided to and experienced by a knowledge worker in sharing/using solutions to work-related problems, openness of communication, opportunity for face-to face and electronic meetings to share/use knowledge, and so on.

Table 1 - Definitions of the Building Blocks (continued)

Leadership	Leadership is a subjective measure of commitment to KM by the top levels of management, exhibited via understanding of the role of KM in business, strategy, and goals set with respect to KM.
Incentive	Incentive refers to formal appraisal and recognition of efforts by knowledge workers for furthering knowledge sharing and reuse.

The relation between the building blocks and the hypothesis tested by the authors are as follows. These hypothesis have been tested and data collection was done by the authors.

" Higher level of Knowledge Content Quality leads to higher level of Perceived Usefulness of Knowledge Sharing (Kulkarni, Ravindran, and Freeze 2006-7)".

" Higher level of KM System Quality leads to higher level of Perceived Usefulness of Knowledge Sharing (Kulkarni, Ravindran, and Freeze 2006-7)".

" Higher level of Perceived Usefulness of Knowledge Sharing leads to higher level of User Satisfaction (Kulkarni, Ravindran, and Freeze 2006-7)".

" Higher level of Knowledge Content Quality leads to higher level of User Satisfaction (Kulkarni, Ravindran, and Freeze 2006-7)".

" Higher level of KM System Quality leads to higher level of User Satisfaction (Kulkarni, Ravindran, and Freeze 2006-7)".

" Higher level of Perceived Usefulness of Knowledge Sharing leads to higher level of Knowledge Use (Kulkarni, Ravindran, and Freeze 2006-7)".

" Higher level of User Satisfaction leads to higher level of Knowledge Use (Kulkarni, Ravindran, and Freeze 2006-7)".

" Higher level of Coworker leads to higher level of Perceived Usefulness of Knowledge Sharing (Kulkarni, Ravindran, and Freeze 2006-7)".

" Higher level of Supervisor leads to higher level of Perceived Usefulness of Knowledge Sharing (Kulkarni, Ravindran, and Freeze 2006-7)".

" Higher level of Leadership leads to higher level of Knowledge Content Quality (Kulkarni, Ravindran, and Freeze 2006-7)".

" Higher level of Leadership leads to higher level of Knowledge Content Quality (Kulkarni, Ravindran, and Freeze 2006-7)".

" Higher level of Incentive leads to higher level of Knowledge Content Quality (Kulkarni, Ravindran, and Freeze 2006-7)".

" Higher level of Incentive leads to higher level of Knowledge Use (Kulkarni, Ravindran, and Freeze 2006-7)".

2.3.1.4 Halawi, McCarthy, and Aronson knowledge management success model. Another Knowledge Management success model based on the IS model is defined by Halawi, McCarthy, and Aronson (2007-8) and it is also based on hypothesis that are achieved by them. These hypothesis are tested based on surveys and results were calculated. This framework or model is intended to answer the below 3 questions:

"What are the appropriate dimensions for evaluating the success of knowledge management system (Halawi, McCarthy, and Aronson 2007-8)" ?

"Is there any relationship between these dimensions (Halawi, McCarthy, and Aronson 2007-8)"?

"Does the extent of KMS use vary greatly according to the KMS' system quality, its knowledge quality and its service quality (Halawi, McCarthy, and Aronson 2007-8)"?

Figure 23 - Halawi, McCarthy, and Aronson (2007-8) Knowledge Management Success Model
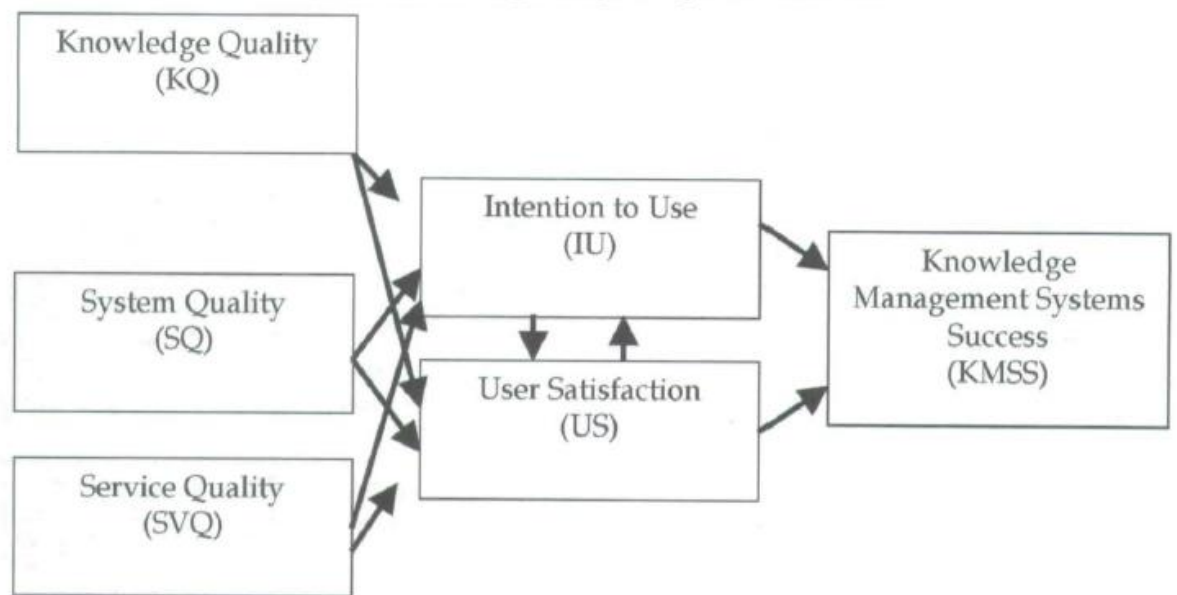
Based on the model above, below are the hypothesis that are concluded by Halawi, McCarthy, and Aronson (2007-8) which also helped in answering the 3 main questions that were mentioned above.

"There is a positive relationship between knowledge quality and the intention to use a knowledge management system (Halawi, McCarthy, and Aronson 2007-8)".

"There is a positive relationship between knowledge quality and user satisfaction of a knowledge management system (Halawi, McCarthy, and Aronson 2007-8)".

"There is a positive relationship between system quality and the intention to use a knowledge management system (Halawi, McCarthy, and Aronson 2007-8)".

"There is a positive relationship between system quality and user satisfaction of a knowledge management system (Halawi, McCarthy, and Aronson 2007-8)".

"There is a positive relationship between service quality and the intention to use a knowledge management system (Halawi, McCarthy, and Aronson 2007-8)".

"There is a positive relationship between service quality and user satisfaction of a knowledge management system (Halawi, McCarthy, and Aronson 2007-8)".

"There is a positive relationship between the intention to use and user satisfaction of a knowledge management system (Halawi, McCarthy, and Aronson 2007-8)".

"There is a positive relationship between intention to use and knowledge management system success (Halawi, McCarthy, and Aronson 2007-8)".

"There is a positive relationship between user satisfaction and knowledge management system success (Halawi, McCarthy, and Aronson 2007-8)".

"There is a positive relationship between system quality, knowledge quality, service quality and intention to use a knowledge management system (Halawi, McCarthy, and Aronson 2007-8)".

"There is a positive relationship between system quality, knowledge quality, service quality and user satisfaction of a knowledge management system (Halawi, McCarthy, and Aronson 2007-8)".

"There is a positive relationship between intention to use. user satisfaction and knowledge management system success (Halawi, McCarthy, and Aronson 2007-8)".

"There is a positive relationship between user satisfaction and the intention to use a knowledge management system (Halawi, McCarthy, and Aronson 2007-8)".

"There is a positive relationship between knowledge quality, system quality, service quality perception, intention to use, user satisfaction and knowledge management system success (Halawi, McCarthy, and Aronson 2007-8)".

2.3.2 Framework measuring the readiness to implement knowledge management. Instruments are not only used for measuring the effectiveness of knowledge management used within organizations, instruments can be used to figure out the readiness of an organization to implement a knowledge management approach. The readiness of an organization will be based on the success/variable factors that were discussed before in the above sections. "The receptive attitudes of organizational members to be involved in knowledge management process through the availability of resources (knowledge management enablers) can be considered as organizational readiness for knowledge management process implementation. In other words, the readiness for knowledge management process implementation can be defined as 'the intention to be involved in the knowledge management process by the organizational individuals within the prevailing organizational context'. knowledge management enablers, such as knowledge management supportive (i) organizational culture, (ii) organizational structure, and (iii) IT infrastructure, and the factors of individual acceptance, symbolized by (i) performance expectancy of knowledge management and (ii) effort expectancy of knowledge management, are expected to be the influencing

factors of knowledge management readiness (Razi and Abdul Karim 2010)". The figure below shows how measuring the organization readiness for using a knowledge management process can be used.

Figure 24 - Razi and Abdul Karim (2010) The Readiness Model for Implementing Knowledge Management Process
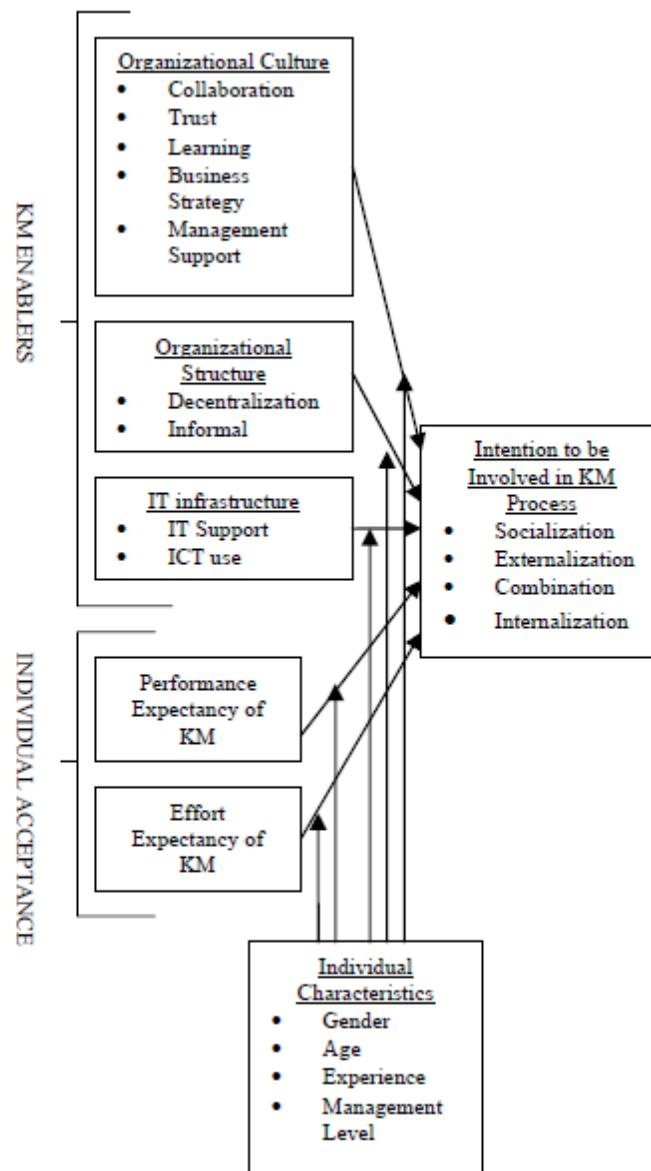
"The initiation for knowledge management process implementation should come from the organizational members , thus their willingness (intention) to be involved in knowledge management process should be investigated. The intention to be involved in knowledge management process can be assessed based on knowledge management sub process (SECI process) as those are the route process of knowledge creation and sharing.

The SECI process is considered as the way to implement knowledge management process in an organization (Razi and Abdul Karim 2010)". "Meantime, the availability of knowledge management enablers shows that the organization is ready for knowledge management process implementation to some extent. Literature on knowledge management enablers, demonstrate that knowledge management enablers provide a conducive environment for organizational members to implement knowledge management process (Razi and Abdul Karim 2010)". "Therefore, it can be expected that those knowledge management enablers may influence the intention of organizational members to be involved in knowledge management process. Similarly, literature on individual acceptance substantiates that performance expectancy and effort expectancy influence the behavioral intention of individuals. In this perspective, it can be assume that the factors of individual acceptance also may influence on the intention of organizational members to be involved in knowledge management process (Razi and Abdul Karim 2010)".

   2.3.3 Holt framework for readiness assessments. Here in this paragraph, explanation of how assessment for readiness of an organization is done according to Holt, Armenakis, Field, and Harris (2007). "Assessment of readiness can be conducted using both qualitative (e.g., observation and interview techniques) and quantitative (i.e., questionnaire techniques) methods (Holt, Armenakis, Field, and Harris 2007)". "Although qualitative methods provide incredibly rich change-specific information, quantitative methods are an appropriate supplement, offering unique advantages to managers, organizational development consultants, and researchers in certain settings (Holt, Armenakis, Field, and Harris 2007)". For example, a well-focused quantitative assessment can be an effective mean to garner change-related information in large global firms because these quantitative instruments can be spread widely in relatively short periods of time according to Holt, Armenakis, Field, and Harris (2007). Moreover, after a quantitative instrument has been administered, the level to which the readiness assessment is reliable and valid can be determined. "Because of the time and effort that is expended on implementing organizational changes, the reliability and validity of quantitative readiness assessments cannot be overemphasized (Holt, Armenakis, Field, and Harris 2007)". "Based on this idea, the primary purpose of this article is to propose a

quantitative measure of readiness at the individual level that satisfies rigorous psychometric properties, measuring readiness for system wide changes that affect many facets of organizations (Holt, Armenakis, Field, and Harris 2007)".

Accordingly, Holt, Armenakis, Field, and Harris (2007) combined the idea of organization readiness with the organization acceptance of change. They mentioned "it is not surprising that the assessment of readiness prior to the introduction of change has been encouraged and several instruments have been developed to fulfill that purpose (Holt, Armenakis, Field, and Harris 2007)". "These existing instruments appear to measure readiness from one of several perspectives, namely, change process, change content, change context, and individual attributes (Holt, Armenakis, Field, and Harris 2007)". The change process denotes to the steps that are followed during the implementation of the change itself, in our context, it is the implementation of knowledge management process within the organization. :One dimension of change process can be the extent to which employee participation is permitted (Holt, Armenakis, Field, and Harris 2007)". "A second perspective is the organizational change content, which refers to the particular initiative that is being introduced (and its characteristics) (Holt, Armenakis, Field, and Harris 2007)". Holt, Armenakis, Field, and Harris (2007) claimed that content typically is directed toward administrative, procedural, technological, or structural characteristics of the organization. "The third perspective is organizational context. Context consists of the conditions and environment within which employees function. For example, a learning organization is one in which employees are likely to embrace continuous change (Holt, Armenakis, Field, and Harris 2007)". "The fourth and final perspective is the individual attributes of employees. Because of the differences between individuals, some employees are more inclined to favor organizational changes than others may be (Holt, Armenakis, Field, and Harris 2007)".

Holt, Armenakis, Field, and Harris (2007) suggests that previous instruments have collectively suggested a comprehensive measurement model that comprises four factors grounded in the measurement perspectives observed in the existing instruments, namely, the change content, change process, internal context, and individual characteristics. "In turn, readiness for change was defined as a comprehensive attitude that is influenced

simultaneously by the content (i.e., what is being changed), the process (i.e., how the change is being implemented), the context (i.e., circumstances under which the change is occurring), and the individuals (i.e., characteristics of those being asked to change) involved (Holt, Armenakis, Field, and Harris 2007)". "Furthermore, readiness collectively reflects the extent to which an individual or individuals are cognitively and emotionally inclined to accept, embrace, and adopt a particular plan to purposefully alter the status quo (Holt, Armenakis, Field, and Harris 2007)".

Holt, Armenakis, Field, and Harris (2007) named five variables that are used in their survey that affected in the four factors mentioned above (content, Process, Context, and Individual Attributes). These variables are "(a) discrepancy (i.e., the belief that a change was necessary), (b) efficacy (i.e., the belief that the change could be implemented), (c) organizational valence (i.e., the belief that the change would be organizationally beneficial), (d) management support (i.e., the belief that the organizational leaders were committed to the change), and (e) personal valence (i.e., the belief that the change would be personally beneficial) (Holt, Armenakis, Field, and Harris 2007)".

2.4 Innovation and Knowledge Management

Innovation may be defined as act of propagating an idea and transforming it into a new product, service, or business model that can be useful to customers. There are two important segments of innovation, namely: product innovation and process innovation. It should be noted that innovation can also be pursued radically (Soliman 2011). However, managing innovation could involve developing strategies, and processes that facilitate the transformation of ideas to final product or service. It should be pointed out that innovation is considered as the new pre-requisite for competitive advantage (Soliman 2011).

Innovation requires an ongoing investment in leadership skills needed to support innovation. To enhance and maintain creativity the organization needs to establish stimulating, supportive, and positively challenging environments (Soliman 2011). Innovation leadership is considered the most important driver of innovation, without great innovation leaders, there is no innovation (Soliman 2011). Further added a good innovation leader is characterized by the ability to excel on the apparently conflicting skills of creativity and discipline(Soliman 2011). Innovation leaders could be characterized by strong ability to recognize opportunities and to develop them, and by a set of attributes, skills and abilities, which makes them more suitable than others (Soliman 2011). Some of the leader attributes are: inspiring, driving, enabling, and advising. Other innovation leaders may exert the following attributes: advocating, rewarding, managing linkages, and supporting (Soliman 2011).

Further attributes of leaders are that leaders should communicate with vision, energizing, and accelerating innovation processes to innovate (Soliman 2011). Committing employees to innovation and enabling employees to be innovative are also attributes of innovation leaders. These characteristics correspond to what is known as charismatic and strategic leadership (Soliman 2011). It should be also remembered that innovation involves risks and uncertainty and therefore the innovation leader should also be the one who handles risks successfully (Soliman 2011). Leaders in innovation do not necessarily avoid risks but carefully approach risks and navigate through and at the same time learn further (Soliman 2011). In addition to those attributes, innovation leaders share

of the common leadership skills and abilities such as coaching, motivating, and rewarding (Soliman 2011).

From the knowledge management perspective, innovation is considered a dynamic capability that represents the application of explicit and tacit knowledge assets in obtaining new products and processes (Perez, Diaz, & Rodriguez 2012). In order to innovate firms require the use of existing knowledge assets or the acquisition of new ones. Therefore, innovations differ in the content of basic knowledge that they require, which in turn influences the way that innovation is developed (internally or externally), the cost of implementation and its effectiveness (Perez, Diaz, & Rodriguez 2012). Recently, some authors have focused their interest in studying which aspects of HRM can contribute to create a human capital with extensive knowledge and skills to enhance the firm capacity to innovate (Perez, Diaz, & Rodriguez 2012). Training is gaining a growing importance as an essential HRM practice to create, share and use organizational knowledge because it prevents organizational knowledge obsolescence, in order to achieve a competitive advantage (Perez, Diaz, & Rodriguez 2012). In this sense, training enables employees to access a range of new knowledge and skills, highlighting new ways of operating to innovate (Perez, Diaz, & Rodriguez 2012). Training will not only increase the intellectual capital of the organization but will also serve as a trigger for the emergence of new products, processes and technologies as a result (Perez, Diaz, & Rodriguez 2012).

The relationship between training and innovation has been a topic addressed by many authors. In general, it has been suggested a positive effect of training on firm innovation (Perez, Diaz, & Rodriguez 2012). The process of stimulating creativity and innovation is based on building the intellectual capital within the organization through training (Perez, Diaz, & Rodriguez 2012). Training allows employees to quickly acquire and use knowledge and develop abilities to accept the new skills in order to innovate (Perez, Diaz, & Rodriguez 2012). Suggestions about training, shows that it can contribute to innovation by exposing individuals to new experiences that facilitate the questioning of existing ways of operating, in addition to an extensive training in a variety of positions and skills that can create the breadth of knowledge required to establish the connections

between divergent stimuli in the environment (Perez, Diaz, & Rodriguez 2012). Finally, other authors consider that innovation in products and services in the modern economy should be accompanied by higher levels of training that enables employees to adapt and learn more than before (Perez, Diaz, & Rodriguez 2012).

2.5 ICT Industry in Egypt

The ICT evolution in Egypt started since 1998, "In 1982, the Arab Republic of Egypt National Telecommunications Organization was the country's independent regulator, before changing its name to Telecom Egypt (TE) in 1998. In 1999, the Ministry of Telecommunication and Information Technology set out to transform Egypt into an ICT hub. With Egypt being a voluntary member of the World Trade Organization, the country signed the Basic Telecom Agreement in 2002 with a view towards liberalizing its data, Internet, and value-added services markets. In 2003, the Telecommunications Regulation Act (TRA) was introduced to monitor the telecoms market and introduce competition in the fixed line sector. In 2005, the TRA was renamed the National Telecommunications Regulatory Authority (NTRA), which removed TE's monopoly on the local domestic long-distance telecoms market and provision of international gateway services. In 2006, the NTRA modified the country's Internet service provider concession to allow licensees to obtain international bandwidth (Datamonitor 2012)". Telecoms in Egypt has observed extensive modernization over the years, with improvements in services and infrastructure immensely improving the country's telecommunications network (Datamonitor 2012). The number of fixed lines owned by Telecom Egypt increased from 4.7 million in 1999 to 12.3 million in 2009 (Datamonitor 2012). In terms of the mobile telecommunications market in Egypt, there are three major players (Datamonitor 2012). The most recent network was launched in May 2007, owned by Etisalat of the United Arab Emirates; the other two are operated by Mobinil and Vodafone Egypt (Datamonitor 2012). In 2010, the total subscriber base was estimated at 66.9 million (Datamonitor 2012). Mobile phone subscribers in Egypt increased at a growth rate of 67% in 2007, which fell to around 21% in 2010. However, the fixed line growth rate was -12.7% in 2009 and -3.3% in 2010 (Datamonitor 2012).

"Egypt is rapidly transforming into a knowledge-based economy, and aims to turn into an ICT hub with strong support from the government. The number of Internet users in Egypt has increased over the years, rising from 6 million in 2006 to 14 million in 2010. According to UNCTAD's first ICT Policy Review of Egypt, the country is expected to emerge as a major player in the information economy. The review reported that the

country has achieved strong growth in exporting ICT services, and Cairo was ranked in fourth position in the UNCTAD"s top 10 emerging cities in 2010 for global services outsourcing (Datamonitor 2012) ". Below are some graphs that shows the rate of mobile and land line subscriber, and the internet subscribers in Egypt.

Figure 25 – Datamonitor (2012) Growth rate of mobile and fixed line subscribers in Egypt, 2002–12
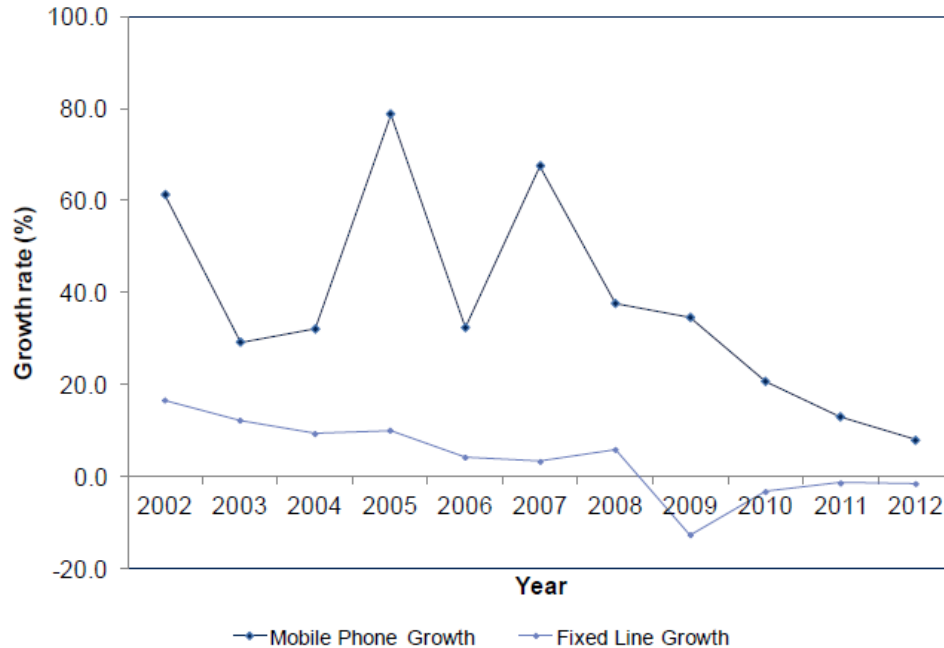
Source: Datamonitor   DATAMONITOR

Figure 26 - Datamonitor (2012) Internet subscribers in Egypt, 2002–13
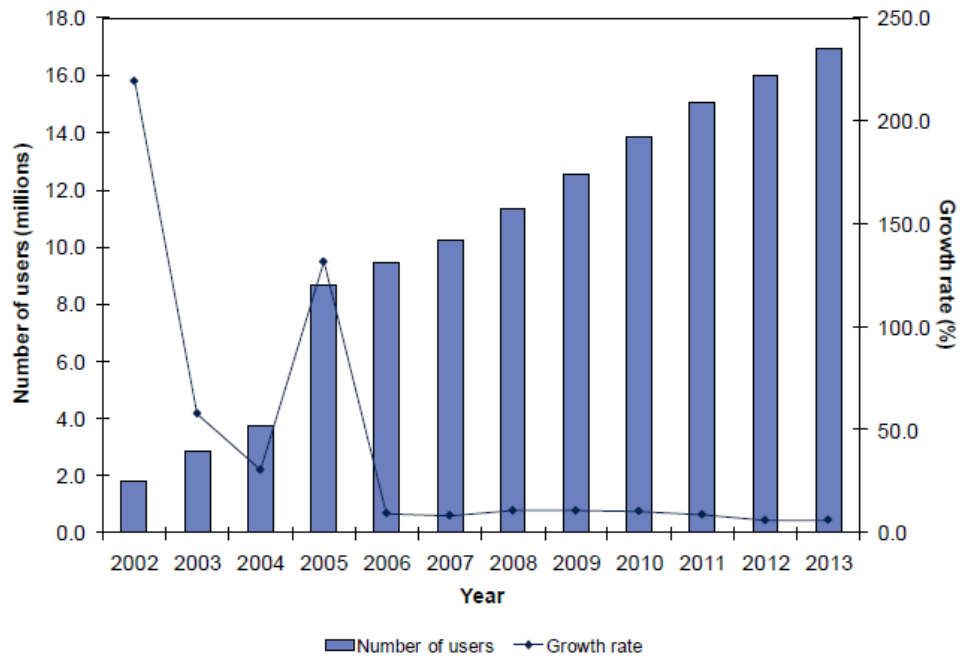
Source: Datamonitor

DATAMONITOR

Figure 27 - Datamonitor (2012) National ICT Strategy 2012-2017 (Vision & Mission)

Vision:
Towards digital citizenship, and an advanced knowledge-based economy and a smooth transition to democracy

Mission:
To develop a democratic knowledge-based society that supports a strong Egyptian economy and is based on equitable access to information and communications services, guaranteeing the digital rights of citizens and the development of a national industry based on human talent and creativity

As mentioned before that the ICT sector is ruled under the Ministry of Communication & Information Technology (CIT), this ministry contains six different affiliates that serve the whole ICT sector.

Figure 28 – Alex Bank (2011) CIT Affiliates
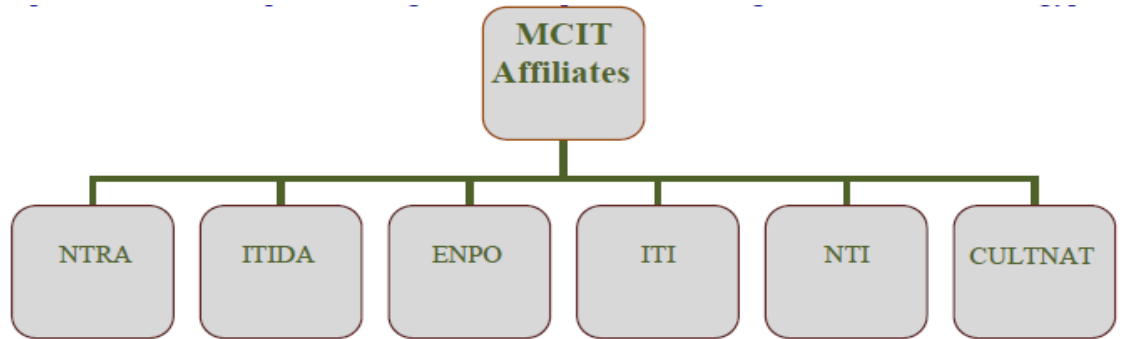
A brief description for the six affiliates will be discussed below.

NTRA: "National Telecommunication Regulatory Authority**;** communications Regulation Law as a national authority to administer the telecommunication sector. The scope of the NTRAs work covers issues related to transparency, open competition, universal service and protection of user rights. The NTRA acts as an independent arbiter for ICT sector stakeholders (Alex Bank 2011)".

ITIDA: "Information Technology Industry Development Agency; The ITIDA is one of Ministry of Communications and Information Technology's affiliates, this agency is a governmental body authorized to enhance the expansion of the IT sector and increase its worldwide competitiveness by identifying the local industry's requirements and addressing them with the needed programs (Alex Bank 2011)".

ENPO: "Egyptian National Post Organization; The ENPO is the largest provider of postal services in Egypt as it was founded in 1865, providing services including the delivery of correspondence, documents, money and goods (Alex Bank 2011)".

ITI: "Information Technology Institute; The ITI was founded in 1992 by the Information and Decision Support Center (IDSC) to share in the progression of a knowledge-based society by developing a new generation of experts. Then In April 2005 the ITI was

transferred to the Ministry of Communications and Information Technology (Alex Bank 2011)".

NTI: "National Telecommunication Institute; The NTI is one of Ministry of Communications and Information Technology's affiliates, it was founded in 1984.The institute specializes in education, training and research activities in telecommunications field (Alex Bank 2011)".

CULTNAT: "Center for Documentation of Cultural and Natural Heritage; The Center for Documentation of Cultural and Natural Heritage was established as a project working under the support of the Ministry of Communications and Information Technology in January 2000. Then CULTNAT became an affiliate of MCIT and Library of Alexandria in 2003. This center runs a group of projects and programs for the documentation of Egypt's both cultural and natural heritage, including architecture ,archaeology, manuscripts, folklore, music, caricatures, natural resources and plastic arts (Alex Bank 2011)".

The market structure of the ICT sector is divided into 3 sub-sectors which are; Information Technology Sector, Information Technology Services Sector, and Communications sector. "The sector possessed 3470 companies in year 2009 includes 282 communications companies, 2728 information technology and 460 IT services. The CIT sector's companies are growing with huge pace with increasing value of total 532 companies in 2009 with increasing rate of 18.1 % compared to 2008 (Alex Bank 2011)".

Figure 29 - Alex Bank (2011) ICT Market Structure
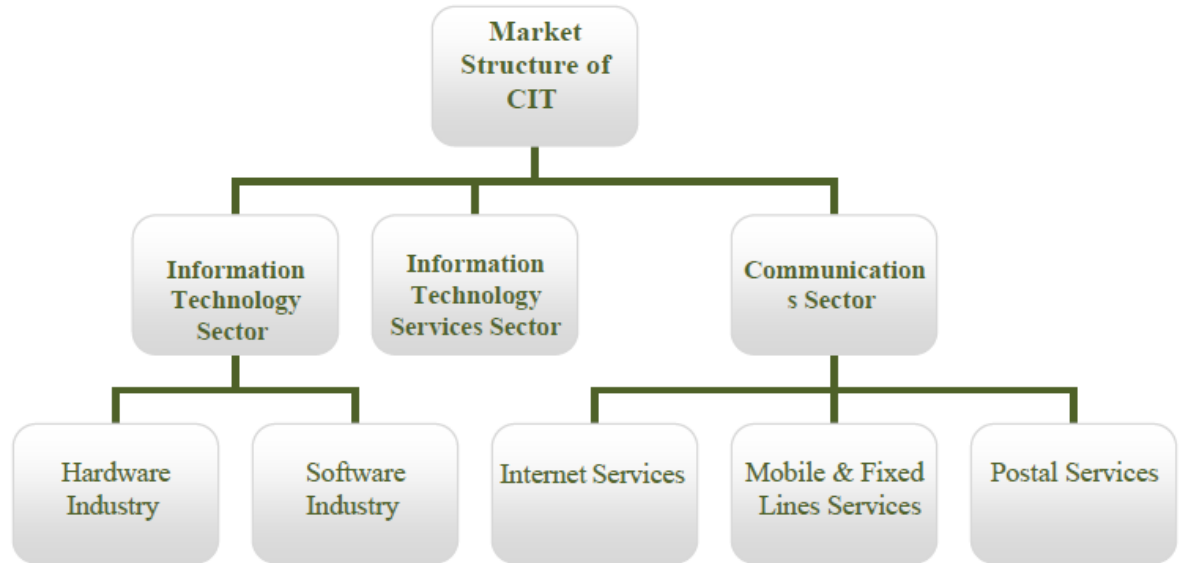
Two of the three sub-sectors have more than one industry that the ICT sector is providing. A brief explanation will be provided on each service to understand the nature of it.

Hardware Industry: "Egypt's IT market is hardware dominated, with spending on PCs sustained by initiatives like Computer for Every Student" and PC for Every Home" programs. Hardware accounted for an estimated 61% of Egypt's IT spending in 2009 with projected sales US$ 862 million in 2010 and are forecasted to reach around US$ 1.6 billion. in 2014 (Alex Bank 2011)".

Software Industry: "Spending on software is expected to record US$197mn in 2010 which is relatively low. Moreover, Egypt's IT market seems to be apparently immature as the estimated share of software industries in the total Egyptian IT spending represents only 14%. In which the growth is largely related to government agreements with vendors to afford for the government or education sectors the software needed (Alex Bank 2011)".

Information Technology Services Sector: "The government, finance and telecommunication sectors have the biggest share of IT services demand that account for more than half of the total spending on IT services. As the government alone accounts for around 25% of the market while basic hardware support and maintenance services, represent more than one-third of IT services spending, with Systems Integration around 15%. In 2008, the key players in the Egyptian market includes Raya Integration, IBM and Giza Systems, in addition to IGS, HP Services and Oracle as all have subsidiaries in the market. As well as Deloitte, SAP and specialists like Schlumberger Oilfield Services. And there is also a strong existence of large number of local companies in the market. Satyam is leading the way for the major Indian players aiming to grow its consulting and outsourcing businesses by 100% in the next few years (Alex Bank 2011)".

Internet Services: "The internet is now the second most important segment behind mobile in terms of subscriber growth. Going forward, this segment is expected to generate increased revenue growth, driven by Egypt's expanding international internet bandwidth and the youth-based population. Telecom Egypt remains by far the largest provider of internet access services in Egypt. However, recent developments have seen the rise to greater prominence of new service providers. One rising star in the internet access market is Etisalat Misr. The Egyptian government in co-operation with NTRA planned to increase the internet and broadband services across the country. This was applied through targeting internet access cost reduction, licensing new internet service providers (ISPs) as a way for promoting market competition. In addition to the direct regulating of broadband services' retail prices. In June 2006, as part of its 'Broadband Initiative', the NTRA lowered the cost of a basic monthly ADSL subscription by 36% to around US$17 for a 256kbps connection. Meanwhile, dial-up services are covered by a 'free internet' initiative, meaning that users only pay the cost of a local call rather than a monthly subscription (Alex Bank 2011)".

Mobile & Fixed Lines Services: "As for the mobile market it consists of three operators. In 1998, Mobinil company and Vodafone Egypt Company obtained two "Global System for Mobile Communications" (GSM) operators,, licensing. In 2006,a third GSM license

has been granted to Etisalat Company, which started offering its services in the Egyptian market in the first half of 2007. Egypt mobile market is experiencing further reduction in the tariff as a result of the sharp competition between telecom companies and will enjoy the launch of more pioneering service packages thereby encouraging more and more Egyptians to subscribe for mobile telephony services (Alex Bank 2011)".

Postal Services: "The Egyptian postal market is performing below potential and not fully satisfies the needs of the mailers either individuals or business. This is verified by the low per capita level of mail in Egypt (3.2 pieces per person annually). The Egyptian postal market witnessed a competition of 12 operators affording different forms of postal services, but with the absence of an effective regulatory, as the ENPO is competing with other operators directly or indirectly in the market, despite considering it a regulator entitled to issue licenses for the operators. Moreover, some of these operators provide services away from the scope of their licenses while others work without authorization (Alex Bank 2011)".

To understand the ICT sector market in more depth, its performance needs to be studied or at least to know how this sector is performing among the other industries in Egypt. From what is mentioned above the ICT sector plays and will play a big role in Egypt's economy. Information taken from Alex bank (2011) is that ICT sector grew sharply in the past few years with accelerated steps, ICT sector contributed in the real GDP factor with a cost increase to 4.3% in 2009/2010 compared to 4% in 2008/2009.

Figure 30 - Alex Bank (2011) GDP Growth Rate

Real GDP Growth Rate at Factor Cost (by Economic Activity)
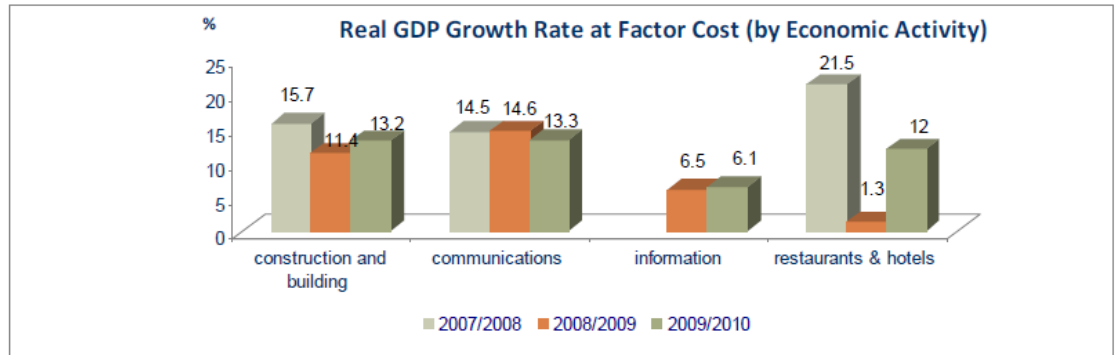
Source: central bank of Egypt

"From the graph above it is shown that the communications sector's growth rate grew in 2008/2009 despite the global financial crisis, this proves the stability of the sector towards the external events and fluctuations. On the contrary, the other two main sectors contributing to the GDP were affected specially restaurants & hotels sector. On the other hand information technology sector recorded growth rate of 6.5% in 2009/2010 compared with 6.1% 2008/2009 (Alex Bank 2011)".

According to the General Authority for Investment (GAFI), investments in the ICT sector together with foreign direct investments led to sustaining an impressive annual growth rate of 20% in the ICT sector over the last few years Alex Bank (2011). During the period 1998-2004 the FDI in ICT sector reached US$ 3.13 billion; US$ 3.97 billion for the period 2006-2007 and until August 2007 over US$ 522 million, while after that reaching average annual FDI inflows of US$1 billion Alex Bank (2011). During 2005-2007, the ICT sector in Egypt successfully managed to attract both local and foreign investments with more than $8 billion. Seventeen international companies are operating in Egypt and exporting IT enabled services (e.g., call centers) Alex Bank (2011). "The implemented investments by the Communications private sector grew sharply in the past few years reaching EGP 17.3 billion in 2009/2010 with growth rate of 46% against the last year. While a steady increase in the investments by the public sector as it represent only 12.2% of total implemented investments in the communications sector in 2009/2010 proving the dominance of the private sector either local or multinational on the

communications sector and the privatization trend the government taking in order to improve the sector (Alex Bank 2011)".

Figure 31 - Alex Bank (2011) Established Companies in ICT Sector

companies	2006/2007		2007/2008		2008/2009		July/March 2009/2010	
	Number of companies	Issued capital in LE millions	Number of companies	Issued capital in LE mn	Number of companies	Issued capital in LE mn	Number of companies	Issued capital in LE mn
Newly Established	283	10,402	344	260	471	297	395	245
expansions	59	510	52	773	50	5443	45	558
ICT total	342	10,912	396	1,033	521	5740	440	803
All sectors	7,330	84,104	9417	86,745	7857	73,927	6614	58728
ICT % of all sectors	4.7%	13%	4.2%	1.2%	6.6%	7.8%	6.7%	1.4%

Source: Ministry of Investment, cited from General Authority for Investment

"ICT market generates 2.9 billion US dollars of annual revenues, almost 2.5 billion US dollars (86%) is from telecommunications and about 450 million dollar due to IT exports. The total operating revenues of ICT companies reached EGP 10.37 billion in Q2 2009/2010 compared to EGP 10.33 billion in Q2 2008/2009. On the other hand, the total operating expenses of the ICT companies increased to EGP 6.94 billion during Q2 2009/2010 (Alex Bank 2011)".

"Egypt shares with other developing nations many of the challenges of building an information society. Therefore, Egypt efforts for ICT development are government-led in collaboration with the private sector and the civil society. MCIT was charged with the task of creating an information society, which started with the preparation of the national ICT plan. The plan paved the way for Egypt Information Society Initiative (EISI), which has been structured around seven major related tracks, each designed, when fully implemented, to help bridge the digital divide and facilitate Egypt evolution into an information society (Kamel 2010) ".

Figure 32 – Kamel (2010) Egypt Information Society Initiative

eReadiness "Equal Access for All"	eLearning "Nurturing Human Capital"
– Enabling all citizens to have easy and affordable access to the opportunities offered by new technologies – Developing a robust communication infrastructure is key	– Promoting the use of ICT in education – Developing a new generation of citizens who understand and are comfortable with the use of ICT in their daily lives
eGovernment "Government Now Delivers"	**eBusiness "A New Way of Doing Business"**
– Delivering high quality government services to the public in the format that suits them – Reaching a new level of convenience in government services – Offering citizens the opportunity to share in the decision making process and greatly improve efficiency and quality	– Creating new technology-based firms – Improving workforce skills – Using electronic documents – Developing ePayment infrastructure – Using ICT can be a significant catalyst to increase employment, creating new jobs and improving competitiveness
eHealth "Increasing Health Services Availability"	**eCulture "Promoting Egyptian Culture"**
– Improving citizens' quality of life and healthcare workers work environment – Adding value using ICT through reaching remote populations – Providing continuous training for doctors, and offering the tools for building a national health network	– Documenting Egyptian cultural identity through the use of tools to preserve manuscripts, archives and index materials – Offering worldwide access to cultural and historical materials – Generate and promote interest in Egyptian cultural life and heritage
ICT Export Initiative "Industry Development" – Fostering the creation of an export-oriented ICT industry – Developing an ICT industry can be a powerful engine for export growth and job creation	

In conclusion, "The development of Egypt's communications and information technology sector has been the product of a close partnership between multiple stakeholders, with MCIT acting as the facilitator of this process. Partnerships of private, public, civil society and multilateral stakeholders have promoted the development of new models of cooperation in the sector. The contribution of private sector is highly important in this area not only offering hi-tech knowledge and innovation but as to take the initiative in developing market-based solutions and spending more on ICT infrastructure (Alex Bank 2011)". "Egypt has already shown over the last decade some headway on the ICT development path. However, it needs to strengthen its commitment and speed its process for a long-term sector development and growth. Such a strategy would invariably drive faster growth across all economic sectors, which will lead to a sustainable socioeconomic development that can be reflected at the individual and societal level (Kamel 2010)".

2.6 Thesis Statement

The aim of this research is to study knowledge management implementation in the ICT sector of Egypt. Companies related to this sector in relation to this research are divided into 2 categories, either an organization that is already implementing knowledge management system or an organization willing to implement knowledge management system. This paper will be tackling the category of the organizations readiness to implement or build knowledge management system. This category is studying the organizations that are willing to implement a knowledge management system, this category will be related to the research in evaluating the readiness of the organization by studying whether or not the organization has the necessary factors to implement the system or not. From what is mentioned in the literature review section, the evaluation of the effectiveness or the readiness of the organization will be studied based on the information mentioned above. There are variables/success factors mentioned, also there are instruments that can be used to evaluate the organization. Choosing the ICT sector in Egypt because this sector is dealing with technology and challenges of this sector is always there in the day-to-day operations of any organization, according to this knowledge management systems are needed to maintain a competitive advantage in the market and also to be able to transfer the knowledge through the whole organization.

This research will be studying the organizations in the ICT sector in Egypt and their readiness to implement or build a knowledge management system. The research model below is taken from a ready-made model by Holt, Armenakis, Field, and Harris (2007).

Is the organization ready and has the needed factors to implement a knowledge management system to enhance its performance?

Figure 33 - Knowledge Management Readiness Research Model
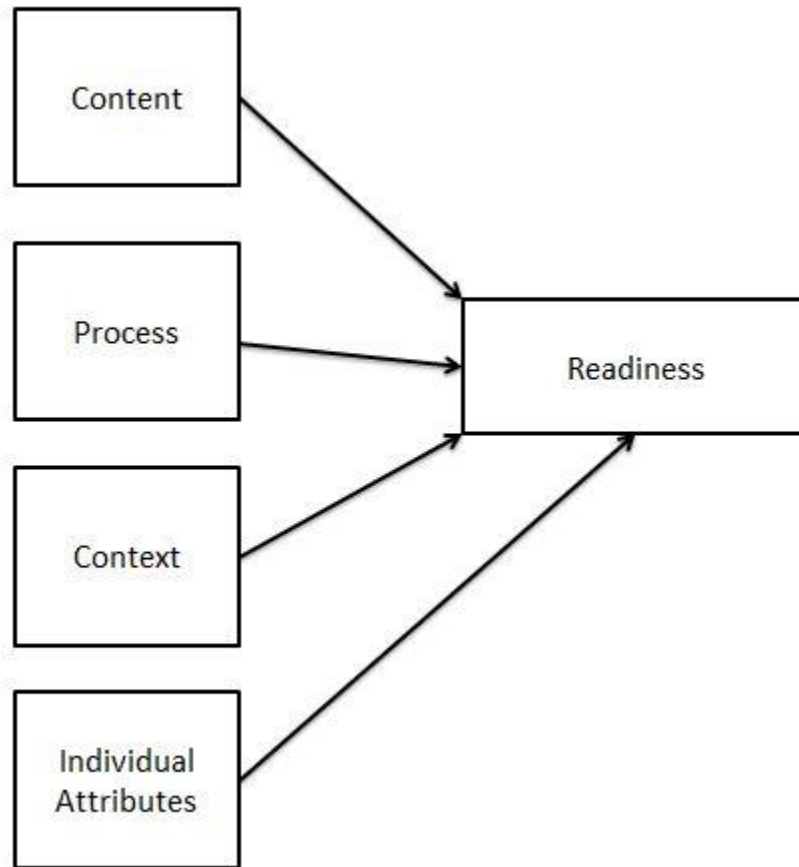
2.6.1 Hypothesis for knowledge management readiness research model.

2.6.1.1 Hypothesis 1. The more Appropriateness of the content within the organization the higher the chances for the organization readiness to implement knowledge management.

2.6.1.2 Hypothesis 2. The more clearer the process is with the support of high management the higher the chances for the organization readiness to implement knowledge management.

2.6.1.3 Hypothesis 3 . The more clearer the context of the knowledge management model to be implemented for employees the higher the chances for the organization readiness to implement knowledge management.

2.6.1.4 Hypothesis 4. The higher the belief of the employees in the knowledge management model and process to be implemented the higher the chances for the organization readiness to implement knowledge management.

Chapter 3: Research Methodology

This research can be considered as a casual study, because simply the research measures the readiness of an organization for implementing a knowledge management strategy. The research is a non-contrived study where field experiments will be involved either by face to face intercepts or over the phone. The time horizon for this study is cross-sectional. The research will be focusing on the ICT industry, this will be covering all the communication, IT, Technology organizations coming under the ICT umbrella.

3.1 Instrument

As mentioned in the literature review that there are variable/success factors that needs to be measured to know the readiness of an organization that is willing to implement the strategy. These variables/success factors needs instruments to be used to assess them, assessing these variables/success factors needs to be done overs surveys. Surveys will be used from previous researches, they will be analyzed, filtered, and combined into one survey that will variable questions on how knowledge management is being seen, used, or there is a willingness for using it. Questions will be designed to fit the scope of the current research, as the surveys that will be used were used in other industries than the ones tested. The survey will be designed on a (1-5) Likert scale where 1 is "strongly disagree" and 5 is "strongly agree". The survey is found in Appendix 'A'.

The instrument or the survey that will be used is taken from an article published in the Journal of Applied Behavioral Science. This survey is really measuring the readiness of organizations for implementing a knowledge management system. It contains questions that really covers the above hypothesis, which can help in achieving results accordingly.

The survey consist of 25 questions measuring the 4 variables in the research model. The content variable is measured with the first 10 questions in the survey, the process is measured with the second 6 questions in the survey, the context is measured with the third 6 question in the survey and finally the individual attribute is measured with the last 3 questions in the survey.

Table 2 - Content Survey Questions

Content	I think that the organization will benefit from this new knowledge management process.
	It doesn't make much sense for us to initiate this new knowledge management process.
	There are legitimate reasons for us to make this new knowledge management process.
	This new knowledge management process will improve our organization's overall efficiency.
	There are a number of rational reasons for this new knowledge management process to be made.
	On the long run, I feel it will be worthwhile for me if the organization adopts this new knowledge management process.
	This new knowledge management process makes my job easier.
	When this new knowledge management process is implemented, I don't believe there is anything for me to gain.
	The time we are spending on this new knowledge management process should be spent on something else.
	This new knowledge management process matches the priorities of our organization.

Table 3 - Process Survey Questions

Process	Our senior leaders have encouraged all of us to embrace this new knowledge management process.
	Our organization's top decision makers have put all their support behind this new knowledge management process effort.
	Every senior manager has stressed the importance of this new knowledge management process.
	This organization's most senior leader is committed to this new knowledge management process.
	I think we are spending a lot of time on this new knowledge management process when the senior managers don't even want it implemented.
	Management has sent a clear signal this organization is going to new knowledge management process.

Table 4 -Context Survey Questions

Context	I do not anticipate any problems adjusting to the work I will have when this new knowledge management process is adopted.
	There are some tasks that will be required when we implementing this new knowledge management process that I don't think I can do well.
	When we implement this new knowledge management process, I feel I can handle it with ease.
	I have the skills that are needed to make this new knowledge management process work.
	When I set my mind to it, I can learn everything that will be required when this new knowledge management process is adopted.
	My past experiences make me confident that I will be able to perform successfully after this new knowledge management process is made.

Table 5 -Individual Attributes Survey Questions

Individual Attributes	I am worried I will lose some of my status in the organization when this new knowledge management process is implemented.
	This new knowledge management process will disrupt many of the personal relationships I have developed.
	My future in this job will be limited because of this new knowledge management process.

3.2 Sampling

The sampling technique used is random sampling which is a probability sampling technique. The research population will be based on 2 Organizations categorized under the ICT sector in Egypt, these 2 organizations are Orange Business Services (OBS) & EMC. The sample population are employees in these organizations, specially employees who are dealing or taking part in the knowledge management process. As mentioned that the survey will be distributed to employees over the internet and employees will be asked to fill it out accordingly. This will guarantee systematic sampling where the sample will be highly generalized and no bias will be detected. The survey will be filled directly by employees in the organizations selected, employees will just press submit and the answers will be saved for further analysis. A brief description below will be showing the major business done by the 2 organizations and how they are one of the biggest ICT organizations in Egypt.

Orange Business Services (OBS): is part of France Telecom group. Orange Business Services was previously known as Equant before 2006, and it is the entity within France Telecom group that serves global business telecommunications. Orange Business Services offers a range of services including WAN (Wide Area Network), LAN (Local Area Network), Security, Mobility, Voice (known as IPT), video, and consulting services in over 220 countries and territories, 967 cities and towns with 1,468PoPs worldwide with staff in 166 countries. In 2000 France Telecom group acquired a majority stake of 54% by merging its Global One unit with Equant. In 2005, France Telecom group made a bid for all Equant stock and thus fully acquired it. Before Equant was acquired by France Telecom group, it was part of the SITA group of companies which was mainly serving air transport industry. As a leader in integrated communications," Orange Business Services helps your people work better together and connect more closely to your customers, suppliers and communities. With our robust portfolio of services, we make your business more successful by enabling your employees, partners and suppliers to connect, collaborate and co-create whenever and wherever they are. Our customers are among the world's first to benefit from our extensive capability, local services and global reach -- unique in the market today. We design the ideal solution for

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you to help your business keep in touch with people and information whenever you need and wherever you are". Orange Business Services offers a variety of services in the field of information technology. A quick overview for all the offered services will be introduced. Network, Mobility, Telephony, Unified Communications, Collaboration, CRM Solutions, IT Solutions, & Professional Services.

EMC: is a global leader in enabling businesses and service providers to transform their operations and deliver information technology as a service. Fundamental to this transformation is cloud computing. Through innovative products and services, EMC accelerates the journey to cloud computing, helping IT departments to store, manage, protect and analyze their most valuable asset information in a more agile, trusted and cost-efficient way. Our differentiated value stems from our sustained and substantial investment in research and development, a cumulative investment of $20.7 billion since 2005. To strengthen our core business and extend our market to new areas, EMC has invested $16 billion in acquisitions over the same period and has integrated more than 75 technology companies. EMC is supported by thousands of technical R&D employees around the globe, the industry's broadest portfolio of systems, software, and services, our ability to create total integrated solutions, and our commitment to delivering the best Total Customer Experience in this or any industry. In 2014, EMC customers awarded the company our highest net promoter score ever recorded, and our service excellence was recognized by distinguished awards for Innovation in Customer Commitment and Innovation in Enabling Customer Success from the Technology Services Industry Association. A quick overview for all the offered services will be introduced. Data Storage, Converged Infrastructure, Data Protection, & Content Management.

The sample who filled the survey from both OBS & EMC, are ranging from entry level positions till middle management positions. In other words, participants are ranging from technical support engineers, problem management experts, project managers, team leaders, voice service managers, head of voice department, project coordinators, etc… The years of experience ranges from 1 year to maximum of 15 years in the tele-communications field. The sample have been introduces to the topic of the survey by a short paragraph before starting to answer the questions of the survey, this is to give them

a glimpse of what knowledge to be ready back in their mind when answering the survey. I got a total of 97 successful survey out of the 2 companies that were used as a sample for the survey.

3.3 Procedures

Structured surveys will be used to test the success/variable factors that are used in the factors that are available in an organization that opens the way for the organization to implement a knowledge management strategy. As mentioned that the procedure for collecting the survey answers will be over the internet were survey is sent to employees in the 2 mentioned organizations to be filled out. Survey results will be coded and filtered and then statistical calculations will be done to find out the final results, and provide the readiness of organizations that are willing to implement knowledge management strategy by evaluating the environment and the factors that are needed for a successful model.

This procedure should be talking a 2 month time to gather data from the survives done, then working on the data statistics to be able to reach the advice hypothesis above.

Chapter 4: Analysis

4.1 Descriptive Analysis

Since the survey is measuring the readiness of organizations for implementing knowledge management strategy, the survey is based on 25 questions. These questions are covering 4 variables the readiness of organization in implementing knowledge management strategy. The 4 variables are; Content, Process, Context, & Individual Attributes. Accordingly the analysis will be based on concluding which company is more ready that the other, or which company is having more support from the 4 variables that are being analyzed in this survey.

The Content; this variable is measured with the first 10 questions (Q1-Q10) in the survey. From the boxplot below it shows that EMC has a balanced box when compared to the median quartile and the whisker shows also that EMC tends to be going more with the context variable. While on OBS side, the median quartile tends to be going much more to the maximum quartile, but the whisker here is not as long as the one for EMC. From this boxplot we can conclude that EMC is showing more attribution within the context variable.

Figure 34 - Content Boxplot
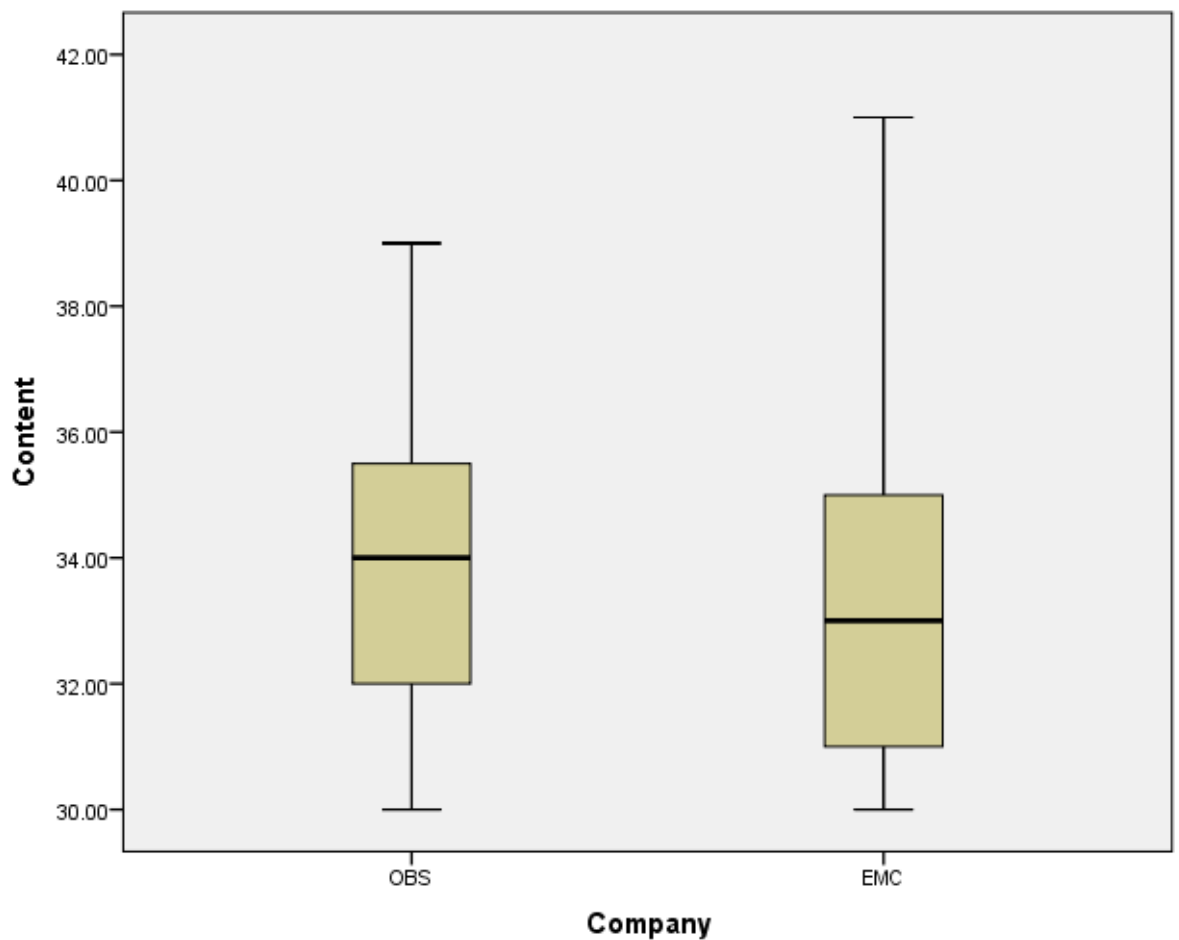
The Process; this variable is measured with the second 6 questions (Q11-Q16) in the survey. For EMC it shows that there are too many outliers than that compared to OBS. This explains the size different between the 2 boxplots for the 2 companies. For EMC it shows the whiskers are almost of the same size and are not contributing very much in this attribute, this also explains the reason why there are more outliers for EMC. On the OBS side the median quartile seems to be reaching more to the minimum quartile, and at the same time the whiskers are almost the same in size. From this boxplot we can conclude that OBS is showing more attribution within the Process variable.

Figure 35 - Process Boxplot
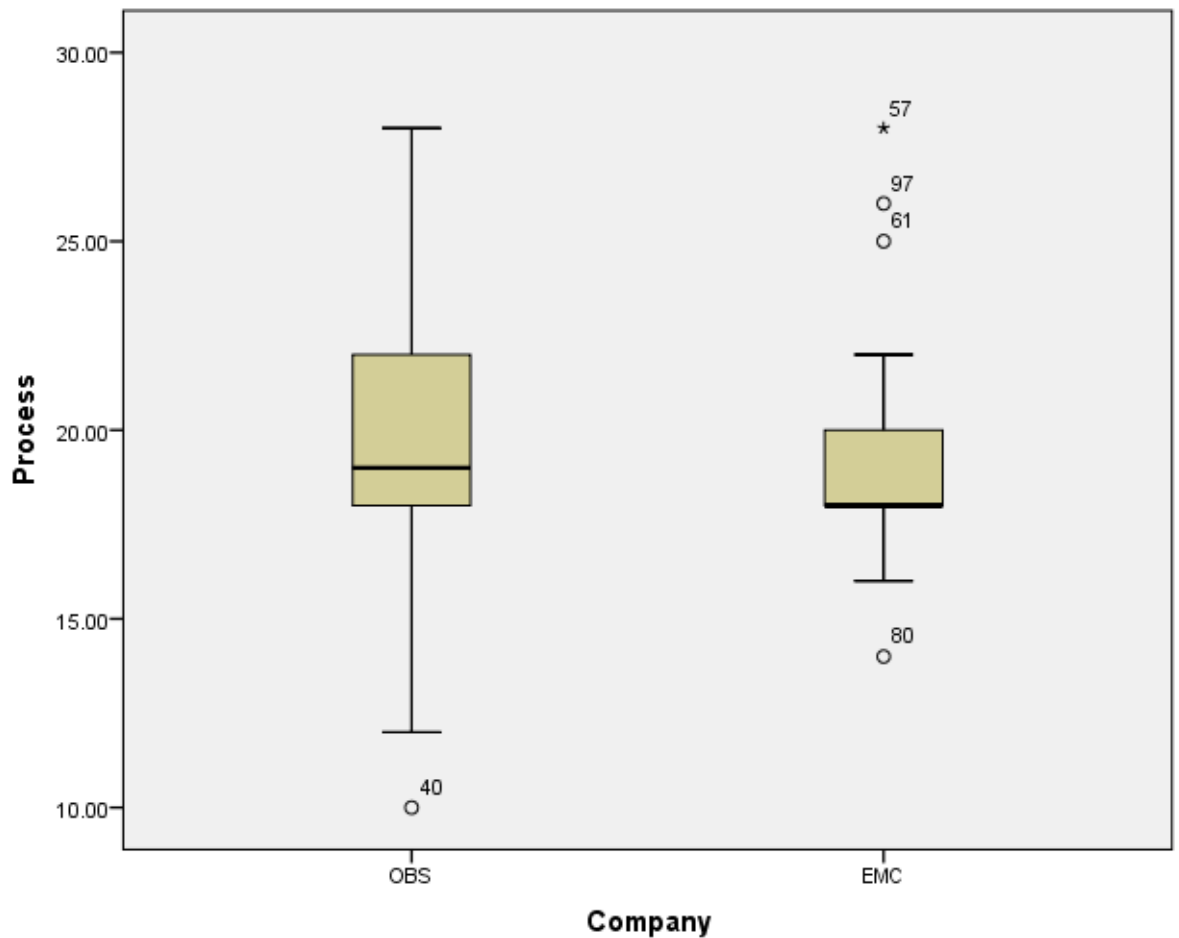
The Context; this variable is measured with the third 6 questions (Q17-Q22) in the survey. There are no outliers on this boxplot diagram. For both OBS & EMC there is no minimum quartile. The boxplot for OBS is almost balanced based on the medial quartile. For EMC the median quartile tends to be more reaching to the maximum quartile. The whisker for OBS is much more higher than that compared to EMC. Accordingly we can conclude that OBS is showing more attribution within the Context variable.

Figure 36 - Context Boxplot
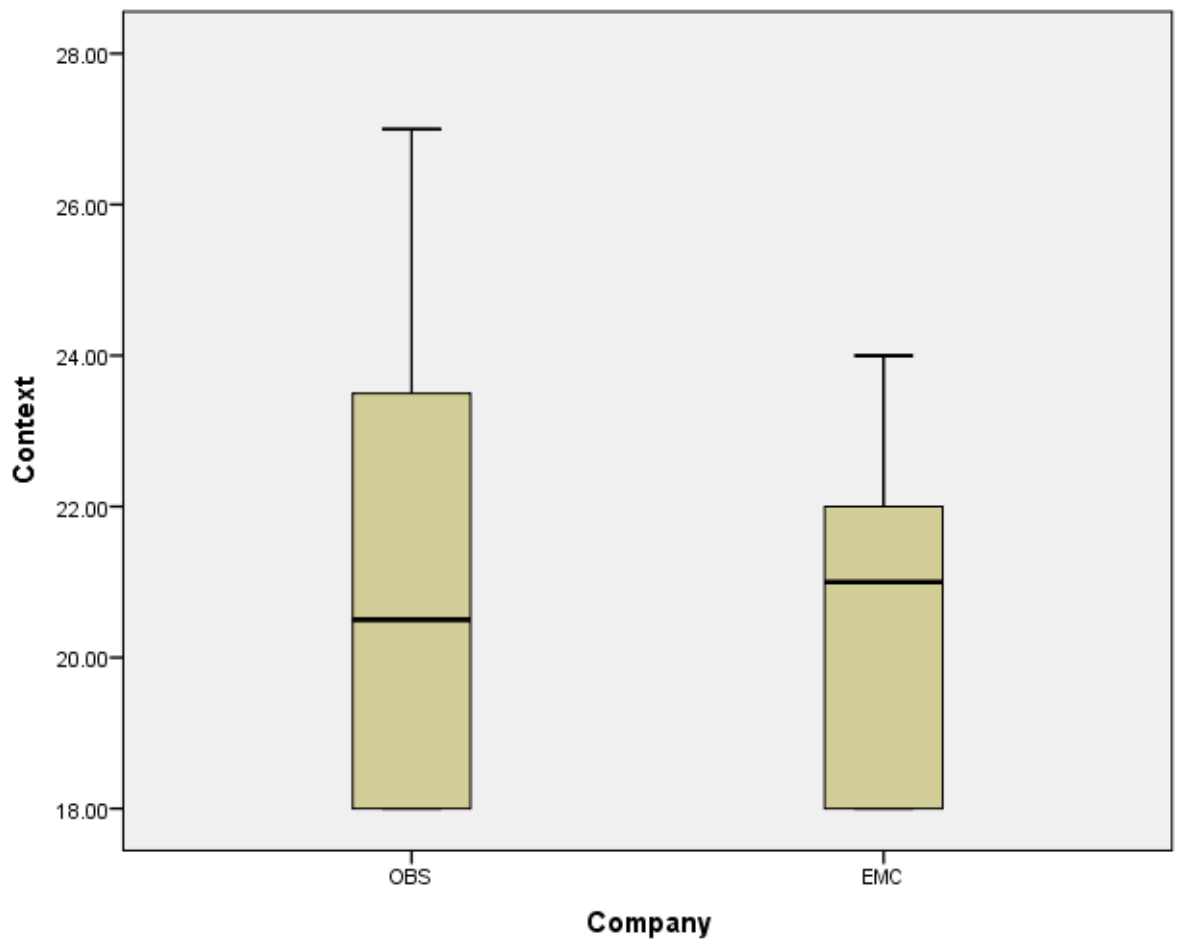
The Individual Attributes; this variable is measured with the last 3 questions (Q23-Q25) in the survey. There is only one outlier within the OBS boxplot. Both OBS & EMC median quartile is tending to the maximum quartile. The minimum whiskers for both companies are almost the same, but still OBS is showing a higher whisker than EMC from the maximum quartile. This being recorded, we can conclude that OBS is showing more attribution within the Individual Attributes variable.

Figure 37 - Individual Attributes Boxplot
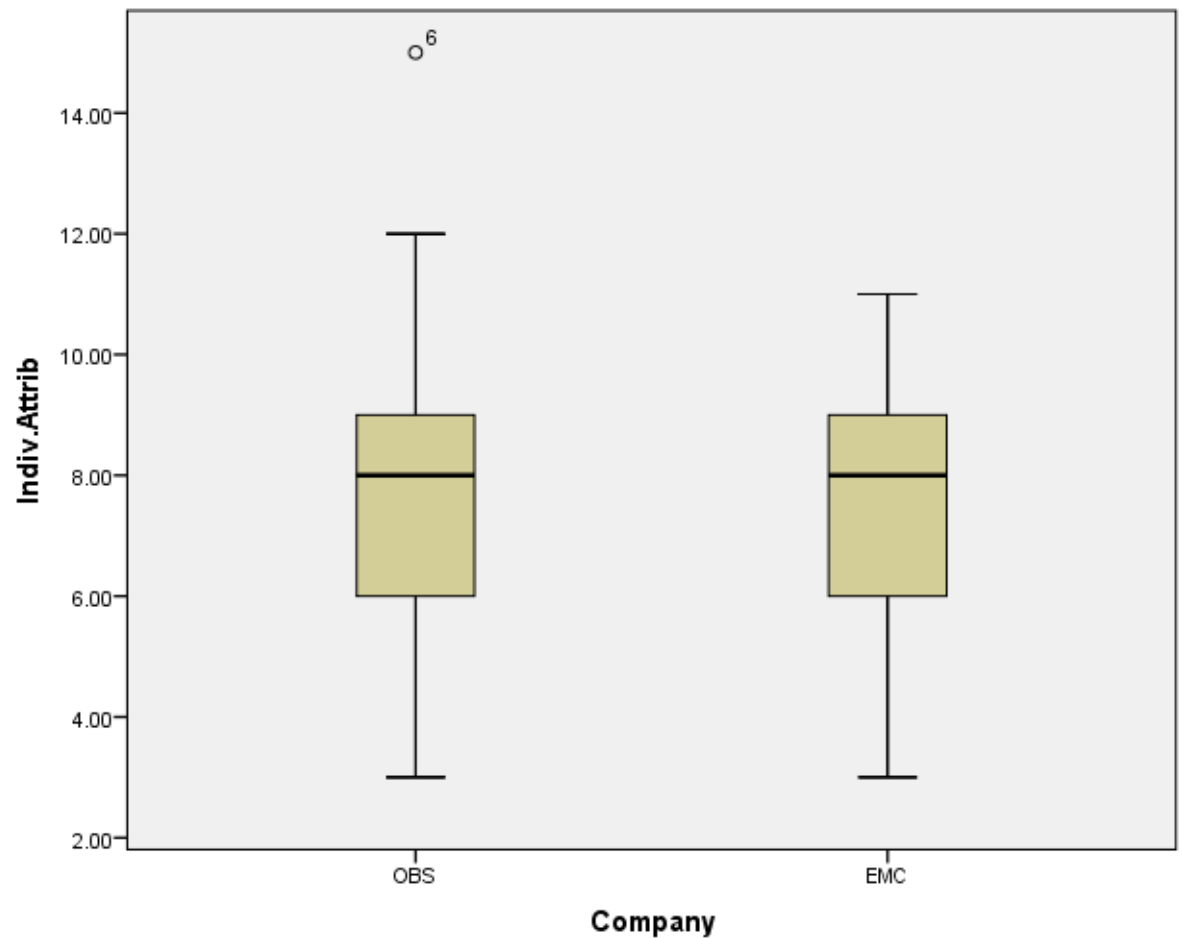
Finally below is the Readiness boxplot diagram for both companies based on the above 4 variables.

Figure 38 - Readiness Boxplot
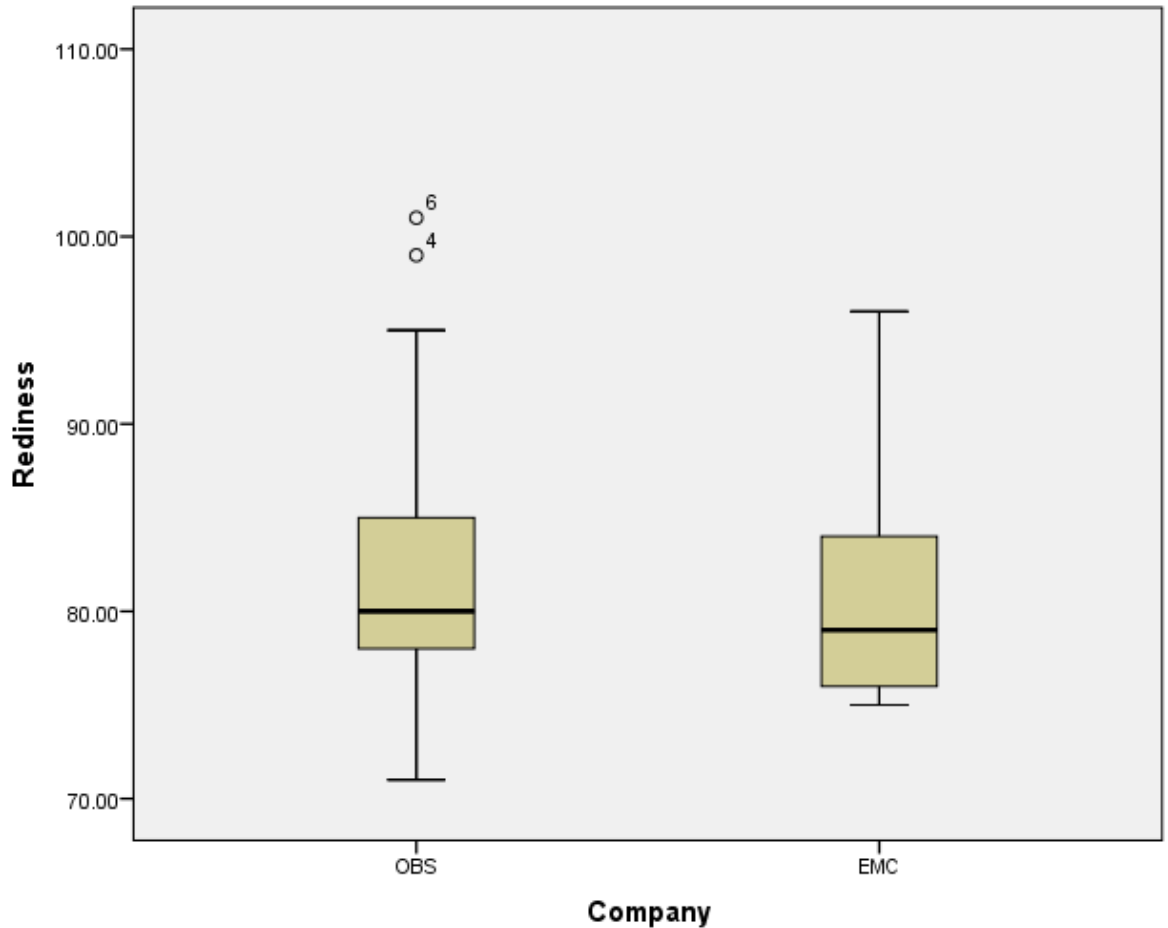
In this diagram it shows the OBS whiskers are much more stretched compared with the minimum and maximum quartiles. While EMC shows only the stretch in the whisker from the maximum quartile. Also there are 2 outliers on the boxplot for the OBS company. Overall statistically both companies shows readiness for implementing this knowledge management strategy according to the survey results and analysis done.

Table 6 - Question #1 Analysis

Crosstab

			Q1				
			2.00	3.00	4.00	5.00	Total
Company	OBS	Count	1	7	38	10	56
		% within Company	1.8%	12.5%	67.9%	17.9%	100.0%
	EMC	Count	0	7	21	13	41
		% within Company	0.0%	17.1%	51.2%	31.7%	100.0%
Total		Count	1	14	59	23	97
		% within Company	1.0%	14.4%	60.8%	23.7%	100.0%
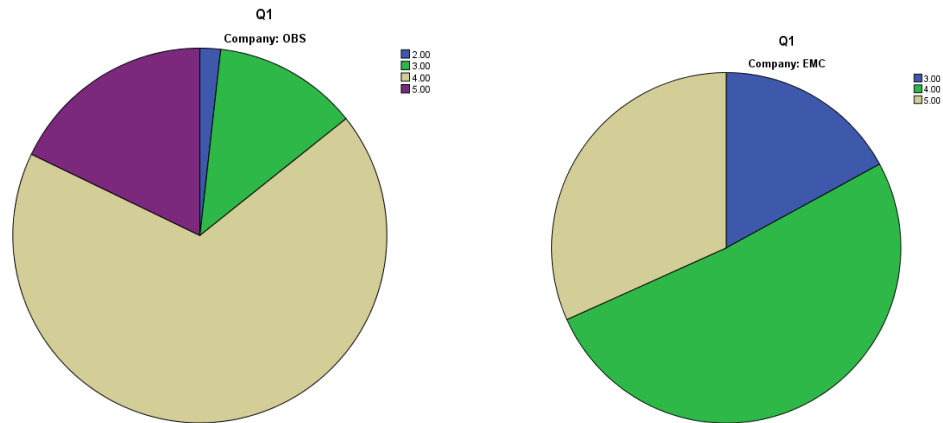
Both OBS & EMC are having the largest population with the Agree (4) selection.

The Fully Agree selection (5) comes next for both companies.

Table 7 - Question #2 Analysis

Crosstab

			Q2					Total
			1.00	2.00	3.00	4.00	5.00	
Company	OBS	Count	5	29	14	6	2	56
		% within Company	8.9%	51.8%	25.0%	10.7%	3.6%	100.0%
	EMC	Count	7	21	8	5	0	41
		% within Company	17.1%	51.2%	19.5%	12.2%	0.0%	100.0%
Total		Count	12	50	22	11	2	97
		% within Company	12.4%	51.5%	22.7%	11.3%	2.1%	100.0%

Both OBS & EMC are having the largest population with the Disagree (2) selection.

The Neutral selection (3) comes next for both companies.

Table 8- Question #3 Analysis

Crosstab

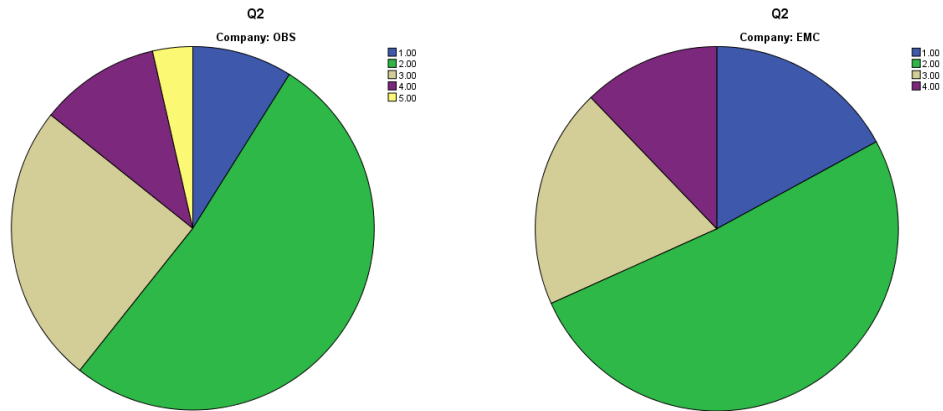|			Q3				
			2.00	3.00	4.00	5.00	Total
Company	OBS	Count	10	11	33	2	56
		% within Company	17.9%	19.6%	58.9%	3.6%	100.0%
	EMC	Count	1	8	29	3	41
		% within Company	2.4%	19.5%	70.7%	7.3%	100.0%
Total		Count	11	19	62	5	97
		% within Company	11.3%	19.6%	63.9%	5.2%	100.0%

Both OBS & EMC are having the largest population with the Agree (4) selection.
The Neutral selection (3) comes next for both companies.

Table 9 - Question #4 Analysis

Crosstab

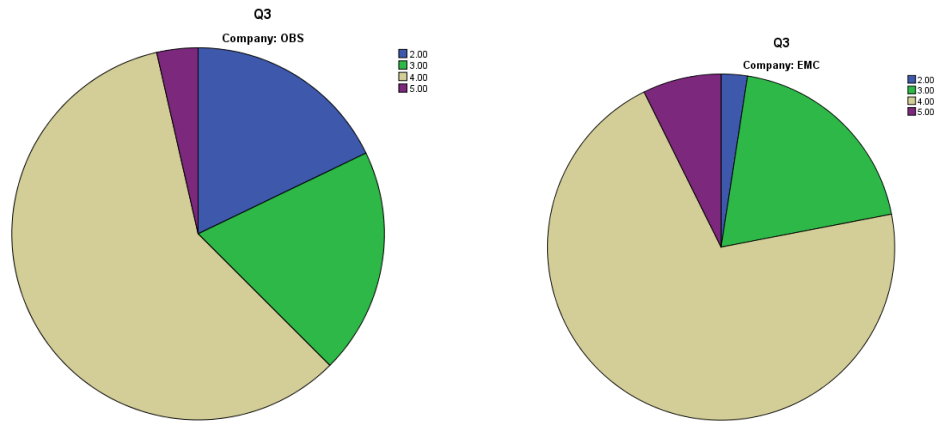|			Q4			
			3.00	4.00	5.00	Total
Company	OBS	Count	6	40	10	56
		% within Company	10.7%	71.4%	17.9%	100.0%
	EMC	Count	15	19	7	41
		% within Company	36.6%	46.3%	17.1%	100.0%
Total		Count	21	59	17	97
		% within Company	21.6%	60.8%	17.5%	100.0%
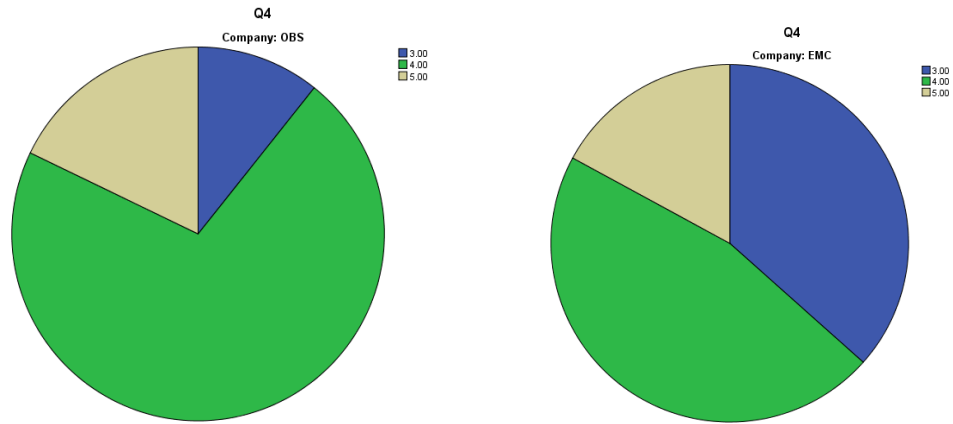
Both OBS & EMC are having the largest population with the Agree (4) selection.

The Neutral selection (3) comes next for EMC company, while the Fully Agree selection (5) comes next for OBS company.

Table 10 - Question #5 Analysis

Crosstab

			Q5				Total
			2.00	3.00	4.00	5.00	
Company	OBS	Count	2	7	35	12	56
		% within Company	3.6%	12.5%	62.5%	21.4%	100.0%
	EMC	Count	1	21	14	5	41
		% within Company	2.4%	51.2%	34.1%	12.2%	100.0%
Total		Count	3	28	49	17	97
		% within Company	3.1%	28.9%	50.5%	17.5%	100.0%

Q5
Company: OBS

2.00
3.00
4.00
5.00

Q5
Company: EMC

2.00
3.00
4.00
5.00
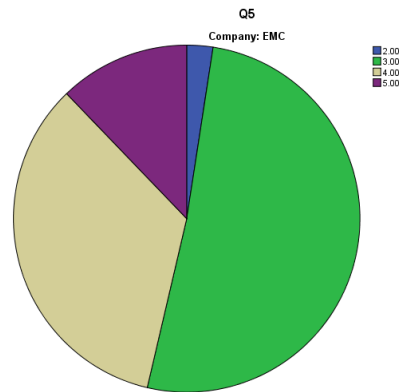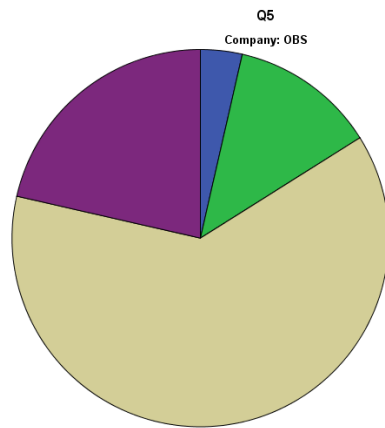
Table 11 - Chi-Square Output

Chi-Square Tests

|	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	17.310a	3	.001
Likelihood Ratio	17.604	3	.001
Linear-by-Linear Association	8.780	1	.003
N of Valid Cases	97		

Both OBS & EMC are having the largest population with the Agree (4) selection.

The Neutral selection (3) comes next for EMC company, while the Fully Agree selection (5) comes next for OBS company.

In this question, there is a significance difference for the Agree (4) selection. Where OBS is having a 62.5% compared with only 34.1% for EMC. The same is also seen in the Neutral(3) selection, where EMC having a 51.2% compared to only 12.5% for OBS.

Table 12 - Question #6 Analysis

Crosstab

			Q6				Total
			2.00	3.00	4.00	5.00	
Company	OBS	Count	3	6	33	14	56
		% within Company	5.4%	10.7%	58.9%	25.0%	100.0%
	EMC	Count	0	17	18	6	41
		% within Company	0.0%	41.5%	43.9%	14.6%	100.0%
Total		Count	3	23	51	20	97
		% within Company	3.1%	23.7%	52.6%	20.6%	100.0%
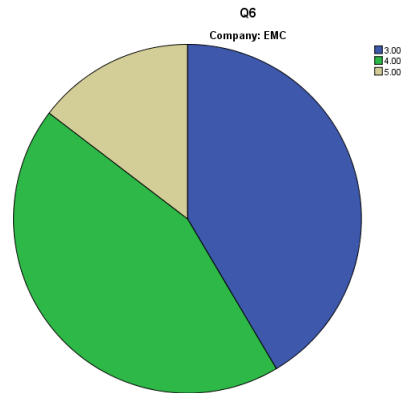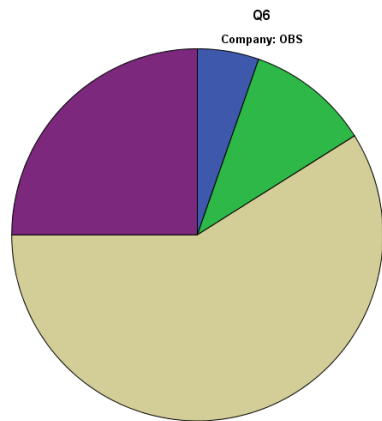
Table 13 - Chi-Square Output

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	13.885a	3	.003
Likelihood Ratio	15.081	3	.002
Linear-by-Linear Association	3.877	1	.049
N of Valid Cases	97		

Both OBS & EMC are having the largest population with the Agree (4) selection.

The Neutral selection (3) comes next for EMC company, while the Fully Agree selection (5) comes next for OBS company.

In this question, there is a significance difference for the Agree (4) selection. Where OBS is having a 58.9% compared with only 43.9% for EMC. The same is also seen in the Neutral(3) selection, where EMC having a 41.5% compared to only 10.7% for OBS.

Table 14 - Question #7 Analysis

Crosstab

			Q7			
			3.00	4.00	5.00	Total
Company	OBS	Count	21	24	11	56
		% within Company	37.5%	42.9%	19.6%	100.0%
	EMC	Count	19	15	7	41
		% within Company	46.3%	36.6%	17.1%	100.0%
Total		Count	40	39	18	97
		% within Company	41.2%	40.2%	18.6%	100.0%
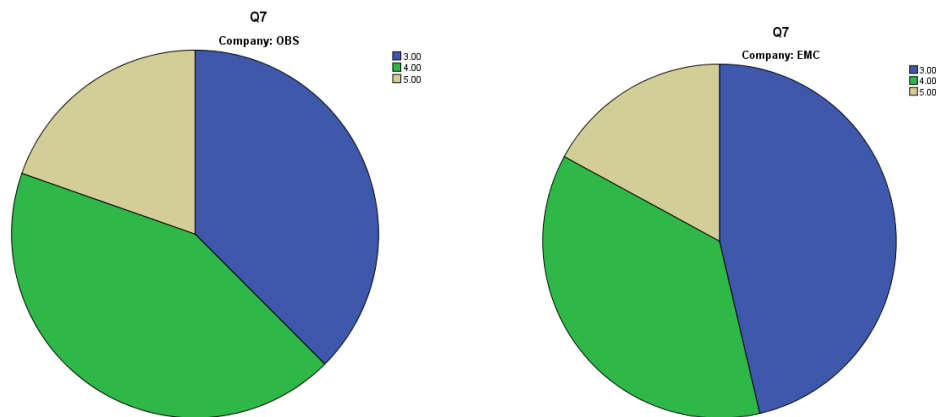
The Neutral selection (3) comes with the largest population for EMC company, while the Agree selection (4) comes with the largest population for OBS company.

Table 15 - Question #8 Analysis

Crosstab

			Q8				Total
			1.00	2.00	3.00	4.00	
Company	OBS	Count	9	34	6	7	56
		% within Company	16.1%	60.7%	10.7%	12.5%	100.0%
	EMC	Count	11	10	19	1	41
		% within Company	26.8%	24.4%	46.3%	2.4%	100.0%
Total		Count	20	44	25	8	97
		% within Company	20.6%	45.4%	25.8%	8.2%	100.0%
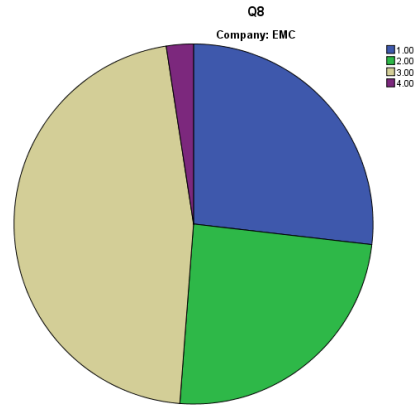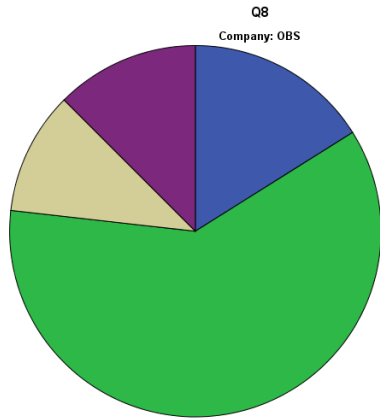
Table 16 - Chi-Square Output

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	22.776a	3	.000
Likelihood Ratio	23.869	3	.000
Linear-by-Linear Association	.071	1	.790
N of Valid Cases	97		

The Neutral selection (3) comes with the largest population for EMC company, while the Disagree selection (2) comes with the largest population for OBS company.

While the Fully Disagree (1) selection comes second for both companies.

In this question, there is a significance difference for the Disagree (2) selection. Where OBS is having a 60.7% compared with only 24.4% for EMC. The same is also seen in the Neutral(3) selection, where EMC having a 46.3% compared to only 10.7% for OBS.

Table 17 - Question #9 Analysis

Crosstab

			Q9				Total
			1.00	2.00	3.00	4.00	
Company	OBS	Count	5	42	5	4	56
		% within Company	8.9%	75.0%	8.9%	7.1%	100.0%
	EMC	Count	4	17	20	0	41
		% within Company	9.8%	41.5%	48.8%	0.0%	100.0%
Total		Count	9	59	25	4	97
		% within Company	9.3%	60.8%	25.8%	4.1%	100.0%
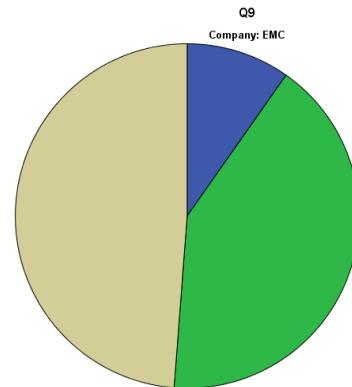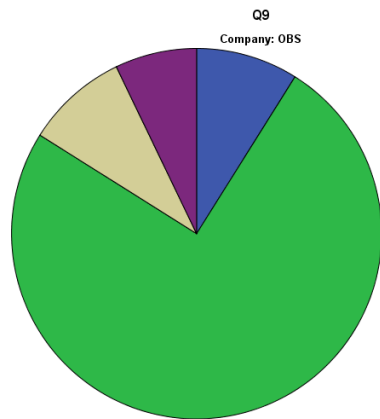
Table 18 - Chi-Square Output

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	21.909a	3	.000
Likelihood Ratio	23.900	3	.000
Linear-by-Linear Association	3.156	1	.076
N of Valid Cases	97		

The Neutral selection (3) comes with the largest population for EMC company, while the Disagree selection (2) comes with the largest population for OBS company.

While the Disagree selection (2) comes next for EMC company, while the Fully Disagree selection (1) & the Neutral (3) selection comes next for OBS company.

In this question, there is a significance difference for the Disagree (2) selection. Where OBS is having a 75.0% compared with only 41.5% for EMC. The same is also seen in the Neutral(3) selection, where EMC having a 48.8% compared to only 8.9% for OBS.

Table 19 - Question #10 Analysis

Crosstab

			Q10			To tal
			3.00	4.00	5.00	
Company	OBS	Count	18	33	5	56
		% within Company	32.1%	58.9%	8.9%	100.0%
	EMC	Count	24	12	5	41
		% within Company	58.5%	29.3%	12.2%	100.0%
Total		Count	42	45	10	97
		% within Company	43.3%	46.4%	10.3%	100.0%

The Neutral selection (3) comes with the largest population for EMC company, while the Agree selection (4) comes with the largest population for OBS company.

While the Agree selection (4) comes next for EMC company, and the Neutral selection (3) comes next for OBS company.

Table 20 - Question #11 Analysis

Crosstab

			Q11					
			1.00	2.00	3.00	4.00	5.00	Total
Company	OBS	Count	1	9	19	23	4	56
		% within Company	1.8%	16.1%	33.9%	41.1%	7.1%	100.0%
	EMC	Count	0	1	26	12	2	41
		% within Company	0.0%	2.4%	63.4%	29.3%	4.9%	100.0%
Total		Count	1	10	45	35	6	97
		% within Company	1.0%	10.3%	46.4%	36.1%	6.2%	100.0%

The Neutral selection (3) comes with the largest population for EMC company, while the Agree selection (4) comes with the largest population for OBS company.
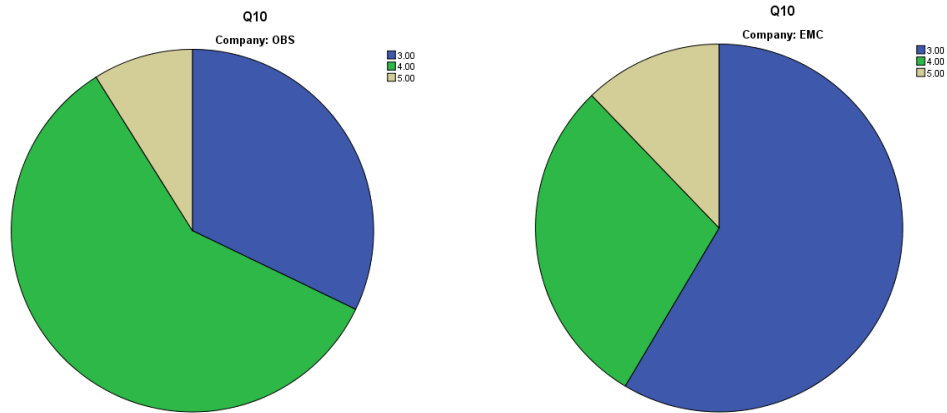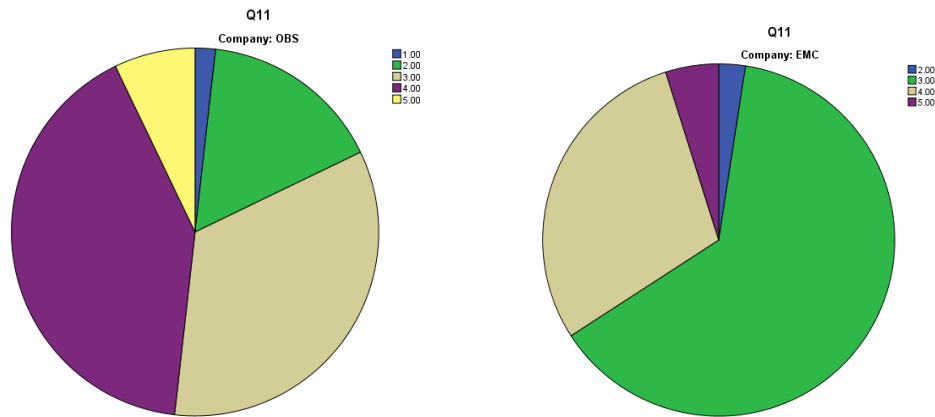
While the Agree selection (4) comes next for EMC company, and the Neutral selection (3) comes next for OBS company.

Table 21 - Question #12 Analysis

Crosstab

| | | | Q12 | | | | | |
			1.00	2.00	3.00	4.00	5.00	Total
Company	OBS	Count	2	6	24	18	6	56
		% within Company	3.6%	10.7%	42.9%	32.1%	10.7%	100.0%
	EMC	Count	0	2	28	9	2	41
		% within Company	0.0%	4.9%	68.3%	22.0%	4.9%	100.0%
Total		Count	2	8	52	27	8	97
		% within Company	2.1%	8.2%	53.6%	27.8%	8.2%	100.0%
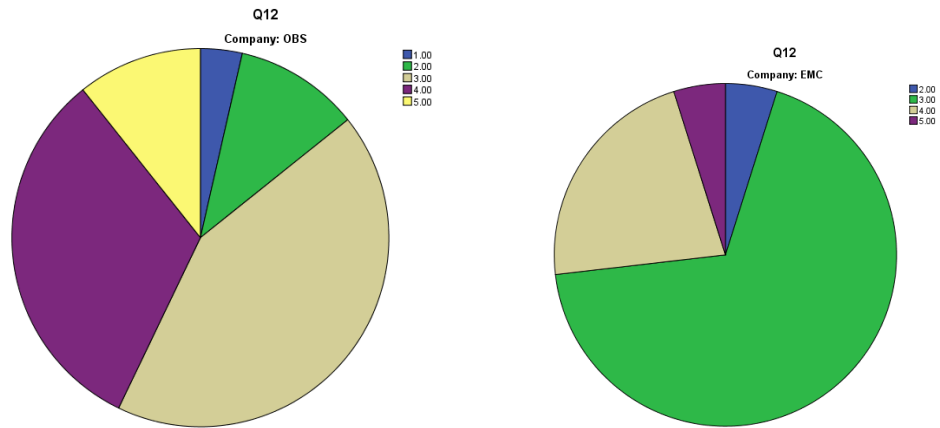
Both OBS & EMC are having the largest population with the Neutral (3) selection.

The Agree selection (4) comes next for both companies.

Table 22 - Question #13 Analysis

Crosstab

			Q13				
			2.00	3.00	4.00	5.00	Total
Company	OBS	Count	8	28	16	4	56
		% within Company	14.3%	50.0%	28.6%	7.1%	100.0%
	EMC	Count	2	27	10	2	41
		% within Company	4.9%	65.9%	24.4%	4.9%	100.0%
Total		Count	10	55	26	6	97
		% within Company	10.3%	56.7%	26.8%	6.2%	100.0%
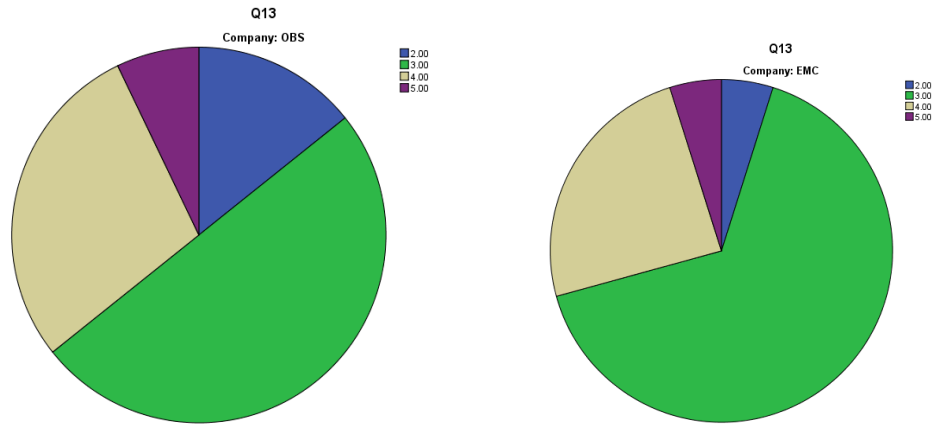
Both OBS & EMC are having the largest population with the Neutral (3) selection.

The Agree selection (4) comes next for both companies.

Table 23 - Question #14 Analysis

Crosstab

			Q14					
			1.00	2.00	3.00	4.00	5.00	Total
Company	OBS	Count	1	4	33	16	2	56
		% within Company	1.8%	7.1%	58.9%	28.6%	3.6%	100.0%
	EMC	Count	0	6	25	7	3	41
		% within Company	0.0%	14.6%	61.0%	17.1%	7.3%	100.0%
Total		Count	1	10	58	23	5	97
		% within Company	1.0%	10.3%	59.8%	23.7%	5.2%	100.0%
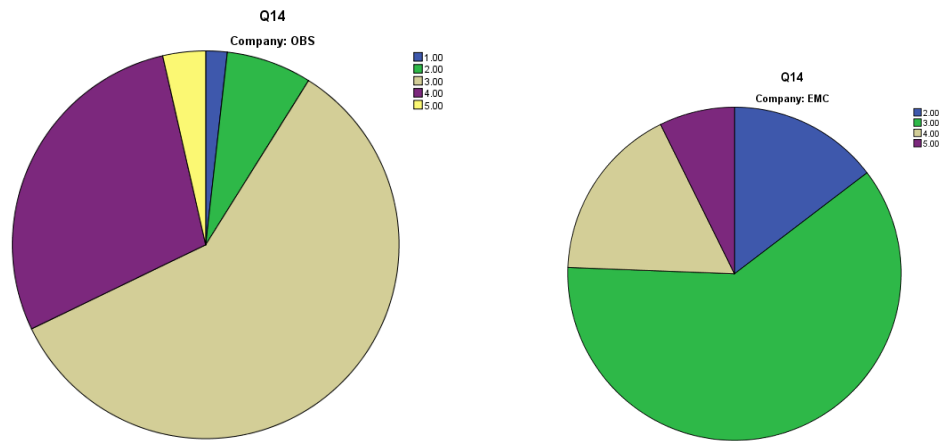
Both OBS & EMC are having the largest population with the Neutral (3) selection.

The Agree selection (4) comes next for both companies.

Table 24 - Question #15 Analysis

Crosstab

|			Q15				
			1.00	2.00	3.00	4.00	Total
Company	OBS	Count	0	20	30	6	56
		% within Company	0.0%	35.7%	53.6%	10.7%	100.0%
	EMC	Count	2	9	26	4	41
		% within Company	4.9%	22.0%	63.4%	9.8%	100.0%
Total		Count	2	29	56	10	97
		% within Company	2.1%	29.9%	57.7%	10.3%	100.0%
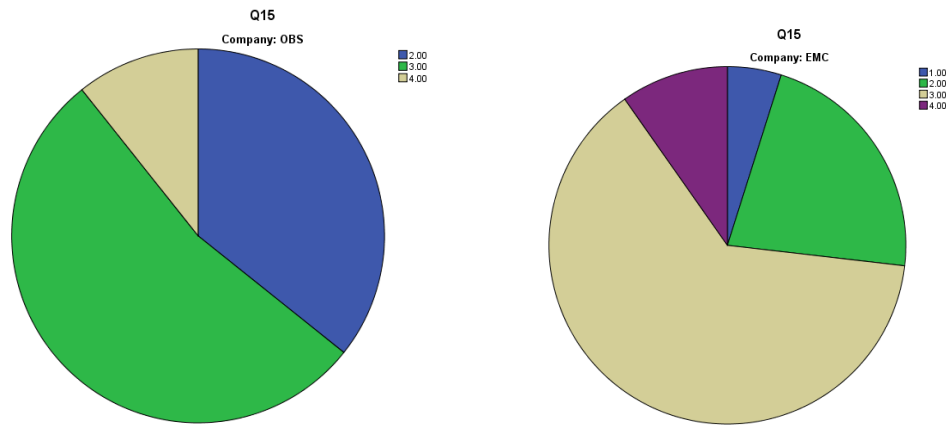
Both OBS & EMC are having the largest population with the Neutral (3) selection.

The Disagree selection (2) comes next for both companies.

Table 25 - Question #16 Analysis

Crosstab

|			Q16					
			1.00	2.00	3.00	4.00	5.00	Total
Company	OBS	Count	1	3	28	22	2	56
		% within Company	1.8%	5.4%	50.0%	39.3%	3.6%	100.0%
	EMC	Count	0	2	26	10	3	41
		% within Company	0.0%	4.9%	63.4%	24.4%	7.3%	100.0%
Total		Count	1	5	54	32	5	97
		% within Company	1.0%	5.2%	55.7%	33.0%	5.2%	100.0%
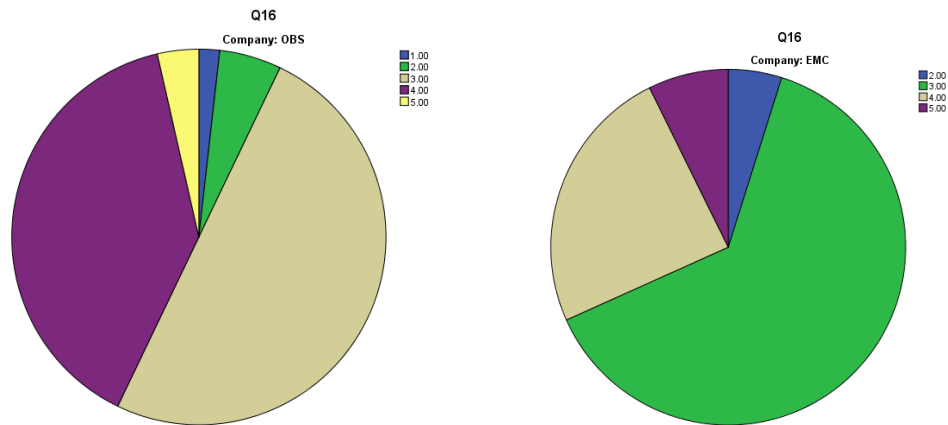
Both OBS & EMC are having the largest population with the Neutral (3) selection.

The Agree selection (4) comes next for both companies.

Table 26 - Question #17 Analysis

Crosstab

|			Q17				
			2.00	3.00	4.00	5.00	Total
Company	OBS	Count	6	25	21	4	56
		% within Company	10.7%	44.6%	37.5%	7.1%	100.0%
	EMC	Count	6	23	10	2	41
		% within Company	14.6%	56.1%	24.4%	4.9%	100.0%
Total		Count	12	48	31	6	97
		% within Company	12.4%	49.5%	32.0%	6.2%	100.0%

Both OBS & EMC are having the largest population with the Neutral (3) selection.

The Agree selection (4) comes next for both companies.

Table 27 - Question #18 Analysis

Crosstab

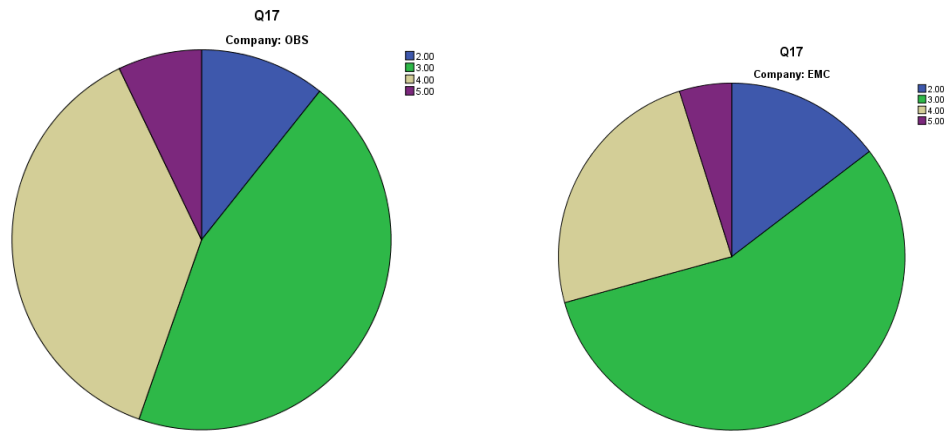|			Q18					
			1.00	2.00	3.00	4.00	5.00	Total
Company	OBS	Count	3	13	28	11	1	56
		% within Company	5.4%	23.2%	50.0%	19.6%	1.8%	100.0%
	EMC	Count	2	12	23	4	0	41
		% within Company	4.9%	29.3%	56.1%	9.8%	0.0%	100.0%
Total		Count	5	25	51	15	1	97
		% within Company	5.2%	25.8%	52.6%	15.5%	1.0%	100.0%

Both OBS & EMC are having the largest population with the Neutral (3) selection.

The Disagree selection (2) comes next for both companies.

Table 28 - Question #19 Analysis

Crosstab

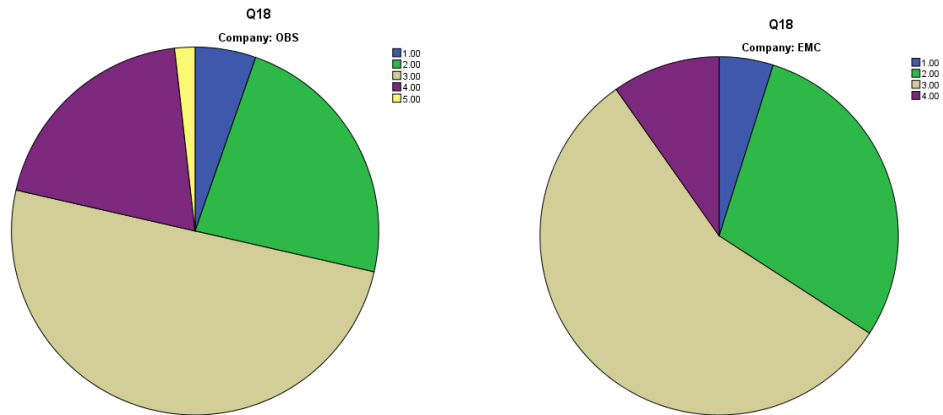|			Q19					
			1.00	2.00	3.00	4.00	5.00	Total
Company	OBS	Count	1	3	23	25	4	56
		% within Company	1.8%	5.4%	41.1%	44.6%	7.1%	100.0%
	EMC	Count	0	0	18	21	2	41
		% within Company	0.0%	0.0%	43.9%	51.2%	4.9%	100.0%
Total		Count	1	3	41	46	6	97
		% within Company	1.0%	3.1%	42.3%	47.4%	6.2%	100.0%
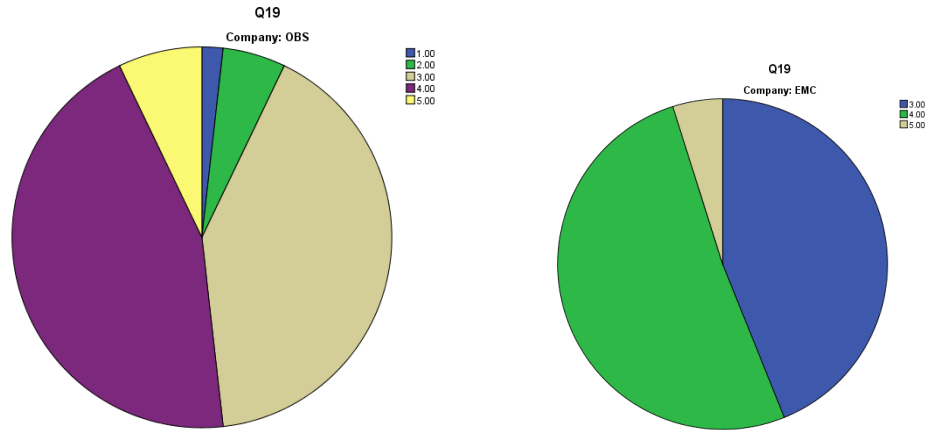
Both OBS & EMC are having the largest population with the Agree (4) selection.

The Neutral selection (3) comes next for both companies.

Table 29 - Question #20 Analysis

Crosstab

			Q20				
			2.00	3.00	4.00	5.00	Total
Company	OBS	Count	1	22	27	6	56
		% within Company	1.8%	39.3%	48.2%	10.7%	100.0%
	EMC	Count	0	18	19	4	41
		% within Company	0.0%	43.9%	46.3%	9.8%	100.0%
Total		Count	1	40	46	10	97
		% within Company	1.0%	41.2%	47.4%	10.3%	100.0%

Both OBS & EMC are having the largest population with the Agree (4) selection.

The Neutral selection (3) comes next for both companies.

Table 30 - Question #21 Analysis

Crosstab

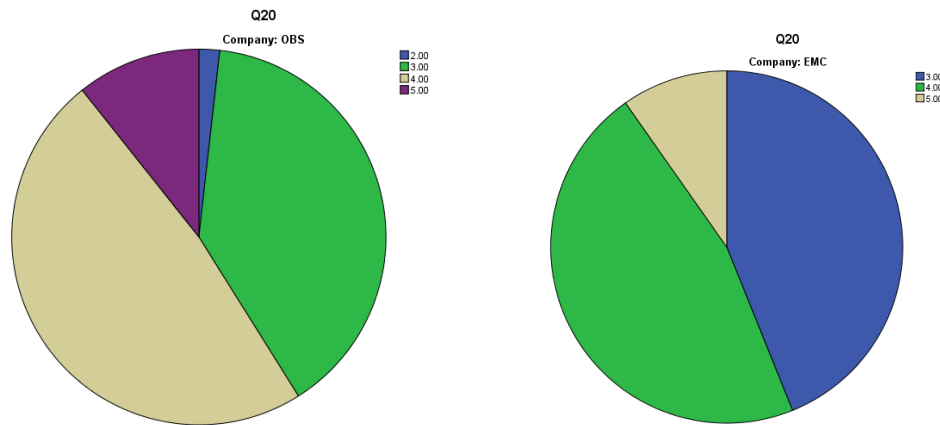|			Q21				Total
			2.00	3.00	4.00	5.00	
Company	OBS	Count	1	24	20	11	56
		% within Company	1.8%	42.9%	35.7%	19.6%	100.0%
	EMC	Count	0	19	17	5	41
		% within Company	0.0%	46.3%	41.5%	12.2%	100.0%
Total		Count	1	43	37	16	97
		% within Company	1.0%	44.3%	38.1%	16.5%	100.0%
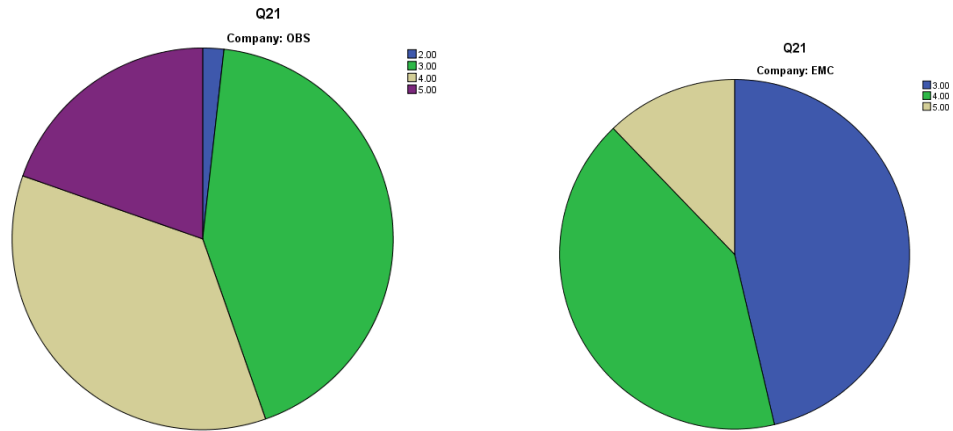
Both OBS & EMC are having the largest population with the Neutral (3) selection.

The Agree selection (4) comes next for both companies.

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Table 31 - Question #22 Analysis

Crosstab

			Q22			
			3.00	4.00	5.00	Total
Company	OBS	Count	25	24	7	56
		% within Company	44.6%	42.9%	12.5%	100.0%
	EMC	Count	18	18	5	41
		% within Company	43.9%	43.9%	12.2%	100.0%
Total		Count	43	42	12	97
		% within Company	44.3%	43.3%	12.4%	100.0%
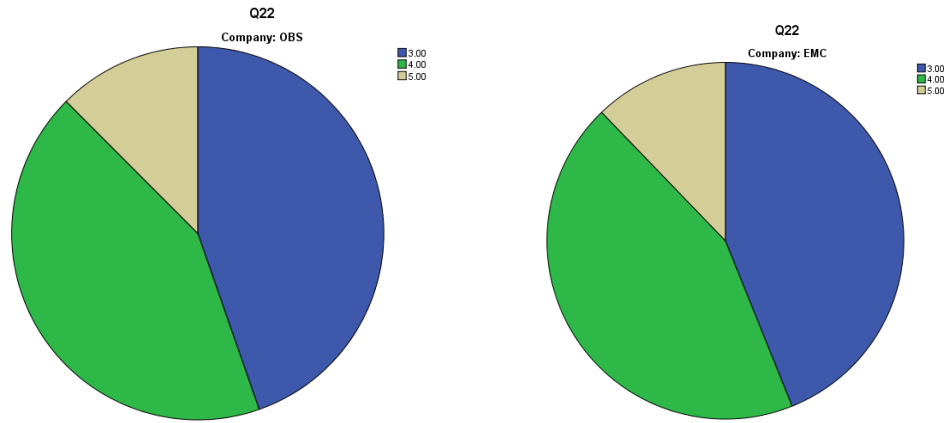
Table 32 - Question #23 Analysis

Crosstab

| | | | Q23 | | |
			1.00	2.00	3.00	4.00	5.00	Total
Company	OBS	Count	6	21	24	4	1	56
		% within Company	10.7%	37.5%	42.9%	7.1%	1.8%	100.0%
	EMC	Count	6	11	21	3	0	41
		% within Company	14.6%	26.8%	51.2%	7.3%	0.0%	100.0%
Total		Count	12	32	45	7	1	97
		% within Company	12.4%	33.0%	46.4%	7.2%	1.0%	100.0%
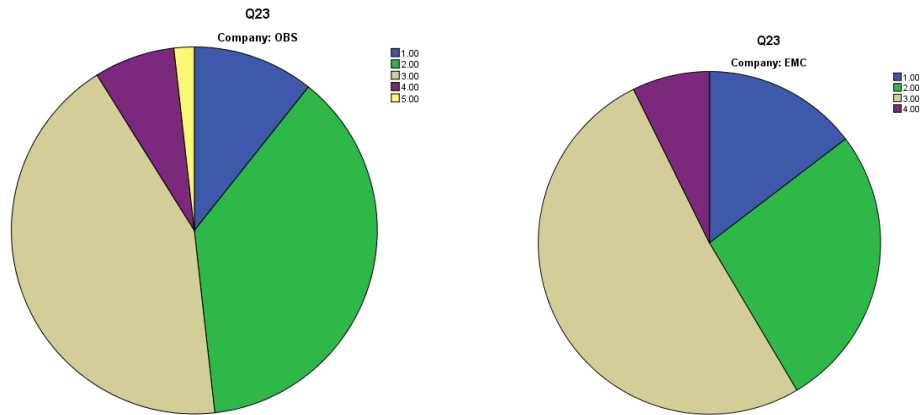
Both OBS & EMC are having the largest population with the Neutral (3) selection.

The Disagree selection (2) comes next for both companies.

Table 33 - Question #24 Analysis

Crosstab

			Q24					
			1.00	2.00	3.00	4.00	5.00	Total
Company	OBS	Count	3	21	25	6	1	56
		% within Company	5.4%	37.5%	44.6%	10.7%	1.8%	100.0%
	EMC	Count	4	14	22	1	0	41
		% within Company	9.8%	34.1%	53.7%	2.4%	0.0%	100.0%
Total		Count	7	35	47	7	1	97
		% within Company	7.2%	36.1%	48.5%	7.2%	1.0%	100.0%

Both OBS & EMC are having the largest population with the Neutral (3) selection.

The Disagree selection (2) comes next for both companies.

Table 34 - Question #25 Analysis

Crosstab

			Q25					Total
			1.00	2.00	3.00	4.00	5.00	
Company	OBS	Count	8	19	25	3	1	56
		% within Company	14.3%	33.9%	44.6%	5.4%	1.8%	100.0%
	EMC	Count	6	13	21	1	0	41
		% within Company	14.6%	31.7%	51.2%	2.4%	0.0%	100.0%
Total		Count	14	32	46	4	1	97
		% within Company	14.4%	33.0%	47.4%	4.1%	1.0%	100.0%

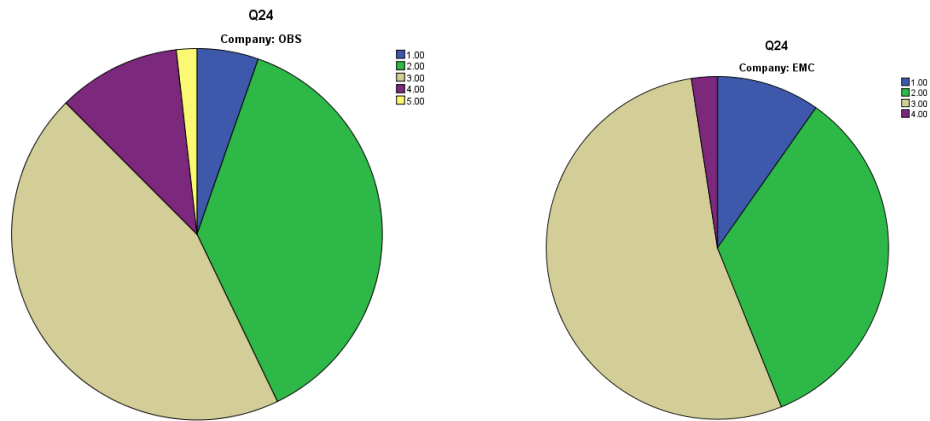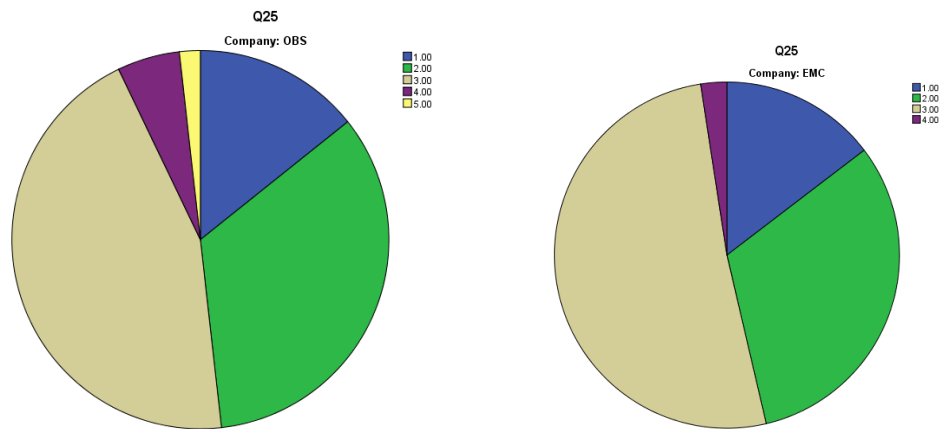Both OBS & EMC are having the largest population with the Neutral (3) selection.

The Disagree selection (2) comes next for both companies.

Chapter 5: Conclusion

5.1 Conclusion

Below are the correlation analysis done for the readiness in correlation with the 4 variables used, to measure the organization readiness in implementing the Knowledge Management Model. The correlation analysis is done for each company separately to conclude the readiness of each company based on the correlation analysis done along the 4 variables used. According to the below results, the conclusion for the hypothesis can be achieved and accordingly this will show whether the tested variables are really affecting the readiness of the company or not.

Figure 39 - OBS Correlation Analysis

	Correlations[a]	Content	Context	Process	Indiv.Attrib	Readiness
Readiness	Pearson Correlation	.708**	.659**	.761**	.104	1
	Sig. (2-tailed)	.000	.000	.000	.445	
	N	56	56	56	56	56

**. Correlation is significant at the 0.01 level (2-tailed).
a. Company = OBS

The correlation for OBS company in figure 39 is showing the following: there is a positive relationship between the readiness and the 3 variables; content, context and process all of them are with high statistical significance. The positive relationship is very high which really shows how these 3 variables are highly correlated with readiness. For the individual attribute variable, it shows that there is no correlation at all with readiness and also no statistical significance. This makes lots of scene as the questionnaire used was asking negative questions for this variable. So all replies were either disagree or strongly disagree. Accordingly, from this correlation analysis and comparing the questions used in the questionnaire it can be concluded that the hypothesis are met. OBS company is ready to implement the knowledge management model based on the above correlation analysis above.

Figure 40 - EMC Correlation Analysis

Correlations^a

		Content	Context	Process	Indiv.Attrib	Readiness
Readiness	Pearson Correlation	.796**	.695**	.805**	-.335*	1
	Sig. (2-tailed)	.000	.000	.000	.032	
	N	41	41	41	41	41

** . Correlation is significant at the 0.01 level (2-tailed).
* . Correlation is significant at the 0.05 level (2-tailed).
a. Company = EMC

The correlation for EMC company in figure 40 is showing the following: there is a positive relationship between the readiness and the 3 variables; content, context and process all of them are with high statistical significance. The positive relationship is very high which really shows how these 3 variables are highly correlated with readiness. For the individual attribute variable, it shows that there is negative relationship with readiness and with no statistical significance. This makes lots of scene as the questionnaire used was asking negative questions for this variable. So all replies were either disagree or strongly disagree. Accordingly, from this correlation analysis and comparing the questions used in the questionnaire it can be concluded that the hypothesis are met. EMC company is ready to implement the knowledge management model based on the above correlation analysis above.

The survey questions are really matching the correlation analysis output very well and this why we have the hypothesis met for both companies. Employees of both companies needs an appropriate content, a clear process, a clear context, and they need to belief in the model and the change to be introduced. This why all the relationship are positive except for the individual attributes, because the questions in the survey are in a negative format and the answers on them were in a positive way.

As a conclusion it can be said that the mentioned hypothesis are met. It was shown from the analysis, that the 4 attributes that were tested plays a big role in measuring the readiness of a company for applying the knowledge management strategy. In a nutshell, analysis shows that both company are ready to apply the knowledge management strategy, OBS is showing that process is the most high variable with

correlation to readiness, and EMC also shows that process is the most high variable with correlation to readiness. But EMC has a higher significance with readiness than OBS. In general EMC correlation with readiness is higher than OBS, but both companies are showing positive relationship as explained in above paragraphs.

5.2 Limitations

More applicants were needed to have a more extended analysis which can really shows which company is more ready than the other in applying this knowledge management strategy within the organization.

5.3 Further Studies

Further studies should be replicated on different sectors in the Egyptian industries to be able to have more generalized look over the importance of knowledge management.

References

Ahani, M., Bahrami, H., & Shariflu, B. (2013). Determining the Dimension of Knowledge Management Implementation by Utilizing a Fuzzy TOPSIS Method. *International Journal Of Business Administration*, 4(1), 113-123.

Ahmadi, A., Eskandari, E., & Ahmadi, F. (2011). Social capital for knowledge management. *Interdisciplinary Journal Of Contemporary Research In Business*, 3(7), 957-972.

Ajmal, M. M., Kekäle, T., & Takala, J. (2009). Cultural impacts on knowledge management and learning in project-based firms. *Journal of Information and Knowledge Management Systems*, 39(4), 339-352.

Akhavan, P., & Zahedi, M. R. (2014). Critical Success Factors in Knowledge Management Among Project-Based Organizations: A Multi-Case Analysis. *IUP Journal of Knowledge Management*, 12(1), 20-38.

Alazmi, M., & Zairi, M. (2003). Knowledge management critical success factors. *Total Quality Management & Business Excellence*, 14(2), 199-204.

Al-alawi, A. I., Al-marzooqi, N. Y., & Mohammed, Y. F. (2007). Organizational culture and knowledge sharing: critical success factors. *Journal of Knowledge Management*, 11(2), 22-42.

Alex Bank. (2011). Sector Survey: Information & Communication Technology Industry: Boosting Industry in Egypt. Retrieved from https://www.alexbank.com/Uploads/documents/research/Outsourcing.pdf

Alexander Styhre, (2003) "Knowledge management beyond codification: knowing as practice/concept", *Journal of Knowledge Management*, 7(5), 32 – 40.

American Chamber in Egypt. (2006). Egypt Reforms: An update from the ICT Sector. Retrieved from http://amcham.org.eg/operation/events/events06/ny_mcit/Amcham.pdf

Bencsik, A., & Juhász, T. (2012). Chance of success at Hungarian small and medium sized enterprises. Problems of Management In The 21St Century, 516-30. *Problems of Management in the 21st Century Journal*, 5, 16-29.

Colin Armistead, (1999) "Knowledge management and process performance", *Journal of Knowledge Management*, 3 (2), 143 – 157.

Dadashkarimi, Y., & Asl, A. M. (2013). A Study on the Relation between Knowledge Management Strategies and Organization Performance (Case Study: ATA Airlines), *Research Journal of Environmental and Earth Sciences*, 5(12), 728-736.

Datamonitor. (2012). Technological Landscape: Country Analysis Report: Egypt. Retrieved from http://www.Datamonitor.com/

Egyptian Ministry of Communications and Information Technology. (2010). National ICT Strategy 2012-2017: Towards a Digital Society and Knowledge-based Economy. Retrieved from http://www.mcit.gov.eg/Publication/Publication_Summary/660/ICT_

Fei Gao, Meng Li, Steve Clarke, (2008) "Knowledge, management, and knowledge management in business operations", *Journal of Knowledge Management*, 12(2), 3 – 17.

Gao, F., Li, M., & Clarke, S. (2008). Knowledge, management, and knowledge management in business operations. *Journal of Knowledge Management*, 12(2), 3–17.

Gavrilova, T., & Andreeva, T. (2012). Knowledge elicitation techniques in a knowledge management context. *Journal of Knowledge Management*, 16(4), 523–537.

Halawi, L. A., McCarthy, R. V., & Aronson, J. E. (2007). An Empirical Investigation of Knowledge Management System Success. *Journal of Computer Information Systems*, 121-134.

Hicks, R. C., Dattero, R., & Galup, S. D. (2006). The five-tier knowledge management hierarchy. *Journal of Knowledge Management*, 10(1), 19–31.

Holt, D. T., Armenakis, A. A., Feild, H. S., & Harris, S. G. (2007). Readiness for Organizational Change The Systematic Development of a Scale. *The Journal of Applied Behavioral Science*, 43(2), 232-255.

Inaki Peña, (2002) Knowledge networks as part of an integrated knowledge management approach, *Journal of Knowledge Management*, 6(5), 469 – 478.

Jean-Baptiste P.L. Faucher, André M. Everett, Rob Lawson, (2008) "Reconstituting knowledge management", *Journal of Knowledge Management*, 12(3), 3 – 16.

Kamel, S. (2010). Innovation and knowledge Management in Twin Track Economies: Challenges & Solutions The Evolution of the ICT Sector in Egypt – Partnership4Development. Retrieved from http://dar.aucegypt.edu/bitstream/handle/10526/1178/ict-partnership-development-kamel.pdf.pdf?sequence=1

Kulkarni, U. R., Ravindran, S., & Freeze, R. D. (2007). A Knowledge Management Success Model: Theoretical Development and Empirical Validation. *Journal of Management Information Systems*, 23(3), 309-347.

Linh-Chi, V. (2012). Pragmatist Perspective on Knowledge and Knowledge Management in Organizations. *International Business Research*, 5(9), 78-88.

Makri, M., Hitt, M. A., & Lane, P. J. (2010). Complementary technologies, knowledge relatedness, and invention outcomes in high technology mergers and acquisitions. *Strategic Management Journal*, 31(6), 602-628.

Maria Martensson, (2000) "A critical review of knowledge management as a management tool", *Journal of Knowledge Management*, 4(3), 204 – 216.

Mirza, W., & Ali, B. (2011). The dilemma of Knowledge Management, innovation and entrepreneurship in SME's: an empirical study. *Interdisciplinary Journal Of Contemporary Research In Business*, 3(2), 1112-1128.

Nada, N., Ghanem, M., Mesbah, S., & Turkyilmaz, A. (2012). Innovation and Knowledge Management Practice in Turkish SMEs. *Journal Of Knowledge Management, Economics & Information Technology*, 2(1), 248-265.

Newman, B. D., & Conrad, K. W. (2000). A Framework for Characterizing Knowledge Management Methods, Practices, and Technologies.

Nonaka, I., & Toyama, R. (2003). The knowledge-creating theory revisited: knowledge creation as a synthesizing process, *Knowledge Management Research and Practice*, 1, 2-10.

Olander, H., Hurmelinna-Laukkanen, P., & Heilmann, P. (2011). Do SMEs Benefit from HRM-Related Knowledge Protection in Innovation Management?. *International Journal Of Innovation Management*, 15(3), 593-616.

Piispanen, V., & Kajanus, M. (2012). The Innovation Management and Partnerships (Knowledge Flow) of the Finnish Small Low Tech Companies. *International Business Research*, 5(6), 36-52.

Popescu, V., Popescu, G. N., & Popescu, C. (2012). Innovation's Role in Nowadays Society and the Ways to Generate Competitive Intelligence and Accountability: Case of Romania. *Journal Of Innovation & Business Best Practices*, 2012 (2012).

Ragna Seidler-de Alwis, Evi Hartmann, (2008) "The use of tacit knowledge within innovative companies: knowledge management in innovative enterprises", *Journal of Knowledge Management*, 12(1), 133 – 147.

Razi, M. J., & Abdul Karim, N. S. (2010). An Instrument to Assess Organizational Readiness to Implement Knowledge Management Process.

Richard C. Hicks, Ronald Dattero, Stuart D. Galup, (2006) "The five-tier knowledge management hierarchy", *Journal of Knowledge Management*, 10(1), pp.19 – 31.

Saá-Pérez, P., Díaz-Díaz, N. L., & Ballesteros-Rodríguez, J. (2012). The role of training to innovate in SMEs. Innovation: Management, Policy & Practice, 14(2), 218-230.

Seidler-de Alwis Ragna, & Hartmann, E. (2008). The use of tacit knowledge within innovative companies: Knowledge management in innovative enterprises. *Journal of Knowledge Management*, 12(1), 133–147.

Soliman, F. (2011). Could One Transformational Leader Convert the Organization From Knowledge Based Into Learning Organization, Then Into Innovation?. *Journal Of Modern Accounting & Auditing*, 7(12), 1352-1361.

Smits, M., & Moor, A. D. (2004). Effective knowledge management in knowledge-intensive organizations. Retrieved from m.t.smits@uvt.nl

Tatiana Gavrilova, Tatiana Andreeva, (2012) "Knowledge elicitation techniques in a knowledge management context", *Journal of Knowledge Management*, 16(4), 523 – 537.

Arabic Translation of Abstract

تناقش هذه الرسالة مدي إ س تعداد الشركات الـمـصريـة لتطبيق استراتيجية ادارة المعرفة و المعلومات ليكسبها ذلك ميزة تنافسية بين الشركات في مجال الاتصالات و نظم المعلومات. بنيت الدراسة الاستقصائية علي عينة من الشركتان من حديثي التعيين، ذوي الخبرة و المديرين. تبدأ الرسالة بشرح تفصيلي لادارة المعرفة و المعلومات مع ايضاح العوامل و المتغيرات المساهمة في نجاح هذا النوع من الادارة. ينتقل البحث بعد ذلك لمناقشة الأطر المختلفة المستخدمة لقياس مدي قابلية الشركات لتطبيق هذا النوع من الادارة مع وصف و شرح للأسواق المصرية في مجال الاتصالات و نظم المعلومات. بنيت هذه الرسالة علي فرضية مستنبطة من نموذج في بحث آخر و ذلك بعد تعديلها لتناسب شركات الاتصالات و نظم المعلومات في السوق المصري. ترتكز هذه الفرضية علي اربع قوائم أساسية و هي: ظروف تطبيق هذا النوع من الادارة، سياق هذا التطبيق، طريقة التطبيق و اخيرا الاضافات و التطبيقات الفردية. و علي ذلك، فالبحث مبني علي فرضية ان اي من هذه القوائم السابق ذكرها تؤثر ايجابيا علي مدي قابلية الشركات لتطبيق نظام ادارة المعرفة. ركز البحث علي شركتان في مجال الاتصالات و نظم المعلومات في مصر و هما OBS و EMC. هذا و قد أتي البحث بنتائج ايجابية و قد تم اثبات الفرضية. هذا و قد اختلفت نتائج الدراسة الاستقصائية بطريقة ايجابية و اثبتت مدي اختلاف تأثير القوائم الاربعة علي الشركتان.

Appendix A

Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I think that the organization will benefit from this new knowledge management process.					
It doesn't make much sense for us to initiate this new knowledge management process.					
There are legitimate reasons for us to make this new knowledge management process.					
This new knowledge management process will improve our organization's overall efficiency.					
There are a number of rational reasons for this new knowledge management process to be made.					
On the long run, I feel it will be worthwhile for me if the organization adopts this new knowledge management process.					

This new knowledge management process makes my job easier.					
When this new knowledge management process is implemented, I don't believe there is anything for me to gain.					
The time we are spending on this new knowledge management process should be spent on something else.					
This new knowledge management process matches the priorities of our organization.					
Our senior leaders have encouraged all of us to embrace this new knowledge management process.					
Our organization's top decision makers have put all their support behind this new knowledge management process effort.					
Every senior manager has stressed the importance of this new knowledge					

management process.				
This organization's most senior leader is committed to this new knowledge management process.				
I think we are spending a lot of time on this new knowledge management process when the senior managers don't even want it implemented.				
Management has sent a clear signal this organization is going to new knowledge management process.				
I do not anticipate any problems adjusting to the work I will have when this new knowledge management process is adopted.				
There are some tasks that will be required when we implementing this new knowledge management process that I don't think I can do well.				
When we implement this new knowledge management process, I				

feel I can handle it with ease.					
I have the skills that are needed to make this new knowledge management process work.					
When I set my mind to it, I can learn everything that will be required when this new knowledge management process is adopted.					
My past experiences make me confident that I will be able to perform successfully after this new knowledge management process is made.					
I am worried I will lose some of my status in the organization when this new knowledge management process is implemented.					
This new knowledge management process will disrupt many of the personal relationships I have developed.					
My future in this job will be limited because of this					

new knowledge management process.					