Analyzing Knowledge Management Job Market
Executive Summary

Companies recognized that they have to manage their intellectual resources and capabilities in order to remain competitive. The result is a rise in demand for knowledge management (KM) professionals. Presently no standard and widely accepted competency framework for KM professionals is available. Therefore KM employers are facing a challenge when employing KM professionals with an appropriate set of competencies because of multidisciplinary nature and diversity in KM activities.

The aim of this research was to identify competencies required by KM employers by conducting a quantitative content analysis using job advertisements from United Kingdom, Ireland, Germany, Switzerland and Austria. This study is subjected to several limitations due to geographic location and culture. Another limitation is that only job advertisements that are in English and Germany were regarded.

The results of the study show that most of the job vacancies required skills in KM Technologies. Those skills help KM professional to improve the effectiveness and efficiency in KM Processes. The reason of this result could be that the KM employers see KM professionals more as technical professionals rather than KM professionals. Skills in KM Practices and KM Processes were also much sought. Other skills that were desired were skills in Project Management, Content Management and Business Development. Therefore this study shows that KM is more than creation, capturing, sharing and using of knowledge. Moreover the investigation shows that KM professionals need to have ability to communicate but also to possess analytical, problem solving and decision making skills. They have to be teamplayer and on the other hand they have to have the ability to work independently. Training and presentations skills were also much desired by KM employers. Interesting observation was found that only 7 job advertisements asked for KM education. Instead the majority asked for a degree in business administration, computer science or information systems/business informatics. Most of the job vacancies sought an experienced applicant without specifying how many years of experiences the applicant has to have.

The research shows also that KM still does not have a set of clear job titles and that does not provide clearly bounded set of activities and tasks.

The main conclusion is that much misunderstanding exists in the business as well as the academic world about who and what knowledge management professionals are and what competencies they have to possess. Anyway KM academic programs have to observe development in KM job market in order to incorporate new trends and competencies in their curricula for meeting the needs of KM employers.
Abstract

Nowadays companies have changed the way they do the business and have realized that they must explicitly manage their intellectual resources and capabilities in order to remain competitive. The consequence is a rise in demand for knowledge management professionals. Since knowledge management is an emerging discipline, presently there is no widely accepted competency framework for knowledge management professions available.

A quantitative content analysis was performed using 89 job advertisements from United Kingdom, Germany, Switzerland, Austria and Ireland in order to identify competencies of knowledge management profession. The results of the study show that most of the job advertisements asked for skills in Knowledge Management Technologies which are important for knowledge management professionals to improve the effectiveness and efficiency of knowledge management processes. The study shows also that knowledge management is more than creation, capturing, sharing and using of knowledge. Moreover it proves that knowledge management does not have a set of clear job titles and that it does not provide clearly bounded set of activities and tasks. Generally much misunderstanding exists about who and what knowledge management professionals are and what kind of skills they have to possess.

Keywords: Knowledge Management, Knowledge Management Profession, Knowledge Management Competencies
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1. Introduction

1.1. Statement of the problem
In today’s rapidly changing business climate, companies realized that to remain competitive they have to explicitly manage their intellectual resources and capabilities. They view the knowledge as their most valuable and strategic resource. Nowadays the business environment is undergoing constant change. It demands knowledge growth and maturity that is relevant, applicable, and value-added. This knowledge must be able to solve enterprise-wide problems to be effective and valuable (Bixler, 2005, p. 53). Companies have changed the way they do the business and have realized that they have to direct their attention to the significance of managing knowledge. Indeed, they need to pay attention to knowledge and expertise of their staff in order to identify new sources of competitive edge. Rowley (1999) states that: "... the knowledge-based society has arrived, and that those organizations that will succeed in the global information society are those that can identify, value, create and evolve their knowledge assets" (Rowley, 1999, p. 416). Stahle and Gronroos (1999) and Sydanmaenlakka (2003) claim that instead of tangible resources, expertise and knowledge have turned into the most crucial organizational factors in securing competitive edge and capital (as cited by Virtainlahti, 2008, p. 51). Recognizing the value of intellectual capital and the necessity for managing company’s intellectual assets, companies are looking for a new generation of knowledge management professionals who are able to work in intensive and complex knowledge environments.

According to Roberts (2001) economists now agree that the ability to create, disseminate and apply knowledge efficiently is fundamental to competitiveness at both firm and national level (Roberts, 2001, p.99). Liebowitz (2000) states in his latest book that “In today’s movement towards knowledge management, organizations are trying to best leverage their knowledge internally in the organization and externally to their customers and stakeholders. They are trying to capitalize on their organizational intelligence to maintain their competitive edge” (Liebowitz, 2000, p.1). The knowledge management professions have become an important aspect of the modern economy in the last decades. Companies need well educated and qualified knowledge management professionals for successfully realizing their knowledge management initiatives and strategies. The result is a rise in demand for knowledge management professionals having a desired set of knowledge, skills and attitudes. Since knowledge management (KM) is an emerging discipline, presently no standard and widely accepted competency framework for KM professionals is available (Luthra, 2008, p.1). Therefore, quite recently KM professionals in Singapore, many of them members of Information and Knowledge Management Society, have proposed a competency framework for knowledge professionals. This framework allows KM professionals to match their roles to the generic archetypes in the framework with the aim of helping them identify the competencies that they need in order to feel more confident in those roles (iKMS, 2009). KM employers are facing a challenge when employing KM professionals with an appropriate set of competencies because of multi disciplinarily nature and diversity in KM activities. Hence it is important to identify and analyze areas and trends in the knowledge management profession in order to understand the needs of job market.
1.2. Purpose of the study and delimitations

KM is crucial for organizational strategic survival. Problem solving, knowledge creation, and innovation are core competencies of any successful organization (Bixler, 2005, p. 54). A company that does not perform knowledge management and does not compensate knowledge workers based on their contribution to the company’s knowledge will be at a significant competitive disadvantage in such a market (Demarest, 1997, p.383). Therefore the purpose of this study was to identify competencies required by KM employers through analyzing job advertisements. Despite an increased interest in KM professionals it is surprising that so little empirical research has actually been conducted on the topic, especially in Europe. Very few studies have focused on such a topic.

One of those studies is from Thompson, Martens and Al-Hawamdeh (2008) which was focused on the roles and responsibilities of KM professionals through analyzing job advertisement within the United States over the course of a year (Thompson, K. et al. 2008, p. 13). Another study from Snyman (2001) was investigated on how the real business world defines the role and responsibilities of the information and knowledge manager. This study was also conducted through analysis of job advertisements in South Africa (Snyman, 2001, p. 273). Ferguson, Hider and Lloyd (2008) found out through the analysis of advertisements for KM positions that there may be some overlap between competencies required by KM and Library and Information Services professionals (Ferguson et al. 2008, p. 40). A recent study about “competencies sought by knowledge management employers” was carried out through content analysis using job advertisements by Majid and Mulia. They collected the data from six different Asia countries during the first half of the year 2008 (Majid and Mulia, 2009, p.3).

As outlined above that KM is an emerging discipline and that employers have the challenge when hiring KM professionals thus this study focused on job advertisements appearing in different job websites, addressing the competencies required by employers who want to employ a KM employee in order to identify a standard competency set for KM professionals. It should also help KM academic programs in reviewing their curricula in order to incorporate new trends and competencies for meeting the needs of KM employers. It also should help to understand the needs of the KM job market. This research is subjected to several limitations due to geographic location and culture. Moreover only job advertisements that are in English and German language were considered. It dealt exclusively with knowledge management operations. The end findings of this research should benefit future research in this area.

1.3. The research question

The objective of the study was to research the competencies of KM profession and thus the research questions are:

RQ 1: What is the demand of knowledge management profession today?

RQ 2: What is the difference between the previous studies and the current study?
2. Review of the literature

In this section theories that are relevant to the research are introduced. The following literature form the basis for the theoretical framework used in this study in order to identify the KM competencies. Firstly, theoretical background of the term knowledge and knowledge management was established by studying relevant literature. Further, an overview of knowledge management profession and competencies is given, which is followed by sections that describe the KM job market situation in USA and Asia. Lastly is a section that describes KM project failure factors in order to understand the reasons for KM project failure and at the same time to determine if there is any relation between the competencies of KM professionals and the project failure factors.

2.1. Knowledge

The term knowledge seems to be simple but it is complex. After occupying oneself with the term "knowledge" it is not hard to realize that there is still no consensus on the nature of the knowledge. Knowledge could be regarded as "actionable information" (see Figure 1.), which allows making better decisions and providing an effective input to dialogue and creativity in organizations. According to Tiwana (2000) this happens by providing information at the right place, at the right time and in the suitable format (cited in Jashapara, 2004, p.16). Before starting to define the term knowledge, it is necessary to define the term data and term information. Lee (2005) defines data as “scattered, unrelated facts, writings, numbers, or symbols” and information as “selected, organized and analyzed data” (Lee, 2005). Porat’s (1977) definition is that “information is data that have been organized and communicated” (Porat, 1977, p.2). Lee (2005) claims that information “is visible, independent from action and decision, different in format after processing, physical product, independent from existing environment, easily transferable, and duplicable” while knowledge is “invisible, closely related to action and decision, different in thought after processing, spiritual product, identified with existing environment, transferable through learning, and not duplicable”. He also states that knowledge is “information combined with user’s ability and experience that is used to solve a problem or to create new knowledge” (Lee, 2005).

Drucker (1959), who coined the term knowledge worker, claims that information becomes knowledge only when it is in the hands of somebody who knows what to do with it (cited in Al-Hawamdeh et al. 2008).
Bell (1973) pointed out that knowledge could be considered as “a set of organized statements of facts or ideas, presenting a reasoned judgment or an experimental result, which is transmitted to others through some communication medium in some systematic form” (Bell, 1973, p. 175). Davenport and Prusak (1998) define knowledge as a “fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms” (Davenport and Prusak, 1998, p.5). In comparison to information or data, knowledge provides us with a better ability to predict future outcomes and at the same time allows us to act more effectively (Jashapara, 2004, p.16).

According to Jashapara (2004) the most common concept of knowledge in the present knowledge management literature has its roots in ideas of logical behaviorism based on the writings of Gilbert Ryle and Michael Polanyi. Ryle explains the difference between intelligence (“knowing how”) and possessing knowledge (“knowing that”). He claims that intelligence (“knowing how”) has to do only with meaning in activity that means a person has to have the ability to perform tasks. In comparison to intelligence, the possessing knowledge (“knowing that”) is holding certain bits of knowledge in one’s mind. Ryle claims when an individual does something intelligently, they are doing only one thing, not two. An example that he uses is when a chef does not recite his recipes to himself (“knowing that”) before he can cook according to them (“knowing how”). Although Michael Polanyi uses Ryle’s distinction between intelligence (“knowing how”) and possessing knowledge (“knowing that”), he claims that each aspect of knowing is ever present with the other (see Figure2.).

![Figure 2: Philosophy of Gilbert Ryle and Michael Polanyi](Jashapara, 2004, p.41)

Therefore “knowing how” and “knowing that” exist together along a continuum and not in separate entities such as Ryle’s distinction (Jashapara, 2004, p.40). So the knowledge exists between tacit knowledge and explicit knowledge (Jashapara, 2004, p.16). Polanyi’s starting point of human knowledge is “the fact that we can know more than we can tell”. For instance riding a bicycle and the need to have tacit knowledge to stay upright is part of “knowing how”. In contrast, to articulate clearly how to ride a bicycle and what keeps a person to stay upright on a bicycle is difficult and that is the part of “knowing that” (Jashapara, 2004, p.40).
2.1.1. Types of knowledge
According to Nonaka (1994) the most dominant notions in the present knowledge management literature are the notions of “tacit” and “explicit” knowledge (cited in Jashapara, 2004, p.40). Nonaka and Konno (1998) claim that tacit knowledge is extremely personal and difficult to communicate and share with others (Nonaka and Konno, 1998, p.42). Tacit knowledge contains subjective insights, intuitions, individual’s actions and experiences as well as the ideals, values or emotions. The technical dimension and the cognitive dimension are two different dimensions of tacit knowledge. According to Nonaka (1994) the technical dimension covers know-how and skills while cognitive dimension covers beliefs, ideals, values, schemata and mental models that are rooted in us (Nonaka, 1994 p.14). Nevertheless, tacit knowledge can be acquired without language. An example is when a trainee learns craftsmanship through observation, imitation and practice (Nonaka, 1994, p.19). In contrast, explicit knowledge can be transferred between individuals formally and systematically. It can be shared in the form of data, scientific formulas, specifications and manuals and it can be also expressed in words and numbers. Explicit knowledge is also objective, rational, mental and sequential (Sutton, 2001, p.83)

A second categorization of knowledge distinguishes between individual and collective knowledge (Bouncken, 2002, p. 29; Hlupic, 2003, p. 72). Ricardo (2008) states that it is necessary to identify knowledge’s locus as either individual or collective. He claims that individual knowledge is “owned” by the individual (Ricardo, 2008, p. 53). Individual knowledge is also “transferable, moving with the person, giving rise to potential problems of retention and accumulation” (Lam, 2002, p. 68). It can be perceived as sources individuals use for their actions and cognitions (Boisot, 1998, p. 12). In contrast collective knowledge is distributed and shared among members of a group. It is the "accumulated knowledge of the organization stored in its rules, procedures, routines and share norms" (Lam, 2002, p. 68). Hlupic (2003) defines individual knowledge as the end result of the understand process while collective knowledge is the end results of all communication processes among the members of a community (Hlupic, 2003, p. 72).

According to Nonaka (1991) the critical success factor in organizations is knowledge which is more primary and the lasting source of competitive advantage (Jashapara, 2004, p.250). Nonaka (1994) claims that one of the most important challenges in knowledge management is investigating creative ways to convert the tacit knowledge base in organizations into explicit knowledge (ac cited by Jashapara, 2004, p.17). Therefore Nonaka defines four different processes for the knowledge creation and transfer:

- **Socialization** (Tacit knowledge to tacit knowledge)
  It allows sharing tacit knowledge between individuals. A key of socialization is the power to spread tacit knowledge and the process of transmitting one’s ideas or images directly to other people (Nonaka and Konno, 1998, p. 43; Jashapara, 2004, p.251).

- **Combination** (Explicit knowledge to explicit knowledge)
  It allows conversion of explicit knowledge into more complex explicit forms (Jashapara, 2004, p.201). Such knowledge transfer does not expand the organization’s knowledge base but through reconfiguring existing knowledge such as capturing, collecting, sorting, editing and integrating explicit knowledge can lead
to new knowledge (Jashapara, 2004, p.49; p.201 and p.251). In practice there are three processes of combination. Capturing and integrating new explicit knowledge from inside and outside of company and then combining such data is the first process. The second is spreading explicit knowledge directly by using presentations or meetings between the company members. Editing or processing of explicit knowledge is the third and the last process (Nonaka and Konno, 1998, p.45).

- **Externalization** (Tacit knowledge to explicit knowledge)
  It involves the articulation of tacit knowledge into understandable forms that can be understood by others (Nonaka and Konno, 1998, p.43 and Jashapara, 2004, p.201). Externalization usually happens through dialogue and the use of figurative language, metaphors, narratives, images and creative inference (Jashapara, 2004, p.49 and p.201).

- **Internalization** (Explicit knowledge to tacit knowledge)
  It allows individuals to increase their knowledge base and create knowledge by converting explicit knowledge to tacit knowledge which Nonaka defines as "learning" process (Jashapara, 2004, p.251 and Nonaka, 1994, p.19). The process happens through learning-by-doing, training and exercises (Jashapara, 2004, p.201).

Figure 3: Spiral evolution of knowledge conversion and self-transcending process (Nonaka and Konno, 1998, p.43)

As shown in Figure 3, Spiral Evolution of Knowledge Conversion and Self-transcending Process is an upward spiral process, starting at the individual level moving up to the collective group level, and then to the organizational level, sometimes reaching out to the interorganizational level (Nonaka, 1994, p.20).
2.2. Knowledge management

The variety of current knowledge management definitions comes from several different perspectives, such as information systems perspective or human resource perspective, as shown in Table 1. After realizing the meaning of knowledge management practices for gaining competitive advantage a small number of definitions have begun to adopt a more strategic management perspective (Newell et al. 2002, uit Beijerse, 2000, as cited by Jashapara, 2004, p.10). According to Bell (1973) and Drucker (1992) the term knowledge management has become an emerging discipline which is becoming more and more popular among academic, consultants and practitioners (cited in Jashapara, 2004, p.8). Jashapara (2004) claims that the knowledge has become the key asset which drives the organizational survival and success.

<table>
<thead>
<tr>
<th>Author/s</th>
<th>Definition</th>
<th>Perspective</th>
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<tr>
<td>(Davenport and Prusak 1998)</td>
<td>‘Knowledge management draws from existing resources that your organization may already have in place - good information system management, and human resources management practices.’</td>
<td>Integration (information systems and human resources)</td>
</tr>
<tr>
<td>(Swan et al. 1999b)</td>
<td>‘...any process or practice of creating, acquiring, capturing, sharing and using knowledge, wherever it resides, to enhance learning and performance in organization.’</td>
<td>Human resource process</td>
</tr>
<tr>
<td>(Skyrme 1999)</td>
<td>‘The explicit and systematic management of vital knowledge and its associated processes of creating, gathering, organizing, diffusion, use and exploitation, in pursuit organizational objectives.’</td>
<td>Human resource process</td>
</tr>
<tr>
<td>(Martins et al. 2000)</td>
<td>‘...all methods, instruments and tools that in a holistic approach contribute to the promotion of core knowledge processes.’</td>
<td>Information systems</td>
</tr>
<tr>
<td>(uit Beijerse 2000)</td>
<td>‘The achievement of the organization’s goals by making the factor knowledge productive.’</td>
<td>Strategy</td>
</tr>
<tr>
<td>(Newell et al. 2002)</td>
<td>‘...improving the ways in which firms facing highly turbulent environments can mobilize their knowledge base (or leverage their knowledge “assets”) in order to ensure continuous innovation.’</td>
<td>Strategy</td>
</tr>
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Table 1: Representative sample of knowledge management definitions
(Jashapara, 2004, p. 11)

Demarest (1997) describes knowledge management as “a process of continually managing knowledge of all kinds and requires a company-wide strategy which comprises policy, implementation, monitoring and evaluation” (Demarest, 1997, p.322). And Liebowitz (2000) argues that the thrust of knowledge management is “to create a process of valuing the organization’s intangible assets in order to best leverage knowledge internally and externally. Knowledge management, therefore, deals with creating, securing, capturing, coordinating, combining, retrieving, and distributing knowledge” (Liebowitz, 2000, p.1).
According to Anklam (1999) “knowledge management is a collection of business practices that promote an integrated approach to the creation, capture, organization, access and use of enterprise knowledge—knowledge about products, processes, systems” (Anklam, 1999, p.36).

The knowledge management is a quite young discipline and its strength and challenge comes from its interdisciplinary approach, as shown in Figure 4.

Jashapara (2004) also claims if knowledge management was only information systems, existing tools and business process would be sufficient but the reality is that different systems and strategic information systems have been found deficient. He contends that the real synergies are possible to occur from boundary-spanning individuals who recognize the importance of dialogue and debate with other disciplines and can see beyond the narrow margins of their own disciplines (Jashapara, 2004, p.9)

Figure 4: Tree of knowledge management - disciplines, content and activity (Jashapara, 2004, p.10)

Different dimensions of knowledge management have been merged together into an integrated definition, as shown in Figure 5. The aim of knowledge management activities is to increase intellectual capital and enhance organizational performance. Through different learning processes the human dimension of developing knowledge in individuals, teams and organizations is taking place.
As soon as the knowledge is created, the significant challenge is to share the knowledge. Different tools, technologies, and systems can help us to explore and exploit knowledge, but knowledge management tools and organizational processes are not enough to achieve success. Several well planned initiatives have failed to acknowledge the cultural and change management dimension of successful implementation (Jashapara, 2004, p.11).

According to Jashapara (2004), knowledge management can be defined from an interdisciplinary perspective as:

“the effective learning processes associated with exploration, exploitation and sharing of human knowledge (tacit and explicit) that use appropriate technology and cultural environments to enhance an organization’s intellectual capital and performance” (Jashapara, 2004, p.11).

![Figure 5: Dimensions of knowledge management](Jashapara, 2004, p. 12)

Al-Hawamdeh (2002) states that the key drivers of KM are organizational efficiency, maximizing organization’s potential, competitive advantage, building a learning organization and managing intellectual capital. He also reveals that those companies that want to implement knowledge management have to grapple with issues like strategy, technology, organizational culture and knowledge organization. Nevertheless, companies have shown interest in knowledge management, judging from the amount of money expected to be spent in the next few years (Al-Hawamdeh, 2002). According to Gottschalk (2005), the objective of KM is to help companies create, share and use knowledge more effectively. He claims that effective KM leads to fewer errors, less work, more independence in time and space for knowledge workers, less questions, better decisions, less reinventing of wheels, improved customer relations, improved service and improved profitability. Thus KM is supposed to increase both innovation and responsiveness (Gottschalk, 2005, p. 2).
2.3. The knowledge management professions and competencies

The notion of the knowledge management profession is quite new. Therefore it has been difficult to define exactly what is encompassed in the field and who should be considered as a KM professional (Al-Hawamdeh et al., 2008). Darr and Warhurst (2008) also claim that the term “knowledge professional” is still not defined (Darr and Warhurst, 2008, p. 41). Moreover, knowledge management is not a clearly bounded set of activities and tasks. Therefore knowledge management work can cover a very wide range of activities. These activities range from content management to advocacy to information governance, to strategic planning to project management, to drawing up technical specifications for a portal, to facilitating knowledge sharing sessions, and so on (Foong and Lambe, 2008, p. 1).

Abell and Oxbrow (2001) argue that knowledge management could not be defined as a single set of competencies for a single job role. They state that it could be represented as a cluster of job roles, with differing competencies being supplied by different roles (Abell and Oxbrow, 2001, cited in Foong and Lambe, 2008, p. 4). Al-Hawamdeh points out that KM practices such as knowledge sharing activities, communities of practice, the learning organization, organizational learning, best practices, collaboration, and knowledge discovery are becoming popular. Those KM practices are starting to root in many organizations. He also claims that is the reason why until now KM has not been an established profession but since it is emerging it will continue to develop in the future (Al-Hawamdeh, 2003, p. 160).

Middleton (2006) refers to lack of definition for a KM as a profession. He points out that there have been some attempts to provide definition of KM profession role. One of the examples that attempt to provide definition of KM profession is from Rowley. Rowley (2003) defines KM profession as “a combination of managing knowledge repositories, facilitating knowledge flow, and leveraging value generation capacity” (cited in Middleton, 2006, p. 35). Middleton (2006) claims that “knowledge manager” as a job title looks more likely to be seen in terms of cultural change in organizations, rather than as a specified role (Middleton, 2006, p. 35).

Lester (2002) indicated in his study that “several factors, such as the growth of the knowledge economy, acceptance that 'professional' problems are frequently interconnected and highly complex, and the rate at which new knowledge and ideas emerge, are strongly suggestive of a reconstructed professionalism rather than of depersonalisation” (Lester, 2002, p. 91). He also claims that in this conception, “professionals might typically:

- be engaged in problem-setting or identification and 'managing messes', as well as problem-solving and developing creative ways forward
- demonstrate autonomy of thought and decision-making within the context of working with other professionals, clients or employers as partners in an agreed endeavor
- be able to transcend the boundaries of their discipline or specialism, and work with issues holistically while contributing their particular expertise and skills
- engage in continual learning and development at a number of levels, from basic updating to reevaluation of their overall practice and envelope of capability
- going beyond uncritical acceptance of a professional code, to a deep-rooted commitment to personal ethical standards and professional practice principles” (Lester, 2002, p. 91).
According to Cobban (2004), “professionalization refers to the developmental stages through which an organized occupation passes as it develops traits that characterize it as a profession” (Cobban, 2004, p. 152).

2.3.1. Knowledge worker

Harrigan and Dalmia (1991) describe knowledge worker as key employees who create intangible value-added assets. Knowledge workers often carry those assets in their heads when they change employers (Harrigan and Dalmia, 1991, p. 5). Nonaka and Takeuchi (1995) stratify organizational knowledge workers into knowledge practitioners, knowledge engineers and knowledge officers. They specify it as “knowledge – creating crew”. Those knowledge professionals’ have common titles with expected duties and roles (Nonaka and Takeuchi, 1995, p. 151). In addition, Nonaka and Takeuchi (1995) state that Drucker defines the knowledge worker as a knowledge executive who knows how to allocate knowledge to productive use, just as the capitalist knew how to allocate capital to productive use (Nonaka and Takeuchi, 1995, p. 7). Knowledge work is about the acquisition, creation, packaging or application or reuse of knowledge (Davenport et al., 1996, p. 62). It is also characterized by diversity and exception rather than routine. It is carried out by professional or technical workers with a high degree of competence and expertise (Broadbent, 1998, p. 31).

However, Lang (2001) claims that knowledge work is dominated by communication - discussion, deliberation, argumentation, debate, and negotiation. She states that new knowledge tends to emerge “at the boundaries of the old where clashes of perspectives occur when received wisdom does not quite work” (Lang, 2001, p.45). In her work “Managerial concerns in knowledge management”, she also explains in her work the difference between procedural work and knowledge work. For procedural workers responsibilities and relationships are well defined so that information flow is correspondingly clearly laid out for consistency of method and output. The procedural work for instance involves filing information away in inflexible filing structures, such as secretaries or administrators do. Knowledge workers’ environment is in constant change so that the teams in which they work with considerable autonomy may even form, disband, and reform within one day (Lang, 2001, p.47). Kidd (1994) purports that knowledge workers “use information opportunistically in diverse, non-standardized ways that are dependent on contexts so that it remains uncategorized” (as cited by Lang, 2001, p.47). Gottschalk (2005) describes knowledge workers as individuals who are the source of much knowledge in the organization. He asserts that some of this knowledge was distributed to other individual in their work group, some of who internalized it and used it as a component of their individual knowledge and achievement bases (Gottschalk, 2005, p. 31).

In comparison to the aforementioned definitions of the knowledge worker Al-Hawamdeh (2005) has a different perception of it. He describes the difference between the knowledge worker and the knowledge professional. He states that there is a need to make a distinction between those two professions. A knowledge worker can be anyone in the organization who works in an intensive information and knowledge environment. In contrast, knowledge professional is someone who works closely with knowledge workers. Knowledge professional understands knowledge workers’ needs, provides direction, and facilitates diverse knowledge activities such as knowledge capture, knowledge retention, knowledge sharing, and knowledge transfer (Al-Hawamdeh, 2005, p. 1200).
2.3.2. Knowledge professional

Al-Hawamdeh et al. (2008) describe an information and knowledge professional as a person who is skilled to use information and knowledge to enhance the objectives of the company, using technology to create and manage information and knowledge resources and services. But they also state that it is crucial that information and knowledge professionals come together in order to set and maintain high level of standards for themselves if this is to become a respected and recognized profession (Al-Hawamdeh et al. 2008). Lamont (2002) in her study mentions an AARP's job advertisement for an associate director of KM which includes all the key elements of the profession: "... planning, implementation, and evaluation of AARP's knowledge management initiatives, including collaborative systems, enterprise knowledge sharing, communities of practice, best practices, culture change, business intelligence and data warehousing, and building systems capacity to support knowledge sharing." She claims that this job advertisement reflects the growing clarification of the goals and methods of KM as a profession (Lamont, 2002, p.2).

2.3.3. A set of knowledge management profiles and job titles

The authors, Angela Abell and Nigel Oxbrow, of the research project “Underpinning Skills for Knowledge Management: training implications”, which was funded by the UK Library and Information Commission to gain an understanding of KM and the roles, skills and competencies needed, a set of profiles were identified. They developed a generic framework of roles and responsibilities. The identified knowledge roles were sectioned into three groups: KM planners and facilitators, KM practitioners and Enterprise-wide workers. KM planners include director and/or manager, Knowledge Network Coordinator, as well as those involved in content structuring role providing standards and policies, and in human resource activities, and so on. KM practitioners include knowledge leaders, knowledge managers, knowledge navigators, knowledge synthesizers, content editors, Web masters, and knowledge brokers, as well as those involved in coaching and mentoring roles. Enterprise-wide workers include "knowledge workers" as well as those involved in Strategic Planning, Competitive Intelligence and the Board (Abell & Oxbrow, 1999, p.118).

The authors of “Creating the Knowledge-Based Business”, David Skyrme and Debra Amidon, have created a list of roles for knowledge professionals based on their observations of the new knowledge-intensive organization. The proposed new titles and job responsibilities appearing in a variety of functions are knowledge engineer, knowledge editor, knowledge analyst, knowledge navigator, knowledge gatekeeper, knowledge broker, knowledge asset manager and so on. The authors claim that those titles and job responsibilities do not include the facilitation and coaching roles nor the functional job titles which are assuming the leadership role in many companies (Skyrme and Amidon, 1997, p. 334). Chase (1998) criticizes that these “new” roles and functions are nothing more than re-labeling of current job titles and that the authors did not take into account the emerging reality of working in knowledge-based organizations (Chase, 1998).

The knowledge management roles have a variety of job titles with varying definitions. Some of these job titles are explicitly labeled knowledge management and others are not (Abell and Oxbrow, 1999, p.118). On the other hand, Lang (2001) states that for knowledge workers job titles usually do not adequately reflect the work they perform (Lang, 2001, p.47).
Nevertheless, Jashapara (2004) presents some typical examples of knowledge management roles that have emerged (see Table 2).

<table>
<thead>
<tr>
<th>Typical knowledge management job titles advertised on the internet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chief knowledge officer</td>
</tr>
<tr>
<td>Director of intellectual capital</td>
</tr>
<tr>
<td>Knowledge manager</td>
</tr>
<tr>
<td>Knowledge consultant</td>
</tr>
<tr>
<td>Knowledge management analyst</td>
</tr>
<tr>
<td>Knowledge coordinator</td>
</tr>
</tbody>
</table>

Table 2: Some examples of knowledge management job titles (Jashapara, 2004, p. 14)

The following are some definitions for aforementioned job titles. According to Al-Hawamdeh (2005) Chief Knowledge Officer (CKO) is considered as the pinnacle knowledge appointment of the organizations in US and European organizations. CKO responsibilities involve building a knowledge culture, creating a knowledge management infrastructure, and ensuring returns on investments (Earl, 1999, cited in Al-Hawamdeh, 2005, p. 1201). CKO's role is complex and multifaceted and it is almost without exception filled by individual from within the organization who knows the business and internal politics and who has the respect of people at all levels. This will change with the entry of qualified and trained knowledge management professionals (Al-Hawamdeh, 2005, p. 1201). Rumizen (2002) describes a CKO as a senior corporate executive whose role is to leverage knowledge, usually by leading a knowledge management program (Rumizen, 2002, p.28).

Knowledge manager is responsible for the acquisition and management of internal and external knowledge but also for facilitating the recording of significant project/unit knowledge. Knowledge Coordinator is responsible for knowing where knowledge can be located (Abell & Oxbrow, 1999, p.118). Knowledge analyst is responsible for collecting, organizing and disseminating knowledge (Rumizen, 2002, p.80).

### 2.3.4. Information and knowledge management

Knowledge management is the amalgamation of technology, processes, and people, which augments knowledge creation, retention, and transfer. Hence Al-Hawamdeh (2003) presents the value-investment diagram, as shown in Figure 6. It identifies the four major component of knowledge management which are infrastructure, content management, information and knowledge sharing, and the utilization of information and knowledge acquired by the organization (cited in Al-Hawamdeh, 2005, p. 1201). He claims that the terms information and knowledge are interrelated in which one cannot co-exist without the other thus he states that information and knowledge cannot be treated as separate entities. The diagram illustrates the disciplines associated with each component. At the bottom of the pyramid are Information Systems and Infrastructure that includes hardware, software, and networking and it is associated with IT. Content and information acquisition and management are associated with information and library science while Information and knowledge sharing is
associated with communication and cognitive science. At the top of the pyramid is utilization of information and knowledge which is associated with business and commerce.

Figure 6: Disciplines associated with knowledge management activities
(Al-Hawamdeh, 2005, p. 1201)

The first two steps in the pyramid should illustrate information management which is more concerned about the identification, capture, processing, storage, and retrieval of explicit knowledge. This field contains hardware and software infrastructure, communication and networking, information systems, and content management. In contrast, knowledge management extends beyond the first two steps and contains information and knowledge sharing as well as the utilization of information and knowledge (Al-Hawamdeh, 2005, p. 1202).
2.4. KM job market in USA
The study of “knowledge management competencies and emerging trends in the KM job market”, which was conducted by Thompson, Martens and Al-Hawamdeh in 2007, was focused on the roles and responsibilities of KM professionals. They did the study using 1200 job advertisements within the USA over the course of a year (Thompson, K. et al. 2008, p. 16). After recording the data of 1200 job description, a set of categories and subcategories was derived according to the similarity of common tasks. Afterwards, the major categories were broader labels identifying major areas of interest, as shown in Figure 7 (Thompson, K. et al. 2008, p. 17).

2.4.1. Competencies relevant to KM positions
It is important to mention that a lot of derived categories are related to other business practices. One of those categories is Project Management. In this category, project management skills were listed in conjunction with knowledge management skills in the job description (Thompson, K. et al. 2008, p. 17).

The categories of KM Practices and Knowledge Processes which form the largest skills category with 14.8% include subcategories of skills such as KM Design and Development Services, KM Strategies, Global KM Networks, and the KM Processes of Knowledge Discovery, Capture, Organization, Sharing, and Retention. These skills were the most desired skills in the job descriptions.

Figure 7: Dispersion of skills relevant to KM positions (Thompson, K. et al. 2008, p. 18)
The next largest category with 14% is Project Management category, meaning that many hiring companies commonly combine knowledge management and project management expertise within their company. According to the research Knowledge Collaboration and Sharing and Knowledge Documentation and Retention were seen as significant skills for project managers (Thompson, K. et al. 2008, p. 18).

KM Technologies category that includes skills, some specific to KM and others to IT is with 8.4% another larger category. The researchers of the study argue that knowledge professionals apply technologies to help the organization capture, organize and share its knowledge resources. Therefore skills in technology are mandatory for knowledge professionals.

Other larger categories are Information Security with 8.5%, Information Architectures with 7.5% and Data Management with 10% of the job description skills. Even though Information Security is its own profession just as Project Management, it contains many skills relevant for knowledge professionals. In many jobs descriptions, the ability to Design, Develop, and Implement Information Architectures and Data Management Systems is desired. Categories like Risk Management, Information Systems and Competitive Intelligence make up less than 10% of job descriptions. The skills of those categories are growing in popularity (Thompson, K. et al. 2008, p. 19).

Although Content Management and Document and Records Management categories are important skills for knowledge professionals, are with 5.5% much smaller categories than the KM specific categories (Thompson, K. et al. 2008, p. 18).

The subcategories of the major categories have some common skills, for example Consulting services, Design and Development strategies are skills that can be found as subcategories of each category. It is worth noting that many of the subcategories are specific to the major category, but at the same time, not specific to knowledge management. Other subcategories contain more generic skills like Training, Analysis and Leadership. The researchers describe the subcategories as a reflection of the diverse requirements of knowledge professionals (Thompson, K. et al. 2008, p. 19).

Most desired technological applications in the jobs advertisements were Microsoft Office, SQL Server, and Project Server, Java, XML, Unix, Linux, and Oracle, SharePoint, and Verity. Some hiring organizations desired the job candidate to have the ability to write their own application while for some jobs some certain applications were required (Thompson, K. et al. 2008, p. 23).

### 2.4.2. Qualification

The minimum requirement for education in the job descriptions was a bachelor degree. Many job advertisements asked for masters degrees while also many of those advertisements indicated MBAs as the preferred masters degree. Those job advertisements which did not asked for MBA or related degree, they asked for some degree of business experience. The study shows that Ph.D.s were appreciated but not required by many of the jobs. Many of the hiring organizations would also accept a master degree plus a designated amount of years of experience instead of a Ph.D.s. Project management jobs required a PMI or PMP certification, information security jobs sought CISSP certification while the jobs in fields like engineering, law and finance wanted specialty requirements relevant to their particular field. The researchers of the study claim that the nature of these certifications reflects the multifaceted skills coveted in knowledge professionals (Thompson, K. et al. 2008, p. 22).
2.4.3. Experience
None of the 1200 jobs that were listed in this study were entry level positions and so none of them accepted applicants with less than one to three years of experience. The most common requirement with 45% of the jobs listed was five years of experience and the maximum was fourteen years (Thompson, K. et al. 2008, p. 22).

2.4.4. Job titles
The study shows that knowledge management still does not have a clear set of specific job titles. The research state that the reason could be that knowledge management is rather a combination of essential skills than a single field of expertise. The words "knowledge management" are not always stated in the job title and so the job titles vary. The words in job titles indicate specific skills knowledge professionals should have and therefore some of them are specifically for knowledge professionals and some are defined for a particular field. The word “Management” occurred in 364 jobs titles, meaning that over 25% of the jobs indicate that knowledge professionals are expected to have skills in communications and leadership. According to the words that appeared in the job titles knowledge professionals should also have broad skills in analysis, consultancy and project management. The word "Analyst" occurred in 142 jobs titles while the word “Consultant” in 112 jobs titles. The word “Knowledge” occurred in 97 jobs titles. As show in Table 3, many job titles are consistent with the derived major categories (Thompson, K. et al. 2008, p. 20).
<table>
<thead>
<tr>
<th>Major categories</th>
<th>Job titles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge Management Practices</td>
<td>Knowledge Manager&lt;br&gt;Knowledge Management Specialist&lt;br&gt;Knowledge Management Business Analyst</td>
</tr>
<tr>
<td>Knowledge Processes</td>
<td>Knowledge Support Systems Manager&lt;br&gt;Knowledge Engineer&lt;br&gt;Knowledge Systems Manager</td>
</tr>
<tr>
<td>Project Management</td>
<td>Project Manager&lt;br&gt;Global KM Project Manager&lt;br&gt;Project Information Management</td>
</tr>
<tr>
<td>Risk Management</td>
<td>Risk Manager&lt;br&gt;Risk Practitioner&lt;br&gt;Business Risk Services Manager</td>
</tr>
<tr>
<td>Information Security</td>
<td>Security Specialist&lt;br&gt;Security Information Specialist&lt;br&gt;Security Officer</td>
</tr>
<tr>
<td>Information Architectures</td>
<td>Application Architect&lt;br&gt;Database Architect&lt;br&gt;Information Architect</td>
</tr>
<tr>
<td>Data Management</td>
<td>Data Analyst&lt;br&gt;Database Administrator&lt;br&gt;Database Architect</td>
</tr>
<tr>
<td>Client Relationship Management</td>
<td>CRM Implementation Consultant&lt;br&gt;Client Relationship Manager</td>
</tr>
<tr>
<td>Business/ Competitive Intelligence</td>
<td>Business Intelligence Analyst&lt;br&gt;Business Intelligence Developer&lt;br&gt;Competitive Intelligence Manager</td>
</tr>
<tr>
<td>Content Management</td>
<td>Content Manager – Senior Consultant&lt;br&gt;Knowledge Management Content Manager&lt;br&gt;Web Project and Content Manager</td>
</tr>
<tr>
<td>Technology</td>
<td>Systems Engineer&lt;br&gt;Remedy Implementer/Technical Specialist&lt;br&gt;Business Technology Analyst</td>
</tr>
<tr>
<td>Business Development</td>
<td>Strategic Development&lt;br&gt;Business Development Manager&lt;br&gt;IS&amp;S Global Development</td>
</tr>
<tr>
<td>Document &amp; Records Management</td>
<td>Certified Records Manager&lt;br&gt;Document Specialist&lt;br&gt;Records Management Coordinator</td>
</tr>
<tr>
<td>Information Systems</td>
<td>Principal Systems Analyst&lt;br&gt;Systems Implementation Director&lt;br&gt;Senior Systems Architect</td>
</tr>
</tbody>
</table>

Table 3: Job titles listed in KM professional advertisements
(Thompson, K. et al. 2008, p. 21)
2.5. KM job market in Asia

As stated in the Section 1.2, Majid and Mulia (2009) did a study about “competencies sought by knowledge management employers” that was undertaken through content analysis. The study was conducted using 110 English language job advertisements from China, Hong Kong, India, Malaysia, the Philippines and Singapore. The data was collected during the first half of the year 2008 and was retrieved from 20 job portals (Majid and Mulia, 2009, p.3). The collected job advertisements were analyzed and the data was grouped under four major categories: KM Core Processes, KM Technologies, Personality traits and Qualification (Majid and Mulia, 2009, p.4).

2.5.1. Competencies relevant to KM positions

The KM Core Processes comprised those competencies that were required for identifying, capturing, organizing, disseminating and using knowledge in an organization (Majid and Mulia, 2009, p.6). Those competencies related to the certain specific KM operations and processes were identified and categorized under 22 broad categories with some degree of overlap. Majid and Mulia identified top five competencies related to KM Core Processes, as shown in Table 4.

Those were knowledge transfer, dissemination and sharing (40.9% advertisements); knowledge creation, sourcing and discovery (37.3%); knowledge organization and classification (25.5%); knowledge access and retrieval (23.6%); and knowledge capturing and retention (21.8%). They noticed also that certain other important KM competencies for instance knowledge measurement, knowledge audit and Return-on Investment (ROI) were not mentioned by many job advertisements (Majid and Mulia, 2009, p.7).

<table>
<thead>
<tr>
<th>Rank</th>
<th>Competency Understanding of:</th>
<th>No. of advertisements (N=110)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Knowledge transfer, dissemination and sharing</td>
<td>45 (40.9%)</td>
</tr>
<tr>
<td>2</td>
<td>Knowledge creation, sourcing and discovery</td>
<td>41 (37.3%)</td>
</tr>
<tr>
<td>3</td>
<td>Knowledge organization and classification, including metadata and taxonomies</td>
<td>28 (25.5%)</td>
</tr>
<tr>
<td>4</td>
<td>Knowledge access and retrieval</td>
<td>26 (23.6%)</td>
</tr>
<tr>
<td>5</td>
<td>Knowledge capturing and retention (i.e. codification)</td>
<td>24 (21.8%)</td>
</tr>
</tbody>
</table>

Table 4: Top five competencies related to KM Core Processes (multiple responses) (Majid and Mulia, 2009, p.7)

The KM Technologies related competencies comprised those technologies and tools that could help improve the effectiveness and efficiency of KM operations and processes. Those competencies were categorized under 21 broad categories. The top five KM Technologies related competencies were the knowledge of content and document management systems (25.5%); knowledge portal and knowledge flow systems (18.2%); following by development and/or maintenance of KM infrastructure and applications (13.6%); development and/or maintenance of knowledge-bases and KM repositories (13.6%); and the knowledge of Microsoft Office application suite (13.6%).
Personality related competencies comprised personality-related skills, attitudes, traits, and other characteristics of potential KM professionals. The researchers found out that 65 personality related competencies were mentioned in the 110 job advertisements. Those were grouped and categorized under their broader categories. The most wanted Personality competence was ability to communicate effectively (63.9%). Analytical and decision-making ability was desired by 47.2% of the advertisements, while 38.0% required writing skills. Training and presentation skills were required by 27.8% (Majid and Mulia, 2009, p.8). It is also worth noting that almost all job advertisements put more emphasis on Personality traits than on other competencies.

2.5.2. Qualification

Regarding qualification it was found that 86.4% of job advertisements asked for a bachelor’s degree while 37.3% for a master’s degree. This is due to the reason that most of them asked for bachelor’s degree or master’s degree. Only 4.5% of job advertisements asked for a KM qualifications. They also noticed that only job advertisements from Singapore, Malaysia and Hong Kong asked for KM qualifications. They claim that one of the possible reasons why only a few job advertisements asked for a professional certificate in KM could be that in some of the surveyed countries the KM discipline is still in its initial phase and that qualified KM professionals are not readily available. Another reason could be that as KM is a multi-disciplinary subject, many employers might be looking for those persons who have more generic qualifications (Majid and Mulia, 2009, p.10). It is also worth mentioning that 26.9% of advertisements asked for a bachelor’s or postgraduate degree in computing while 14.8% of advertisements asked for a bachelor’s or postgraduate degree in information management, as shown in Table 5 (Majid and Mulia, 2009, p.9).

<table>
<thead>
<tr>
<th>Rank</th>
<th>Qualification</th>
<th>Percentage of advertisements (N=110)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>General bachelor’s degree</td>
<td>38.0%</td>
</tr>
<tr>
<td>2</td>
<td>Bachelor’s or postgraduate degree in computing</td>
<td>26.9%</td>
</tr>
<tr>
<td>3</td>
<td>Bachelor’s or postgraduate degree in information management</td>
<td>14.8%</td>
</tr>
<tr>
<td>4</td>
<td>Bachelor’s or postgraduate degree in business and commerce</td>
<td>11.1%</td>
</tr>
<tr>
<td>5</td>
<td>Bachelor’s or postgraduate degree in library</td>
<td>9.3%</td>
</tr>
</tbody>
</table>

Table 5: Top five qualification (multiple responses) (Majid and Mulia, 2009, p.9)

2.5.3. Experience

They also grouped the collected job advertisements based on the length of required work experience. This led that jobs requiring up to two years’ of work experience were classified as entry-level jobs, jobs requiring 2 to 5 years’ of experience as middle-level positions while those jobs which required more than 5 years' of experience were classified as senior-level positions. The result was that one-half of the job advertisements were for entry-level positions, while forty-one (37.3%) were for middle-level positions and only 14 (12.7%) were for senior-level positions (Majid and Mulia, 2009, p.5).
2.6. Why knowledge management projects fail

Chua and Lam (2005) did a research about the reasons for knowledge management project failure. They claim that KM failure factors fall into four distinct categories. Those categories are as follows: technology, culture, content and project management category (Chua and Lam, 2005, p.11)

- The **technology category** contains aspects of KM infrastructure, tools and technology. In this category the failure factors are identified as follows (Chua and Lam, 2005, p.12):
  
  Connectivity: The technical infrastructure cannot support the required number of concurrent access because of bandwidth limitation.

  Usability: The KM tool has a poor level of usability. It is either hard or complicated to use for KM users.

  Over-reliance: An over-reliance of KM tools lead to the disregard of the tacit aspects of knowledge.

  Maintenance cost: The cost of maintaining the KM tool is too high.

- The **culture category** refers to softer aspects related to human and organizational behavior. In this category the failure factors are identified as follows (Chua and Lam, 2005, p.12):

  Politics: The KM project is used as an object for political manipulation such as gaining control and authority with the company.

  Knowledge sharing: Employees do not share knowledge within the company. Reasons could be such as the lack of trust and knowledge-hoarding mentality.

  Perceived image: Employees perceive accessing other’s knowledge as a signal of inadequacy.

  Management commitment: The management appears to be very interested in beginning a KM project. Nevertheless, when problems emerged, commitment to the KM project is quickly withdraw.

- The **content category** includes the characteristics of the knowledge itself. In this category the failure factors are identified as follows (Chua and Lam, 2005, p.12):

  Coverage: The content is developed fragmentarily from different groups of KM users. Therefore, cross-functional content could not be captured.

  Structure: The content is not structured in a format that is meaningful to the task. The result is that KM users find the content hard to understand.

  Relevance and currency: The content is not contextualized. It cannot help KM users in order to achieve business results.
Knowledge distillation: There is a lack of effective mechanism to extract knowledge from discussions. The result is valuable knowledge remain obscured.

- The **project management category** includes the management of the KM initiative as a project. In this category the failure factors are identified as follows (Chua and Lam, 2005, p.12):

  User involvement: KM users are not enough involved in the project. The result could be that the knowledge requirements of the users are poorly understood.

  Technical and business expertise: When the project is implemented, it could be a lack of staff with the required technical and business expertise to sustain the initiative.

  Conflict management: Conflict occurs among stakeholders of the KM team but there is no effort to manage it.

  Rollout strategy: The KM project does not have a proper rollout strategy. The result is that many problems that could have been mitigated at the early stage are left unchecked.

  Project cost: The overall cost of KM project overrun what was originally expected.

  Project evaluation: There is no systematic effort to follow and measure the success of the KM project as it developed. Hence, if there are early successes, the opportunity to publicize success stories could not be seized. On the other hand, if there are failures, there are no opportunities to correct the same.

  Involvement of external consultants: The engagement of multiple external consultants can cause the KM project to meander.

Chua and Lam (2005) argue that in their study it was not observed that a singular set of factors solely causes the failure of the KM project. Instead, the interactions among the factors and the context led to the failure (Chua and Lam, 2005, p.13).

According to the authors of the research success factors to KM projects include “the alignment between the knowledge managed and the goals of the organization, the identification of a specific population that has a specific knowledge need (Dixon, 2000), a clear articulation and commitment to knowledge management (Trussler, 1998), senior management support and technical and organizational infrastructure (Davenport and Prusak, 1999)” (Chua and Lam, 2005, p.15).
3. Methods

3.1. Type of research design
The knowledge claim of this study is postpositivist paradigm. Postpositivist paradigm is applicable for this research because it involves variables that constitute hypothesis and research questions testing through data collecting and analysis (Cresswell, 2009, p. 7). The research method chosen is the quantitative content analysis. Krippendorff (2004) claims that content analysis is maybe one of the most important research techniques in the social science. He describes content analysis as a research technique “for making replicable and valid inference from texts (or other meaningful matter) to the contexts of their use” (Krippendorff, 2004, p. 18). Holsti’s (1969) definition is that content analysis is “any technique for making inferences by objectively and systematically identifying specified characteristics of messages” (Holsti, 1969, p. 14). Weber (1990) defines content analysis “a research method that uses a set of procedures to make valid inferences from text” (Weber, 1990, p. 9). According to Powell (1997) content analysis is a systematic analysis of the occurrence of words, phrases and concepts (Powell, 1997, p.50). Snyman (2001) stated in her study that content analysis involves working with data, organizing it, breaking it into manageable units, synthesizing it, searching for patterns, discovering what is important and what is to be learned, and reporting the findings (Snyman, 2001, p. 274). And according to Riffe, Lacy and Fico (2005) quantitative content analysis is “the systematic and replicable examination of symbols of communication, which have been assigned numeric values according to valid measurement rules and the analysis of relationships involving those values using statistical methods, to describe the communication, draw inferences about its meaning, or infer from the communication to its context, both of production and consumption” (Riffe et al. 2005, p. 25).

Although the content analysis of job advertisements has been used in many studies, especially in other disciplines, it is not widely used in KM sector. Some of studies in KM sector that used this kind of research method are mentioned in the 2.1 Section. According to Majid and Mulia (2009) such analysis is considered as part of the competency profiling technique. They also claim that for this purpose content analysis is a reliable technique. Shellabear (2002) describes competency profiling as a method for identifying specified skills, knowledge, attitudes and behavior necessary to fulfilling a task, activity or career. Majid and Bee (2003) mention in their study that content analysis of job advertisements can be used to identify gaps between knowledge and skills provided by academic programs and the competencies required by potential employers.

3.2. Population, sample and participants
Using quantitative content analysis research method a number of 89 job advertisements for KM professionals appearing on various online websites were identified, collected and analyzed over a span of three months. Online websites from United Kingdom, Ireland, Germany, Austria and Switzerland were considered by searching. Only those job advertisements that are described in English and German language are regarded.
3.3. Data collection instruments, variables, and materials
The data for this research was collected as already mentioned from 89 job postings for KM professionals containing information about the job title, the status of the employee, the main knowledge and skills desired in the applicant, the experience and the qualifications needed. The aim was to look at the roles and competencies outlined by companies in descriptions of their job advertisements.

The text in the job descriptions was reviewed for keywords, phrases and concepts and was analyzed using content analysis method to categorize and count the most common answers to the questions. Keywords, phrases and concepts were derived from the literature and previous studies. Those keywords, phrases and concepts were for example: knowledge sharing; knowledge transfer, creation, capture, sharing and use of knowledge; creation and implementation of Information and KM strategies; developing and maintaining a KM process and repository; project management, and so on.

3.4. Data collection and analysis procedures
The procedures that were used in the collection and analysis of the data are as follows:

1. Online websites were searched in order to find KM jobs. Different job portals were searched in United Kingdom (UK), Ireland, Germany, Austria and Switzerland. Since there were already conducted studies in America and Asia but not in Europe, the selected countries were chosen because of that reason. Another reason why particular those five countries were selected was because of the language. In those countries either English or Germany is spoken and I speak both of them. Further reason was that in all those selected countries the demand of KM profession has been rising.

The job portals from UK used for this study were as follows: jobs.ac.uk, totaljobs.com, jobssearch.co.uk, jobsite.co.uk, monster.co.uk, justlondonjobs.co.uk and scotcareers.co.uk. The job portals from Ireland used for this study were as follows: monster.ie, iwantanewjob.ie, jobs.ie, employireland.com and irishjobs.ie. Following job portals from Germany were used for this study: monster.de, jobmonitor.com, stepstone.de, top-itservices.com, it-arbeitsmarkt.de, praktika.de, studienabbrucher.com, and jobstairs.de. Following job portals from Austria were used for this study: monster.at, derstandard.at and kurier.at. The job portals from Switzerland used for this research were as follows monster.ch and jobs.ch.

Beside job portals some company websites’ were searched in already mentioned countries for KM positions. The company websites’ that were searched were from large and famous companies.

2. A sample of KM job advertisements was collected. By collecting the job postings following specifications were considered:

   a. The job title or description has to contain the key words “knowledge management”.
   b. The job description sought a professional with skills essential for knowledge management. Those skills were derived from literature and previous studies.
3. A quantitative content analysis of the job descriptions found on internet was conducted in order to identify the main skills hiring companies indicated in their job descriptions. Skills that were specified in the job description but not relevant to knowledge management were not considered in the results, for example knowledge in banking and finance, software testing, accounting and so on.

4. The skills that were required by KM employers were sorted out into a database. The database contained all of the job description data which were needed for analysis. In the database it was included the job title, the country, the status of the employee, the main knowledge and skills desired in the applicant, the experience and the qualifications needed.

5. The skills were classified and organized. The skills were first arranged into groups according to common key words and after that subcategories of common skills were derived from these groups. Then those subcategories were classified according to common area of interest. At the end those areas of interest became the main skill categories of the KM jobs.

For example if in some job descriptions “knowledge creation” was desired and in some others “knowledge sourcing and discovery” and again in some others “knowledge creation, sourcing and discovery” and all those were either in literature or in previous studies determined as KM skills then those phrases were identified and grouped in one subcategory. Afterwards this subcategory was classified and hence became subcategory of KM Processes.

Another example is if in some job description “MS Excel” is required and in some others “MS Access” then those skills were grouped in one subcategory in this case in subcategory “MS Office” that later became subcategory of KM Technologies.

6. The data was analyzed for other variables after the competency categories were ascertained. Additional areas of interest contains: the job title, the country, the status of the employee, the experience and the qualifications needed.

Figure 8 shows an illustration which presents the above data collection and analysis procedures. Further, Figure 9 should help to understand the fifth procedure in detail, for example KM Technologies was a category that included subcategories such as knowledge of Microsoft Office, KM Infrastructure and Applications and so on.
Figure 8: The procedures that was used in the collection and analysis of the data

1. Search the online websites to find KM jobs
2. Collect a sample of KM job advertisements
   • a. job titles with key words "KM"
   • b. job description with skills for KM
3. Conduct a quantitative content analysis
   • skills that are not relevant to KM will be not considered
4. Sort out the skills that are required by KM employers into a database
   • database will also include the job title, country, status of employee, experience and qualification
5. Classify and organizes the job skills
6. Analyze the data for supplementary variables
   • job title, country, status of employee, experience and qualification

Figure 9: An example of the fifth procedure in detail

- Category
  - KM Technologies
    - KM Infrastructure and Applications
    - Knowledge of Microsoft Office
3.5. **Ethical considerations**

In this study following ethical considerations were taken into account:

Any critical information of the companies and organizations that was used during and after completion of the study was not mentioned in the research in order to ensure the security and privacy of the same. Since the study is based on content analysis of the job description thus this study does not place any of the participants at risk. Also it would be tried to keep research result independent from the effect of personal or others biases.

4. **Analysis and results**

As outlined above during the period of three months job vacancies were collected from different online job portals and different company’s websites from five different countries. The job advertisements were either in English or in German language. After collecting a number of job vacancies it was necessary to eliminate those which occurred several times. There were cases where one and the same job vacancy occurred on different online job portals. Furthermore there was often also that one and the same job vacancy appeared at the same job portal after one period of time, e.g. after one week and then again after three weeks and so on. In order to determine whether two vacancies are one and the same, their job reference codes and job titles were compared with each other. The result was that many of job vacancies had to be deleted. Afterwards a quantitative content analysis was conducted and skills related to KM positions were sorted out into a database. Moreover supplementary data such as the job title, country, status of employee, experience and qualification was recorded too. For detailed procedures, see Section 3.4.

4.1. **Job advertisements by country**

For this study 89 job vacancies were collected and analyzed from 77 companies. As shown in the Figure 10, data analysis revealed that 53 (59.6%) job advertisements were from Germany, hence the majority of job advertisements. Further 28 (31.5%) job vacancies were from United Kingdom while only 4 (4.5%) job vacancies were from Switzerland. 2 (2.2%) job advertisements were from Austria as well as from Ireland.

![Figure 10: Job advertisements by country](image)
4.2. Status of employee
It was observed that 71 (79.8%) of job advertisements were searching for a regular employee while 15 (16.8%) for an intern (Figure 11). And only 3 (3.4%) of job advertisements were searching for a working student. All job vacancies that searched an intern or working student were from Germany, that are one-third (33.9%) of all German job advertisements. In Germany, there is a distinction between an intern and a working student. An intern is a student who does an internship required for his/her university degree. S/he may or may not earn money for the internship. In comparison to some countries, most internships are paid in Germany. After the intern the company gives a certificate that details what the intern have been doing and what skills s/he learned. A working student is a student who works the same job as an intern but is often paid more than an intern and does not get a certificate.

![Figure 11: Status of employee in job advertisements](image)

4.3. Job titles
The collected job titles for knowledge management professionals vary and do not always contain the words "knowledge management", therefore the reason why other job advertisements that contained skills important for knowledge management were also considered. Job titles were searched for specific words that were derived above all from literature but also from previous studies. Thus words such as knowledge management, knowledge, information, data, content, management, project, consultant, analyst and transfer were identified by conducting quantitative content analysis. Anyhow 44 (49.4%) of all job titles contained the words “Knowledge Management” while 26 (29.2%) job titles contained the word “Knowledge” (Table 6). The word “Consultant” was mentioned in 18 (20.2%) job titles. Further, the word “Management” was included in 10 (11.2%) job titles while the word “Project” occurred in 7 (7.9%) job titles, followed by the words “Analyst” and “Information” which occurred each 6 (6.7%) times. Very few job titles included words such as “Content” (4.5%), “Data” (3.8%) and Transfer (2.2%). In the Table 7 are examples of job titles that occurred in the job advertisements that were analyzed. Examples of job titles which are addressed to those who search an internship are presented in the Table 8.
<table>
<thead>
<tr>
<th>Words in job titles (Multiple responses)</th>
<th>No. of advertisements (N=89)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge Management</td>
<td>44 (49.4%)</td>
</tr>
<tr>
<td>Knowledge</td>
<td>26 (29.2%)</td>
</tr>
<tr>
<td>Consultant</td>
<td>18 (20.2%)</td>
</tr>
<tr>
<td>Management</td>
<td>10 (11.2%)</td>
</tr>
<tr>
<td>Project</td>
<td>7 (7.9%)</td>
</tr>
<tr>
<td>Analyst</td>
<td>6 (6.7%)</td>
</tr>
<tr>
<td>Information</td>
<td>6 (6.7%)</td>
</tr>
<tr>
<td>Content</td>
<td>4 (4.5%)</td>
</tr>
<tr>
<td>Data</td>
<td>3 (3.8%)</td>
</tr>
<tr>
<td>Transfer</td>
<td>2 (2.2%)</td>
</tr>
</tbody>
</table>

Table 6: Common words in job titles

<table>
<thead>
<tr>
<th>Main categories</th>
<th>Job titles</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Knowledge Management Practices</strong></td>
<td>Knowledge Manager</td>
</tr>
<tr>
<td></td>
<td>Knowledge Management Specialist</td>
</tr>
<tr>
<td></td>
<td>Knowledge Management Officer</td>
</tr>
<tr>
<td></td>
<td>Knowledge Management Coordinator</td>
</tr>
<tr>
<td></td>
<td>Knowledge Management Analyst</td>
</tr>
<tr>
<td></td>
<td>Director of Knowledge Management - Banking</td>
</tr>
<tr>
<td></td>
<td>Director of Global Knowledge Management</td>
</tr>
<tr>
<td></td>
<td>Director of Banking &amp; Finance Knowledge Management</td>
</tr>
<tr>
<td></td>
<td>Head of Knowledge Management</td>
</tr>
<tr>
<td></td>
<td>Knowledge &amp; Research Manager</td>
</tr>
<tr>
<td></td>
<td>Consultant Knowledge Management</td>
</tr>
<tr>
<td></td>
<td>An employee in the field of Knowledge Management</td>
</tr>
<tr>
<td></td>
<td>Knowhow Officer</td>
</tr>
<tr>
<td></td>
<td>Knowledge Officer</td>
</tr>
<tr>
<td></td>
<td>Consultant Knowledge Management and Collaboration</td>
</tr>
<tr>
<td><strong>Knowledge Processes</strong></td>
<td>Knowledge Engineer</td>
</tr>
<tr>
<td></td>
<td>Communication/Knowledge Management Engineer</td>
</tr>
<tr>
<td></td>
<td>Knowledge Transfer Manager</td>
</tr>
<tr>
<td></td>
<td>Intern in the Knowledge Transfer</td>
</tr>
<tr>
<td></td>
<td>Knowledge Analyst</td>
</tr>
<tr>
<td><strong>Project Management</strong></td>
<td>Project Manager / Consultant Enterprise Search</td>
</tr>
<tr>
<td></td>
<td>Project Manager Knowledge Management Market Research Media</td>
</tr>
<tr>
<td></td>
<td>Project Manager Knowledge-Management</td>
</tr>
<tr>
<td></td>
<td>Project Engineer Knowledge Management</td>
</tr>
<tr>
<td></td>
<td>IT Project Analyst - Knowledge Analyst – Banking</td>
</tr>
<tr>
<td></td>
<td>Project Analyst - Knowledge Management</td>
</tr>
<tr>
<td>Information Architectures</td>
<td>IT Consultant / IT Architect</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Data Management</td>
<td>Data Officer (Data &amp; Knowledge Management)</td>
</tr>
<tr>
<td></td>
<td>Intern - Knowledge Storage / Data Management</td>
</tr>
<tr>
<td>Client Relationship Management</td>
<td>Manager CRM Knowledge Management</td>
</tr>
<tr>
<td>Business/ Competitive Intelligence</td>
<td>Intern in Consulting - Business Intelligence</td>
</tr>
<tr>
<td>Content Management</td>
<td>Multi Channel Content Manager</td>
</tr>
<tr>
<td></td>
<td>Knowledge Broker</td>
</tr>
<tr>
<td></td>
<td>Editor of Knowledge Management</td>
</tr>
<tr>
<td>Business Development</td>
<td>Business Consultant</td>
</tr>
<tr>
<td>Document &amp; Records Management</td>
<td>Intern - IT Document Management</td>
</tr>
<tr>
<td>Information Systems</td>
<td>Systems Analyst</td>
</tr>
<tr>
<td>Information Management</td>
<td>Enterprise Information Management Consultants</td>
</tr>
<tr>
<td></td>
<td>Information Manager</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>Manager, Content &amp; Knowledge Management</td>
</tr>
<tr>
<td></td>
<td>Knowledge &amp; Content Management, Senior Manager</td>
</tr>
<tr>
<td></td>
<td>Corporate Knowledge and Information Officer</td>
</tr>
<tr>
<td></td>
<td>Knowledge &amp; Records Information Consultant</td>
</tr>
<tr>
<td></td>
<td>Consultant for Knowledge Management, projects and processes</td>
</tr>
<tr>
<td></td>
<td>Interim Assets and Knowledge Management Administrator</td>
</tr>
<tr>
<td></td>
<td>Finance Paralegal - Knowledge Management Position</td>
</tr>
<tr>
<td></td>
<td>As an employee in the support for Enterprise 2.0, Collaboration, Knowledge and Content Management</td>
</tr>
<tr>
<td></td>
<td>Knowledge Team Manager Insurance</td>
</tr>
<tr>
<td></td>
<td>Trainers and Consultants for Knowledge Management in customer support</td>
</tr>
<tr>
<td></td>
<td>Process Safety Consultant</td>
</tr>
<tr>
<td></td>
<td>Assistant of the management and advisory team</td>
</tr>
<tr>
<td></td>
<td>Strategic Consultant Knowledge Portals and Custom Solutions</td>
</tr>
<tr>
<td></td>
<td>Consultant Intranet/Knowledge Management</td>
</tr>
</tbody>
</table>

Table 7: Job titles listed in job advertisements

<table>
<thead>
<tr>
<th>Job titles – Internship</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internship in Knowledge Management</td>
</tr>
<tr>
<td>Intern - IT Knowledge Management</td>
</tr>
<tr>
<td>Intern for the field of Knowledge Management &amp; e-Learning</td>
</tr>
<tr>
<td>Intern in the field of Knowledge Management / Internal Media</td>
</tr>
<tr>
<td>Intern for Knowledge Management MS Office SharePoint Server</td>
</tr>
<tr>
<td>Intern in the field of Knowledge Management (Internet Self Service)</td>
</tr>
</tbody>
</table>

Table 8: Job titles which are addressed to those who search an internship
4.4. Competencies relevant to KM positions

Competencies in the job advertisements were arranged into groups according to common key words. Those competencies that were not relevant to KM were not considered. Afterwards subcategories of common skills were derived from these groups. Further those subcategories were classified according to common area of interest which became the main competencies relevant to KM positions (Figure12). For detailed procedures, see Section 3.4.

KM Technologies as the largest category with 34.5% of all required skills, includes skills that were most desired by employers. Those skills are essential for knowledge management professionals in order to help the company to improve the effectiveness and efficiency of KM processes. Those skills were categorized in following subcategories: KM Tools and Technologies; KM System; KM Infrastructure and Applications; Knowledge bases and KM Repositories; Microsoft Office Application; IT Skills; Web 2.0; Enterprise Search. KM Processes with 13.9% includes following subcategories: Knowledge identifying, capturing, organizing, classification, dissemination and using; Knowledge transfer, dissemination, sharing and retention; Knowledge creation, sourcing and discovery. KM Practices with 11.8% comprises subcategories KM Design and Development as well as KM Strategies. Project Management is the fourth largest category with 9% which includes skills specific to project management but also some specific to KM, followed by Content Management with 6.3% and Business Development with 6.1%. Categories that contain skills that were fewer desired are Document/Records Management (3.2%) and Customer Relationship Management (CRM) (3.8%). Other categories that included skills that were not that much desired are Data Management (1.9%), Information Architectures (1.7%), Business Process Management (BPM) (1.7%), Risk Management (1.1%) and Quality Management (1.1%). Some skills that are important for KM professionals are also included in Content Management, Data Management, Document/Records Management and Information Architectures.

Figure 12: Competencies relevant to KM positions
4.4.1. Categories relevant to KM positions

It was interesting to observe the top five categories that were sought in all 89 job advertisements (Table 9). In this case, it is important to mention that category is not to be confused with skills that were presented in Figure 12.

On the first rank is the Knowledge Management Technologies category with 69 (77.5%) of all vacancies. On the second rank are following two categories: KM Processes and KM Practices (each 42.7%). Project Management was the third category sought by the employers (29.2%). On the fourth rank is Content Management category (20.2%) followed by Business Development category (19.1%).

<table>
<thead>
<tr>
<th>Rank</th>
<th>Top five categories relevant to KM positions (Multiple responses)</th>
<th>No. of advertisements (N=89)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Knowledge Management Technologies</td>
<td>69 (77.5%)</td>
</tr>
<tr>
<td>2</td>
<td>Knowledge Management Processes</td>
<td>38 (42.7%)</td>
</tr>
<tr>
<td>2</td>
<td>Knowledge Management Practices</td>
<td>38 (42.7%)</td>
</tr>
<tr>
<td>3</td>
<td>Project Management</td>
<td>26 (29.2%)</td>
</tr>
<tr>
<td>4</td>
<td>Content Management</td>
<td>18 (20.2%)</td>
</tr>
<tr>
<td>5</td>
<td>Business Development</td>
<td>17 (19.1%)</td>
</tr>
</tbody>
</table>

Table 9: Top five categories relevant to KM positions

4.5. Skills relevant to personality

Skills relevant to personality were edited, grouped and evaluated into the top ten (Table 10). It was found that a KM professional has to have a great ability to communicate (40.4%). This study shows also that a KM professional also has to possess strong analytical, problem solving and decision making skills (37.1%). 25 of 89 job advertisements asked for team working skills (28.1%). Training and Presentation Skills were asked in 16 (18%) job advertisements while 14 job advertisements asked for commitment skills (15.7%). On the sixth rank were interpersonal skills (14.6%) followed by independently working skills (13.5%). On the eighth and ninth rank are self motivation skills (11.2%) and leadership skills (10.1%). Effective writing skills were asked in 7 job advertisements (7.9%).

<table>
<thead>
<tr>
<th>Rank</th>
<th>Top ten skills relevant to personality (Multiple responses)</th>
<th>No. of advertisements (N=89)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Communication Skills</td>
<td>36 (40.4%)</td>
</tr>
<tr>
<td>2</td>
<td>Analytical, Problem Solving and Decision Making Skills</td>
<td>33 (37.1%)</td>
</tr>
<tr>
<td>3</td>
<td>Team Working Skills</td>
<td>25 (28.1%)</td>
</tr>
<tr>
<td>4</td>
<td>Training and Presentation Skills</td>
<td>16 (18.0%)</td>
</tr>
<tr>
<td>5</td>
<td>Commitment Skills</td>
<td>14 (15.7%)</td>
</tr>
<tr>
<td>6</td>
<td>Interpersonal skills</td>
<td>13 (14.6%)</td>
</tr>
<tr>
<td>7</td>
<td>Independently Working Skills</td>
<td>12 (13.5%)</td>
</tr>
<tr>
<td>8</td>
<td>Self Motivation Skills</td>
<td>10 (11.2%)</td>
</tr>
<tr>
<td>9</td>
<td>Leadership Skills</td>
<td>9 (10.1%)</td>
</tr>
<tr>
<td>10</td>
<td>Effective writing skills</td>
<td>7 (7.9%)</td>
</tr>
</tbody>
</table>

Table 10: Top five skills relevant to personality
4.6. Qualification

This section provides data analysis of required degrees and required fields of education by employers.

4.6.1. Required degrees

Job advertisements were taken from different countries into account and therefore a considerable diversity was observed in the type of qualification (Table 11). On the other hand in 16 (18.0%) job advertisements the required type of qualification was not specified. Degree level, Foundation degree and two A-level are qualification sought in job advertisements from the UK. Although those qualifications are either below or at the same level with bachelor, those were grouped with bachelor degree into one category. Hence 14 (15.7%) job vacancies sought one of those qualifications. Only 2 (2.2%) job vacancies asked for Master degree and on the other hand also 2 (2.2%) asked for bachelor or master degree. Ph.D. was required only for 1 (1.1%) job vacancy. It was interesting to observe that 3 (3.4%) job vacancies sought either university degree or equivalent knowledge acquired through work experience. Most of job advertisements, exact 38 (42.7%) looked for an applicant with a university degree. From those 38 job advertisements that asked a university degree, 2 are from Switzerland, 2 from Austria and 34 from Germany. As already mentioned above 15 of all job advertisements sought an intern and 3 sought a working student, totaling 18. 3 of those 18 job advertisements that sought an intern or a working student required a university degree, 2 did not specified any requirement. Therefore 13 (14.6%) job advertisements asked for a student who is enrolled in the studies and that is the reason why they did not ask for any qualification.

<table>
<thead>
<tr>
<th>Degrees in job advertisements</th>
<th>No. of advertisements (N=89)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor degree, Degree level, Foundation degree, two A-level</td>
<td>14 (15.7%)</td>
</tr>
<tr>
<td>Bachelor or master degree</td>
<td>2 (2.2%)</td>
</tr>
<tr>
<td>Master degree</td>
<td>2 (2.2%)</td>
</tr>
<tr>
<td>University degree</td>
<td>38 (42.7%)</td>
</tr>
<tr>
<td>Ph.D.</td>
<td>1 (1.1%)</td>
</tr>
<tr>
<td>Experiences or university degree</td>
<td>3 (3.4%)</td>
</tr>
<tr>
<td>Intern, working student</td>
<td>13 (14.6%)</td>
</tr>
<tr>
<td>Not specified</td>
<td>16 (18.0%)</td>
</tr>
</tbody>
</table>

Table 11: Required degrees in job advertisements

4.6.2. Required fields of education

As shown in the Table 12, it was found that in the most of job advertisements a degree in business administration was required (18.0%). Information Systems/Business Informatics and Computer Science both were on the second rank and thus second most desired fields of educations (each 15.7%). It is important to note that in Germany, Information Systems and Business Informatics are one and the same area of study called “Wirtschaftsinformatik”.

On the third rank was economics which was desired in 12 job vacancies (13.5%). On the fourth rank were Knowledge Management, Information Management (7.9%) and Communication Science (7.9%), followed by Social Science and Development (5.6%).
### Top five fields of education that are sought in job advertisements (Multiple responses)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Field</th>
<th>No. of advertisements (N=89)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Business Administration</td>
<td>16 (18.0%)</td>
</tr>
<tr>
<td>2</td>
<td>Information Systems/Business Informatics</td>
<td>14 (15.7%)</td>
</tr>
<tr>
<td>2</td>
<td>Computer Science</td>
<td>14 (15.7%)</td>
</tr>
<tr>
<td>3</td>
<td>Economics</td>
<td>12 (13.5%)</td>
</tr>
<tr>
<td>4</td>
<td>Knowledge Management, Information Management</td>
<td>7 (7.9%)</td>
</tr>
<tr>
<td>4</td>
<td>Communication Science</td>
<td>7 (7.9%)</td>
</tr>
<tr>
<td>5</td>
<td>Social Science and Development</td>
<td>5 (5.6%)</td>
</tr>
</tbody>
</table>

Table 12: Required fields of education in job advertisements

### 4.7. Experience

It was observed that in 42 (47.2%) of all job advertisements experience was required but the exact amount of experience was not specified (Table 13). In 11 (12.4%) job advertisements experience were neither specified nor mentioned at all. In 3 (3.4%) job advertisements one year of experience was required while in 5 (5.6%) advertisements two years of experience were required. Only in 2 (2.2%) job vacancies three to five years of experience were required while in 5 (5.6%) job vacancies five or more years were required. In 3 (3.4%) job advertisements several years of work experience were needed while on the other hand as already mentioned in 3 (3.4%) job advertisements either equivalent knowledge acquired through work experience or a university degree were desired. All 15 (16.9%) job advertisements that were looking for an intern did not ask for any experience.

<table>
<thead>
<tr>
<th>Experience</th>
<th>No. of advertisements (N=89)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 year</td>
<td>3 (3.4%)</td>
</tr>
<tr>
<td>2 years</td>
<td>5 (5.6%)</td>
</tr>
<tr>
<td>3-5 years</td>
<td>2 (2.2%)</td>
</tr>
<tr>
<td>5+ years</td>
<td>5 (5.6%)</td>
</tr>
<tr>
<td>Several years</td>
<td>3 (3.4%)</td>
</tr>
<tr>
<td>Experienced</td>
<td>42 (47.2%)</td>
</tr>
<tr>
<td>Experienced or relevant education</td>
<td>3 (3.4%)</td>
</tr>
<tr>
<td>Intern</td>
<td>15 (16.9%)</td>
</tr>
<tr>
<td>Not specified</td>
<td>11 (12.4%)</td>
</tr>
</tbody>
</table>

Table 13: Experience required in job advertisements
4.8. Comparison of competencies relevant to KM positions between the Asia study and the current study

Since the study conducted in Asia was different analyzed it is hard to compare it with the current one. The competencies relevant to KM positions were divided into three major categories: KM Core Processes, KM Technologies and Personality related competencies. In contrast to this, the competencies relevant to KM positions of this study were divided into fourteen categories and two of those fourteen are KM Processes and KM Technologies. When looking the KM Core Processes category in Asia study and comparing it with the current one it is obvious that this category is the same as the KM Processes category (see Table 4 in Section 2.5.1 and Section 4.4). The key difference of those two studies is that the current study analyzed all competencies relevant to KM positions together in contrast to Asia study where KM Core Processes and KM Technologies were analyzed and discussed separately. In other words the current study shows different categories of skills and the Asia study shows different skills in two different categories. The table on the left side of Figure 13 is same as Table 4 and the table on right side is same as the Table 9. Figure 13 shows that the KM Processes in this study are the same as KM Core Processes in Asia study (see Section 4.4 and 4.4.1).

Figure 13: Comparison of competencies relevant to KM positions between the Asia study and the current study.
4.9. **Comparison of competencies relevant to KM positions between the USA study and the current study**

Figure 14 shows the comparison of competencies relevant to KM positions in USA with this study. The left pie chart represents competencies relevant to KM positions in USA and is adopted version of Figure 7 in order to compare with the current study, thus the originally order of the competencies was changed in order to get a better comparison. The right pie chart represents competencies relevant to KM positions in UK, Ireland, Germany, Austria and Switzerland (same as Figure 12). When comparing those two studies it is obvious that KM Technologies was much more desired in this study than in the study conducted in USA. Another interesting observation was also that most of categories in the left pie chart do not differ much of each other in percentage in comparison to the right pie chart where categories such as KM Technologies, KM Practices, KM Processes and Project Management dominate. The study which was conducted in USA revealed the same percentage of Business Development skills as this study. This study did not reveal any percentage of Information Security. In contrast to this study Information Security was much desired in the study carried out in USA.

![Comparison of competencies relevant to KM positions between the USA study and the current study](image-url)

Figure 14: Comparison of competencies relevant to KM positions between the USA study and the current study
5. Discussion

In this section, the results are discussed and compared with the results of other studies.

5.1. Job advertisements by country
This study shows that almost 60% of all job advertisements were from Germany and almost one-third from UK while the rest were from Switzerland, Austria and Ireland. Probably the reason is, the greater the population the greater the number of KM job advertisements. Another reason could be that the KM job market is larger in Germany than in other countries.

5.2. Status of employee
An interesting fact was the considerable number of job advertisements which addressed to those applicants that have sought an internship. Each of those job advertisements were from Germany. The reason could be that the companies have recognized that they have to direct their attention to the importance of managing knowledge and therefore they are looking for future KM professionals. It could be also that the companies are looking for those KM professionals who are coming directly from universities and are up to date concerning the knowledge management.

5.3. Job titles
This study proves that KM still does not have a set of clear job titles. When comparing the study that was carried out in USA with this study one can easily see that almost none of the job titles were the same (see Table 3 and Table 7). Those two studies revealed only four same job titles and those were Knowledge Manager, Knowledge Management Specialist, Knowledge Engineer and Project Manager and all other job titles were completely different from each other. When comparing the current study with the examples that Jashapara presented in his book, only two same job titles were the same and those were Knowledge Management Analyst and Director of Knowledge Management (see Table 2). Although some KM positions were clearly labeled KM most of job advertisements were not. The reason could be that KM employers have not a clear perception of the same.

5.4. Competencies relevant to KM positions
Furthermore it was interesting to observe the competencies relevant to KM positions or in other words the skills related to KM in the job advertisements. KM Technologies was the largest category with one-third of skills that were most desired. Although it includes skills important for KM professionals to improve the effectiveness and efficiency of KM processes it is a considerable number of skills that were desired in comparison to other categories. The explanation could be that the hiring companies see KM professionals more as technical professionals rather than KM professionals. Categories such as KM Practices and KM Processes together built the second largest category with one fourth of skills that were sought. Since the next largest category is Project Management one may conclude that the companies combine project management with knowledge management or on the other hand Project Management category includes skills that are important for KM. This is the case also with Content Management which includes some skills specific for Content Management and some specific for KM. Content Management category and Business Development
category contain skills fewer desired than Project Management category but still worth to mention. Categories that include also some skills specific for KM are Document/Records Management, Data Management and Information Architectures. Although those categories include skills that are somehow important for KM profession those were fewer desired.

When comparing how many times each category appeared in all job advertisements than again KM Technologies is the most desired category. KM Technologies category was sought in 69 of 89 job advertisements, consequently in those 69 job advertisements one or more skills that relate to KM Technologies were required. Another interesting fact is that KM Practices category and KM Processes category each appeared in 38 job descriptions. One may infer that skills from both categories intertwine with each other.

As aforementioned, KM failure factors fall into four categories (see Section 2.6). One of those categories is the technology category which includes aspects of KM infrastructure, tools and technology. This study also confirms that KM Technologies are important for KM. Further, the content category and project management categories are another two categories that contain KM failure factors. Thus project management and content management are significant for KM profession. It is interesting that all those three categories beside KM Practices and KM Processes were most desired by KM employers in surveyed countries.

Further, Figure 5 shows different dimension of knowledge management. One of those dimensions is "organizational learning" which involves for instance knowledge creation, knowledge sharing, knowledge exploration and so on. This is another argument which explains that KM Processes are essential for KM profession and this category was quite desired in job advertisements. Another dimension is “systems and technology” which includes different tools, technologies and systems that help KM professionals to explore and exploit knowledge (see Section 2.2). In other words, as mentioned several times before KM Technologies help KM professionals to improve the effectiveness and efficiency of KM processes. Beside “systems and technology” dimension there is “cultural and change management” dimension. Through those two dimensions it is possible to explore and exploit knowledge in order to enhance the organization’s intellectual capital and performance which is “strategy” dimension. The strategy dimension in this study is the KM Practices category. All those dimension or in this case categories were much desired in job vacancies.

5.5. Skills relevant to personality
Looking at the skills relevant to personality it was found that KM professionals must have great ability to communicate. Moreover they must have strong analytical, problem solving and decision making skills and at the same time training and presentation skills. Similar results were observed also in the study for Asia market (Section 2.5). In comparison to the Asia study, this study shows also that team working skills were also very desirable on the other hand independently working skills should be not ignored since those were required in 12 job advertisements. A noteworthy pattern observed in this study was that commitment skills were desired in 14 job advertisements. The reason could be that the KM employers have recognized that commitments skills are important since this could be one of the KM failure factors (see Section 2.6). All those required skills are very important for KM professionals in order to help them to enhance the organization’s intellectual capital and performance.
5.6. Qualification
Regarding the degrees that were required in job vacancies it was found that most of hiring companies required a university degree, which could be minimum a bachelor degree. A big diversity was observed by field of education. Most of job advertisements asked for a degree in business administration, information systems/business informatics or computer science. One may conclude that the employers look either for a business administration professional or a computer science professional rather than a KM professional since only 7 vacancies asked for a KM education. In the study that was conducted in USA, it was also found that many job description indicated MBA as preferred (Section 2.4).
Tree of knowledge management indicates that knowledge management comes from different discipline roots such as computer science, information science, management science, human resource management, sociology and so on. That could be a reason why so many job advertisements looked for education in those fields and not for a KM education (see Figure 4, Section 2.2). Another possible explanation could be that KM is still an emerging discipline in surveyed countries and that qualified KM professionals are not readily available.

5.7. Experience
This study revealed that most of job vacancies asked for an experienced applicant without specifying how many years of experiences such person has to have. In comparison to this study, the study carried out in Asia revealed that one-half of the job advertisements were for entry-level positions. On the other hand the study that was conducted in USA revealed that none of the jobs advertisements were entry level positions. Most of job advertisements listed five years of experience.

5.8. Comparison of competencies relevant to KM positions in Asia with the current study
As mentioned in Section 4.8, the study conducted in Asia was different analyzed than this study and therefore it is hard to compare those with each other. The difference is that the current study analyzed all competencies relevant to KM positions together in contrast to Asia study where KM Core Processes and KM Technologies were analyzed and discussed separately. Nevertheless the Asia study shows that KM Core Processes were much more desired than KM Technologies in comparison to the current study where KM Processes were less desired than KM Technologies. The possible explanation could be that the KM employers in Asia perceive KM more as organizational learning than systems and technology. In contrast, this study shows that KM employers in surveyed countries perceive KM more as systems and technology rather than organizational learning.

5.9. Comparison of competencies relevant to KM positions in USA with the current study
Comparing the study which was carried out in USA with this study it is obvious that this study places more emphasis on KM Technologies, KM Practices, KM Processes, Project Management and Content Management. In contrast, USA study shows that many categories were more or less almost equally represented. Another difference is that in USA Content Management category is very few desired in comparison to this study where Content Management is one of the most desired categories. Further difference is that Project Management is most desired in USA job descriptions while KM Technologies is most desired.
in this study. This study shows that skills in Information Security were not desired at all although it is important for KM, in contrast USA study shows that KM employers in USA required Information Security skills. Further Data Management, Information Architectures and Client Relationship Management were very much desired in USA job descriptions while those categories were very few desired in this study. Both studies revealed the same percentage of Business Development skills.
The reason for such a big percentage for KM Technologies could be that in the surveyed countries explicit knowledge is more valuable because it is easily transferable and objective. Another possible explanation could be that KM employers in surveyed countries perceive KM more as KM Technologies.

6. Conclusion

This research represents an overview of the current situation in KM job market. The main focus of this research was to identify competencies which were required in collected job advertisements using quantitative content analysis. This research should help KM academic programs to understand the demand of KM job market in order to align their curricula. However the KM academic programs need to observe developments in KM job market in order to incorporate new trends and competencies for meeting the needs of KM employers. Furthermore it should help KM employers to understand what KM is and which competencies a KM professional has to have. As a main conclusion that I want to emphasize with this study is to answer following research questions.

Research Question 1: What is the demand of knowledge management profession today?

This research shows that most of the job advertisements asked for skills in KM Technologies, hence KM technologies is a major component of KM. Skills in KM Technologies facilitate KM processes in other words KM Technologies help KM professionals to improve the effectiveness and efficiency in identifying, capturing, organizing, classifying, disseminating and using of knowledge within a company. It is obvious that KM processes without KM Technologies and vice versa cannot work. It was also found that skills in KM Practices and KM Processes were much desired in job descriptions but also those skills that are specific to KM as well to other areas such as project management and content management. Based on the dimensions of knowledge management it can be concluded that mentioned skills are very important for KM professionals. Additionally, this study proves that knowledge management is more than acquisition, creation, capturing, sharing, retention and using of knowledge. On the other hand the explanation for such result regarding the KM Technologies could be that the KM employers see KM professionals more as technical professionals rather than KM professionals. This could be also argued through the number of job advertisements which required a degree in computer science. Interesting observation was found that only 7 job advertisements asked for KM education instead the majority asked as already mentioned for a degree in computer science, business administration or information systems/business informatics. Further possible reason for such a big percentage for KM Technologies could be that KM employers value more explicit knowledge which is easily transferable and objective on the other hand it could be also that they perceive knowledge management more as KM Technologies.
Furthermore the research shows that KM professionals must have great ability to communicate. In addition they should have strong analytical, problem solving and decision making skills. Moreover KM professionals should have training and presentations skills and should be team player.

Additionally this investigation proves that KM is still an emerging discipline and it does not provide clearly bounded set of activities and tasks. Therefore it is hard to set up a widely accepted competency framework for KM professionals. One may conclude that much misunderstanding exists in the business as well as the academic world about who and what knowledge management professionals are and what competencies they have to possess.

Finally based on the dimension of knowledge management and this research one may conclude that the most important competencies

Research Question 2: What is the difference between the previous studies and the current study?

Except the fact that the study which was conducted in USA examined a huge number of job advertisements in comparison to this study and the study in Asia there are some more differences in the results. The previous investigations and the current one prove that KM Technologies are essential for KM professionals and that the same were much desired by employers, beside KM Practices and KM Process. In comparison to previous studies this study shows that KM employers required most of the skills in KM Technologies. The reason for such a big percentage for KM Technologies in this study could be that explicit knowledge is more valuable since it is easily transferable and objective. Further possible explanation could be that KM employers in surveyed countries perceive KM more as KM Technologies.

Another difference is that skills in Content Management were much more desired in this study than in the USA study. On the other hand this study required very few skills in Data Management, Information Architectures and Client Relationship Management in contrast to USA study. Another considerable difference is that skills in Information Security were not desired at all in this study in comparison to the USA study. Further difference was that skills in Project Management were not that much required in this study in comparison to the USA study. It was interesting to observe that both studies revealed the same percentage of Business Development skills.

The difference between Asia study and this study is that in the Asia study skills in KM Core Processes were more desired than skills in KM Technologies and the reason could be that the KM employers in Asia perceive knowledge management more as organizational learning than systems and technology. In contrast to the Asia study, this study revealed also that team working and independently working skills were also very desirable. Another difference is that this study showed that commitment skills were much sought. Further Asia study showed also that leadership skills and effective writing skills were much desired in comparison to this study.

Since knowledge management comes from different disciplines roots, this could be a reason why so many job vacancies required education in those fields and not KM education. The same pattern was observed in previous studies too.

In addition, it shows that KM still does not have a set of clear job titles. Instead, KM positions have a variety of job titles, some were clearly labeled KM and others were not. The possible explanation could be that KM employers have not a clear perception of the same. In previous studies the same pattern was observed.
In comparison to previous studies this research revealed that 18 job advertisements were looking for an intern or working student. The explanation could be that the companies are looking for those KM professionals who are coming directly from universities and are up to date concerning the knowledge management.

6.1. Further limitations
Beside the limitations that were stated in Section 1.2 there are other limitations which were observed when analyzing the data. Those limitation were that many job advertisements did not specified the exact amount of experiences, further many did not specified what kind of degree and what field of education they require.

6.2. Future research
In this study, as aforementioned quantitative content analysis was performed using 89 job advertisements in five countries during 3 months. Future research could be done collecting a considerable larger amount of job advertisements during the period of at least 6 months in order to get a broad insight. For future research it would be also interesting to conduct interviews and questionnaires with knowledge management professionals in order to get an insight in their roles and responsibilities. Further it would be also interesting to conduct interviews with KM lecturer in order to get their opinions about the KM profession.

6.3. Reflections
Writing the master thesis was an interesting and at the same time challenging experience. The interesting part was to observe which requirements were desired. The challenge that I faced when evaluating the data was the difference in educational systems not only in different countries but also inside the countries e.g. different degrees in different countries that are part of UK, such as Scotland and so on. Although 89 job descriptions are not a small number, I still think that a larger number of job vacancies would provide a broader insight.
References


