Desired Competences for Project Managers

Masters in Strategic Project Management (European)
Acknowledgements

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Tiago Miranda & Bimal Ghimire
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Abstract

Project Management is multidisciplinary in nature; it involves a number of activities and requires the project manager to possess a wide variety of competences. This thesis aims to investigate which competences organizations currently require from project managers. In particular the focus of this research is to examine and contrast the “soft” (interpersonal) and “hard” (technical) competences required by the job market and to find out if organizations recognize the importance of both of them or if they pay special attention to one of them. A total of 50 online job advertisements from different industries and countries were analyzed using content analysis in order to determine what competences are valued by employers. Furthermore, 9 semi-structured interviews were conducted with project management academics and practitioners in order to provide a more in depth study and to allow triangulation between the findings. The results indicate that some competences are more valued than others. Communication, project integration management and scope management are the top three competences required by employers. The results also suggest that employers, academics and practitioners are aware of the need to balance hard and soft competences.

Keywords: Project Management, Competences, Skills, Interpersonal Skills, Technical Skills, Hard and Soft Competences, Content Analysis, Job postings, Job Advertisements.
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1 Introduction
This study aims to investigate what are the competences required by the companies who are seeking project managers. The research replicates and furthers the study done by Koong and Liu (2006), which investigated job descriptions for project managers in the information and technology area. The methodology chosen was to conduct a content analysis on online job postings to identify the competences requested by employers for their prospective project managers. Semi-structured interviews were added to complement the study and particular attention was given to the soft interpersonal competences of project management.

1.1. Background of the study
Project management (PM) as a formal discipline is relatively new, having evolved within the last 60 years from a military use during the cold war defense programs (Verzuh 2005). However, human beings have managed projects as long as they have been present on earth. After all, a project can be simply defined as “a temporary endeavor undertaken to create a unique product, service, or result” (PMBOK Guide 2004, p.5).

If we look at history it’s possible to identify a great number of projects that have been completed in earlier times without the explicit use of modern PM techniques. The pyramids, the Great Wall of China, irrigation systems created by early civilization and the Coliseum all serve as example of projects, just to name a few. In our daily lives we are constantly managing small projects such as personal vacations, school assignments, organizing dinners and parties. All of these can be examples of projects.

Traditionally PM has been associated with engineering or construction projects, such as some of the examples mentioned above, but its scope has broadened recently. Gardiner (2005) mentions new ‘brands’ of PM including: business PM, event PM and strategic PM, among others. The IT sector is one that has greatly benefited and contributed to the development of PM as a discipline. But more recently, following what Gardiner (2005) has said, organizations are beginning to understand that PM is much more powerful than previously believed. Söderlund (2005) points to a growing number of project-based organizations in mature industries, such as transportation, construction, automotive and telecommunication. In a more general view, all types of organizations have started to recognize the value of PM and the importance of having competent employees to execute their projects (Kloppenborg & Opfer, 2002).

According to Crawford (2005) the use of PM to achieve business goals is becoming more popular in organizations. Verzuh (2005) explains that as repetitive tasks are replaced by automation and the necessity to constantly change becomes more evident, the need for efficient PM grows. Kloppenborg & Opfer (2002) considers PM as a good strategic tool to manage organizational change, while Gardiner and Carden (2004) believe strategies themselves can be implemented through projects. This more strategic role of PM is also emphasized by Jugdev and Müller (2005) who argue that it can be used to create core business value and as a form to escape disadvantageous positions. Söderlund (2005) adds that for many firms PM is at the core of their competitive advantage. Taking into consideration what Kloppenborg & Opfer (2002), Gardiner (2005), Jugdev and Müller
(2005) and Söderlund (2005) have stated it is possible to observe that PM can be elevated from a simple operational standpoint to a strategic position.

As project managers take on a more important role in the business world the interest in which competences are necessary to successfully manage projects grows. This growth in interest has sparked the creation of standards and certification programs that describe the discipline’s practices, offer definitions of the main terms and process, explain the main techniques and serves as the basis for assessing PM competences, (Crawford, 1999). The main PM standards and certification programs are provided by the PMI (Project Management Institute - http://www.pmi.org), IPMA (International Project Management Association - http://www.ipma.ch), AIPM (Australian Institute of Project Management - http://www.aipm.com.au) and the APM (Association for Project Management - http://www.apm.org.uk/).

These standards are generic, that is, they are not industry specific. The reason for that is because even though PM includes activities that are specific to each project and their related field, it also involves a wide number of general processes that are common among all projects. In whichever sector a project manager finds himself working on, be it construction, information technology, financial, or any other, they will be required to have a set of competences that are specifically related to the PM profession, in addition to industry specific knowledge.

The need for project managers to possess a specific set of competences is highlighted by Schmitt and Kozar (1978), as these authors relate poor PM with project failure. According to them, poor PM was, at that time, the most usual reason why projects fail to reach their goal.

Two more recent studies show that this scenario remains the same. The PCI Global Survey of 2004, mentioned by Koong and Liu (2006), reveals the importance of project manager’s competences to attain project success. According to this survey, the competences possessed by project managers determines if the project will contribute to the company’s profitability or become a “horror story”. Mullaly’s (2003) study found that 64.5% of the project managers have little or no formal training. The author identified the lack of formal training as a key reason why projects fail to realize the expected results and continue to be completed late and over budget. Mullaly (2003) explains that there is still a lot of `accidental´ project managers, who are not even aware that what they are doing has been transformed into a formal discipline. Following this argument, without formal training project managers are not able to acquire the necessary competences to accomplish their job. What usually happens is that project managers are chosen for their technical expertise in the specific area, but they do not possess PM competences which are essential for dealing with projects.

With the arguments made by Schmitt and Kozar (1978), Mullaly (2003) and Koong and Liu (2006) it becomes clear that project managers need to possess a set of PM related competences to achieve project success. But which competences are needed?
Although PM standards present the necessary competences a project manager should have, a number of authors continue to research and question this topic (Stretton, 1995; El-Sabaa, 2001; Crawford, 1999, 2000, 2005, 2006). Also it has been observed that PM competences mainly focus on the “hard”, technical skills such as the ability to create a work breakdown structure, to develop a Gantt chart or project budgeting; neglecting the more “soft” interpersonal skills.

Pollack (2007) goes as far as calling the human resource management practices found in PM literature as “elementary”. The author reveals that research on the field has found human relationships to be indispensable for project success. Flannes and Levin (2005 p.1), reinforce that point by stating that “people issues can hinder project success, especially in terms of meeting the project’s schedule and budget.” But as Blackburn (2000) mentions, professional bodies avoid including interpersonal competences in their content because they are seen as less easily defined.

Recently more attention has been given to the soft interpersonal competences necessary to manage projects (Edum-Fotwe and McCaffer, 2000; Cowie, 2003; Muzio, et al. 2007; Pollack, 2007). The need for such competences in PM is strengthened by Boardman (2006), who makes it clear that the hard part of the job refers to softer issues regarding people. Other recent publications such as Flannes and Levin’s 2005 book called “Essential People Skills for Project Managers” confirm this trend. In Posner's (1987) study one of the main conclusions was that project managers struggle with human issues and not with technical ones. According to the author managers that move to PM positions need to improve interpersonal competences such as communication, organization, team building, and leadership to be successful.

This discussion in the PM literature has triggered an interest in the topic of PM competences and in contrasting hard and soft competences to see how companies value them. The specific interest is to investigate what the job market currently requires from project managers. When searching for project managers, with the help of online job advertisements, do organizations recognize the need for soft interpersonal competences or do they mainly focus on the hard technical side of PM. This has led the following research question:

1.2. Research Question

The research question that motivates this study is: Which competences do organizations currently require from project managers?

1.3. Objective of the study

This study aims at understanding the competences that are required by companies who are seeking project managers. The objective of the study is to help build the PM literature on competences by analyzing online job advertisements for the PM profession. The research replicates and furthers the study done by Koong and Liu (2006), which investigated job descriptions for project managers in the information and technology area.
1.4. Thesis Outline
This thesis is structured in six sections, including the introduction, which had the purpose of integrating the reader to the chosen topic and served as a logical approach to the research question and objectives of the study.

Section two presents the research strategy. The research strategy explains the reasons for the chosen topic, demonstrates which sources were used and most importantly explains the underlying perspective in knowledge creation in the social sciences. Section two is finalized with the research strategy chosen and the hypothesis that guide the study.

The third section develops the theoretical framework that surrounds the research. This section starts off by illustrating similar studies that have been conducted both in other fields and in project management area, and then it demonstrates the importance of the concept of project management competence followed by a definition of the term. Section three also presents the concept of hard and soft competences and discusses the changing paradigm that is happening in the field. This section is concluded by giving a detailed description of the soft and hard competences that will be considered in the study.

The fourth section is dedicated to the research methodology that was used. A detailed explanation is given regarding both methodologies used, content analysis and semi structured interview. The process that occurred during the data collection is also explained in this section.

In the fifth section the findings are presented for both methodologies used. The first part in section five presents the descriptive statistics and shows the profile of the advertisements analyzed. The findings obtained through the interviews conducted are also presented in this section.

The last section is the conclusion of the thesis, there a discussion on the findings is developed, the limitations of the study are presented and the suggestions for future researches are given.
2. **Research Strategy**

2.1. **Choice of the subject**

The competences necessary to conduct a specific task or which are common for a professional community is a subject that has intrigued many researchers (Todd, McKeen and Gallepe, 1995; Redman and Matthews, 1997; Chan and Swatman, 2000; Bennet, 2002; Gallavin, Truex, and Kvasny, 2004; Lai, 2005; and Koong and Liu, 2006). Principally for PM, a young and developing profession, the need to further understand the desired competences was identified. The many bodies of knowledge that have emerged in different regions are examples of past efforts to determine the competences needed for managing projects. Nevertheless, they still mainly focus on technical aspects of the profession.

The subject of this study is relevant for every practicing and future project manager because it deals with a topic that is naturally interesting to them. By knowing what competences are highly demanded by the market project managers can make a deliberate effort to develop them and increase their value. Especially those that believe in lifelong learning and continuous self-improvement. The subject is also extremely important for institutions that train project managers because they could use the findings to adjust their offer of training to market demands. This study was driven by following reasons: the relevance of understanding PM competences; the importance of soft competences on the success of project managers; and the lack of literature that focuses on the topic.

2.2. **Selection and collection of secondary sources**

A search in the main PM related journals was conducted in order to identify the “state of the art” knowledge on project manager’s skills and competences. Both the Project Management Journal and the International Journal of Project Management were emphasized because they are the main peer-reviewed Journals in the field. The search also aimed to detect similar studies which could help to define the methodology, such as studies using job advertisements and studies using content analysis. Among the databases used to support our studies, the following played a significant role: ScienceDirect, Emerald Fulltext, JSTOR, and EBSCOhost. The reason for focusing on academic journal is due to the fact that they offer the most recent information. Although the focus was on journals, this does not mean other sources of information were not included. Books and less scientific sources such as trade journals and periodicals were also consulted in order to include practitioners’ perspectives; however recent publications were preferred over older ones.

2.3. **Perspectives in knowledge creation in social sciences**

Every research has some type of perspective in knowledge creation. This section introduces the perspective of this research. Research is a detailed study of a subject for the purpose of discovering new information or reaching new understanding (Cambridge Advanced Learners Dictionary). In line with this definition, this research explores the project managers’ competences that are required by companies. It will take a holistic view of PM as a profession rather than looking at one specific project or industry.
Huges (1980) discusses that philosophically minded people such as researchers, should be concerned with the basis of their claims and choices. This encourages researchers not only to use valid methodology but also to provide justification of particular methods and procedures used. Among two broad methodologies of conducting research, quantitative methodology, which is based on the deductive research, is at the centre of this study. However, with the inclusion of semi-structured interview the research also addresses some aspects of qualitative methodology especially when analyzing interviews. This selection was led by researcher’s perception on knowledge creation in the social sciences. In that sense, both epistemological and ontological issues should be further clarified.

Generally, an epistemological analysis deals with issues regarding the validity of knowledge claims, the purpose of knowledge, the ways by which knowledge is corroborated, the limits of knowledge, etc. (Bernecker and Dretske, 2000 in Bukobza, 2007 p. 47). Similarly, Bryman and Bell (2003) perceive epistemological issues as the way social scientists tend to understand how knowledge is constructed in their field of study. According to them, it refers to what is considered as ‘acceptable knowledge’ and whether the methods used in natural sciences should be followed by social scientists. In terms of epistemological considerations, this research holds the view towards the ‘positivism’ approach which is found to be valuable, especially the deductive framework of hypothesis creation and testing. Positivists believe in the possibility of studying social phenomena with the help of scientific method (O’Leary, 2004). Even though this research is based in positivism approach, this does not mean it negates completely the interpretivism approach. It is believed that there is more than one way to contribute to knowledge in social sciences and any extremist and radical view might be wrong.

Epistemological and ontological issues are closely linked with one another (Huges, 1980). For Green (2005), ontology is a ‘branch of philosophy’ in which human perception and behavior of words are studied. Further to this, Bryman and Bell (2003 p.19) add that the main message in ontological consideration is “whether social entities can and should be consider objective entities that have a reality external to social actors, or whether they can and should be considered social constructions built up from the perceptions and actions of social actors.” It is believed that the latter rather than the former opinion is more appropriate. That is, social actors have an active role in building social entities, this view is called constructionism.

Constructionism does not believe on the independence of meaning on its own. It is constructed as a result of human interaction and interpretation (O’Leary, 2004). It is an ontological approach that argues social phenomena is not only created but continuously modified by social actors (Bryman and Bell, 2003). Actually, the general object of this study, which is PM as a discipline, can be seen as such phenomena. Crawford (2006) explains that PM has evolved from conversations, writing, and cooperation from

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1 Interpretivism is an epistemological approach which focuses on how the world is created and preserved by the interaction of social actors (Holman, Clegg, and Waterson, 2002). It also views social sciences, which includes people and their institutions, as being fundamentally different from natural sciences (Bryman and Bell, 2003).
practitioners, consultants and academics that shared interest and dealt with projects. Therefore, it is believed that when researching topics related to a discipline such as PM, which is still growing and evolving, a constructionist ontological position is necessary. It is also considered that the findings of this research, even if microscopically, will in some way affect future direction of PM.

Normally, a quantitative methodology would be linked with an ontological objectivism positioning, however, similar to our opinion, Bryman and Bell, 2003 mention some past studies which demonstrate the link between quantitative research and constructionism.

2.4. Research strategy
Research strategy, also known as research procedure, can be defined as the particular approach to design and conduct a research (Kuperan and Kuper, 1996). Keeping this definition in mind, a strategy has been developed to ensure that the research will answer to research question, remain within scope, and be completed on time. Although various research strategies can be found in academic literatures, this research will be based on the view presented by Bryman and Bell (2003). These authors, advocates research strategy that is based on the classification of quantitative and qualitative methodologies. It also takes into account the connection between theory and research; including epistemological and ontological considerations. Table 1 shows the variation between these two methodologies:

<table>
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<tr>
<th>Table 1 - Fundamental differences between quantitative and qualitative research strategies</th>
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<tr>
<td><strong>Quantitative</strong></td>
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<tr>
<td>Principle orientation to the role of theory in relation to research</td>
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<tr>
<td>Deductive; testing of theory</td>
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<tr>
<td>Epistemological orientation</td>
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<tr>
<td>Natural science model, in particular positivism</td>
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<td>Ontological orientation</td>
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<tr>
<td>Objectivism</td>
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<tr>
<td><strong>Qualitative</strong></td>
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<tr>
<td>Inductive, generation of theory</td>
</tr>
<tr>
<td>Interpretivism</td>
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<tr>
<td>Constructionism</td>
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*Source: Bryman and Bell (2003 p. 25)

From the research point of view, data could either be quantitative or qualitative. Data which is represented by numbers and analyzed with statistics are quantitative, whereas data that are represented by words, pictures, or icons and analyzed with thematic exploration are qualitative (O’Leary, 2004). Similarly, to distinguish between these two different types of research, Neuman (2000) states that in quantitative research, the researchers focus on issues of ‘design’, ‘measurement’ and ‘sampling’ as well as use of deductive approach; whereas, in qualitative research, the focus will be on ‘richness’, ‘texture’ and ‘feelings of raw data’ as well as the use of inductive approach.

This research tries to seek the competences required for the project managers by the companies. For this purpose, data will be obtained through project managers’ online job advertisement and analyzed using content analyses. The idea is to see which of the competences are important and mainly required by the companies. Then, obtained results are matched with the responses collected through interview with professionals in the area.
The interviews with project managers and academics serve to validate the findings and to get a different perspective. By adding interviews more robust results can be obtained.

For deductive reasoning, Bryman and Bell (2003, p.9) refer to an approach where “the researcher, on the basis of what is known about in a particular domain and of theoretical considerations in relation to that domain, deduces hypothesis (or hypothesizes) that must then be subjected to empirical scrutiny.” This deductive reasoning is linear and follows a logical sequence. Table 2 demonstrates the process of deduction in regard to this research.

Table 2 - Deductive Approach

<table>
<thead>
<tr>
<th>Theory</th>
<th>“Soft” interpersonal competence are essential for project managers to manage project successfully</th>
</tr>
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</table>
| Hypothesis | a. Research Hypothesis: Organizations do recognize the importance of “soft” interpersonal competences for project managers.  
|          | b. Statistical Hypothesis: H0 - Organizations mainly require “hard” technical competences from project managers.  
|          | c. Alternative Hypothesis H1 - Organizations require both “soft” interpersonal and “hard” technical competences from project managers.  |
| Data collection | Data collection – Through online job advertisements and semi-structured interviews |
| Findings | Finding available from data analysis |
| Hypothesis confirmed or rejected | Hypothesis is confirmed or rejected |
| Revision of theory | Conclusion based on acceptance or rejection of hypothesis |

* Adapted from: Bryman and Bell (2003 p.11)

Gardiner (2005) states that soft interpersonal competences are required for project managers to manage project successfully. Based on this theory, hypothesis has been developed that provide the researchers a basis for data analysis. Then, collected data are analyzed and tested to accept or reject the hypothesis. This will be the basis for the conclusion of the research.
3. Theoretical Framework

3.1. Similar Studies

A number of studies can be found which aim to further understand the competences required for a certain profession. It was also observed that the use of job description and the application of content analysis are well established methodology to study such phenomenon. The main studies identified were the ones from Todd, McKeen, and Gallupe (1995), Redman and Matthews (1997), Chan and Swatman (2000), Bennett (2002), Gallavin, Truex, and Kvasny (2004), Lai (2005) and Koong and Liu (2006).

Todd, McKeen, and Gallupe (1995), for example, used content analysis on information system professionals’ job advertisement in the major newspapers over a 20 year period (1970 to 1990). The purpose was to assess the changes in knowledge and skills requirements in three types of jobs i.e. programmers, system analysts, and IS managers. The study revealed that programmers and IS managers skills requirements were relatively the same, whereas System analysis required more technical skills than the other two.

Redman and Matthews (1997) analyzed job advertisements to determine if they could find a perceived difference between the skills required for public and private sector managers. However, their study led them to identify more similarities than differences. Interestingly enough they found that both the public and private sector greatly emphasize social skills such as communication and other interpersonal skills.

Chan and Swatman (2000) developed an exploratory study to obtain data from web sites of online recruiters. Their objective was to discover the characteristics of the E-Commerce/E-Business jobs market-place. The authors identified 8 categories for these types of jobs which include web development and programming, E-Commerce Systems and solutions, business analysis and sales and consultancy among others. The most important discovery in their study was that E-Commerce can be seen as a specialist field. This was observed by the language that has been developed around the subject with words like B2B, B2C, E-Business, E-Commerce Strategy, EDI, etc. They also noted that there is a high demand for graduates with a good knowledge in the field and an increasing future trend in E-commerce jobs.

Bennett (2002) analyzed job postings to assess the “transferable personal” skills demanded of graduate job applicants. The study, which analysed 1000 job advertisements in four occupational categories (marketing, general management, finance and human resource management), observed that the most important skills include: Communication, Team working, IT and Organization. Their study also proved, through a follow-up survey, that there was a high coherence between the skills managers found most important and the ones that appeared most frequently in the job advertisements. This indicates that the content of the job advertisements was carefully selected and does represent what companies are looking for in future employees.

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2 Transferable skills include: ability to work well with others, ability to organize, self motivation, communication skills, creativity, capacity to solve problems, leadership among others (Bennet, 2002).
Gallavin, Truex, and Kvasny (2004) present a good example of the use of content analysis by analyzing the trends in the requirement of job skills for IT professionals. In regards to soft skills they concluded that there is still a recruitment gap. In spite of organizations emphasizing the need for a well rounded individual, the soft skills only represented a small percentage (≈5%) of all phrases in the advertisements. Their research used both printed and online job posting advertisements, but favored the later. Due to high cost of printed advertisements there is a need to summarize the competences wanted. Online job posting, on the other hand, have less size restriction and their description of what is wanted is more detailed.

Lai (2005) applied content analysis on job posting to investigate the needed skills for knowledge management professionals. The author identified the desire for both technical and interpersonal skills in his findings. Knowledge management employers desired a deep understanding of IT and content classification, which are very technical competences, but also team working and communication were among the highest-ranking skills.

Koong and Liu’s (2006) study was the only similar one found in the literature review which focused on PM. Their study investigated job descriptions for project managers in the information and technology area in the USA. The results of their study showed that the top three required competences are Scope, Time and Integration management. Koong and Liu’s (2006) study used the nine knowledge areas mentioned by the PMBOK Guide (2004) to classify the content in the advertisements. However, out of the 9 areas only Project Communication Management and Project Human Resource Management are considered soft in nature. Another limitation was that it used only one search engine (monster.com) and was geographically bounded to one country.

As can be seen, other researchers have found valuable the need to further understand the competences required for a specific profession. It was also noted that content analysis is a well established methodology. It is often used to analyze job postings with the intention of further understanding desired competences. In spite of this, such studies have not been widely conducted in the field of PM. Even more neglected were the soft skills necessary for this profession. Because of this gap in the literature it was deemed necessary to conduct this research. Project managers are becoming extremely important in the modern organizational structure and it is vital to understand what competences they should possess. The importance of PM competences is explained in the next section.

3.2. The Importance of Project Management Competence
Projects are more tightly related to business success than ever before (Brandel, 2006). In construction projects, for example, where a single project has a significant impact in a company’s overall turnover, project failure can lead to organizational failure (Edum-Fotwe and McCaffer, 2000). The importance of competent project managers in such a scenario becomes ever more apparent. Schmitt and Kozar (1978), Mullay (2003) and Koong and Liu (2006) all highlight how important the project manager is, as these authors relate project failure with poor PM. Crawford (2005) also relates project
performance and even organizational performance with competent PM personnel. These relationships are displayed in Figure 1.

**Figure 1 – Crawford’s Relationship between Project Manager Competence and Project/Organization Performance**

![Diagram of Crawford's relationship between project manager competence and project/organization performance]

Figure 1 shows just how important it is for project managers to possess the necessary competences. A research done by Crawford (2000) demonstrated that the competence of a project manager clearly contributes to project success. A competent project manager, as opposed to an incompetent one, has a higher chance of completing the project successfully. However, the relationship showed in this model is linear and can lead to the belief that Project Management Competence is the only aspect contributing to project performance.

A more dynamic and complete model, which also relates competences to project success, is presented by Kendra and Taplin (2004). Their open system cultural model for project success takes into consideration cultural factors and is based on four key aspects: Project Manager Competences, Performance Measurement Systems, Business Process, and Organization Designs. Kendra and Taplin’s (2004) model is based on four-dimensions, the micro- and macro-organizational design elements; each having both technical and social considerations.

Kendra and Taplin’s (2004) model is more complete and shows that other elements also contribute to project performance. Particularly it demonstrates the importance of organizational culture and values. However, it also recognizes Project manager competences as one of the main elements that lead to project success. Kendra and Taplin’s (2004) open system cultural model for project success is presented in figure 2.
One flaw that can be observed in the model is that it does not link project results to organizational performance, as Crawford (2005) has done. Kendra and Taplin (2004) do not incorporate in their model the growing importance of projects to the modern organization. As projects start to play a more strategic role (Shenhar and Levy, 1997; Kloppenborg and Opfer, 2002; Gardiner, 2005; Jugdev and Müller, 2005 and Söderlund 2005) their results will impact organizational performance. In the end, the organization will be affected by the selection and combined outcome of the projects they undertake.

The correlation between PM competences, project performance and even organizational performance has been underlined by various authors, among them Schmitt and Kozar (1978), Mullay (2003), Crawford (2000 and 2005), Kendra and Taplin (2004), Koong and Liu (2006). Following this scenario it is well supported by PM literature that project managers need to possess competence in what they do. But what exactly is meant by competence?

### 3.3. Defining Competence
According to the Cambridge Advanced Learner’s Dictionary “competence is the ability to do something well”. Among the many definitions provided by the Oxford English Dictionary, one with a similar meaning would be that competence is “sufficiency of qualification; capacity to deal adequately with a subject”. Both definitions offer a general explanation which is quite representative of the common understanding of the word. However, as noted by Robothan and Jubb (1996) the concept has evolved incorporating different meanings, it has also become one of the most used terms in organizational
A good definition of competence is presented by Berglund (1999) in Glader (2001):

“Competence is used to accomplish something. It includes knowledge in all their shapes, but it also includes personality traits and abilities, such as social competence, persistence, stress tolerance and so on. Competence is at first an individual based term, but is however not impossible to also talk about organisational competence. One can then refer back to the complete competence at the individuals in the organisation, or the stored knowledge concerning systems, techniques or the culture”.

By analyzing this definition it can be understood that competence can be looked at from an individual perspective and also from an organizational point of view. In the organizational perspective the firm possesses competence as an institution. This perspective is presented by Söderlund’s (2005), who looks at project competence in terms of organizational capability. In his view the organization is deemed to posses’ PM competence if it is able to generate/select and implement/execute projects in a skillful manner. These two different views are not contradicting, after all an organization is an inanimate character that exists only through its people. Therefore, for an organization to have competence it is essential that the people inside are competent. Nevertheless, there is a difference on how competence is approached; one perspective looks at the individual parts and the other at the whole. For this thesis we are looking strictly at individual competences of project managers.

An interesting framework found in the literature to look at competence is Kerstin Keen’s “competence hand" presented in Figure 3 (Glader, 2001). Here it is illustrated how competence involves a number of different aspects, such as: knowledge, skills, experience, contacts and values. The idea of the hand demonstrates how everything works together. The palm of the hand coordinates it all and it represents the individual as he balances his abilities to achieve the desired results. The wrist is the connection to the organization, since people need to be supported and guided in order to fully utilize their competence.

The literature surrounding competence is quite extensive. Many other perspectives can be found, such as competence as an individual’s demonstrated ability or characteristics to perform specific actions for a particular job in order to produce the job demands (Gale and Brown, 2003). However most views on competence can be summarized in three approaches, presented in the table 3.

| Attribute-based | Sees the competences as a number of personal attributes such as: skills, knowledge, attitude and personal characteristics. If a person possesses the desired attributes for dealing with a specific situation or for exercising a certain profession one is deemed to be competent. Usually tests are used to measure the level of such attribute in a person. |

*Source: Glader (2001)
**Performance-based**
This approach rather observes competence in a practical situation, such as in the workplace. It focuses more on results achieved by the competences possessed or in other words performance.

**Combined**
The combined approach aims at minimizing the weaknesses that each of the above views, by themselves, possess. It preaches that a combination of both attribute-based and performance-based approach to competences should be used in order to establish a more complete understanding.

* Adapted from: Stretton (1995)

Some approaches are better accepted and used in different regions. As Crawford (2005) mentions the attribute-based approach, or what she calls the competency model is prevalent in the USA, and the performance-based, mentioned by the author as competency standards, has a larger acceptance in the United Kingdom, Australia, New Zealand and South Africa.

For this thesis we have decided to utilize Crawford’s (2005) integrated model of competence. This model is relatively straightforward and easy to comprehend. It also offers a clear scope of what will be researched through the chosen methodology. Crawford’s model is presented in Figure 4.

**Figure 4 – Crawford’s Integrated Model of Competence**

![Figure 4 - Crawford's Integrated Model of Competence](image)

Source: Crawford (2005, p. 9) (Circle added)
This research will be limited to the attribute based perspective presented in the model, which is emphasized by the circle. The focus is on what the companies require project managers to have, or in other words, their attributes. It is not in the scope of this study to look at how project managers perform in the job against those requirements. Crawford’s model was chosen because it is more synthetic and comprehensive. The three basic components of competence, knowledge, skill, and personal characteristics offer a clear scope on what to look for in the online job postings. However, there is no intention of making differences between them; rather they will all be looked at as competences. Be it a skill, knowledge or personal characteristic that is being required. The focus of the research is to see if these competences have a soft interpersonal or hard technical characteristic and not to debate whether a requirement is a skill or knowledge. Therefore it is extremely important to have a closer look at what is meant by hard and soft.

3.4. Hard & Soft: the changing paradigm

3.4.1. Hard & Soft Competences
The idea of making a distinction between hard and soft competences came from Gardiner (2005). This author explains that the term hard and soft refers to the nature of the skill. The soft skills are the people skills which involve behavior, while the hard skills are more technical in nature.

The soft skills include things like: interpersonal communication, commitment to success, negotiation, decision making, consensus, problem solving, leadership, motivation, and ability to influence people. It is also possible to find in the literature these skills mentioned as “human” skills (El-Sabaa; 2001), “personal transferable skills” (Bennet 2002), “interpersonal” skills (PMBOK Guide 2004), “micro-social” skills (Kendra and Taplin, 2004), or even “social” skills (Brandel, 2006). El-Sabaa (2001) refers to human skills as the ability to work in a team and to create cooperation among the team members; this is highly related to the person’s perceptions about themselves and others. The way project managers view themselves, their colleagues and supervisors will have an influence on how they interact and in their ability to encourage cooperation. To Gardiner (2005) ironically the soft skills are a lot more difficult to master and use effectively because they are related to a person’s EQ (Emotional Quotient).

The importance of a project manager’s EQ has also been highlighted by Müller and Turner (2007). Their research, which involved 400 web-based questionnaires and 14 interviews, suggests that EQ significantly contributes to project success. The individual competences highlighted by the authors as having correlation with project success were conscientiousness, sensitivity and communication. As can be seen all three have a soft nature.

The hard skills are the ones most training courses focus on; they refer to the mechanical and technical skills of planning, estimating, scheduling and controlling a project, for example (Gardiner, 2005). To El-Sabaa (2001) a technical skill is related to the understanding of a specialized activity that involves methods, processes, procedures, tools, and techniques.
Even though Gardiner (2005) originally referred solely to skills, his concept can be extrapolated to competences as well. Competence is a broader concept, as can be seen in Crawford’s (2005) integrated model of competence. However, some authors make no differentiation between these terms and use them as a synonym. As in this study there is no intention of making differentiation if a certain competence is knowledge, skill or personal characteristics the term will also be used interchangeably.

The necessary competences for managing projects could have been divided in a number of ways. There is no limitation to the creativity on the names or on how to group them. El-Sabaa (2001), for example, presents Katz’s (1991) model which divides them in three categories, instead of two. They are: (1) human skills, (2) conceptual skills and (3) technical skills. Simon and Murray (2007) present EngagementWork’s competence categorization called MOCs and HOCs. The MOCs represent the Methodological and Operational Competences and have a technical nature, while the HOCs are the Human and Organizational Competences, which are soft in nature (see figure 5).

**Figure 5 - EngagementWork’s HOCs and MOCs**

![Diagram of EngagementWork’s HOCs and MOCs]

Butler and Chinowsky (2006), when talking about emotional intelligence (EI), divide the soft competences related to EI further into a number of categories, such as: interpersonal, intrapersonal, adaptability, stress management, and general mood. Muzio et al. (2007) also mentions Coleman, Boyatzis, and McKee (2002), who prefer the personal/social terminology with a number of sub groupings. Robotham and Jubb (1996) introduce a rather different perspective of looking at the competences; they divide them between threshold and high performance. The threshold competences are the minimum required level of competence necessary for a position, while the high performance competences distinguish workers who perform at a superior level. For this thesis Gardiner’s (2005) framework has been preferred over other possible options.

Although the terms hard and soft are used mostly in such a context they can have a deeper meaning, as the one proposed by Pollack (2007). The author relates them to ways of thinking in what he calls the hard and soft paradigm. These terms will be further explained in the next section which deals with the changing paradigm of PM.
3.4.2. The changing paradigms of project management

PM has its roots in technical disciplines such as military, engineering and construction. This has guided the literature to mainly focus on the technical aspects, often neglecting the more soft processes such as team building (Zwikael and Bar-Yaseph 2004). As most of the early project managers came from a technical background this was a natural phenomenon, as disciplines such as IT, engineering and designing have little to do with people, or so was thought. Recent research, such as the one from Edum-Fotwe and McCaffer (2000) and El-Sabaa (2001) show that human skills are very important and should not be underestimated.

The technical focus in the PM discipline can be explained by the strong influence of what is called the hard paradigm (Pollack, 2007). A paradigm refers to a tendency for thought and action that impacts a certain field, or in this case a discipline (Pollack, 2007). The concept of a paradigm was first introduced by Kuhn around the 1960’s and basically means a certain way of thinking and doing things; it is a pattern that forms and tends to be followed and too often not questioned. Barker (1992) compares the term to a game, according to him a paradigm lets you know what the game is, what the rules are and how the game should be played. The hard paradigm, refers to concepts that are related to rigor and objectivity, while the soft paradigm tends to highlight learning, participation and is interested in the social process (Pollack’s, 2007).

Pollack (2007) analyzed methodically PM literature regarding a number of aspects such as the philosophical basis, tools and techniques and its perspective toward people and participation. The author then compared these aspects with the underlying concepts of each paradigm and concluded that PM is traditionally rooted in the hard paradigm. The fact is that PM still focuses too much on control and tends to put the project managers in a pedestal, where they are seen as having all the answers; little attention is given to participation and interpersonal issues (Pollack 2007).

Even though PM is rooted in the hard paradigm it has also been observed that the soft paradigm is gaining ground in the field (Pollack, 2007). Muzio et al. (2007) goes as far as saying that the need for soft skills has already clearly been established, but his literature review includes general management literature as opposed to Pollack’s study which focused only on PM literature. However the growing number of literature in the field that pays attention to soft interpersonal issues, shows that it is becoming recognized as an important factor. This can be seen as a paradigm shift, or as Barker (1992) would put it, a change in the game that is played, causing a new set of rules to be established. Not only in the academic literature is this shift observed but also in practice. Bryan Beverly, a software architect and team leader at BAE System, quoted in Brandel (2006 p.1) explains that “the perspective, the knowledge base, the skill set and methods traditionally employed by the project manager must change to accommodate the demands of project management in 2006”.

A similar shift from a hard to a soft paradigm can be observed in the more general discipline of management. First, it began with Taylorism, a very mechanical hard view of management. It slowly evolved to a softer approach with Maslow’s hierarchy of needs
and later to quite advance concepts such as Senge’s learning organization, where participation and knowledge sharing are essential. In the last decades organizations have realized that their most important assets are the people within. The need for cooperation between employees of different departments, cultures and even geographical locations is essential for gaining competitive advantage (Nahapiet, Gratton, and Rocha, 2005).

This quite simplified overview, where many chapters in history got skipped, in a way shows what is happening to PM. First it started out more technically oriented, focusing on the tools and techniques that help people manage projects. As time evolved the PM community has noticed that this is not enough to successfully manage projects. No matter how good a project manager knows how to elaborate a Gantt chart, develop a budget or create a WBS he still needs to manage people. There are still some unresolved issues in the PM discipline, as projects continue to under perform. The Standish Group survey, conducted in 1995, the chaos report, shows that in the IT industry only 16.2% of information system projects are perceived as successful. Furthermore, 31.1% of those projects are cancelled and never get completed, while an astonishing 52.7% surpass the original cost estimates by 189%. A possible answer to this problem could be to pay more attention to the softer side of PM since the three top causes of failure presented in the report dealt with people issues, they were: user involvement, executive management support and clear statement of the requirements.

Edum-Fotwe and McCaffer (2000), mention that efficient relationship management is essential for successful project delivery. Couillard (1995) also gives a lot of emphasis on human relations; the author sees it as a determinant factor for project success. One research that points to the same direction is the survey done by the Standish Group in 2000 mentioned by Kendra and Taplin (2004). This study concluded that insufficient collaborative working relationship was the main reason behind low success rates in IT projects. Perhaps in PM the people’s skills are even more important because of the lack of formal authority most project managers have over team members. As El-Sabaa (2001) mentions, project managers often need to get things done through a distinct number of people even though they posses none or little direct control over them.

El-Sabaa’s (2001) research involving one hundred and twenty-six managers of three sectors; information system, electricity and agriculture has provided empirical evidence that soft skills actually represented the most important skills for those professionals. Differently than this research which uses Gardiner’s (2005) framework, El-Sabaa (2001) applied Katz’s (1991) model. Out of the three categories of competences which make up this model: (1) human skills, (2) conceptual skill and (3) technical skill, the fist one received the highest grade by the participants, who were asked to rate the importance of competences in those categories.

Edum-Fotwe and McCaffer’s (2000) research also offers similar empirical evidence that points to the growing importance of soft interpersonal skills even in fields such as the construction industry. Their study aimed to review the development of PM competency in that industry. One of the objectives was to evaluate project manager’s perception regarding the competences which contributed to professional performance. They
conducted a survey which was answered by 170 practicing project managers. In their findings, it can be seen that out of the 10 most important competences judged by the participants 6 were of non-technical nature. From those 10 competences the top five that contribute the most to professional performance were: leadership, planning and scheduling, delegation, the ability to chair meetings and negotiation. As can be observed, out of the 5 most important competences only one could be considered as technical, while all the others have a more soft nature.

The study by Söderlund (2005), which was elaborated based on multiple cases of large Swedish companies, also contributes to demonstrate the importance of soft competences. Söderlund (2005) proposes a project competence framework that integrates soft concepts such as teamwork and leadership into a bigger picture, see figure 6. Although Söderlund (2005) views competence as an organizational capability his framework can still be used to illustrate the importance of soft competences as they are clearly embedded in his model. During his research he found that a lot of companies emphasized the importance of skilled project managers. He also concluded that leadership capability, for example, is much more a collective effort than had been assumed. Another relevant finding was that the organizations studied paid a lot of attention and spent great effort to develop teamwork competence in their employees.

Figure 6 – Söderlund’s Project Competence Framework

![Figure 6 – Söderlund’s Project Competence Framework](image)

*Source: Söderlund (2005 p.465)

Less scientifically rigorous sources also present anecdotic evidences that soft competences are becoming more important. The article by Boardman (2006) illustrates, using a story telling approach, just how important the softer interpersonal competences are for project managers. She depicts a project manager who had just concluded a PM course but still faced enormous difficulties to manage his new project. Most of the difficulties faced by this manager were related to the softer side of PM such as dealing with and influencing people.

Comments by practicing project managers quoted in Brandel (2006) also show that PM is going through a change. Peter Baker, vice president of information systems and technology at Emcor Facilities Services Inc. states that PM is “slowly morphing to the point that soft skills are as important as the hard skills”. Another IT professional mentioned by Brandel (2006), Bill Hagerup, a senior instructor at Ouellette & Associates mentions how important understanding people and their motivations is for project managers. Hagerup also stresses the need for relationship skills and explains how political issues cannot be ignored. Gardiner (2005) also emphasized that both categories of skills, hard and soft are necessary to successfully manage projects, in his view the hard
skills set the goals and procedures, and the soft skills make sure that people can meet those objectives.

As can be seen both in theory and in practice the soft competences are growing in importance and people from both segments are starting to pay more attention to them. This increasing recognition of the importance of soft skills can also be observed in other fields. Bennet (2002) mentions that because of a change in employment patterns there has been an increasing demand for personal skills in graduate jobs for marketing, general management, finance and human resource management. Even in the IT sector or in the Construction industry where previously might not have been seen as a “people” oriented profession they are being recently emphasized. It has been this growing appearance of soft competences in the literature that has sparked an interest in the topic. That is why the main objective of this study is to determine whether the companies really do emphasize soft competences in their online job postings for project managers. Therefore, it would be interesting to first make a clear definition of what will be considered soft and hard competences for this research.

### 3.4.3. Soft Competences

As mentioned earlier, there has been growing trend on number of literature covering topics on soft interpersonal competences. In spite of this, there is no consistency and agreement on different terms used to represent soft competences and no unified list exists. In addition to the nine knowledge areas considered by Koong and Liu (2006), this research will look closer at soft competences, since some authors such as Gardiner (2005) and Cowie (2003) have strengthened the importance of such skills. Also, it was observed that the nine knowledge areas mainly deal with technical skills, except for project communication management and project human resource management. During the data collection it was noted that other soft interpersonal skills, not focused by the PMBOK Guide (2004), were repeatedly mentioned in the job postings.

Therefore, in this research, literature review of soft skills was conducted and efforts have been made to compile the list of terms for soft skills, which will be used in this study. For this purpose, a number of sources covering topics on soft skills such as Kimmons and Loweree (1989), Blackburn (2000), El-Sabba (2001), Cowie (2003), PMBOK Guide (2004), APM (2005), Gardiner (2005), Brandel (2006), Simon and Murray (2007) and also the website of Project Manager Partners are consulted. In addition to this, the findings of Miranda (2006), an earlier exploratory research that was conducted in Heriot-Watt University, served as a starting point.

From the works of those authors it was possible to group similar terms together. For instance, there are many terms referring to communication skills such as interpersonal communication, effective communication, resolving ambiguity, customer relation etc in the literatures of above mentioned authors. After grouping the terms together a name was given to represent the soft skills in that category, such as communication for this specific example. This methodology has helped to come up with a unique list of ten major soft skills that are quite representative of the literature in the subject, see table 4. In the left side of the table are the 10 soft competence categories that were created based on the
literature, in the middle are the grouping of related soft competences, and finally, the last column shows the authors who emphasized similar terms. The list is comprehensive and not exhaustive; it includes the soft competence mentioned by the main authors in the field and is ordered randomly, it does not following any particular criteria such as importance.

<table>
<thead>
<tr>
<th>Soft Competences</th>
<th>Groupings</th>
<th>Authors that used these terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>Ability to develop and maintain favorable relations with the client.</td>
<td>Kimmons, R. L. and Loweree (1989)</td>
</tr>
<tr>
<td></td>
<td>Effective communication</td>
<td>PMBOK (2005), APM (2005)</td>
</tr>
<tr>
<td></td>
<td>Interpersonal communication</td>
<td>Gardiner (2005)</td>
</tr>
<tr>
<td></td>
<td>Customer relation</td>
<td>Project management partners (2007)</td>
</tr>
<tr>
<td></td>
<td>Mobilization</td>
<td>El-Sabba (2001)</td>
</tr>
<tr>
<td></td>
<td>Influencing skills</td>
<td>Cowie (2003)</td>
</tr>
<tr>
<td></td>
<td>Influencing the organization</td>
<td>PMBOK (2004), APM (2005)</td>
</tr>
<tr>
<td></td>
<td>Acting strategically</td>
<td>APM (2005)</td>
</tr>
<tr>
<td></td>
<td>Influence people</td>
<td>Brandel (2006)</td>
</tr>
<tr>
<td></td>
<td>Common sense</td>
<td>Gardiner (2005)</td>
</tr>
<tr>
<td></td>
<td>Prudent risk taker</td>
<td>Gardiner (2005)</td>
</tr>
<tr>
<td></td>
<td>Thinking and taking decision</td>
<td>APM (2005)</td>
</tr>
<tr>
<td></td>
<td>Bravery &amp; judgment</td>
<td>Simon &amp; Murray (2007)</td>
</tr>
<tr>
<td>Team working</td>
<td>Gains powerful allies</td>
<td>Blackburn (2000)</td>
</tr>
<tr>
<td></td>
<td>Uses network to gain information</td>
<td>Blackburn (2000)</td>
</tr>
<tr>
<td></td>
<td>Team work</td>
<td>Gardiner (2005), Miranda (2006)</td>
</tr>
<tr>
<td></td>
<td>Team building</td>
<td>Meredith et.el in El-Sabba (2001), APM (2005), Project management partners (2007)</td>
</tr>
<tr>
<td></td>
<td>Consensus</td>
<td>Gardiner (2005)</td>
</tr>
<tr>
<td>Organizing</td>
<td>Organization</td>
<td>Meredith et.el in El-Sabba (2001), Miranda (2006)</td>
</tr>
<tr>
<td></td>
<td>Focusing on result</td>
<td>APM (2005)</td>
</tr>
</tbody>
</table>
Below a brief description of each soft competence is given. This description is necessary as it will be used later to categorize the requirements found in the online job postings. It has been realized that these competences are very broad topics and entire books could be written on each one of them. The focus here is to present a brief understanding of what is meant by the terms.

**Communication:** refers to exchange information in any form such as oral, written, symbolic etc. (Edum-Fotwe and McCaffer, 2000). Apparently it is one of the areas where project managers spend most of their time during the life of the project. PMBOK Guide (2004) refers to project communication management as an activity that involves collection, distribution, storage, retrieval and disposition of the

<table>
<thead>
<tr>
<th>Flexibility &amp; Alertness</th>
<th>Flexibility and alertness</th>
<th>Gardiner (2005), Brandel (2006)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adaptability</td>
<td>Gardiner (2005)</td>
<td></td>
</tr>
<tr>
<td>Perspective</td>
<td>Project management partners (2007)</td>
<td></td>
</tr>
<tr>
<td>Ability to work under pressure</td>
<td>Miranda (2006)</td>
<td></td>
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<tr>
<td>Ability to handle multi task</td>
<td>Miranda (2006)</td>
<td></td>
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<tr>
<td>Creativity &amp; Innovation</td>
<td>Gardiner (2005), Miranda (2006)</td>
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<tr>
<td>Creativity &amp; innovation</td>
<td>Gardiner (2005), Miranda (2006)</td>
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<tr>
<td>Open-mindedness</td>
<td>Gardiner (2005)</td>
<td></td>
</tr>
<tr>
<td>Actively working as a change agent</td>
<td>APM (2005)</td>
<td></td>
</tr>
<tr>
<td>Innovation and change</td>
<td>Simon &amp; Murray (2007)</td>
<td></td>
</tr>
<tr>
<td>Staff recruitment &amp; selection</td>
<td>Miranda (2006)</td>
<td></td>
</tr>
<tr>
<td>Human relation</td>
<td>Brandel (2006)</td>
<td></td>
</tr>
<tr>
<td>Negotiation</td>
<td>Gardiner (2005), Project management partners (2007)</td>
<td></td>
</tr>
<tr>
<td>Negotiation and conflict mgmt</td>
<td>PMBOK (2004)</td>
<td></td>
</tr>
<tr>
<td>Political factors</td>
<td>Simon &amp; Murray (2007)</td>
<td></td>
</tr>
<tr>
<td>Coping with authority</td>
<td>El-Sabba, Meredith et.al in El-Sabba (2001)</td>
<td></td>
</tr>
<tr>
<td>High-self esteem &amp; enthusiasm</td>
<td>El-Sabba (2001)</td>
<td></td>
</tr>
<tr>
<td>Commitment to success</td>
<td>Gardiner (2005)</td>
<td></td>
</tr>
<tr>
<td>Trustworthiness</td>
<td>Gardiner (2005), Simon &amp; Murray (2007)</td>
<td></td>
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<tr>
<td>Fairness</td>
<td>Gardiner (2005)</td>
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<tr>
<td>Attitude- positive can do</td>
<td>Gardiner (2005)</td>
<td></td>
</tr>
<tr>
<td>Acting assertively</td>
<td>APM (2005)</td>
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<tr>
<td>Behaving ethically</td>
<td>APM (2005)</td>
<td></td>
</tr>
<tr>
<td>Managing self</td>
<td>APM (2005)</td>
<td></td>
</tr>
<tr>
<td>Commitment</td>
<td>Gardiner (2005), Miranda (2006)</td>
<td></td>
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</tbody>
</table>
information in the project. Since project involves a number of internal as well as external stakeholders, project manager’s effective communication plays vital role in maintenance of stakeholders’ relation. The four components of project communication management process are: Communication planning, information distribution, performance reporting and managing stakeholders (PMBOK Guide, 2004). However, since the focus of the research is on soft interpersonal communication skills aspects of customer relationship, communication with the stakeholders and issues that deal with resolution of ambiguity have also been considered as part of communication. For the purpose of this research, all competences that fit this description are going to be considered as communication competences.

**Leadership:** helps a project manager lead people and the organization as a whole to achieve project objectives. APM body of Knowledge (2006, p.18) defines leadership as “the ability to establish vision and direction, to influence and align others towards a common purpose, and to empower and inspire people to achieve project success.” Gardiner (2005, p.7) refers leadership to terms such as: shaping goals, obtaining resources, building roles and structures, establishing good communications, seeing the whole picture and moving things forward to a successful conclusion. He further mentions that these skills are different than the ones provided to project managers through training, which mainly have a technical nature. This competence is critical to a successful PM. In addition to this, the importance of leadership, for example is demonstrated by Müller and Turner (2007), when they linked leadership style with project success. Some of the soft competences categories created have overlapping definitions in the literature. Here we can see that Gardiner (2005) also includes good communication as a part of leadership, however skills related to communication will fall under the communication category for the purpose of this research. Similarly motivation, which is usually linked to leadership, has been included in Human Resource Management.

**Problem solving:** is a competence that every Project manager should have to resolve issues that arise on daily basis. Problem definition and decision making are the two main parts of the problem solving. First, causes and symptoms are analysed in order to define the problem which could be internal, external, managerial, interpersonal etc (PMBOK Guide, 2004; APM, 2006; Edum & McCaffer, 2000). The second step is decision making, which refers to the cognitive process that leads to the selection of a best course of action from available alternatives. In this research, aspects of common sense, problem solving and judgement, thinking and taking decision are considered as decision making competence.

**Team working:** “is when people work collaboratively towards a common goal as distinct from other ways that individuals can work within a group” (APM, 2006, p 18). Every project involves a number of people from various backgrounds and cultures to perform various project related tasks. This situation requires managerial competence of working along with groups of people, coordinating and facilitating
them to get the job done effectively. Consensus, team building, delegation, the ability to encourage maximum inputs from team members, involving the right people, gaining powerful allies, and the use of networking to gain information are consolidated under this heading.

**Organizing:** refers to arrangement of: people, material and support resources to meet the organizational objectives successfully (Gardiner, 2005). Even though by Gardiner’s definition organizing involves requirement of both hard and soft skills, our focus here will be to the latter (i.e. soft organizational skill). Moreover, aspects of organization of people side of project and collaboration will fall in other categories. Organization of people, for example, will be considered under human resource management. The competence of collaborating with other people is part of team working. For this research organizing will have a more general meaning that involves the competence of arranging, preparing and attaining orderly and systemized structure in the results of the tasks performed (adapted from the Oxford English Dictionary).

**Flexibility and alertness:** is related to the competence of coping with situations. As the project operates in dynamic environment, flexibility is one of the essential competences of project manager. Similarly, alertness refers to the competence that facilitates managers to see quickly, understand and act in a particular situation in projects (Cambridge Advance Learners Dictionary). The following terms have been considered in the same category: adaptability, perspective, ability to work under pressure and the ability to handle multi task.

**Creativity and innovation:** play an important role in managing projects successfully as they help project managers come up with new solutions to problems. Differently than the problem solving competence, creativity and innovation refers to the new, unique and different while problem solving has a more structured methodology and doesn’t necessarily require that a solution be new. However, creativity and innovation can also lead to solving problems, but in a different way. Both creativity and innovation are related to ‘out of box thinking’ or ability to tackle problems from a different angle. Innovation refers to the new ideas, process or product offering that could be either in the form of product innovation or process innovation, Cooper (1998). It can be said that creativity leads to innovation, creativity deals with idea generation and innovation happens when those ideas are put into practice (Gurteen, 1998). There are some other terms which also represent creativity and innovation such as inventiveness, open mindedness, innovation and change and acting as a change agent.

**Human resource management (HRM):** is an essential ‘subset’ of PM which involves the process that ensures effective use of human resources (PMBOK Guide, 2004). This competence is related to dealing with people in project. Project manager require this competence in order to effectively acquire, manage and motivate people to perform effectively. Even though, HRM is a broad topic covering wide varieties of competences such as communication, team working,
conflict and negotiation etc, this research treats each of these factors as individual competence to fit within the framework of soft competences. Because HRM is such a broad term only the more formal aspects such as staff recruitment, selection, training and evaluating people will be considered under this heading. Motivation, which is a softer aspect of human resource management, has also been included in this category.

**Negotiation and conflict management:** can happen both at the formal and informal arena. Negotiation is related to seeking a consensus, resolving differences and aligning views, it has to do with getting people to agree and to accept and agree upon terms and conditions of a certain situation. Conflict management, on the other hand is “the process of identifying and addressing differences that if unmanaged would affect project objectives” (APM, 2006, p.18). Where there are people, there are conflicts. As a number of stakeholders are involved in projects this requires project managers to have effective negotiating as well as conflict management competence. PMBOK Guide (2004) mentions only ‘negotiating’ where as APM (2006) mentions both negotiation and conflict management separately. Both of these terms have been combined in one category for this research. Other terms such as political sensitivity, political factors etc. are also considered under the periphery of negotiation and conflict management.

**Positive attitude:** Attitude refers to a feeling or opinion about something or someone (Cambridge Advanced Learners Dictionary). It could be negative, positive or neutral. Having positive attitude is one of the essential competences of Project managers. APM (2006) relates positive attitude as behavioral characteristics as a function of values, beliefs, and identity. For the purpose of this research, it also includes commitment to success, high self esteem and enthusiasm, trustworthiness, fairness, can do attitude, acting assertively, behaving ethically, coping with authority and managing self.

### 3.4.4 Hard competences

The foundation of hard competence is associated with traditional construction and defense industries based projects; it refers to the set of essential competences for managing such projects (Bourne and Walker, 2004). According to Pollack (2007) hard competence refers to: structure, control and efficiency. El Sabaa (2001) goes as far as saying that project managers require relevant experience or knowledge of the technology involved in the project to be successful. This author refers technical skills to the following: special knowledge in the use of tools and techniques, project knowledge, understanding methods, processes, and procedures, technology required, and skills in the use of computer.

As mentioned earlier, the PM literature gives a lot of focus in the hard competences. These competences are associated to the technical knowledge and skills necessary for the use of tools and techniques while managing projects. There are several such tools and techniques available in PM: baseline plan, Gantt chart, project charter, progress report, scope statement, activity list, work breakdown structure, just to name a few. In addition
to this, there are growing numbers of PM software that aim to facilitate managing projects. With all these tools and techniques available the project manager needs to have hard competences to be able to understand and utilize them to manage projects successfully. But not all tools and techniques are appropriate all the time. The project manager needs to know what to use and when. For the context of this research, hard competences can be viewed as an umbrella topic including all those knowledge and skills necessary for understanding and using PM tools and techniques.

The study of tools and techniques is one of the key areas in researching PM practices because they are means used by project managers to achieve the desired results (Besner and Hobbs, 2006). This requires practical know-how from managers regarding the use of those tools and techniques that are different from the soft competences described in section 3.2.3. Koskinen, Pihlanto, and Vanharanta (2003) refer to these technical competences as an important part of organizational tacit knowledge assets. According to these authors the integrated use of tools and techniques is complex in nature and hard to replicate. Here, the authors’ “technical competence” is hard by nature. However, Koskinen, Pihlanto, and Vanharanta’s (2003) description would lead one to conclude that, similar to Söderlund (2005), they view competence as an organizational capability.

Among the many studies related to tools and techniques the one from White and Fortune (2002) stands out. They conducted a survey of 995 project managers to judge the effectiveness of the tools and techniques in PM. The research revealed that most of the respondents used only a small number of PM tools and techniques. Among them, PM software and Gantt chart were the mostly used. Besides, almost half of the respondents expressed drawbacks of the tools and techniques that they used.

Besner and Hobbs (2006) also present interesting findings. Their research was, based on the large scale survey of 753 PM practitioners and had the objective to answer four questions related to PM practices. One of those questions is of extreme relevance to hard competences, since it tries to determine which practices professionals find most valuable. To answer this question their study focused on 70 PM tools and techniques and their potential contribution to the successful implementation of projects. The findings highlighted a list of tools and techniques classified in three categories: “less than very limited use”; “very limited to limited use”; and “extensive use”. It also concluded that the seven most often used tools that have the greatest potential to improved project performance are: [1] lesson learned/post-mortems, [2] requirement analysis, [3] scope statement, [4] work breakdown structure, [5] PM software for monitoring schedule, [6] PM software for task scheduling, and [7] PM software for resource scheduling. The study further mentions that these results were more significant to large projects for external customers than smaller projects for internal customer.

As there are several types of methodologies, tools and techniques in PM, it is essential to put them into systematic framework. PMBOK Guide (2004) divides the big picture of PM into nine knowledge areas. However, only 7 out of 9 knowledge areas are related to hard competences (see Table 5). The other two (project communication management and project human resource management) maybe classified as soft competence.
But there are other studies with different perspectives. Turner (1999), for example, highlights six areas of PM functions, where all areas are related to hard competences. Meredith and Mantel (2000) approach is based on the life cycle based framework of PM. A more recent study (Simon and Murray, 2007) highlights the importance of both hard and soft skills for the project manager, which has already been shown in figure 5. They presented EngagementWork’s set of hard competences called Methodological and Operational Competences (MOCs). Table 5 depicts these various perspectives of PM hard competences.

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<tbody>
<tr>
<td>Project Scope Management</td>
<td>Managing Scope</td>
<td>The requirement</td>
<td>Project planning</td>
</tr>
<tr>
<td>Project Time Management</td>
<td>Managing time</td>
<td>Roles and responsibilities</td>
<td>Scheduling</td>
</tr>
<tr>
<td>Project Cost Management</td>
<td>Managing cost</td>
<td>Earned value, Benefit management</td>
<td>Budgeting and cost estimating, Resource allocation</td>
</tr>
<tr>
<td>Project Quality Management</td>
<td>Managing quality</td>
<td>Quality management</td>
<td>-</td>
</tr>
<tr>
<td>Project Risk Management</td>
<td>Managing risk</td>
<td>Risk management</td>
<td>-</td>
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<tr>
<td>Project Procurement Management</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Project Integration Management</td>
<td>Managing project organization</td>
<td>Governance, Methodology, ICT systems, Policy, Configuration</td>
<td>Project organization, Monitoring, Control</td>
</tr>
</tbody>
</table>

As can be seen on Table 5, in spite of different perspectives taken by other authors, all of them can be in some way classified under the 7 general knowledge areas of the PMBOK Guide (2004). For instance, areas such as scope, time, cost and quality are very similar to each other in all of those perspectives. There is higher degree of similarity among PMBOK Guide (2004) knowledge areas, the PM functions mentioned by Turner (1999) and the MOCs by Simon and Murray (2007). Despite the fact that the life cycle based of PM from Meredith and Mantel (2000) has fewer similarities, their main points can also be compared to the PMBOK Guide (2004) knowledge areas. In this way, the approach adopted by PMBOK Guide (2004) appears to be most comprehensive and general from all of them when dealing with hard competences. Hence, this study will use the PMBOK Guide (2004) seven knowledge areas that can be considered hard to classify the content of PM online job advertisements in regards to the hard technical skills.

In addition to the seven knowledge areas, this research included an additional one: PM software related competences. As there has been growing use of software in PM for various purposes such as: software to manage time, cost and risk, it is essential for the managers to have competence regarding these tools. Not only the research of White and
Fortune (2002) mention the use and importance of PM software but also it is vividly illustrated by the work of Besner and Hobbs (2006). This approach is similar to the methodology used by Koong and Liu (2006), which also chose the PMBOK Guide’s (2004) knowledge areas to classify IT project managers’ job descriptions.

There are number of literatures which suggest that PMBOK Guide is an important guide and it has been used by various organizations to assess the competences of their project managers. Besner and Hobbs, (2006) mention that PMBOK Guide (2004) outlines an extensive set of tools and techniques for managing projects that are not only valuable but also applicable to most of the projects most of the time.

The PMBOK Guide (2004) was developed by the Project Management Institute (PMI). The PMI is a recognized institution in the field; it also publishes the Project Management Journal and the PM Network magazine. The creation of this guide involved the consultation and feedback of a global network of PM practitioners working as volunteers (Crawford, 2000). The PMBOK Guide (2004) has been approved as an American national standard as of 2000. Its main purpose is to enhance the understanding and competence of PM professionals in the area (Gardiner, 2005).

One of the main reasons why this research uses the Guide for the classification of hard competences is because of its wide recognition, acceptability, and similarity to others work as well as its comprehensiveness in including most of the hard competences. In 1999 nearly 300,000 copies had been distributed worldwide (Crawford 2000). Another indication of the importance of the PMBOK Guide (2004) is its huge contribution to the development of other PM handbooks, such as the AIPM’s body of knowledge in Australia (Stretton, 1995).

A synthetic summary of the 7 knowledge areas has been elaborated to give a general idea of what each area covers. For further detail please consult the PMBOK Guide (2004). In addition to these 7 areas the PM software related competence which was added in the list is also described briefly.

**Project integration management:** involves the integration of a wide number of techniques. It ranges from developing project chartered to project closure. Project integration management ensures the understanding of overall PM as a big picture. PMBOK Guide (2004, p.9) defines project integration management as “the process and activities that integrates the various elements of project management, which are identified, defined, combined, unified, and coordinated within the project management process group.” This knowledge area includes the following:

- Develop project charter,
- Develop preliminary project statement,
- Develop project management plan,
- Direct and manage project execution,
- Monitor and control project work,
- Integrate change control, and
- Close project management processes
Project scope management: deals with the task of deciding what to include and what not to include in the project. Project scope management can be defined as the ‘process’ which will help to identify and define project deliverables as well as activities necessary to achieve them (APM, 2006). Understanding of particular project’s boundaries is essential to complete them within its defined time, cost, and quality constraints. The following areas of project scope management are highlighted by the PMBOK Guide (2004):

- Scope planning,
- Scope definition,
- Create WBS,
- Scope verification, and
- Scope control project management process

Project time management: involves tactical consideration while dealing with time and helps managers to work more efficiently (Clemens, 2005). Time is one of the three main constraints when dealing with projects, alongside cost and quality. The ability to manage time ensures that projects will be completed within the planned period. The development of IT has greatly contributed to time management, software like Microsoft Project help to visualize delays so actions can be taken. According to the PMBOK Guide (2004) project time management process includes:

- Activity definition,
- Activity sequencing,
- Activity resource estimating,
- Activity duration estimating,
- Schedule development, and
- Schedule control

Project cost management: ensures that the projects are completed within budget (PMBOK Guide, 2004) or with the lowest cost possible without compromising the other two constraints, time and quality. Blocher et al. (2006), emphasizes the need to manage cost related information, which could be financial or non-financial and both short- or long-term. Lack of cost management competence leads to project cost-overrun. The PMBOK Guide (2004) considers the following component within project cost management:

- Cost estimating,
- Cost budgeting, and
- Cost control

Project quality management: is all about management and hard work, it does not depend on luck or on confidence (Rose, 2005). This author explains that quality is a continuous process which involves planning, careful consideration of contributing elements, disciplined processes and tools. Moreover, quality can be seen from two different perspectives i.e. broad and narrow. The broad perspective perceives quality as the ‘fitness for purpose’ whereas the narrow perspective perceives ‘degree of conformance of the outputs and process’ (APM, 2006 p.9). Both of these
perspectives have to be taken into consideration for quality management in projects. The PMBOK Guide (2004) highlights the following area of quality management:

- Quality planning,
- Perform quality assurance, and
- Perform quality control

**Project risk management:** is a fundamental aspect of PM because projects are usually carried out in an environment of uncertainty. There are many tools and techniques that aid managers in managing risk (Boyce, 2003). Among them are: risk analysis, risk register, risk model, and active risk management in order to mitigate the potential risks and ensure that projects are concluded successfully. The main contribution of project risk management is to increase probability and impact of positive events and decrease probability and impact of negative events (PMBOK Guide, 2004). It includes the following:

- Risk management planning,
- Risk identification,
- Qualitative risk analysis,
- Quantitative risk analysis,
- Risk response planning, and
- Risk monitoring and control

**Project procurement management:** is one of the key activities in the PM as it generally involves a large share of project budget. Project procurement management refers to the processes of obtaining necessary products, services or results to carry out the work in the project (PMBOK Guide, 2004). It further highlights the following components of project procurement management:

- Plan purchase and acquisition,
- Plan contracting,
- Request seller responses,
- Select seller,
- Contract administration, and
- Contract closure

**Project management software related competence:** is an essential competence for managing projects in the modern time. As has been defined by Encyclopedia of Britannica "software comprises the entire set of programs, procedures, and routines associated with the operation of a computer system." The same definition applies in the use of project management software though some of them might have project specific applications. With the development of information technology these software are emerging in the recent time with the aim to help managers plan, estimate, track, and visualize the project activities in a systematic way. Since PM generally involves the management of a number of projects at a time, it is not easy for project managers to manage hundreds of activities without software. Some of the widely used project management software are: Microsoft Project, Microsoft Visio, and Suretrack.
4. Research Methodology

Many methodologies could have been applied to find out which competences organizations currently require from project managers. For example, one way would have been to do a case study in a specific company or multiple case studies from companies in different industries to assess the most important competences desired from project managers. Another way would have been to send out questionnaires. Among the possible options, the one that proved to be most appropriate was content analysis of online job advertisements. Not only is this methodology well established for this purpose, as has been shown in the similar studies section (3.1.), it is also a less expensive way to accomplish the research objectives. Another reason that led to this methodology is because it does not depend on others for response; it only depends on the researcher’s effort and ability to search for the appropriate advertisements and to analyze the content. Therefore, because it is a well established methodology for investigating the competences in a particular field and it presents a cheap and independent approach, content analysis of online job advertisements is the methodology chosen for this research. Section 4.1 explains in detail the content analysis methodology.

Although content analysis is a good methodology to attain the objectives of this research it was decided to complement the findings with semi-structured interviews of PM practitioners and academics. By combining two methodologies it is possible to do a more in depth study and to reach more robust findings. The semi-structured interviews bring a different perspective into the research and serves to create triangulation in the findings. Bryman and Bell (2003) explain that the confidence in the findings can be increased by using more than one methodology; they particularly emphasize the combination between quantitative and qualitative methodologies and how the latter can add relevant information that supports the findings of the first. Section 4.2. is dedicated to explaining the semi-structured interview methodology.

4.1. Content Analysis

Content analysis can be considered as a technique that allows researchers to make “replicable and valid inferences” from the content of data (Gallavin, Truex, and Kvasny, 2004). Neuendorf (2002 p.1) defines content analysis as “the systematic, objective, quantitative analysis of message characteristics.” Similarly, to Neuman (2000) content analysis is a technique for examining information or content, in written or symbolic materials, which tries to count the number of times certain words or themes occur. Both Neuman (2000) and Neuendorf (2002) highlight the growing popularity as well as applicability of this method in diverse area of research for instance: exploratory, explanatory, descriptive research and so on. Content analysis can be applied to TV commercials, films, political speeches, novels and much more, the methodology can also be computer-driven (Neuendorf, 2002). For this research Excel and SPSS have been used to aid in the quantitative analysis of the content in online job advertisements.

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3 Triangulation: “The use of more than one method or source of data in the study of a social phenomenon so that findings may be cross-checked” (Bryman and Bell, 2003 p.575)
The first issue in content analysis is to identify the body of material to analyze and then to establish a system of recording specific aspects of it. In the context of this research, an analysis of the content of online job advertisement for project managers was conducted to ascertain the competences that are desired by the employers. Simply speaking, this research is about counting the number of times a particular competency occurs in the online job advertisements analyzed. The purpose of doing this is to identify and develop a priority of importance for the desired PM competences and to contrast between the natures of these competences. The main goal is to determine if the organizations do recognize the importance of soft interpersonal competences or if they primarily focus on the hard technical competences of PM.

As others research methods there are advantages and disadvantages related with content analysis. According to Bryman and Bell (2003) on the positive side, it is very transparent because of its use of coding scheme and sampling procedure. It provides some amount of longitudinal analysis which can help to track changes over time. For example, years from now other researchers can use our findings and framework to see the changes in the competences required by employers for PM professionals. Similarly, content analysis is an ‘unobtrusive method’ which does not require researchers to take participants into account. It is more flexible method with its application to diverse areas and also help in collecting information related to social groups which are difficult to gain access. Moreover, Neuman (2000) adds that content analysis is useful for problems that involve large volume of text and in revealing messages which are rather not easy to see with casual observation.

On the negative side, Bryman and Bell (2003) mention that quality of research depends upon the document. Therefore, the researcher should be careful about authenticity, credibility and representativeness of such documents. Neuman (2000) also presents the similar view and mention that content analysis lacks to consider the authenticity or quality of literature that is being used for analysis. Since online job advertisements are published in well known web sites, it can be assumed that they are authentic documents and represent quality material for the purposes of this research. Another factor that represents a problem regarding content analysis is that it is impossible to devise coding manuals that do not entail some interpretation on the part of coders. Furthermore, there are some criticisms that content analysis is atheoretical. In this research efforts were made in order to overcome such limitations. One action taken to minimize the disadvantages related to content analysis was not to depend solely on its results and to triangulate the findings using semi-structured interviews. Another step taken was to carefully compile a coding scheme that minimized personal interpretation. Also the analysis was done by two researchers, so they could discuss and categorize the competences in such a way to minimize personal biases.

The coding scheme is an indispensable part of content analysis. According to Bryman and Bell (2003) the key elements of a coding scheme involve: designing a coding schedule and designing a coding manual. Coding schedule, according to authors, refers to the ‘form’ of coding the content; it refers to the variables that will be considered when analyzing the data laying out the scope of the study. On the other hand, coding manual
refers to the statement of instruction which provide information regarding classification categories to be used and rules associated to classification. The Coding manual provides important information to the coder as it ensures that the content will be coded in a consistent manner. As the reliability of coding is one of the important consideration in content analysis, due attention was given while designing such documentation. The coding scheme is presented in section 4.1.2.

### 4.1.1. Coding Scheme

The coding scheme is presented in table 6. On the left hand side can be seen the coding schedule, or in other words, what variables are being analyzed in this study. On the right column the categories and their respective codes are presented, this represents the coding manual, which can also be thought of as the content analysis dictionary, it enables the data to be coded consistently, Bryman and Bell (2003). The scheme is used to instruct the researcher on the rules for classifying the information found in the data.

<table>
<thead>
<tr>
<th>Information</th>
<th>Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country of the job opportunity</td>
<td>(1) USA, (2) Canada, (3) UK, (4) Germany, (5) Australia</td>
</tr>
<tr>
<td>Industry of Organization</td>
<td>(1)Engineering and construction, (2) Information system, (3) Organization and Business.</td>
</tr>
<tr>
<td></td>
<td>* Adapted from Müller &amp; Turner (2007 p.24)</td>
</tr>
<tr>
<td>Level of Position</td>
<td>(1) Entry Level, (2) Middle Level, (3) Senior Level.</td>
</tr>
<tr>
<td>Degree Required</td>
<td>(0) Not mentioned, (1) High-School, (2) Bachelor, (3) Masters, (4) Doctorate</td>
</tr>
<tr>
<td>Experience in PM</td>
<td>Will be recorded as a numerical variable. The average number of years of PM related experience will be recorded. If not mentioned the field will be left blank. Industry related experience will be disregarded.</td>
</tr>
<tr>
<td>PM Certification Required</td>
<td>(0) Not required (1) Required</td>
</tr>
<tr>
<td>Industry Specific Knowledge</td>
<td>(0) Not mentioned, (1) Wished but not required, (2) Required</td>
</tr>
<tr>
<td>Hard Competences</td>
<td>(11) Project integration management, (12) project scope management, (13) project time management, (14) project cost management, (15) project quality management, (16) project risk management, (17) project procurement management. (18) PM software competence</td>
</tr>
</tbody>
</table>

In order to classify the content of the online advertisements more rigorously and to give a more detailed explanation of the process undertaken a need was felt to further develop the
coding manual. A more detailed explanation is given below of the process done and how the information was categorized. Some of the variables are quite straightforward and do not require thorough explanation as opposed to others that represented more of a challenge to code and are explained in more detailed. Special attention is given to the competence classification.

**Country of the job opportunity**
The country of the job opportunity was quite straightforward to code. This variable was coded according to where the project manager would work or if not specified where the company that was advertising was located. The codes followed the order presented in table 6.

**Industry of Organization**
The industry of organization required some adjustments. A wide range of industries were encountered in the advertisements. Therefore, it was decided to use Müller and Türner’s (2006) classification of application area of projects which narrowed the industries into the three main categories presented in table 6. For the 1st category (1) Engineering and Construction the classification was quite straightforward. Most of the advertisements specifically mentioned Engineering or Construction, companies in the Aviation and Energy sector were also considered in this category because they are more related with engineering than any of the other categories. For the 2nd category (2) Information system organizations related to Information Technology (IT) as well as Telecommunication were codified under this category. Finally all the other industries were considered to be in the 3rd category (3) Organization and Business; organizations related to financial services, banking, entertainment, logistics, utilities, recruitment solutions, training, consulting and biotechnology and pharmaceuticals were included in this category.

**Level of Position**
The level of the position was not so quite straightforward. Some positions clearly stated the level of the position from the title of the advertisement. Such as Senior Project Manager, which was classified as (3) Senior Level and Internship, which was classified as (1) Entry Level. However for the most of them a judgment call was necessary since the advertisement didn’t specifically mention the level. Advertisements which required a lot of past experience and were very demanding on the competences required were classified as (3) Senior Level, those that didn’t require any experience, were looking for graduates and weren’t so rigorous in the competences required were classified as (1) Entry Level. Those that fell in-between those two descriptions were coded as (2) Middle Level positions.

**Degree Required**
The degree required didn’t represent a very difficult task for coding. Whichever degree was required in the advertisement was coded accordingly following the categories in table 6. However, when more than one degree appeared in the advertisement the higher one was chosen. For example if the advertisement required a Bachelors degree but preferred a Masters the latter was chosen because it was assumed candidates with that degree would have an advantage in the selection process.
Experience in PM
For experience it was only looked at PM related experience. If the advertisement required 3 years experience as an IT programmer for example that information was disregarded. But if it mentioned 4 years of PM experience it was coding accordingly. For advertisements that gave a range such as 4 to 6 years of experience the average was coded, in this case 5. For those advertisements that simply said experience required, several years of experience, significant or extensive experience required that information could not be coded because it was not specific enough. The intention was to look at how many years of experience was required and not only if it was required or not.

PM Certification Required
PM Certification was coded as either (0) not required or (1) required. If the advertisement did not mention any PM certification under the desired competences for the job it fell under the (0) not required, the underlying assumption is that if it is not mentioned it is not required. In the case of (1) required even if the advertisement said it preferred a PM certification and not necessarily required it was coded under this option. The underlying assumption is that a candidate that does have a certification will have more chances of obtaining the position. It is not the intention of this study to look at which certification was required as it may vary from country to country and it was also assumed that a professional with any of the relevant certification would be considered for the position. Mentions of certifications such as PMP, APM, and AIPM all fell under this category.

Industry Specific Knowledge
Another aspect of PM that was looked at was if it could be understood as an independent profession or not. The interest to analyze this variable arose after the search for the advertisements had started and it was observed that most of them required industry specific knowledge. It was observed that if the advertisement was offering a job for project managers from a specific sector, such as engineering, it required some knowledge about engineering, or in the IT sector, it demanded some programming skills. Therefore, it was also decided to look if the advertisements required industry specific knowledge or not. Three categories were created to measure this variable, as can be seen in table 6. If the advertisement didn’t mention any industry specific knowledge and all the requirements were PM related than it was classified as “not mentioned”. If the industry knowledge was preferred but not necessarily required it was classified as “wished but not required”. However, if the advertisement asked for previous experience in a specific sector, for industry specific knowledge or if it required a degree different than management it was classified as “required”.

Competences
To code the competences required the analysis of the whole advertisement. Both the section where clearly stated the requirements for the candidate as well as the section that gave a description of the tasks that needed to be executed were emphasized. By looking at the task descriptions it is possible to identify which competences are being asked for. The descriptions given in the sections 3.4.3 (Soft Competences) and 3.4.4 (Hard Competences) were used in order to categorize the job advertisement requirements.
However, for both soft and hard competences it is valuable to show the criteria used for categorizing the competences and what type of words, sentences and expressions were coded under each of them. This helps clarify to the reader the coding process.

**Soft Competences**
The soft competences have been taken out of the table 4, which was compiled based on the work of different authors. In total 10 soft competences categories were identified. Below a detailed explanation is given about what was considered under each competence and real examples are presented to provide transparency in content analysis the process.

(1) **Communication** – Sentences that clearly stated communication as well as things such as building or managing relationships, third parties or stakeholders, dealing with information, presentations, reporting, documentation, and language skills, for example, were all coded under communication. The reason to have relationship related ideas under this category is because it is believed that a good relationship is only achieved through good communication between the parties. Some examples coded under communication are given below:
- Ability to communicate effectively across all levels of organization, including executive management;
- Excellent Speaking and writing skills;
- Ability to write reports, business correspondence, and procedure manuals;
- Fluent with multiple languages particularly helpful;
- Maintain a good professional relationship with the client, acting as first point of contact for any issue or query;
- Keeping senior stakeholders in the picture with presentations on how the projects are tracking.

(2) **Leadership** – The sentences that were coded under leadership included sentences that clearly mentioned the word leadership as well as the ones that included things such as mobilization, influencing people, acting strategically, direction (roadmaps), coaching and mentoring. Acting strategically was included under leadership because leaders are able to see the complete picture and establish a vision and direction; therefore, they need to have a strategic mind frame. Some examples coded under leadership are given below.
- Establish roadmaps;
- Demonstrated the ability to lead and manage project teams;
- Demonstrated tactical and strategic focus is preferred;
- “Driver” mentality;
- Champion and enforce best practice to the entire team;
- Ability to influence.

(3) **Problem solving** – Sentences that clearly mentioned both parts of this competence problem identification and decision making were coded in this category. Analytical skills were also included under problem solving. Some examples coded under problem solving are given below.
- Make decisions on problem resolutions;
• Possess excellent analytical skills;
• Must be able to solve practical problems and deal with variables in situations where only limited standardization exists;
• Selecting and implementing application solutions;
• Trouble-shooting mentality;
• Proactively identify potential problems.

(4) **Team working** – For team working a distinction was made between being part of a team and managing a team. When the advertisement mentioned managing a team it was classified as human resource management competence, but when it talked about working in and being part of a team it was coded under this category. Other words that fell under this category include gaining allies, involving people, managing or running team meetings and being part of team. Some examples coded under team working are given below.
  • Conduct project team meetings;
  • Proven cross-functional team success;
  • You will be part of an international project team;
  • Team working skills;
  • Team environment;
  • Team player;

(5) **Organizing** – This category was limited to sentences or words that mentioned the competence of being organized or organizing. Some examples coded under organizing are given below.
  • Be responsible for organizing;
  • Must possess excellent organizational skills;
  • Organized;
  • Organization ability;
  • Strong organizational skills;
  • Project managers who are organized.

(6) **Flexibility & alertness** – For this category sentences that mentioned a fast paced and dynamic environment were included under flexibility. As it was assumed that to work in such environments requires the project manager to be flexible and alert. Also things that referred to: multi-tasking, multiple-work and being detailed or paying attention to detail were included under this category. Some examples of coded under flexibility & alertness are given below.
  • Fast-paced environment;
  • Experience in a multiple project environment preferred;
  • Manage multiple project plans concurrently and prioritize tasks appropriately under changing conditions;
  • Very flexible and able to work under pressure;
  • Your core task and responsibility is to manage different projects;
  • An eye for detail.
(7) Creativity & innovation – This category included both the competence to act creatively and innovatively as the competence to foster such behavior within the participants of the project. It included sentences that either mentioned the word creativity and innovation or called for forward thinking and the ability to identify opportunities. Some examples coded under creativity & innovation are given below.

- Create an atmosphere of innovation
- Promote forward thinking and guide reengineering discussions toward process and technology improvements aimed at increasing efficiency and productivity in business operations
- Support areas with structural problems by using existing or new processes
- Allows the teams to concentrate on developing creative content
- Creative decisions
- Ability to identify project opportunities

(8) Human resource management (HRM) – For this competence all the sentences that referred to the more formal human resource management procedures were included such as selecting, training and motivating staff. Also the general competence of managing people or teams was included under this heading. Some examples coded under human resource management are given below.

- Internal management accountabilities including staff management;
- Determination of manpower requirements;
- Experience in managing (medium to large) multi-person, multi-disciplinary teams;
- Provide training where necessary on techniques or existing processes;
- Talent for creating a motivating working environment;
- Good people management skills.

(9) Negotiation and conflict management – All the sentences that mentioned the competence of negotiating and managing conflicts were coded in this category. Some examples coded as negotiation and conflict management are given below.

- Manage issue resolution
- Conflict resolution;
- Good negotiation skills;
- Act as the catalyst for any resolution;
- Issues management;
- A born negotiator.

(10) Positive work attitude – This category included all the sentences that referred to general competences related to positive working attitude. Words such as result oriented, performance oriented, self-starter, positive and proactive and sentences that mentioned an overall willingness to respond to additional duties as they appeared were classified under this competence. Some examples coded as positive work attitude are given below.

- Professional conduct at all times;
- A self-starting, results oriented, positive and proactive;
• Ability to work autonomously;
• Result-driven and hands-on working style;
• Undertake ad-hoc activities within the scope of these responsibilities, which are requested by management from time to time;
• Hard working, Reliable.

**Hard Competences**
The hard competences were classified mainly on the knowledge areas of the PMBOK Guide (2004) as has been explained in section 3.4.4. Software competence was also added to this category. A total of 8 competences are classified under this heading, however the numbering system is a continuous one and comprises all the 18 competences that are being analyzed, both hard and soft. Following the same approach taken for the soft competences a detailed explanation is given and real examples are presented to provide transparency in the process.

**(11) Project integration management** – This category is a broad category by nature. It includes general sentences about PM and words such as PM methods, processes and vague terms about PM. Also sentences that mention dependencies, the whole life-cycle of the project, monitoring and controlling progress and the adherence to deliverables and objectives were classified under this heading. The reason for that is because it was assumed that, for example, if the candidate is comfortable running projects, has a track record of successful projects or is able ensure project delivery according to specifications he possess all the PM competences and is able integrate them all to achieve the results. Some examples coded as project integration management are given below.

• Comfortable running the project;
• Track record of successful projects;
• Solid project methods; project management skills;
• Monitoring project progress and other performance indicators;
• Coordination of project interfaces;
• Ensuring the delivery of projects;

**(12) Project scope management** – The category of scope management included all the sentences that specifically mentioned scope management, required planning competence, talked about defining or understanding requirements and the ones that mentioned changes. The reason for including changes into scope management was because a project manager needs to control the changes in order to manage the scope of the project. It is project scope management competence that allows the project manager to control what is and what isn’t part of the project, which is also why requirement definition was included under this heading. Some examples coded as project scope management are given below.

• The Project Manager will plan;
• Project scope definitions;
• Tracking changes;
• Definition of the project;
• Identification of ongoing changes within existing projects;
• Works with internal and external stakeholders to develop a clear understanding of the requirements.

(13) **Project time management** – This competence was fairly easy to code. Time management competences tended to stand out and little doubt occurred during the coding process. Sentences that mentioned time, tracking milestones, prioritize and creating as well as monitoring schedule all were coded under this classification. Some examples coded as project time management are given below.

• Key work packages to be delivered on time;
• Prepare project schedule;
• Monitor the project's progress in terms of planned versus actual schedule;
• Outstanding time management skills;
• Monitoring of project milestones;
• Delivers the project within agreed time;

(14) **Project cost management** – This category was also easily identifiable. All sentences that mentioned words such as budget, finance, tracking expenditure were included under project cost management. Depending on the way the sentence was formulated mentions of resource management was also included into cost management. If it was understood that they were talking about resources other than people they were classified as cost management. The reason for that is because the way resources are managed will influence the costs of the project. Some examples coded under this heading are given below.

• Ensures adherence to budget;
• Tracking project costs;
• Earned Value;
• Estimates;
• Proven track record delivering projects within budget;
• Able to effectively manage, allocate and co-coordinate resources.

(15) **Project quality management** – This category included all mentions of words such as quality, improvements, compliance with quality procedures or regarding the quality of the end result and its usefulness to the client. Some examples of coded as project quality management are given below.

• High-quality results;
• Commitment to continuous improvement;
• Quality plan;
• Be fully aware of the Company Quality Policy and comply with the Quality Procedures and instructions;
• Be able to effectively manage to a high standard of quality;
• Your task is to ensure the solution works for end users.
(16) Project risk management – The sentences classified under this competence include all sentences that mention things like risk, risk identification, risk mitigation, minimizing risk, creating contingency plan and so on. Some examples coded as project risk management are given below.

- Risk identification, mitigation and reporting;
- Plans and defines project risks;
- Risk Management;
- Minimizes risk;
- Contingency plans;
- Supervise risk assessment and proactively drive risk mitigation.

(17) Project procurement management – This category included all words that related to obtaining quotes, bids or offers from suppliers, developing resource requirements and managing contracts from suppliers. Everything that was related to what would be procured and when fell under this category. Some examples coded as project procurement management are given below.

- Develop project resource requirements;
- Obtaining quotes from suppliers;
- Develop and manage vendor contracts / agreements;
- Including Procurement, RFP and Contract Management;
- Responsible for advising on the validity of the quotation document information;
- Evaluate, test, specify and procure novel process technologies.

(18) PM software competence – The last hard competence that was analyzed dealt with PM related software. General software such windows or Microsoft office were disregarded. The same with industry specific software competence such as specific applications related to programming, in the case of IT advertisements, or graphic designing for marketing positions. Only PM related software was considered. Some examples of PM related software that appeared in the advertisements include MS Project, Visio and Suretrack.

Following this detailed explanation regarding the criteria used for coding it is possible to have a good understanding of how content analysis was conducted in the PM online job advertisement analyzed. For a more graphic explanation please refer to Appendix 1.

4.1.2. Selection and collection of online job advertisements
As a result of a search in six selected websites, two hundred online project manager job posting advertisements (ads) were collected during the month of September 2007. The six websites were selected because they were the ones with higher amount of PM job offer. From these 200 online advertisements, 50 were selected randomly to be thoroughly analyzed using content analysis methodology (see table 7).
An effort was made to create a diverse group which includes job advertisements for project managers from various industries such as IT, Finance, Marketing, Construction, Logistics, Pharmaceutical and various countries. This strategy was taken due to the multidisciplinary characteristic of PM and as a form of avoiding biases of competences related to one specific industry or country. The study only considered advertisements published in English and those postings that clearly specify job title ‘project/program managers’. However, there was no geographical delimitation. Table 8 shows the number of advertisements from each country regarding the 200 advertisements originally collected. It also depicts the number of advertisement per countries of the sample selected and analyzed. The process of data collection consisted in entering the web sites mentioned in Table 7 and searching for jobs consisting project management or project manager as key words. After that the advertisements that appeared were randomly selected to be part of the study. When the random sample of 50 advertisements was chosen, content analysis was applied in order to conduct the study.

### Table 8 – Geographical disposition of job advertisements collected and analyzed

<table>
<thead>
<tr>
<th></th>
<th>Collected</th>
<th></th>
<th>Analyzed</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>%</td>
<td>Number</td>
<td>%</td>
</tr>
<tr>
<td>Australia</td>
<td>63</td>
<td>32%</td>
<td>17</td>
<td>34%</td>
</tr>
<tr>
<td>USA</td>
<td>58</td>
<td>29%</td>
<td>15</td>
<td>30%</td>
</tr>
<tr>
<td>UK</td>
<td>42</td>
<td>21%</td>
<td>9</td>
<td>18%</td>
</tr>
<tr>
<td>Germany</td>
<td>25</td>
<td>13%</td>
<td>9</td>
<td>18%</td>
</tr>
<tr>
<td>Canada</td>
<td>7</td>
<td>4%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Others</td>
<td>5</td>
<td>3%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>200</strong></td>
<td><strong>100%</strong></td>
<td><strong>50</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

### 4.2. Semi-structure interview

As mentioned earlier, this research not only depends upon the content analysis which is based on secondary data but also includes empirical data collected through semi-structure interview. There could be a number of ways of conducting interview such as structured interview, semi-structured interview, unstructured or focused interview, and groups and focus interviews etc. However, for the purpose of this research, the semi-structure interview was chosen. According to May (2001) this method is the hybrid of both structured and unstructured/focused group. The author also highlights that interviewer
will normally have a set of questions to be asked similar to that of structured interview; however, he/she can vary the sequence of the questions depending on the circumstances in the interview. Furthermore, unlike structured interview, there is the possibility for the researcher to clarify the questions and ask further according to the responses if needed. This approach is applied in this research because it not only allows interviewee to provide responses on their own terms compared to standardized interview but also holds a greater structure for comparability than unstructured interview. As the respondents are from various cultures and background, it is believed that semi-structured interview would be more useful.

As other research methods, semi-structure interview is also not free from limitations. On the one hand, it is simple, moderately flexible and one of the useful methods to conduct interviews. On the other hand, it has some issues that need to be taken into account to ensure the quality of data collection. May (2001) points out that the first issue is to carefully examine the role of interviewer and its impact on the respondent and the material collected to avoid the possible bias. The second issue is about cognitive capability, for instance, the interviewee should be aware of what is being asked and expected out of him/her. The third issue is related to motivation because if the respondents are not valued for their response as well as cooperation or if they have the doubt of misuse of information, the interviewer is unlikely to get a good response. Moreover, it is generally not easy to get access to managers due to a number of reasons: business, issue of power and status especially at senior level, cost of time for instance (Bryman and Bell, 2003). There is also the issue of the complexity of people and complexity of communication in interview (O’Leary, 2004). Therefore, this author not only highlights on necessity of realistic consideration of issues but also advocates the issues related to including the representation and access, development of contingency plan to avoid possible failure of key interviews. Also, familiarization with the plan, consideration on languages to be used and cultural issues, drafting interview questions, doing pilot interview and making necessary adjustment are required to make this type of interview successful.

4.2.1. Selection of Interviewee
Semi-structured interview of nine project managers and academics has been done to collect empirical data. The selection of the respondents was done based on a convenience sample. Personal contacts were used to attract possible respondents for this study. This strategy was used to mitigate the risk of not finding willing respondents, as managers are busy people and it is not easy to get their time if they do not know who you are. The selected respondents are people that have an extremely relevant PM background; including authors of studies in the area and PM professionals, who have either occupied important positions in the past or are still working with projects on a day to day basis. The interviewees come from different industries such as oil and gas, NGO, construction and engineering, education etc. Not all participants have had formal PM

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4 Convenience sample: “A sample that is selected because of its availability to the researcher. It is a form of non-probability sample” (Bryman and Bell, 2003 p.568)
training but some are quite highly qualified in the field and are academically active having books and papers published. The table 9 gives a glimpse of the respondents.

<table>
<thead>
<tr>
<th>Nº</th>
<th>Industry</th>
<th>Country</th>
<th>Description</th>
<th>PM Certification</th>
<th>Perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Educational</td>
<td>Sweden</td>
<td>Associate Professor (Ph.D.)</td>
<td>-</td>
<td>Academic &amp; Professional</td>
</tr>
<tr>
<td>2</td>
<td>Oil and gas</td>
<td>United Kingdom</td>
<td>Senior project manager</td>
<td>PMP</td>
<td>Professional</td>
</tr>
<tr>
<td>3</td>
<td>Educational</td>
<td>Italy</td>
<td>Associate Professor</td>
<td>IPMA</td>
<td>Academic &amp; Professional</td>
</tr>
<tr>
<td>4</td>
<td>Engineering &amp; Construction</td>
<td>Italy</td>
<td>Director of Project Management Consultancy</td>
<td>-</td>
<td>Academic &amp; Professional</td>
</tr>
<tr>
<td>5</td>
<td>Rural Development (NGO)</td>
<td>Nepal</td>
<td>Program manager</td>
<td>-</td>
<td>Professional</td>
</tr>
<tr>
<td>6</td>
<td>Education</td>
<td>United Kingdom</td>
<td>Senior Lecturer, Author of Project Management Book (Ph.D.)</td>
<td>-</td>
<td>Academic &amp; Professional</td>
</tr>
<tr>
<td>7</td>
<td>Garment Manufacturing</td>
<td>Germany</td>
<td>COO, CIO and CFO (Kaufmännischer Leiter – Ph.D.)</td>
<td>-</td>
<td>Professional</td>
</tr>
<tr>
<td>8</td>
<td>Education</td>
<td>United Kingdom</td>
<td>Director of Charities and Honorary Professor</td>
<td>-</td>
<td>Academic &amp; Professional</td>
</tr>
<tr>
<td>9</td>
<td>Energy</td>
<td>United Kingdom</td>
<td>Director of Project Management Consultancy</td>
<td>PMP</td>
<td>Professional</td>
</tr>
</tbody>
</table>

As can be seen on the table 9, the interviewees are from diverse geographical locations as well as industries. The objective was not limiting the study to a particular industry or geographical area. Such approach helps to ensure an overall analysis that is not bias by a specific country or industry culture.

**4.2.2. Interview process**

Taking into account all of the issues and constraints related to semi-structured interviews a strategy was created to ensure quality data collection. The interview process began from sending emails to prospective respondents and asking their willingness to participate in the study. The email carried the brief account of the research and asked if they were willing to participate in the study. Twenty five people were contacted including both familiar and unfamiliar prospective interviewees. Even though most of them showed interest initially, more than half of them did not confirm for the interview and only one unfamiliar person was willing to participate. The initial e-mail sent out did not specify if the participants would have to fill out an electronic survey or participate in an interview, both methodologies were mentioned since at the time of first contact it was still not decided. After the interview was selected as the methodology, more than half of the people that seemed willing to participate lost their interest. Maybe they were not as comfortable with the interview as they would be with an electronic survey, or maybe it has to do with the fact that a survey requires less of their precious time than an interview. Therefore, the final numbers of respondents was limited to nine people.
In addition to establishing contacts with the respondents, the number and types of questions to be used needed to be determined. Bryman and Bell, (2003) suggest that in semi-structured interview an ‘interview guide’ should be created. The guide covers the list of questions to be asked in the interview although some changes might occur from one interviewee to the next. Therefore, to make a more systematic approach and frame the interview, the interview guide was developed including a set of questions to be asked to the respondents. The guide contains five main questions and other five extra questions that would only be asked depending on the responses as well as time (please refer to Appendix 2 for interview guide).

Because of budget limitations and the diverse geographical location of the interviewees, a face-to-face interview was not possible and a phone-interview was conducted instead. Another aspect that limited the interviews was time. In order to guarantee the participation of so many interviewees, a promise of an interview that wouldn’t take up more than half an hour was made. A pilot interview was conducted with one respondent to make sure that the questions were clear, the recording equipment worked and the amount of questions was appropriate for the 30 minutes time window. The pilot interview showed no major problems and proved to be valuable. Since there were no major changes and only little adjustments were made it was decided to include this interview and analyze it along with the others. The fact that the participant of the pilot interview also had relevant PM background played a strong role in this decision.

An interview schedule was developed to help keep track of the appointments made with the interviewees. This schedule provided detailed information of respondents including name, organization, date and time of appointment, telephone number that should be used for the interview, location and so on. One day in advance, the interview guide, excluding the extra questions, was sent to each respondent and he/she was also reminded of the appointment. The objective here was to facilitate the respondents to take a quick look to the questions so as to avoid possible misunderstanding during the phone-interview. That also helped them start thinking about the topic in advance.

Before each interview the recording equipment was installed and tested, as to avoid any loss of information and to mitigate the risk of not recording correctly the interviews. During the phone-interview, respondents were given a brief account of the research that was being conducted and they were thanked for their willingness to participate. The respondents were assured of anonymity of their names as well as organizations. Then, they were asked for permission to record the interview. One out of the nine respondents did not give such permission and a note taking process was conducted.

The first five questions in the interview guide were generally asked in the same order; however the extra questions took place in between depending on the context of the conversation. Respondents were provided with sufficient time to express their answers and they were asked to add further explanations where their answers were viewed as limited. Most of the interviews were completed within time. In two cases, where time was exceeded, the respondents were asked for their approval for extension. Finally, the interviews were closed by thanking the participants for their cooperation once again and
they were asked if they would be interested in receiving a copy of the completed study. All participants were interested in the results and wished to receive a copy.

The next important phase in the interview process was to transcribe the recorded interviews. Effort was made to transcribe them immediately after they were completed to ensure originality of the responses. After the interviews had been transcribed the next step was to analyze them. The analysis is presented in section 5.2.
5. Data Analysis
This section presents the findings of the study and is divided into two parts. The first one describes the descriptive statistics that were generated to show the profile of the advertisements analyzed. The second part analyzes the findings of the interviews that were conducted with PM academics and practitioners.

5.1. Descriptive analysis of PM online job advertisements
The sampling process and the geographical dispersion of the advertisements analyzed have already been presented in section 4.1.2. Therefore, the analysis will begin with the second variable that was analyzed, which is the industry of the organizations. Table 10 presents the results.

<table>
<thead>
<tr>
<th>Industry of organization</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering and Construction</td>
<td>10</td>
<td>20.0</td>
<td>20.0</td>
</tr>
<tr>
<td>Information System</td>
<td>18</td>
<td>36.0</td>
<td>56.0</td>
</tr>
<tr>
<td>Organization and Business</td>
<td>22</td>
<td>44.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

As can be seen, the majority of positions related to PM are still located in the two main industries of Engineering and Construction and Information systems, which together represent more than 50% of all advertisements analyzed. However, as has been argued before many different organizations are turning to PM, this can be seen by the large number of organizations in the last category. The Organization and Business category nevertheless is the broadest one of them all which would explain why it has the largest frequency count. Please refer to the coding scheme in section 4.1.1 to see which companies fell under each category.

The next variable that was looked at concerns the level of the position. Table 11 shows the results found.

<table>
<thead>
<tr>
<th>Level of position</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entry Level</td>
<td>14</td>
<td>28.0</td>
<td>28.0</td>
</tr>
<tr>
<td>Middle Level</td>
<td>25</td>
<td>50.0</td>
<td>78.0</td>
</tr>
<tr>
<td>Senior Level</td>
<td>11</td>
<td>22.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Examining table 11 it is possible to conclude that for the advertisements analyzed the majority of positions offered for PM are within the middle level. Following this rational, both entry level positions and senior positions are harder to find. A reason for this result could be the key words used for searching. The words senior, entry level, internship or
The degree required by the organizations when seeking project managers was also observed. Only the level of the degree was looked at and not the subject of interest. Table 12 depicts the findings regarding this variable.

### Table 12

<table>
<thead>
<tr>
<th>Degree Required</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td>19</td>
<td>38.0</td>
<td>38.0</td>
</tr>
<tr>
<td>High School</td>
<td>1</td>
<td>2.0</td>
<td>40.0</td>
</tr>
<tr>
<td>Bachelor</td>
<td>25</td>
<td>50.0</td>
<td>90.0</td>
</tr>
<tr>
<td>Masters</td>
<td>5</td>
<td>10.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Interestingly enough a large number of advertisements do not mention a specific degree. This could be for a number of reasons and one can only speculate why. One reason could be because organizations value more working experience and a previous track record of successful projects. Another one could be that it is already implicit that for such positions one should have minimum a university degree, the 50% of the advertisements that require just that signal in this direction. The one advertisement that was considered to require a High School degree referred to an internship for students still in the university and it was assumed that for that the individual would need a high school diploma first to enter the university. But since the applicant is still a student he couldn’t be asked for a bachelor degree. A master’s level degree was the least mentioned category and no advertisement specifically asked for a Ph.D.

The years of experience the job advertisements required project managers to have was also analyzed. Table 13 and 14 show the results found. As it can be seen in Table 13, the average number of years of experience required 5.2. However, for this case the median (which is 4) might be a better measure of central tendency as it minimizes the affect of outliers. Table 14 shows that the range from 4 to 5 is the one with highest frequency. One other information that draws attention is the number of advertisements that do not mention the years of experience desired: 54% of all advertisements. That could be due to the fact that only PM experience was been looked at. A lot of advertisements required
industry specific experience and for this variable they were disregarded since the intention was to look only at PM experience.

Koong and Liu’s (2006) study also analyzed years of experience required for project managers; however it is not clearly stated if any prior experience was coded or only PM experience was being observed. Although the ranges are not the same, comparisons can be made and their study presents somewhat similar information. Out of the advertisements they were looking at, about 20% required less than two years of experience. In this study the percentage of advertisements that asked for 3 years or less was 14%. The largest range in Koong and Liu’s (2006) study was between 2 and 6 years of experience where 56% of the advertisements they analyzed required. In this study the range that represented the highest frequency, after the not mentioned category, was between 4 and 5. Since their study did not present a not mentioned category it indicates that they were looking at prior experience regardless if it was PM related experience or just any working experience. About 22% of the advertisements analyzed in their study required more than 7 years of prior experience as opposed to this study where only 14% of the advertisements required more than 6 years of PM experience.

The next variable that was looked at related to PM certification. Here the attention was turned to the number of advertisements that mentioned some PM related certification. Table 15 presents the results.

| Table 15  
PM Certification |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>Percent</td>
<td>Cumulative Percent</td>
</tr>
<tr>
<td>Valid</td>
<td>Not required</td>
<td>37</td>
</tr>
<tr>
<td>Required</td>
<td>13</td>
<td>26.0</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 15 shows that 74% of the advertisements do not mention the need or desire for PM certified project managers. Possible reasons for that can be that such certification are still not widely known or simply not valued. Blomquist and Thomas’s (2004) study points in this direction regarding certification. Their study, which was based on a survey that was responded by 435 individuals, aimed to find out why project managers want to be certified. Among their findings they discovered that the top reasons for not certifying included that either the organization or the industry did not see it as a necessity. Another factor that may have contributed to a low number of companies that required certification is that it does not guarantee superior performance. As Blomquist and Thomas (2004 p.1) emphasize the “results indicate that certification does not give higher professional behavior.” Looking at the project manager’s point of view they also mention that the rewards expected from certification are less realized than expected.

The advertisements seemed to put a lot more emphasis in past project management experience than in PM Certification. In the Koong and Liu’s (2006) study, the vast majority of advertisements also did not specifically require certification. However, their
percentage was lower (about 58%). However, they also included IT specific certification such as SAP, Six Sigma, ASAP and MSCE in their analysis. If only PM related certification is considered, 44% of the advertisements they analyzed required this certification. The findings of this study show a much lower number of 26%. This can be due to the fact that their study only analyzed IT related positions and was limited to the USA.

Another interesting aspect of project management that was observed was if it could be seen as an independent discipline or if project managers had to possess industry specific knowledge. This next variable was designed to measure if the advertisements required industry specific knowledge or if they just asked for PM competences. Table 16 summarizes the findings regarding industry specific knowledge.

<table>
<thead>
<tr>
<th>Industry Specific Knowledge</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td>5</td>
<td>10.0</td>
<td>10.0</td>
</tr>
<tr>
<td>Wished but not required</td>
<td>5</td>
<td>10.0</td>
<td>20.0</td>
</tr>
<tr>
<td>Required</td>
<td>40</td>
<td>80.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

The results presented in table 16 make it pretty clear that, for the advertisements analyzed, PM can not be considered an independent discipline. The vast majority of the advertisements (80%) specifically mention that the project manager should have industry specific knowledge, and 10% wished or preferred they did. Only 10% of the advertisements analyzed could be seen as pure project management positions.

The next variables analyzed were competences required in each advertisement. Keeping in mind that the research question aimed to find out which competences do organizations currently require from project managers the competences where ranked in order of importance using two different criteria. Table 17 represents the first approach, where the frequency of the competences where counted throughout all the 50 advertisements in the sample. For example Communication appeared 197 times throughout the 50 advertisements. In total there were 981 sentences, expressions or ideas that were analyzed in the 50 advertisements. The percentage presented in table 17 compares the number of times a certain competence appeared to this total amount. The ranking of importance is displayed in the first column and in the last column the nature of the competence is shown.

![Table 17](image)

The second approach to determine the order of importance for each competence is presented in table 18. Here the criterion is the number of advertisements that mentioned a certain competence. For example in the first line the number 49 means that communication was required in 49 advertisements, the percentage is this number compared to the total of 50 advertisements that were analyzed. That is to say that communication appeared in 98% of the advertisements. Here the number of times a
competence appeared in the advertisement is irrelevant, the unit of measure is simply if the advertisement required the competence or not.

By analyzing the two different approaches some similarities appear. The top three competences are the same, no matter which approach you choose. They are: (1) Communication, (2) PM Integration and (3) Project scope management, one of them being soft and the other two having a more hard nature. Leadership and Positive work attitude basically are around positions 5 and 6, with leadership being more important, if the number of times it appeared in the total advertisements is considered, and with a tie for the 5th place, when considering number of advertisements that mentioned the competences. Also Project quality management, project risk management, creativity and innovation, PM Software Competence, Organizing, Negotiation and conflict management and Project procurement management basically all occupy the same positions in both tables, with a small difference between the last two competences depending on the approach.

In both approaches the top 9 competences consist of the same group of competences. Only the order is slightly different. The competences that are part of this group are: Communication, PM integration management, Project Scope management, Leadership, Team working, Project cost management, Positive working attitude, Project time management and Flexibility and Alertness. Out of this group 5 competences have a hard nature while 4 have are soft. Except the first three which the order is consistent in both approaches, the other competences have been listed here without any specific order. However, the data indicates that those are the competences mainly emphasized by the employees. Both approaches confirm this finding.

The ranking does not go up to 18 because in some instances there were competences that tied for a certain position. In that case they were ranked in an equal order of importance, an examples of this is team working and flexibility in table 17. In both approaches the top 10 competences required in the advertisements are made up of 6 soft and 4 hard

<table>
<thead>
<tr>
<th>Table 17</th>
<th>Frequency of Competence Appearance in All Advertisements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ranking</td>
<td>Competence</td>
</tr>
<tr>
<td>1</td>
<td>Communication</td>
</tr>
<tr>
<td>2</td>
<td>PM integration</td>
</tr>
<tr>
<td>3</td>
<td>Project scope management</td>
</tr>
<tr>
<td>4</td>
<td>Project cost management</td>
</tr>
<tr>
<td>5</td>
<td>Leadership</td>
</tr>
<tr>
<td>6</td>
<td>Positive work attitude</td>
</tr>
<tr>
<td>7</td>
<td>Project time management</td>
</tr>
<tr>
<td>8</td>
<td>Team working</td>
</tr>
<tr>
<td>9</td>
<td>Flexibility and Alertness</td>
</tr>
<tr>
<td>10</td>
<td>Human resources mgt.</td>
</tr>
<tr>
<td>11</td>
<td>Project quality mgt.</td>
</tr>
<tr>
<td>12</td>
<td>Project risk management</td>
</tr>
<tr>
<td>13</td>
<td>Creativity &amp; innovation</td>
</tr>
<tr>
<td>14</td>
<td>PM Software Competence</td>
</tr>
<tr>
<td>15</td>
<td>Organizing</td>
</tr>
<tr>
<td>16</td>
<td>Negotiation and conflict mgt.</td>
</tr>
<tr>
<td>16</td>
<td>Project procurement mgt.</td>
</tr>
<tr>
<td>Total Amount Analyzed</td>
<td>961</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 18</th>
<th>Frequency of Advertisements that Required Each Competence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ranking</td>
<td>Competence</td>
</tr>
<tr>
<td>1</td>
<td>Communication</td>
</tr>
<tr>
<td>2</td>
<td>PM integration</td>
</tr>
<tr>
<td>3</td>
<td>Project scope management</td>
</tr>
<tr>
<td>4</td>
<td>Team working</td>
</tr>
<tr>
<td>5</td>
<td>Leadership</td>
</tr>
<tr>
<td>5</td>
<td>Positive work attitude</td>
</tr>
<tr>
<td>6</td>
<td>Project cost management</td>
</tr>
<tr>
<td>7</td>
<td>Project time management</td>
</tr>
<tr>
<td>7</td>
<td>Flexibility and alertness</td>
</tr>
<tr>
<td>8</td>
<td>Problem solving</td>
</tr>
<tr>
<td>9</td>
<td>Human resources mgt.</td>
</tr>
<tr>
<td>10</td>
<td>Project quality mgt.</td>
</tr>
<tr>
<td>11</td>
<td>Project risk management</td>
</tr>
<tr>
<td>12</td>
<td>Creativity and innovation</td>
</tr>
<tr>
<td>13</td>
<td>PM Software Competence</td>
</tr>
<tr>
<td>14</td>
<td>Organizing</td>
</tr>
<tr>
<td>15</td>
<td>Project procurement mgt.</td>
</tr>
<tr>
<td>16</td>
<td>Negotiation and conflict mgt.</td>
</tr>
<tr>
<td>Total Number of Adv.</td>
<td>50</td>
</tr>
</tbody>
</table>
competences. 5 of the soft competences are common among both groups, they are: Communication, Leadership, Team working, Positive work attitude and Flexibility and alertness. All 4 hard competences in the top ten competences of both approaches are the same, they are: PM integration, Project scope management, Project cost management and Project time management. These similarities are clearly demonstrated in tables 19 and 20.

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Competence</th>
<th>Total Frequency</th>
<th>% Nature</th>
<th>Nature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Communication</td>
<td>197</td>
<td>20%</td>
<td>Soft</td>
</tr>
<tr>
<td>5</td>
<td>Leadership</td>
<td>71</td>
<td>7%</td>
<td>Soft</td>
</tr>
<tr>
<td>6</td>
<td>Positive work attitude</td>
<td>60</td>
<td>6%</td>
<td>Soft</td>
</tr>
<tr>
<td>8</td>
<td>Team working</td>
<td>46</td>
<td>5%</td>
<td>Soft</td>
</tr>
<tr>
<td>8</td>
<td>Flexibility and Alertness</td>
<td>46</td>
<td>5%</td>
<td>Soft</td>
</tr>
<tr>
<td>9</td>
<td>Human resources mgt.</td>
<td>42</td>
<td>4%</td>
<td>Soft</td>
</tr>
</tbody>
</table>

| Frequency of Competence Appearance in All Advertisements |

Here a comparison can be made with Koong and Liu’s (2006) study, however the differences in approach have to be kept in mind as they used only the 9 knowledge areas presented in the PMBOK Guide (2004) and did not include soft competences as has been done in this study. Their study found Project scope management to be the most important competence, followed by Time management, Integration management and Cost management. These were the same four competences ranked as the top most important hard competences for this study; however, the order of importance changed.

Further comparing the hard and soft competences again two approaches were used. Table 21 summarizes the two different approaches. It was decided to use the sum of all the times a hard or soft competence appeared in order to compare between the different natured competences. The first two columns show a simple addition of all the hard and soft competences. In this case soft competences appeared more in the 50 advertisements analyzed than did hard competences with a total count of 544 against 437. However, this could have been due to the larger number of categories in this type of competence, as there were 10 soft competences categories against only 8 hard competences. In that case there might have been a bias towards a larger amount of soft competences. If we divide the total frequency each type of competence appeared by the amount of variables they were represented by, in an attempt to correct such bias, the numbers appear to be pretty equal. This second approach is presented in the last two columns of table 21. Although this number doesn’t have much meaning on its own, other than the average amount that each category for soft and hard competences appeared throughout the whole 50 advertisements, these findings indicate that the organizations do pay attention to both hard and soft competences when recruiting new project managers.

<table>
<thead>
<tr>
<th>Table 21</th>
<th>Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>50</td>
</tr>
<tr>
<td>Missing</td>
<td>0</td>
</tr>
<tr>
<td>Sum</td>
<td>437.00</td>
</tr>
<tr>
<td>Valid</td>
<td>50</td>
</tr>
<tr>
<td>Missing</td>
<td>0</td>
</tr>
<tr>
<td>Sum</td>
<td>544.00</td>
</tr>
</tbody>
</table>
Because of the relatively small sample size, not much inference can be made in the profile of all the online job advertisements for project management in the world. However, since the sample was taken randomly from a larger group of 200 advertisements the findings do represent quite accurately the profile of those advertisements.

5.2. Analysis of semi-structured interviews

After the interviews had been transcribed the answers were grouped into the questions in order to facilitate the analysis, which will be presented separately for each question. The main points related to each question are highlighted and special attention has been given to ideas that were common between different participants. First the analysis will concentrate on the 5 main questions that were asked for all the participants, than the extra questions will be compiled following the same methodology. At some moments the participants answer to different questions have been integrated to a particular question in order to facilitate comparisons between contrasting points of view. Participants were numbered, in order to keep them anonymous.

The first question that will be analyzed is the following:

1. **Do you see project management as an independent profession, in a way that a project manager can manage all types of projects in all industries, or should a project manager have industry specific knowledge?**

Regarding the first part of the question, which is if PM is an independent profession, five out of the nine respondents, viewed PM as a separate discipline. However, seven out of the nine interviewees emphasized the need for industry specific knowledge, which indicates some contradiction. The need for industry specific knowledge can be seen in the statement made by participant 2: “It is important however to have industry specific knowledge, or else it might be quite difficult”, this perspective is commonly shared among most participants. Some, however, viewed PM as a general profession such as participant 7 who says that “a project manager can manage all types of projects in all industries... if he knows the methods he can do any project”, nevertheless he complemented that industry specific knowledge is preferable. Participant 8 makes a counter argument against project managers having too much industry specific knowledge; he mentions the danger of this creating a narrow view and actually would prefer a project manager who had experience in a range of industries.

Two participants mentioned that it is common for project managers to move from one industry to another. Participant 6 viewed such move as healthy and according to him it adds values to the professional as he is able to learn different things in one industry and apply in another. He also emphasized the universality of the PM basic principles and mentioned that they could be applied anywhere. Participant 4 explained that this movement between industries usually happens in the beginning of the project manager’s career and that as he becomes more specialized in a field he will tend to be more appreciated and settle in.
Four participants saw PM as a more general position, they were: participant 4, who even made an analogy between a project manager and a CEO; participant 5 who argued that management position doesn’t require technical knowledge; participant 6 who argued that PM is more generic; and participant 7 who went as far as saying that its part of management. Participant 6 made an interesting point as he mentioned that the differences found in the projects have more to do with the different sizes and complexities of each project than with the sector. That view was also shared by participant 9. Participant 5 seems to agree with this idea as he believes that some projects might require more technical knowledge than others. Concluding this question it can be learned from the interviews that, although many might see PM as an independent profession, industry specific knowledge is desirable. However, it is hard to generalize since most participants pointed out that it depends on the type of projects.

2. Competence involves knowledge, skills and personality characteristics. Which competences you think are important for a project manager to posses and why?

When answering this question two soft competences were common among almost all participants: communication and leadership. This can be observed in table 22, which depicts the competences mentioned by the participants. Table 22 does not take into consideration the number of times each competence was mentioned, it only presents what competence was mentioned by each participant of the survey. The competences mentioned are marked with an (X). The numbers 1 through 9 represent the participants in the interviews.

<table>
<thead>
<tr>
<th>Competence</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Communication</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>(2) Leadership</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3) Problem solving</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>(4) Team working</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>(5) Organizing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>(6) Flexibility &amp; alertness</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>(7) Creativity &amp; innovation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>(8) Human resource management (HRM)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>(9) Negotiation and conflict management</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>(10) Positive work attitude</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>(11) Project integration management</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>(12) project scope management</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>(13) project time management</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>(14) project cost management</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>(15) project quality management</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>(16) project risk management</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>(17) project procurement management</td>
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<td></td>
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<td></td>
<td></td>
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<td></td>
<td>0</td>
</tr>
<tr>
<td>(18) PM software competence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Soft Competences</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>32</td>
</tr>
<tr>
<td>Hard Competences</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>19</td>
</tr>
</tbody>
</table>

In the last column to the right of table 22 are the total number of participants that mentioned a specific competence. Communication, for example, was mentioned by 8 participants and is the competence mentioned with higher frequency. The competences that were mentioned by the largest number of participants are: communication, which was mentioned by 8 participants; leadership; and project integration management, which
were both mentioned by 7 participants. The last two lines in the bottom show the total amount of soft and hard competences mentioned by each participant.

In total the 9 participants mentioned 32 soft competences against 19 hard competences; which show the importance interviewees attribute to soft competences. Nevertheless things like scope, cost and quality management along with good understanding of PM methodology and tools and techniques were often brought up. Participant 2 mentions that the soft side is very important and that maybe not enough attention is given to it. Participant 6 also states that “it is important to have soft skills... understanding relationships between different people in the project... recognizing the way in which you ask or speak with someone can affect how likely they are to get on and respond in a positive way.” Participant 4 gives a good explanation and divides the importance of different competences throughout the project manager’s career. He mentioned that at the beginning of the career the formal knowledge in the methodologies is very important as it gives credibility to the person. Later when the project manager shifts to a more strategic position, where he has to convince people of his vision of the project, then competences such as leadership, team building, team working and communication are more important.

In terms of leadership, participant 4 explains that this competence is important because of the lack of formal power the project manager has over people and he reminds that their career does not depend on him. Participant 6 actually would rather think about project managers as a project leaders, because according to him “the majority of the skills they need are related more to leadership than management.” Relating to communication this participant also explains that the importance of the concept is something trivial and that most important is to understand what “effective communication” means. Building to the communication competence, participant 9 adds that other things such as being a good listener, having ability to present points of view, observing reactions and using body language are important.

The ability to manage people and specially to be able to identify their strengths and to get them to contribute as much as possible to the project was also emphasized. This was classified under human resource management. Participant 1, however, links this ability to communication and networking, he says that a project manager needs to communicate and that “means to actually figure out, to see people and to see the capacity of the person. For example, to be able to see a person is good at finishing things or that person is very good at integrating things...doing that you need to be a networker.” Participant 6 also makes a similar statement “I think that a project manager needs to be able to recognize the strengths and skills of the other people who are working on the project to be effective and delegating work appropriately.”

Another point that can be taken out of the interviews is the ability to be flexible and to adapt to different situations. This is mentioned by a number of participants. Participant 3, for example, emphasizes the need to break the rules, as each project is different. Therefore, you have to adjust to the situation. This need for adjustment can also be felt by participant’s 6 remark that sometimes a project manager needs to be quite forceful and authoritative where other times he needs to be more like a mentor. Participant 1 also
mentioned the two approaches but rather preferred the more gentle way as he had seen more cases when the project manager’s forceful behavior had not been good at all.

Different points of view were given regarding if one can learn behavioral competences such as leadership or if it depended on personality characteristic. Participant 6 believed that the raw personality characteristic was less important and that a good leader would be able to use a variety of approaches and adapt to the situation. Participant 9 also mentions that he doesn’t believe that people either have them or not, he believes everybody has the ability to improve. One way this participant said you could improve leadership competence is through feedback. Participant 7, on the other hand, believes that for things such as leadership a person either has it or not.

Dealing with stakeholder was also another aspect that was often brought up. Participant 2 states that “it is important to manage the stakeholders who are involved. Building trust, relationships, communication, etc…” Participant 6 linked making good decisions to this aspect “in a way you might have steering groups or committees involved; sponsorship roles or groups that have to do with the project, so decision making is very important.” Participant 7 also mentioned that a project manager needs to know how to manage people in different countries and cultures because we are in a global world. And Participant 9 emphasized the need to be “other centered” instead of “self centered” and that there is a need to be aware of the reaction of others and their perception.

3. What types of project management tools and techniques do you consider to be most important?

In response to this question, most of the participants highlighted the fact that the types of project management tools and techniques are dependent on the type of project or the company. Amongst the most common tools and techniques mentioned by the participants are work breakdown structure (WBS), Gantt chart, and Critical Path Method (CPM). Stating the importance of WBS, participant 3 mentions that “it is the most important tool because it is a base to develop other such as scheduling, budgeting etc.”

As there are various tools and techniques having their own features and importance; participant 6 reminds that “in a way really what you have to do is select several tools that work well together. It is not necessarily one tool or another but it is the collection of tools and how well they integrate together.” Participants 2, 6 as well as 9 also brought up the need of tools that deal with costs or finance of the project. Participants 9 also emphasize the need to integrate the tools. His opinion is that “in terms of managing costs, from project managing point of view you need to have some system which is integrated into the company financial system. I do not like having to spend time looking at the information from a cost perspective. I need to have a cost system which indeed fit in procurement system, which is project oriented.”

Besides, many participants highlighted the usefulness of software which can help in dealing with tasks related to project management. Participants 4 states “...nowadays software can help you in a lot of things. Each kind of tools and techniques can be seen
on software.” Participants 6 and 7 have similar opinions regarding software, they particularly mentions the usefulness of Microsoft Project. Participant 7, for example, uses the program for more than 10 years.

Participant 3 states that “all the people agree that scope, time, cost, risk, quality, cost schedule are very important. So I do not think it’s useful to spend more towards that.” Instead he emphasized having a probabilistic view and understanding the language related with risk management such as expected value, standard deviation and so on. Participants 4, 8 as well as 9 also emphasized the tools and techniques related to the identification and management of risk.

Another common theme among the interviewees was stakeholder management tools and techniques, which was mentioned by participants 3, 8 and 9. Participant 9 explains that tools for classifying stakeholders and identifying communication requirements of the different stakeholders are neglected but very important. In line with this, participant 1 highlighted the tools and techniques that have to do with understanding customer needs such as requirement analysis. Participant 8 also explained that it is important to involve important stakeholders such as suppliers early in the project in order to identify and manage risk.

Other tools and techniques mentioned by some participants include: to-do lists, walk troughs of cost estimate and schedule, what-if analysis, decision tree, PERT diagram, precedence diagram, earned value management, document management etc. However, these tools where not commonly mentioned among different participants. Their name only came up a small number of times.

4. Do you believe that it is important for a Project Manager to have an official certification?

When answering this question a wide variety of answers were given. Four participants tended to think it is important, while two of them believed it was not important and the remaining three said it depended on the situation. One statement that can be used to summarize the overall opinion is the one made by Participant 6, who states that “certification has a place and I think it is relevant but I wouldn’t say it was necessary.”

Participants 1, 4, 6 and 9 all agreed that the certification process does not really measure competence and that such certification does not make someone a project manager. Participant 1, for example, says that “I don’t believe you will become a better project manager if you have a PMP or an IPMA certificate, A, B, C certificate”. Participant 4 strongly criticizes the process. To him, the PMP certification for example, only shows if a person knows what is written in their body of knowledge and doesn’t measure if you are a good leader, communicator or if you are good at team building. This participant believes the IPMA certification process to be more complete. Participant 6 explains that it is not “important to have certification for someone to use project management skill”, he also criticized the process and noted that “some certification you can get quite easy”. Participant 9 emphasizes that a positive side of certification is that it fosters a common
language; however it does not make a person a project manager. Participant 1 was also skeptical of the certification process. To him “certification is more for project management associations because they earn money in the process”.

Participant 3 makes a point to distinguish the need of certification depending on what type of career path a project manager follows. He explains that experience can compensate for a lack of certification in Engineering and Contracting companies, but for project managers working in small companies or as consultants it is important as the clients might expect to see such certification. Other participants also saw certification as a marketing tool, such as participant 1 and participant 2, who believes that “it shows that they have at least some understanding of PM…. it gives some level of comfort.”

5. **In your opinion what distinguishes superior performing project managers from others?**

In response to this question, all of the participants’ responses are related to the soft interpersonal competences. Participants 1, 4, 5, 6 and 8 all mentioned leadership as a competence that distinguishes superior performance. To participant 6, leadership “would include things like being very focused on the mission of the project and communicating that mission to everybody else who is involved.” For him, this ability helps project manager to consistently deliver projects on time, cost, and right quality. Similarly, participant 4 makes an analogy between leadership characteristics and the athletes’ power and will to win the game, for him “you must be convinced that a particular target is reachable and must be reached.” Participants 1 also mention the need of networking and getting people to work, “to have the ability to connect resources that actually fit to fulfill the projects.”

For participants 2 and 3 the distinguishing factors have to do with ability to manage stakeholders. They highlight the need of correctly identifying the needs of stakeholders and satisfying them. Participant 3 mentions that superior performance is the ability to focus both hard and soft issues in parallel and at the same time manage issues of time, cost and quality and stakeholders. In line with this, participant 9 relates the importance of communication skills especially finding information, questioning, listening and presenting information to superior performance.

Participants 3 as well as 7 acknowledge the contribution professional experience has to superior performance. To participant 3 the soft side such as focusing in stakeholders is harder and is something you learn with bad experiences and mistakes. Participant 7 explains that experienced project manager “knows how to take care of the project. Because he has handled already a lot of them and he can easily smell if the project is doing well or not.” This participant gives importance to the intuition gained with experience.

Other factors that were mentioned but were not common among many different interviewees include: politically awareness, ability to think and make decisions, flexibility, conflict resolution, and team development.
6. What would be one competence that you would wish to have or further develop, that would significantly improve your ability to manage projects? Why?

Regarding this question there was a good balance between competences that can be seen as soft and the ones that have a more hard nature. Participants 1, 6 and 9 all mention that they would like to further develop their prioritization competence, which can be related to time management. Participants 1 and 9 mention that, dealing with too many projects requires effective prioritization. Participant 1, for example mentions that “people like me have too many projects... you spend a lot of time going between things and it takes time to adjust.” Participant 9 also sees a problem with trying to do too much and stated that “if you are trying to do too much you can do lots of things but in medium way.” Participant 6 links time management with the competence of being organized, which is a competence that for him takes hard work.

Leadership was also a common factor mentioned by various participants. Participant 2, 4, 6 and 8 would wish to improve in their leadership competence. Participant 2 believes “the higher up you go, the more important it becomes.” Participant 4 mentions leadership along with communication and team working, for him these competences are things you should develop until you die. Although participant 8 does not mention leadership directly, he implies it by talking about the need to understand and influence people’s priority and to persuade them. Participant 6 mentions big picture thinking and strategic thinking as competences he would like to further develop; those can also be linked with leadership.

Participant 3 adds that competence in stakeholder management such as: ability in the political arena and relationship with people are important. For him these competences are more important than the ones that focus on time and cost. Participant 6 offers a similar opinion; to him “the ability to network strategically and effectively is crucial.”

7. What is the project management competence that if lacking could compromise project performance?

Although this question was not asked to all participants the ones who answered focused on the soft competences. The competence of managing people and stakeholders, leadership and communication came up.

Participant 7, for example, believed that “if someone can’t handle people, even if they have a lot of knowledge it could mess up everything... It is more important to handle people, to convince people... to make their mood... you have sometimes failure... but than you have to encourage people to go on. This is more important.” Similarly, participant 6 emphasized stakeholder “not being aware of your stakeholders... That could screw you up.” Although the key word for participant 9 was communication his idea was basically the same as the others, to him “what makes projects fail is lack of understanding between the various parties involved.”
8. If you have ever experienced an unsuccessful project what would you consider the main reason for the project failure? What could the project manager have done to avoid this?

In response to this question most of the participants’ opinion was related to issues of the stakeholders’ management. Participants 1, 2, 3, 4, 6, 7 and 8 all highlighted issues of unclear project objective or lack of focus on stakeholders.

Participant 1 mentions an example where a project was not successful in spite of project manager’s good academic and formal project management qualification. The problem was due to lack of ability to handle interpersonal relationships with the internal and external stakeholders. Similarly, Participant 2 mentions that in one global IT project in his company stakeholders’ management was not effective and as a result the program ran over time and budget. The main cause according to him was “there wasn’t enough emphasis on local stakeholders, their expectations and making it clear that there wasn’t optionality of solutions.”

For participant 3 the two main reasons for project failure are “lack of focus on the stakeholders and lack of flexibility.” For participant 4, generally speaking “projects are not successful when the principle aim of the project is not clear”. Participant 6 has a similar view; he exemplifies it with the Scottish Parliament, which he viewed as an unsuccessful project. According to him the failure was due to a weak sponsor who was “not able to define very clearly what they wanted.”

Participant 7 emphasizes the need to involve people in the project, specially the “small potatoes”. His view is shared by participant 8 who argues that “early involvement of participants and maximum communication is difficult to do” so it is important to make it clear what will be the benefits created by the project.

9. Supposing that you are recruiting someone to work by your side. What do you pay more attention to, the hard or the soft competences?

The answers for this question varied between three categories. Out of the 9 participants 3 tended for the soft competences, 3 believed that it depends either on the project, team or the role of the project manager and 3 participants emphasized the need of both soft and hard competences.

Participant 1 mentioned that “it’s a two sided thing, you need to have both.” Participant 2, on the other hand, explained that it was difficult to generalize. According to him “you need to jump down the level and go into the role. There will be a different mix depending on the position.” Participant 5 shared a similar opinion. For him, in some projects, such as construction, you need more technical competences, where in research projects a leader is needed. When asked to choose which was more important between soft and hard participant 5 opted for the interpersonal skills and mentioned leadership as a key competence. Participant 3 also tended more to the soft side although he mentions that both were important. However, he emphasized the need for political competence, which
is softer by nature and according to him “is just not being able to deal with people but also with political institutions.”

Participant 7 also mentioned things related to leadership and added that you can learn the hard competences “but if you have only knowledge you can’t handle people. No use.” Participant 6 agrees that the hard competences are easier to learn, he believes that “you could have no knowledge of Microsoft Project and within a week you would be able to know it reasonably well. As where with the soft skills it takes longer to learn.” For him, when choosing someone to work by his side, he would first look at the soft competences but if a candidate displayed both soft and hard he would find it relevant.

The ability to influence people was mentioned by participants 2, 5, and 8. Participant 5, for example, says that “there will be a need of some influential practice” and that if you are capable of influencing people you will get the technical expertise needed by using others. Participant 8 makes a distinction between the roles of the project manager. According to him if the project manager has to manage a number of projects than the softer competences such as ability to work with others, communicate persuade and influence are more important. He relates those competences with leadership. Similarly participant 2 believes that the competences depend on the position. He exemplifies that for the role of a project management office (PMO), which deals with lots of projects, you need “good influencing and persuasion skills...because they don’t have direct control.”

Participant 4 believed that it was necessary to balance the team. He explains that “if you have three leaders, the team does not work.” Participant 9 agreed as he shares that for some teams he would select some persons that would not be selected for other teams. He also mentions that “the first thing is to see how they would fit in the cultural and working environment...in a team you need different skills. You need starters, leaders, chairman, finishers and many others.” Commitment was also an issue mentioned by both of these participants. Participant 4 looks for someone who gives “everything to the boss.” Participant 9 likes people who he can trust and most importantly are proactive, flexible and prepared to help others. He makes a bold statement as he says “I don’t care if the guy is nuclear scientist but you go to do the photocopy... I don’t need people who are premadonas.”

10. How important do you believe the project manager is to the successfulness of the project?

Seven out of the eight participants, who were asked this question, expressed that project managers are important to the successfulness of the project. Participant 9, for example, says that the role of project manager is extremely important because he is the “centre point” of the project. Similar to this view, participant 8 believes that the project manager “is someone who sees the whole picture and plays a vital role.” Participant 5 concludes that the project manager’s “skills and ideas will play a vital role for the successfulness of the project.”
Participants 1 and 3 mention other factors that contribute to the project success. For them, although the project manager plays a role he alone does not determine project success. Participant 1 emphasizes the importance of the environment and the maturity of the organization regarding projects. He explains that in an organizational environment that is not familiar with running projects it will be difficult to be successful. In the other hand “in an environment that is mature then it probably will be easier to work as a project manager.” Participant 3 goes as far as saying that the project manager is not so important. For him, the project manager is mainly responsible for managing the day-to-day activities; however the strategic decisions are taken at a higher level and involve people like the sponsor and senior executives. For participant 7 the project manager is also somewhat important but the team carries the responsibility for making the project successful. He states that “it’s always the team. The team is successful or not. Not a single person of the team.”
6. Conclusion
6.1. Discussion of the Findings
When looking at the findings gathered by the two different methodologies used in this study, the evidence indicates that the null hypothesis - (H0) Organizations mainly require “hard” technical competences from project managers - should be rejected. Therefore, the alternative hypothesis should be accepted, that is: organizations require both “soft” interpersonal and “hard” technical competences from project managers.

The online job advertisements for project managers showed a good balance between soft and hard competences that were being required by the employers. The top soft competences were respectively communication, leadership, positive work attitude, team working, and flexibility and alertness. The top hard competences included project integration, scope, cost and time management. The interviews also showed a balance and participants mentioned both hard and soft competences. It could even be said that the interviewees actually emphasized soft competences, especially when relating to superior performance and with competences that, if lacking, could compromise project success. In this way, it can be observed that PM organizations, academics and PM professionals all have similar opinion towards the competences required for project managers and recognize the need for both soft and hard competences. Although the sample size is not big enough to make generalizations to the field of PM, they do indicate a tendency.

Communication and all the things that were categorized under this heading such as managing relationships with stakeholders and disseminating information among people had a top position. That shows that participation and the social process are being recognized as important aspects of the profession. The emphasis the interviewees gave to communication and stakeholder management also points in that direction. This adds to the findings of Pollack (2007), Crawford (1999, 2000, 2005, 2006), Müller and Turner’s (2007), Redman and Matthews (1997), Bennett (2002) and Lay (2005).

Pollack (2007), argues that the soft paradigm in PM is gaining ground. The results found here add evidence that indeed it is, as it seems the organizations equally emphasize both hard and soft competences for PM positions. This research also supports the findings of one of the leading authors in the field such as Crawford who highlights the growing importance of soft competences for PM. Similarly Müller and Turner’s (2007) study shows that soft competences such as communication and sensitivity were not only important for project managers to posses but were also correlated with project success. It seems the importance of communication is not limited to PM but common among all management positions. Communication was emphasized by Redman and Matthews (1997), as they found that employers of managers in both the private and public sector highly value this competence. Other studies such as Bennett’s (2002) and Lay’s (2005) also put communication, along with teamworking, among the most important competences for positions in knowledge management, marketing, general management, finance and human resource management. Like the findings of Bennett (2007) and Lay (2005) not only communication but also teamworking were highly ranked competences for the PM job advertisements analyzed.
One significant difference was found when comparing to Gallavin, Truex, and Kvasny’s (2004) research on competences for IT professionals. Their study found that only around 5% of the competences required by employers were related to soft competences. When looking at PM the soft competences seem to be more important. From the advertisements analyzed around 50% of all sentences were related to soft concepts. Nevertheless, the iron triangle of the hard competences represented by scope, cost and time management continue to be very important for project managers. They were among the top 10 competences required in the advertisements and were also often brought up by the interviewees. The tools and techniques they emphasized the most were related to these competences. Project integration management and scope management were respectively the second and third most important competences considering both approaches used for ranking. The findings show similarities with the study done by Koong and Liu (2006), who found scope and project integration management among the top three most important competences for IT project managers in the USA. However, communication seemed to be less important when looking strictly at IT industry. Their study ranked this competence as 5th most important, while in this research it occupies the top position.

Other soft competences that were seen as being extremely important were leadership and flexibility. Leadership is not a surprise; it is highly related to the nature of the profession. The project manager needs to get everybody involved in the project and working together. For that he needs to be a leader and able to see the complete picture, establish a vision and give direction. Leadership and flexibility are also greatly emphasized by Müller and Turner, (2007). The authors concluded that not only the leadership style of the project manager influences project success but also that different leadership styles are appropriate for different types of projects. Comparable to their findings leadership was ranked highly in this study. It was also noted, both in the advertisements and in the interviews that project managers should be able to adjust to different situations, industries and to different sizes and types of projects. The need for project managers to be flexible could be attributed to the fact that PM deals with temporary and unique endeavors, each presenting a different challenge to the project manager who has to adapt.

According to the interviewees, most the competences that, if lacking, could hinder projects from achieving success were on the soft interpersonal side of PM. The ability to deal with people and to manage stakeholders seemed to be essential in the participant’s perspective. In the literature Couillard (1995), Flannes and Levin (2005) and Pollack (2007) also expressed the importance of people issues; according to them problems with human relationships can hinder project success. The fact is that project managers have to deal with people; this can not be underestimated as it could compromise the projects results. The evidences found here also indicate that soft interpersonal competences are indispensable for project managers. Having to deal with the conflicting interests of all stakeholders is an intrinsic task of managing projects. These stakeholders may be single individuals, groups or institutions, but in the end they are all created and represented by people. Human beings have feelings and are emotional, making them hard to deal with. Also organizations don’t make decisions, people do. In the end the people are going to judge and be affected by the end results of the project. That is why the soft interpersonal competences are so important.
Regarding the direction of the PM profession it was noticed that it has been widen to new areas such as financial, entertainment and educational etc. This can be seen by a wide number of advertisements categorized under the organizational and business industry. Gardiner (2005), Crawford (2005), Verzu (2005) and Kloppenburg & Opfer, (2002) all pointed out the increasing use of PM by all types of organizations in all industries. Another aspect that drew attention was that although the theory presents PM as being an independent profession, similar to management, the evidence found here contradicts this position. Most of the interviewees agreed that PM can be seen independently but at the same time they highlighted the need for industry specific knowledge. The online advertisements for PM showed that the market sees it more as a complement to other professions, as 80% required either previous experience, knowledge or a degree related to another profession. However, in terms of competences there are a lot of similarities when comparing to that of a traditional manager, with the addition of some PM specific competences.

The findings also revealed that PM is also not usually associated with entry level positions, as a small percentage of positions in this level appeared and in average the employers required 4 to 5 years of passed PM experience. This could be seen as logical because the project manager, like a manager, coordinates and manages a team of people. A new comer would not be competent enough to undertake such responsibility at the start of his career. Therefore, PM positions would naturally be in the middle to top management level. Regarding PM certification it seems that although it is something to consider depending on the project managers career path, it is not a necessity. The large majority of the advertisements did not require such certification and the interviewees also saw certification with skepticism. Most of the interviewees believed that a certification does not make a person a project manager, although it might give some level of comfort for the people he is working for. In that way it serves more as a marketing tool and as some participants pointed out it only ensures that the project managers possess a common language and basic PM know-how.

The results also indicated that the project manager is important for the successfulness of the project. Although other factors such as the organizational environment and the PM maturity level of the company the project manager plays a central role for attaining success. The majority of the interviewees seemed to share this opinion. This finding builds to arguments made by Schmitt and Kozar (1978), Mullaly (2003), Kendra and Taplin (2004) and Crawford (2000 and 2005) and Koong and Liu (2006), all of which expressed the importance of competent project managers in order to manage projects successfully.

Integration also plays a big role and is a competence project managers should possess. It was the second most required competence in the advertisements. This shows the importance of project managers using all their competences in an integrated way. This competence was classified as a hard competence since it included vague terms that mentioned PM methods. However it also included things such as being comfortable running projects, having a successful track record and being able to deliver projects.
successfully. For that, the project manager needs both hard and soft competences. They need to take care of the interpersonal aspects, get people working together with a common goal, resolve conflicts, deal with political setting and so on, but they also need to use integrated tools for controlling time, cost and quality. Both soft and hard competences are required for project managers and a project manager that possesses only one type is not attractive to the job market. This was also emphasized by the interviewees who usually had a hard time putting one ahead of the other. For them both hard and soft competences are important for running projects.

The results found in this study contribute to show the value the job market, the literature, and professionals related to PM give to soft interpersonal competences. Organizations that are involved in qualifying and training project managers need to pay closer attention to this often less emphasized soft side of PM. In addition to mainly focusing on hard competences on their training materials, they should also include a significant amount of materials related to soft competences. The literature itself could be further developed in the field of soft competences for project managers; some of the top publications in the field such as the PMBOK Guide (2004) and other PM handbooks still dedicate a small percentage of the content to the topic. Moreover, project managers, prospective project managers, students as well as those interested and/or involved in PM profession can take advantage of this research by increasing their level of awareness regarding growing need of soft competences.

6.2. Limitations
The findings of this study are limited to the 200 advertisements that were collected. The random sample of 50 advertisements analyzed, which represent ¼ of the total advertisements collected, can be considered representative. However, the findings do not allow for generalizations to be made to the whole population of PM online job advertisements. They only show indications of the profile of online job advertisements for project managers. Even though the number of job postings limits the study, an effort has been made to complement it by adding 9 semi-structured interviews with PM academics and practitioners. This makes the findings and the results more robust.

Weaknesses of the chosen methodologies are other limiting factors of the study. They have already been highlighted in section 4. when the methodologies were presented. Other limiting factors include the fact that there were no consistency in structure and size of the advertisements; some advertisements were up to three pages long whereas others ranged from half page to two pages. Therefore, the presence of long advertisements might dominate over others and create a bias for the competences required for those specific positions. In regard to the advertisements collected, they were limited to the English language. That could influence the competences required to the ones desired by companies located in western civilizations. The requirements could be slightly different if advertisements in different languages had been analyzed. However, that would have required multi-language competence from the researchers and a longer period of time in order to translate the advertisements and to categorize them.
In the context of the semi-structured interview, the reluctance of more than half of the people contacted to participate limited the study. A larger number of interviews could have made sample size more representative and the quality of the study would have increased. Due to budget constraints and to disperse geographical location of the interviewees, the interviews were conducted through the telephone. Face-to-face interviews are richer and could have improved the results. The limited time of the interviews, which was of 30 minutes, also constrained the amount of questions that could be asked.

As mentioned by Koong and Liu (2006) the job postings do not use the exact terminologies of the competences and the classification depends on the author’s individual judgment. While analyzing the content of the job advertisements, some of the sentences were not clearly stated in terms of competences so that they were interpreted based on the authors understanding. This might constrains the reliability of the research. Similarly, some of the sentences were long and included more than one type of competences; in that case they were broken down in such a way that fit into different competences categories. Other sentences that were long but referred only to one competence were left intact. So the limitation here is that not all the sentences were broken down, and the sentences that were might have gained more weight than others. Hence, this is a limitation of the study since there is a level of subjectivism in the classifications made. It could also be the reason for some differences found in this research when compared to the findings of Koong and Liu (2006). Gallavin, Truex, and Kvasny (2004) p.16-17, call attention to the same problem, stating that “even when using a well-developed set of content variables, such coding requires making judgment calls”.

6.3. Suggestions for Further Research

The evidence found in this study points to PM been seen by the market as a complement to other profession instead of a general and independent profession such as management. It would be interesting to do a study with the sole purpose of investigating this perception of the market place in order to validate or contradict what was found here. It would also be interesting to conduct a future study to see if this perception remains or if PM starts to be more independently recognized as time progresses.

Since the sample size is one of the limitations of the study, it would be interesting to conduct a large scale study to analyze a statistically significant sample. This would allow for greater reliability and for generalizations to be made based on the findings. It would also be interesting to do a study, following the same methodology, with project management job postings in other regions of the world, such as Latin America and Asia, to analyze if the cultural differences impact the competences desired by the employers.

As this study focused on online job advertisements and was complemented by semi-structured interviews with academics and practitioners, the recruiting department of the organizations was left out. It would have been interesting to contact and conduct interviews with the recruiting departments or recruiting companies, which most of the times are responsible for the advertisements, as to analyze the reason they mentioned such competences and left others out. What is the process of creating such job
advertisements, how much time, thought and effort is really put into it? Who is involved? These questions would add a lot to the findings of this study.

Another interesting approach would be to focus on two or three different industries and get samples large enough to allow for comparisons between them. This would allow researchers to see if a certain industry requires a specific set of competences that differs from other industries. An in depth case study with one company would also be interesting to thoroughly understand what competences they require for the type of projects they are running. Then comparisons could be made with the findings presented in this study.
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Appendix 1 - The content Analysis Process

The first step is to look at the advertisement selected and classify it regarding the variables 1 to 7 from table 6. Please observe the advertisement presented below as it serves as an example.

| 1. Country: | (4) Germany |
| 2. Industry of Organization: | (2) Information system |
| 3. The level of the position was classified as entry level because it did not require experience and they mentioned university degree. |
| 4. Degree Required: | (2) Bachelor |
| 5. Experience in Project Management: | The field was left in blank (missing value) as it was not found in this particular advertisement |
| 6. Project Management Certification Required: | (0) Not required |
| 7. Industry Specific Knowledge | (2) Required |

**Work for be2!**

**be2 (www.be2.com) is one of the fastest growing internet companies in Europe and worldwide.**

*Join us in our Munich office as*

**Your responsibilities**

*Your core task and responsibility is to manage different projects (projects will go beyond B1). This includes:*

- Definition of the project
- Planning of the project
- Internal and external resource management
- Risk management
- Change management

**Your profile**

- Excellent university degree, reflecting very good analytical and logical skills
- High level IT knowledge
- Excellent communication skills on all organisational levels
- Metrics minded, rigorous, precise, business sense
- Independent work style and “driver” mentality
- Very good English (English is working language)

**Our offer**

*be2 is continually expanding. We offer you a challenging position in a dynamic, professional and fun team of more than 100 people and 24 different countries, where you have the opportunity to take part in the continuation of be2 success story.*

**Interested? We are looking forward to your application!**

*Please send your application in English along with school and academic certificates to Christine Kaiser at christine.kaiser@be2.com with reference to job title above. For further information you can call +49 (0) 21 23 22 18.*

The second step is to look at the sentences related to the competences. They were selected and exported to Excel for classification. A drop down menu was created containing all the 18 different variables 10 soft and 8 hard to facilitate the classification.

The process was repeated throughout the whole advertisement.

**Explanation**: This sentence was coded as (6) Flexibility and alertness, as can be seen in the drop down menu. The reason for that was because it required the project manager to manage different projects. For that he has to be flexible and adapt each time as he deals with different projects.

**Explanation**: This sentence possesses two different ideas. One is that the project manager should have an independent working style the other is that he should have a “driver” mentality. Therefore they were split into two categories.
The last step was transferring all the information to SPSS in order to facilitate the analysis. The frequency each type of competence appeared was counted and included into SPSS. For this particular example the number each competence appeared is summarized below.

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Competence</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>(1) Communication</td>
</tr>
<tr>
<td>1</td>
<td>(2) Leadership</td>
</tr>
<tr>
<td>2</td>
<td>(3) Problem solving</td>
</tr>
<tr>
<td>1</td>
<td>(4) Team working</td>
</tr>
<tr>
<td>2</td>
<td>(6) Flexibility &amp; alertness</td>
</tr>
<tr>
<td>1</td>
<td>(10) Positive work attitude</td>
</tr>
<tr>
<td>3</td>
<td>(12) project scope management</td>
</tr>
<tr>
<td>1</td>
<td>(14) project cost management</td>
</tr>
<tr>
<td>1</td>
<td>(16) project risk management</td>
</tr>
</tbody>
</table>

The figure below gives an idea of how the data looks into SPSS. The advertisement 109 is highlighted in order to for example to be finalized.
Appendix 2 - Interview Guide

1. Do you see project management as an independent profession, in a way that a project manager can manage all types of projects in all industries, or should a project manager have industry specific knowledge?

2. Competence involves knowledge, skills and personality characteristics. Which competences you think are important for a project manager to posses and why?

3. What types of project management tools and techniques do you consider to be most important?

4. Do you believe that it is important for a Project Manager to have an official certification?

5. In your opinion, what competences distinguish superior performing project managers from others?

Extra Questions

6. What would be one competence that you would wish to have or further develop that would significantly improve your ability to manage projects? Why?

7. What is the project management competence that if lacking could compromise project performance?

8. If you have ever experienced an unsuccessful project what would you consider the main reason for the project failure? What could the project manager have done to avoid this?

9. Supposing that you are recruiting someone to work by your side. What do you pay more attention to, the hard or the soft competences?

10. How important do you believe the project manager is to the successfulness of the project?