Recruiting Project Managers: A Comparative Analysis of Competencies and Recruitment Signals From Job Advertisements

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INTRODUCTION

Recruiting the right project manager is an important challenge for organizations. According to A Guide to the Project Management Body of Knowledge (PMBOK® Guide) (Project Management Institute, 2008), the project manager is the person responsible for accomplishing project objectives. The project manager manages the project through identifying project requirements; establishing clear and achievable objectives; balancing the competing demands for quality, scope, time and cost; adapting plans and approaches to the different concerns and expectations of the various stakeholders; and managing projects in response to uncertainty. The project manager’s role is one of the most challenging jobs in any organization, because it requires a broad understanding of the various areas that must be coordinated and requires strong interpersonal skills. It is widely acknowledged that the final outcome of the project depends mainly on the project manager; therefore, the selection of the project manager is one of the two or three most important decisions concerning the project (Meredith & Mantel, 2006, p. 139). How to attract the “right” project managers, therefore, is an important organizational imperative; however, there is a lack of research on which recruitment “signals” or messages are used to attract potential applicants to the project manager role and whether these signals reflect project management prescriptions from professional bodies and standards. In this study, we examine the recruitment of project managers from job advertisements, and address how organizations describe the competencies of project managers. This study provides a systematic approach to understanding how project manager competencies are utilized from both the “supply” and “demand” sides. The competencies used in project manager job advertisements are compared with the competencies from both the academic literature and project management professional body of standards.

This study addresses the following questions: What are the most frequently used competencies to attract potential project managers to organizations? Do the competencies sought by recruitment job advertisements reflect the competencies prescribed by the project management literature and from professional bodies? Finally, we examine whether there are differences regionally and between industries in the use of project manager competencies to attract potential project managers. The contributions of this research are threefold: This study provides a systematic approach to identifying and comparing project manager competencies from both the supply side.
and demand side; second, it provides a framework for understanding the recruitment of project managers, including the signals that organizations communicate to potential candidates through job advertisements; and, last, this study provides a look into the utilization of project manager competencies from theoretical, regional, and industry perspectives.

The organization of this paper is as follows: we provide a research rationale for the importance of this research, including highlighting the research gaps; we present data on our systematic content analysis of project manager competencies from the supply side (including the academic literature and project management professional bodies); we then compare this with a content analysis of project manager job advertisements from 762 online job advertisements from Australasia (demand side). Last, we report the findings from this study, including the implications of the results.

**Theoretical Background**

**The Project Management Profession and Role of the Project Manager**

The last four to five decades have seen a rise in the use of project management in various industries, such as education and healthcare services, as a reaction to increasing modes of employment flexibility and accountability (Hodgson, 2000, 2005). Such growth has seen its practitioners organize and develop the field as a “professional” practice and form project management as a legitimate occupation (Hodgson, 2002). Much like the development of other professions (e.g., law), project management has attempted to adopt the strategies and practices of more established professions in order to claim legitimacy vis à vis the organization and promotion of accredited training programs and collection of a universal body of knowledge and recognized credentials in job markets (Hodgson, 2002). As a result, the number of project management practitioners is growing. According to the Project Management Institute (PMI, 2011), as of November 2010, PMI had a total of 3,331,697 members, of which 409,159 were Project Management Professional (PMP)® credential holders.

Although the evolution and development of project-based organizations have received some attention in theory and practice (Sydow, Lindkvist, & DeFillippi, 2004; Turner & Keegan, 1999; Turner & Keegan, 2001), less research has been done on the project manager role (Hölzle, 2010). The project manager role is changing; in an early article, Gaddis (1959) described the role of a project manager who functioned as a focal point for the management of resources being applied to managing ad hoc activities across organizational boundaries. The project manager’s role starts with set responsibilities; however, he or she ends up with additional roles that are not parts of his or her job description (Shenhar, Levy, & Dvir, 1997). The project manager role must be supplemented with other knowledge and skills, in addition to the traditional functions, to meet the changing needs of modern projects they are hired to manage (Edum-Fotwe & McCaffer, 2000; Russell, Jaselski, & Lawrence, 1997). Overall, the role of the project manager evolves from being the administrator of the project toward a much more managerial and leadership position, to fulfilling an organizational strategic need. Hence, the project manager needs a completely different set of capabilities and competencies; therefore, there is the need to look at a broad spectrum of requested project management competencies (Edum-Fotwe & McCaffer, 2000).

Despite project management being common in many industries, the project manager can be considered as an accidental profession for many individuals. According to Pinto and Kharbanda (1997, p. 216), “few individuals grow up with the dream of one day becoming a project manager. It is neither a well-defined nor a well-understood career path in most modern organizations. Generally, the role is thrust upon people rather than being sought.” Few project managers, therefore, would have started out in the project management role fully trained. In fact, there is considerable evidence to suggest that the transition into a project manager position is a complex interaction of influence and experimental progression at the individual, organizational, and project levels (El-Sabaa, 2001; Hölzle, 2010). El-Sabaa (2001) adds that such individualistic approaches to the project manager role puts the project manager’s development in terms of his or her career expectations and acquisition of specific competencies and know-how at the forefront. In tracing the decision to follow the project manager role, several authors have noted that the personality of the individual is a strong indicator of those choosing a project manager career (Tremblay, Wils, & Proulx, 2002). Within individual preferences for project management work, studies have also shown the critical place of career orientations for project managers (Brousseau, Driver, Eneroth, & Larsson, 1996; Hölzle, 2010).

The organization itself plays a significant part in the needs and requirements of the project manager, thus showing a need to take into account how organizations ‘manage’ these industry professionals (Brousseau et al., 1996; Chen, Chang, & Yeh, 2004; Hölzle, 2010). Organizations are implicated in project manager development as they provide a context for what, how, and where projects are carried out. The traditional view of project manager development is often described as organizational careers that follow a hierarchical, upward-oriented promotion of the individual within the organization (Hölzle, 2010); however, Hodgson (2002, 2004, 2005) traces the development of the project management role in organizations. From an organizational point of view, the professionalization of project managers still remains largely discrepant, and divergences in the conceptualization of the field as an occupation and profession in regions such as the United States and...
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United Kingdom exist. Thus, commentators (Styhre, 2006) have described project managers as “pseudo-professionals” (Hodgson, 2005, p. 57). These tensions are embodied by the disagreements on the conceptualizations and forms of project management work and the absence of an agreed-on form of mandatory qualifications (Hodgson, 2002). This has led to the observation that the nexus of control for the management of projects is subjected to organizational influence, rationalization, and bureaucratization of project work (Hodgson, 2005; Räisäinen & Linde, 2004; Styhre, 2006). Such balancing of professional and organizational tensions appears to contribute to the changing nature of project management through work redesign, temporal work units and cooperation, work tasks, relations, and responsibilities (Räisäinen & Linde, 2004). These organizational variables have spurred conceptual and practical impetus to examine the characteristics of the project and how it impacts on the performance of projects.

Research has shown that the features of the project and its complexity require specific competencies from the project manager (Crawford, Hobbs, & Turner, 2006; Huemann, Keegan, & Turner, 2007; Müller & Turner, 2007). Aspects of the project, such as technology (Anantatmula, 2008), direct managerial support (Kelley & Lee, 2010), and the structure of the project (Lechler & Dvir, 2010) influence the right project manager competencies for successful project completion. While project and organizational variables are important, individual factors are still critical for project success. Thus, one key question that allows us to investigate how project manager competencies influence project management would be to examine what makes a competent project manager.

What Makes a Competent Project Manager? Competency Frameworks and Project Management Literature

McClelland (1973) first proposed competencies as a critical differentiator of performance and since then the competency movement has become pervasive in management practice (Boyatzis, 2008). The term “competency,” although diffused throughout the management literature, can be heterogeneous in conceptualization, depending on its use and development (McClelland, 1998; Sylvia, 2000). The differences in conceptualizations have proposed a diversity of typologies of competencies, ranging from generic approaches (e.g., Mei, Dainty, & Moore, 2005) to more context-specific approaches (e.g., Antonacopoulou & FitzGerald, 1996; Ling, 2003). However, while many conceptualizations exist, competencies can be understood as having components that include knowledge, skills, and abilities (KSA model) used to improve performance (Ulrich, Brockbank, Johnson, Sandholtz, & Younger, 2008). Some scholars (e.g., Čiarniené, Kumpikaité, & Vienažindienė, 2010; Hayton & Kelley, 2006) and practitioners have even used the terms “KSAs” and “competencies” interchangeably. Various scholars have added to this basic definition with ancillary components such as behavioral and overarching components (Athey & Orth, 1999; Campion et al., 2011; McClelland, 1998). Recently, these conceptualizations have parlayed into the human capital approach specifying the potential of these individual competencies to be managed and leveraged for performance (Boudreau & Ramstad, 2007; Hatch & Dyer, 2004).

Depending on the type and scope of the project, the competencies of project managers vary in depth and breadth. Müller and Turner (2007) identify the correlations between project manager leadership competencies (emotional, managerial, and intellectual) with project success. Later, Müller and Turner (2010) analyze the differences in project manager leadership competency profiles with different types of projects: relatively simple projects involve more transactional style of leadership, whereas more complex projects require transformational leadership style. A short-term specialized and low-budget project calls for different competencies than those of a long-term, strategic, and large-scale project (Hölzle, 2010). For example, for ICT recruiters in the United States, the most valued project manager competencies are experience and education, whereas certification is moderately important (Stevenson & Starkweather, 2010). Research shows that for managing ICT projects, recruiters prefer more soft skills from project managers. The major soft competencies for ICT project managers include personal attributes, communication, leadership, negotiations, professionalism, social skills, and project management competencies (Skulmoski & Hartman, 2010). Although the scope and variation of projects appear diverse, broad commonalities and generalities have been reported in the literature. For example, basic project manager competencies have included project-based expertise, problem-solving competence, leadership, and social competence (Hölzle, 2010). Others have emphasized additional competencies, such as communication, organizational, team building, leadership, coping, and technological skills (El-Sabaa, 2001; Meredith & Mantel, 2006). There is an assumption that project manager skills can traverse different projects leading to prescriptions of project manager competencies.

Two prime project management professional organizations, the International Project Management Association (IPMA) and Project Management Institute (PMI), have developed the IPMA Competence Baseline (ICB) and the Project Manager Competency Development (PMCD) framework, respectively. The ICB components (technical, contextual, and behavioral) and the PMCD components (knowledge, performance, and personal) appear structurally similar. In order to understand what makes a competent project manager, to frame our research objectives we utilize the PMCD framework (PMI, 2007), because, to our
knowledge, it is the most comprehensive and widely used standard for project manager competencies in the Asia-Pacific region.

We examine the PMCD framework and look at the empirical literature on its use to date. The PMCD framework utilizes three dimensions of project manager competencies: knowledge, performance, and personal. To be competent, a project manager needs to satisfy the following competency components: knowledge competence (i.e., what the project manager knows about the application of processes, tools, and techniques for project activities); performance competence (i.e., how the project manager applies knowledge to meet project requirements); and personal competence (i.e., how the project manager behaves when performing activities within a project environment, his or her attitude, and core personality characteristics (PMI, 2007, p. 2). Based on this, competent project managers can consistently apply their project management knowledge and personal behaviors to increase the likelihood of delivering projects that meet stakeholders’ requirements (PMI, 2007). However, in order for us to extend our discussion of project manager competencies, an examination of the PMCD framework and the empirical literature on project manager competencies is imperative. The following sections examine these competencies in detail, utilizing the PMCD framework as an organizing structure, with a particular focus on the implications for competency profiles of project managers.

### Knowledge Competence
As one of the three central competencies required to be a project manager, knowledge competence is important to the extent that it reflects the project manager's knowledge or body of information (the processes, tools, and techniques for project activities) required to perform the tasks required for the project. Under the Project Management Professional (PMP) credential framework, knowledge competence can be demonstrated by passing an appropriately credentialed assessment, such as the PMP examination, or any equivalent project management accreditation. The PMCD framework for knowledge competence is designed to be applied generically, regardless of the nature, type, size, or complexity of the projects being managed (PMI, 2007). As such, the knowledge competence for project managers tends to be prescriptive and nonspecific. Unfortunately, the PMCD framework does not address whether there are industry-specific or region-specific competencies. The generic PMCD framework assumes that individual competencies are transferable across industries and organizations (PMI, 2007). Depending on the type and scope of the project, competencies of project managers vary in depth and breadth. In some industries there may be technical skills that are particularly relevant to that industry or covered by specific domain, regulatory, or legal requirements (PMI, 2007). For example, to run a construction project, an organization may require its project managers to have more knowledge of safety standards. In contrast to this, an ICT project may require that the project manager possess a specified level of IT technical competence, as well as competence in project management. A short-term specialized and low-budget project calls for different competencies than those of a long-term, strategic, and large-scale project (Hölzl, 2010). Because of these complexities, PMI does suggest developing industry-specific or organization-specific competencies.

Knowledge aspects of competencies are the factual or procedural information necessary for successfully performing a task. When a manager is attempting to fill a position, it is important to have accurate information about the characteristics a successful job holder must have. With regard to the knowledge component of project manager competencies, there is less research in terms of effectiveness criteria. Studies have prescribed the knowledge competencies required, such as quality control (Dainty, Mei, & Moore, 2004; Geoghegan & Dulewicz, 2008; Gillard & Price, 2005; Hao & Świerczek, 2010; Mei et al. 2005; Stevenson & Starkweather, 2010); however, in a recent study by Zwikael (2009), of 783 project managers from different countries and industries, it was found that the Knowledge Areas from the PMBOK Guide (PMI, 2007) with the greatest impact on project success were Project Time Management, Project Risk Management, Project Scope Management, and Project Human Resource Management. These results were found to be sensitive to industry requirements; thus, a general consensus in the literature is that knowledge underlies many of the competencies required in successful project management and the requirements may be different for different industries.

### Performance Competence
In terms of performance of knowledge competence, project manager performance competence can be demonstrated by assessing project-related actions and outcomes. In other words, project managers must apply their knowledge to meet project outcomes. Within project-based sectors, there is a growing imperative to link the performance of project managers with the performance of the organization (Gillard & Price, 2005; Mei et al., 2005). The link between performance competency and project success has been extensively studied in the literature (Alderman & Ivory, 2011; Frank, Sadeh, & Ashkenasi, 2011; Liu, Chen, Jiang, and Klein, 2010; Papke-Shields, Beise, & Quan, 2010; Starkweather & Stevenson, 2011; Yang, Huang, & Wu, 2011). These studies have underscored the key competencies required in the project management role. For example, Pinto and Slevin (1989) stressed in their article the importance of selecting project managers who possess the necessary technical and administrative skills for successful
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Their study also stressed the changing nature and effectiveness of the competencies based on the development and life cycle of the project. Recently, Hao and Świerczek’s (2010) study demonstrated that factors related to manager competencies and member competencies affect success criteria. They suggest that more emphasis should be placed on developing these competencies through more appropriate training for managers and professionals in skills and certifications for the future success of projects. In addition, they found that manager and team competencies were more important to the success of a project in the implementation and completion stages, where projects managers have a major role in effective performance. This is congruent with Zwika and Golesron’s (2006) finding that the quality and intensity of organizational support and the project manager’s ability to project plan results in his or her ability to complete projects by almost half the cost and schedule overrun. In addition, Liu et al. (2010) found a strong positive relationship between management control and project management performance, which translated into project team task completion competence and project management performance.

The identification of project management competence with that of performance of a project and organizational outcomes demonstrates the importance of identifying effective project manager competencies. Thus, the identification of superior project managers is possible based on competency profiles (Mei et al., 2005). To that end, Mei et al. (2005) generate a competency-based framework for identifying excellent performance of project managers in the construction industry. Their research shows that the behavioral competencies of superior project managers could be identified using a holistic approach focused on the job role (e.g., task competencies associated with the project management function) and the characteristics of the individual person (behavioral competencies of the managers’ personal characteristics). Their findings suggest that 12 core competencies underpin the success of project manager performance: achievement orientation, initiative, information seeking, focus on client’s needs, impact and influence, directionality, team leadership, analytical thinking, conceptual thinking, self-control, and flexibility. Gillard and Price (2005) similarly identified goal and action management, leadership, human resource management, directing subordinates, and focus on others as competencies of effective project managers. Zwikael (2009), as described earlier, further showed empirical support for the requirements of project managers to understand and develop competencies for successful project completion. Mei et al. (2005) suggest that, although the behavioral competencies of superior project managers can be identified, job-task competencies were highly specific to the industry in which they work, whereas behavioral competencies of superior project managers were generic in nature and applicable to a wider range of other management positions. Given the above findings, the use of competencies in achieving performance is imperative theoretically and in practice. Such identification of performance competencies highlights the critical elements of performance in a project; however, the links between competencies and performance can be complex.

Personal Competence

Personal competence reflects how the project manager behaves when performing activities. The project manager’s personal competence includes elements of the manager’s attitude and personality characteristics. These skills tend to be often described as “soft skills” or “other” attributes from an HRM perspective. However, research suggests that personal aspects are important in the project manager role (Bierhoff & Müller, 2005; Clarke, 2010a; Gehring, 2007; Malach-Pines, Dvir, & Sadeh, 2009; Thal & Bedingfield, 2010). Hao and Świerczek (2010) measured managers’ competencies as the ability to delegate, to coordinate, to make decisions, and to understand their roles and responsibilities. The development and improvement of these skills were seen as important parts of enhancing professional development and adaptability (Hansson, Backlund, & Lycke, 2003). Personality characteristics have been examined in the literature (Dolfi & Andrews, 2007; Dvir, Sadeh, & Malach-Pines, 2006; Gehring, 2007; Malach-Pines et al., 2009; Thal & Bedingfield, 2010). Dvir et al. (2006) tested the hypothesis that a project with a particular profile needed a manager with fitting personality traits in order to achieve optimal performance and success. They examined project managers’ personality traits relevant to the project dimensions (novelty, complexity, technology, and pace) and project success to find tentative support for the hypothesis. This was subsequently supported by Thal and Bedingfield (2010), who found conscientiousness and openness (from the five-factor personality model) to be positively correlated with project manager success. Recently, Clarke (2010a) found emotional intelligence (EI) ability measures and empathy explained project manager competencies of teamwork, attentiveness, and managing conflict. In addition, after controlling for cognitive ability and personality, EI also explained transformational leadership behaviors, such as idealized influence and individualized consideration. In a subsequent study, Clarke (2010b) showed positive effects from a training program in EI six months after, showing improved emotional intelligence abilities, empathy, and the project manager competences of teamwork and managing conflict.

One area of personal competencies that has received the most attention is leadership (Anantatmula, 2010; Bierhoff & Müller, 2005; Geoghegan & Dulewicz, 2008; Hölzle, 2010; Müller & Turner,
The literature shows that there is a statistically significant relationship between a project manager's leadership competencies and project success (Bierhoff & Müller, 2005; Geoghegan & Dulewicz, 2008; Müller & Turner, 2010). Geoghegan and Dulewicz (2008) examined ten leadership dimensions (five management related, four social/emotional competencies, and one intellectual competence) and found that management leadership dimensions contributed most to successful projects. However, early reviews of the literature on leadership in project management found surprisingly little evidence that leadership impacts project success despite the general management literature viewing effective leadership as a critical success factor in the management of organizations (Turner & Müller, 2003). Recently, Anantatmula (2010), however, found that when uncertainties and changes occur within projects, leadership has a greater impact on the success factors. In a similar mold (Yang et al., 2011), leadership may enhance relationships among team members and has a statistically significant influence on project performance. Certainly the context and interactions of leadership's effects on successful project management may be complex and interactive (Bierhoff & Müller, 2005; Müller et al., 2012).

Overall, the literature highlights that personal factors may account for some of the successes of a project; therefore, the personal characteristics of the project manager are just as important as the other factors presented earlier. However, little is known about whether such characteristics are signaled in the recruitment of project managers and it would be beneficial for the project management community to further investigate those sought after components of competencies in different job markets and industries. In an effort to understand how the PMCD framework of competencies map out in the supply side and demand side, in the next section we examine the core constructs underlying competencies, that is, the knowledge, skills, and abilities (KSAs; see Ulrich et al., 2008).

**Knowledge, Skills, and Abilities: The Building Blocks of Project Manager Competencies**

A competency is a measurable pattern of KSAs, behaviors, and other characteristics that an individual needs to perform the core roles of occupational functions effectively (Rodriguez, 2002). With this basic premise, competency-based approaches are highly diverse in their conceptualizations and approaches. Competency-based models have also focused on identifying the characteristics necessary for the successful performance and behavioral indicators that can be used to assess an individual's proficiency in those particular competencies (Jackson, Schuler, & Werner, 2009). Other competency approaches have either focused on the behavior enabling people to perform the task or the underlying characteristic that result in superior performance (Mansfield, 1999). Furthermore, other approaches have focused on the work-related concept (such as task or functional criteria on which managers can be rated on) or on the generic underlying qualities (i.e., behavioral competencies). While the diversity often is attributed to the different approaches to management of particular regions, such as the United States and Europe (Mei et al., 2005), competencies (whatever their focus) have been implicated in effective job and organizational performance (Brophy & Kiely, 2002).

KSAs can also sometimes focus on the job or role's tasks or the worker in the role through job analysis (Schippmann, 1999). This process forms the basis for systematically understanding the work that gets done in an organization (Brannick & Levine, 2007) and can be a good starting point for understanding how project manager competencies are conceptualized and used in practice. Therefore, careful consideration of the core components of competencies (i.e., the KSAs) that underlie diverse competency descriptions is imperative. In this study, we separate competencies into the component parts of KSAs to better facilitate an analysis of the underlying components of competencies (Ulrich et al., 2008). The KSA model specifies greater accuracy of the characteristics a successful job-holder has (Green & James, 2003), as well as facilitates far greater precision in analyzing competencies for comparative purposes.

In an effort to further understand how the PMCD framework of competencies map onto the supply side and demand side, we examine the core constructs underlying competencies—that is, the knowledge, skills, and abilities (KSAs; see Ulrich et al., 2008). In analyzing the PMCD framework, which emphasizes knowledge, performance, and personal competencies, it can be observed that breaking down the competencies into their component parts of knowledge, skills, and abilities allows an observation into their core components. For example, although the PMCD framework of ‘knowledge’ competencies maps intuitively to knowledge, the ‘performance’ and ‘personal’ competencies can be broken down into core components that consist of knowledge, skills, and abilities. The mapping between PMCD and KSA competencies is shown in Figure 1. By breaking down the components of competencies into KSAs, a more in-depth analysis of competencies (and how they relate to one another) can be performed, including allowing comparative analysis. Therefore, although we use the term “competencies” to reflect these various approaches, we conduct an analysis of ‘KSAs’ as the underlying components of these competencies.
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![Diagram showing the mapping between PMCD and KSA competency dimensions.]

The organization's ability to attract and retain talented individuals. Recruitment involves "those practices and activities carried on by the organization with the primary purpose of identifying and attracting potential employees" (Barber, 1998, p. 5). Recruitment performs the essential role of bringing in the requisite human capital into the organization and can have a significant impact on organizational performance (Chhinzer, Ghatehorde, 2009; Han & Han, 2009; Newman & Lyon, 2009; Schulz, Camp, & Wahman, 2008). Effective recruitment practices grow out of strategic planning and must not only be consistent with the organization's strategy, mission, and values, but also include the basic job description based on sound job analysis information (McEntire, Dailey, Osburn, & Mumford, 2006).

Because of the complexity of project-based workplaces, the critical role that the competencies of project managers play is vital to the organizational demands of project management. Complexities are in terms of short-term interaction and involvement, reliance on a transient workforce, and conducting projects in a complex multidisciplinary team environment (Loosemore, Dainty, & Lingard, 2003; Mei et al., 2005). Fundamental to the process of successful management of projects is the focus of organizations to implement effective recruitment of qualified personnel based on accurate job analysis data (Mei et al., 2005). The pre-hire processes of recruitment and selection of potential project managers are important activities due to the transient nature of project work. This places greater importance on the ability of organizations to select project managers based on their competencies to achieve the required organizational and project outcomes. In a survey among IT recruiters in the United States, it is found that project managers are recruited based on critical core competencies in the areas of leadership and interpersonal skills (ability to communicate at multiple levels, verbal skills, written skills, ability to deal with ambiguity, and change) (Stevenson & Starkweather, 2010). The growth in interest of recruiting and managing effective project managers has led to a shift from talking about which qualifications are needed to which competencies are necessary (Dainty, Mei, & Moore, 2005; Gillard & Price, 2005).

In addition to the complexities of project work, the combination of strong competitive business environment and tight labor markets for talented project managers means that the ability to attract the right talent becomes imperative for the business (Wu & Zmud, 2009). Thus, recruitment is a highly competitive activity, especially in contexts where there are labor market and skill shortages. Organizations unable to recruit effectively are unable to compete with organizations that do (Chen et al., 2004; Lam & White, 1998). Perhaps one of the most important recruitment activities that organizations use to gain competitive advantage is the use of the job advertisement, which is a basic recruitment tool that organizations utilize to generate an initial applicant pool for project management job vacancies (Johnson, Winter, Reio, Thompson, & Petrosky, 2008). Job advertisements can be effective in attracting potential job applicants, depending on how accurately described and attractive their content is (Barber, 1998; Heneman & Berkley, 1999). Job advertisements provide signals on employer expectations and demanded skill set (Ahmed, 2005; Youngok & Rasmussen, 2009). Research on job advertisements shows that they influence the types of people who apply for jobs (Johnson et al., 2008). Aside from their stated purpose of informing and attracting potential applicants, job advertisements can be used as a proxy for the organization's missions, values, and culture (Avery, 2003; Johnson et al., 2008).

In addition, job advertisements are helpful in both employee self-selection and employer selection. With respect to employee self-selection, job advertisements indicate the required competencies and job information, allowing potential employees to self-select themselves in or out of applying for the job. Employers are thus able to utilize the job advertisements as signals for the organizational requirements not only for the job but the organization.

In matching a project manager to the requirements of projects and organizations, a consideration of the competencies required is often utilized. These competencies come from a variety of sources, such as the PMCD, and HRM job analysis information, such as O*Net (O*Net, 2012). Although most organizations rely on the PMI credential and certification processes for project
managers or even developed their own certificates (Remington & Leigh, 2007), the requisite breakdowns of KSAs underlying competencies can also be found through job analysis information. How organizations signal their requirements is a subject that can be of critical importance in the process of recruitment. With that aim, our research thus builds on the development and use of these competencies by examining how organizations signal their required need through job advertisements. In this research we utilize a two-pronged approach in examining the question: to what extent do project manager job advertisements reflect the supply side of project manager competencies? In so doing, we hope to highlight the extent to which competencies of project managers and signals used to attract potential project managers are actively used in communicating about project manager positions.

**Methodology**

**Content Analysis**

Content analysis is a research technique that enables inferences to be made based on a text considering the context in which it was written (Holzmann & Spiegler, 2010). According to (Krippendorff, 2004), the term ‘content analysis’ did not appear in the English language until 1941. Following the end of the World War II, this method was widely used in the study of texts from journalism, political speeches, and propaganda, among other applications. Subsequently, the methods were taken up by other fields, including psychology, anthropology, history, and linguistics (Krippendorff, 2004).

The method basically includes two separate, though usually integrated approaches, namely qualitative and quantitative content analysis (Krippendorff, 2004). Qualitative analysis provides the conceptual framework, whereas quantitative analysis provides measurable terms for the framework. Qualitative content analysis demands meticulously reading each document, understanding and interpreting the text in its relevant context, and finally coding and classifying each of the text units. On the other hand, quantitative content analysis summarizes the inferences and insights derived from the qualitative phase in the form of numerical examinations of the interpreted text units and the related categorized codes (Holzmann & Spiegler, 2010).

Content analysis as a recognized research method has promulgated various areas, such as information systems and information technology (Gallivan, Truex, & Kvasny, 2004; Lee & Lee, 2006; Todd, McKeen, & Gallupe, 1995), operational research (Mar-Moliner & Xie, 2007; Sodhi & Son, 2008; Sodhi & Son, 2010), operations management (Montabon, Sroufe, & Narasimhan, 2006), marketing (Howard & Kerin, 2006), social sciences (Hartog, Caley, & Dewe, 2007), and the public sector (Redman & Mathews, 1997). However, content analysis is relatively rare in project management. Recently, Holzmann and Spiegler (2010) conducted a study based on qualitative and quantitative content analysis of lessons-learned documents to construct a list of organizational risk data sets. Loo (2003), in contrast, only used a qualitative approach of content analysis to assess ‘team climate’ in project teams.

Of interest to this study, Kolltveit, Karlsen, and Gronhaug (2007) used content analysis to review project management books and journal articles in an attempt to identify the different perspectives on project management. The authors utilized a literature review and project management practices to identify six important perspectives on project management. These perspectives were task, leadership, system, stakeholders, transaction cost, and business by projects. The focus of the task perspective is on the project objective that should be delivered as specified, within budget, and on time. Planning and control methods were central to this perspective. The leadership perspective is based on issues such as leadership, communication, uncertainty, and learning. The system perspectives implied that problems should be solved by considering the total picture rather than individual components. The key issues of stakeholder perspectives are communication, negotiation, relationships, influence, and dependence. The transaction cost perspective focused on economic transaction. The frequently used methods and tools within this perspective were contract development, contract negotiations, contract execution incentives, and innovation process. Finally, the business perspective dealt with project investment, strategy, results, and benefits. This study was thus able to highlight the different approaches and perspectives on the project management concept, including its implications for professionalization and development for all users. As such, this study attempts to build on prior research by explicating the conceptualization of project manager roles and requirements from the perspectives of employers. The research method of the study is discussed in the next section.

**Content Analysis Steps**

Identifying the importance of project manager competencies from job advertisements, our study focuses on content analysis method as a research tool. This study utilizes qualitative and quantitative techniques in an integrated manner. We use the following steps: (1) create project manager job-related key categories from the literature, (2) identify job advertisement websites, (3) collect sample data and modify variables, and (4) search job advertisement contents and code frequency of relevant items.

**Create Project Manager Job-Related Key Variables From the Literature**

The first step of our research is to create variable dictionaries that will be the basis of our data collection. From the project management literature (International Journal of Project Management, Project Management Journal®), project
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When contemplating which job sites to use as sources for advertisements, we find the seek.com website to be a potential, comprehensive, and dedicated source of job advertisements. SEEK is by far the largest job board in the Australasian region in terms of both job advertisement and job seeker numbers, and represents a rich cross-section of jobs. In Australia, SEEK hosts approximately 62% of all jobs on Australia’s major job sites. In a given month, over 150,000 job advertisements are posted on SEEK and visited 14.7 million times a month. In New Zealand, approximately 14,000 job advertisements are now posted on SEEK, significantly more than those of its nearest competitors. (Sources: Nielsen Online Ratings, Market Intelligence Traffic Data, January 2012.)

We do not consider any other job board, because recruiters quite often post the same advertisements simultaneously on multiple websites, and that means either we run the risk of analyzing duplicate advertisements or we need to cross check each advertisement to omit duplicates, which is a lengthy process. For the same reason, we do not consult the vacancy or career webpage of any individual organization or professional recruitment company. Such an approach would require considerable time, including visiting different websites and potentially overlooking smaller and lesser known companies (Sodhi & Son, 2010).

Collect Sample Data and Modify Variables

Before starting data collection, we made sure the KSA variables we are using cover most sought after project manager competency–related keywords. With that goal, we start off by analyzing 40 advertisements in the first phase. The merging and grouping of KSA variables are conducted based on literature, pilot content analysis from job advertisements, and group consensus among researchers. These variables are tallied and ranked based on the frequency of citations. From the sorted 60 variables, Table 1 shows the top 15 most cited KSAs.

Identify Project Manager Job Advertisement Websites

Job advertisements can be found in both print and online media. Print media includes newspapers, professional magazines, and journals, whereas online media ranges from online job boards, recruiter websites, to individual company career webpages, and social networking sources; we decided to use only online job boards. Advertisements published in newspapers and magazines tend to be shorter and less elaborate because they are generally charged based on the space they take and, thus, the bigger and more detailed the advertisement the more costly it is; this is especially true for small recruiters with limited budgets (Sodhi & Son, 2010).

The consequence is less content to analyze, resulting in potentially compromised research output. Furthermore, online sources are also easy to navigate and finding the intended advertisement is manageable and accessible. Job advertisements from online sources are categorized based on country, industry, position roles, and responsibilities. In addition, the scope of using various search strings ensures the results are more relevant. For example, in our case, we searched for “project manager” (within quotation marks) and this ensured the advertisements captured by the database were almost always of ‘project manager,’ not ‘program manager,’ ‘technical manager,’ or ‘project engineer.’

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<table>
<thead>
<tr>
<th>Desired KSAs</th>
<th>Citation Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Leadership</td>
<td>17</td>
</tr>
<tr>
<td>2. Effective communication</td>
<td>11</td>
</tr>
<tr>
<td>3. Project technical expertise</td>
<td>10</td>
</tr>
<tr>
<td>4. Team building and management</td>
<td>9</td>
</tr>
<tr>
<td>5. Planning skill</td>
<td>8</td>
</tr>
<tr>
<td>6. Flexibility</td>
<td>6</td>
</tr>
<tr>
<td>7. Organizational skill</td>
<td>5</td>
</tr>
<tr>
<td>8. Decision-making skill</td>
<td>5</td>
</tr>
<tr>
<td>9. Management skill</td>
<td>4</td>
</tr>
<tr>
<td>10. Delegation</td>
<td>4</td>
</tr>
<tr>
<td>11. Analytical abilities</td>
<td>3</td>
</tr>
<tr>
<td>12. Problem solver</td>
<td>3</td>
</tr>
<tr>
<td>13. Coping with situations</td>
<td>2</td>
</tr>
<tr>
<td>14. Interpersonal skills</td>
<td>2</td>
</tr>
<tr>
<td>15. Stakeholder management</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 1: Top 15 most cited KSAs from the literature.
Australia and New Zealand. The idea is to check the initially identified 60 variables from the literature (described earlier) and find out whether amendments are required. The adjustment process proved to be a success because we ended up adding new variables in addition to the variables identified from literature. These variables include health and safety, quality management, and compliance. We also discarded a few of our initial variables (described earlier) as they did not generate any hits; moreover, a small number of variables were merged since we considered them too similar in meaning and they did not warrant being separate. Overall, this process ensures a more robust variable set, which means that eventually, when actual content data commence, all data will fall into the right place.

Content Search of Job Advertisements and Record Frequency of Relevant Items
The content analysis is done manually and no content analysis software is used. Advertisements were collected between December 2010 and February 2011. We used this time period because many companies recruit project managers at the beginning of the year and there are more job advertisements on the website at this time. Each job advertisement was printed out, marked with a reference number and filed under corresponding country and industry. All the advertisements were thoroughly scanned and possible keywords and phrases falling under the predefined variables marked. The manual data processing was painstaking and laborious; however, the method provided expert input and better output compared with software. Words are not only words; they are drenched in context and so human involvement means superior accuracy in data collection (Sodhi & Son, 2010).

Our unit of analysis is job advertisement. After identifying specified key variables (measures) from job advertisement content, we tabulate the database. Variables are placed in columns and job advertisements in rows. For each measure, we use binary code; if a project manager job advertisement mentions a competency variable, we consider it a positive answer and use ‘value = 1’; otherwise we use ‘value = 0.’ Along with the competencies, we also recorded some relevant demographic data, such as the name of the advertising agency or company, job title (such as project manager), offered salary, benefits (such as superannuation, car park, and so forth), and project size.

Weber (1990) notes: “to make valid inferences from the text, it is important that the classification procedure be reliable in the sense of being consistent: Different people should code the same text in the same way” (p. 12). We ensured validity by cross checking the coded data. Initially, data were entered by one of the researchers; the same researcher randomly cross checked the data and found the same results for each case. Later, the other two researchers randomly cross checked the data in 50 separate instances. Using this process, we took printed job advertisements and, based on the reference number, the advertisement data were thoroughly scanned in terms of keywords and phrases falling under the predefined variables marked. We found in 48 cases coded data were error free; only in two cases (4%) there were some inconsistencies, which were later resolved through discussion. Overall, we found no remarkable inconsistencies in data coding, and the content data entry process is essentially error free.

Results and Analysis
During the data collection period, we have collected about 795 job advertisements. After careful screening of all job advertisements, we discarded 33 advertisements. Among the 33 discarded samples, 23 are not informative enough or have insufficient contents (only the advertiser name and contact information are provided), and 10 are duplicates. Finally, we tabulated 762 job advertisements in the Australian (55.6%) and New Zealand (44.4%) markets. Tabulated advertisements identify the job title as project manager, 80%; senior project manager, 15%; and junior project manager only 5%. The jobs are from industries such as information and communication technology (52%), construction (25.7%), engineering (11.2%), government and defense (6.2%), healthcare (2.8%), mining, art and the media, manufacturing, and others. In the following subsections, we focus on analyzing job advertisements to identify key KSAs in general, across countries and industries.

Job Advertisement KSAs
We analyze job advertisement data under KSA classifications. Table 2 illustrates job advertisement frequencies under KSA categories and subcategories. Results show that under the knowledge category, education (28.61%) is the most cited competency, followed by project management certification (20.47%), and demonstrates that many employers are looking for a project manager with a tertiary or trade background. For example, for a construction project manager job, it is desirable to find a project manager with a civil engineering degree. Analysis also shows that many jobs require project managers with certifications from professional bodies, such as the Project Management Professional (PMP)® credential from PMI or PRINCE2 from the United Kingdom.

The job of a project manager is to know how to manage projects and therefore skills pertaining to management are the most critical for success. It appears that industries in both countries are mostly looking for project managers with good ‘communication’ skills (61.68%). In our analysis, ‘communication’ skills cover sub-categories such as reporting, presenting, relations management, and interpersonal skills. Technical skill was identified as the second most sought after competency (43.57%). Employers are looking for project managers with technical skills that are very specific to project technology, such as an IT project manager who...
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Whereas in New Zealand the number is five. For both countries, all top ten KSAs are common. We found in Australia, the most popular KSAs are cost management and communication, whereas the New Zealand market emphasizes communication and technical skills. In both markets, stakeholder management and leadership skills are equally emphasized. Details of the top ten sought after KSAs are shown in Figure 2. Australian job advertisements are more concerned about time and cost management than the New Zealand market. Nearly 25% more of Australian job advertisements mention planning as a desirable quality. Similar differences have been marked regarding time management, education, and cost management skill. This is perhaps because the Australian

<table>
<thead>
<tr>
<th>Knowledge Category</th>
<th>Advertisement (%)</th>
<th>Skill Category</th>
<th>Advertisement (%)</th>
<th>Ability Category</th>
<th>Advertisement (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational background</td>
<td>28.61</td>
<td>Communication</td>
<td>61.68</td>
<td>Result oriented</td>
<td>16.14</td>
</tr>
<tr>
<td>Certification</td>
<td>20.47</td>
<td>Technical skill</td>
<td>43.57</td>
<td>Problem solver</td>
<td>6.69</td>
</tr>
<tr>
<td>Health and Safety</td>
<td>11.81</td>
<td>Stakeholder management</td>
<td>41.73</td>
<td>Commercial acumen</td>
<td>6.69</td>
</tr>
<tr>
<td>MS Project</td>
<td>4.33</td>
<td>Cost management</td>
<td>37.40</td>
<td>Agility</td>
<td>4.72</td>
</tr>
<tr>
<td>Compliance to regulations</td>
<td>3.67</td>
<td>Time management</td>
<td>32.68</td>
<td>Work under pressure</td>
<td>3.41</td>
</tr>
</tbody>
</table>

Table 2: Top five KSAs from job advertisements.

is required to have a “solid understanding of software development.” The next most important project manager skill in demand is identified as stakeholder management (41.73%).

Among “abilities,” frequently cited competencies are “result-oriented ability” (16.14%) (i.e., getting things done), followed by “analytical ability” and “problem solving ability.” In Table 2, we summarize the top five KSAs sought after by employers.

Sought-After KSAs Across Industries and Countries

We explored job advertisements to identify any existing patterns between Australia and New Zealand. Table 3 shows that communication requirement places at the top of the chart. An average 61.68% of all advertisements are seeking good communication skills from project managers. While “leadership” is the most frequently cited competency within the literature, it ranked only eighth in job advertisement requirements. If we compare our findings (top 10 KSAs) with the 15 most cited KSAs from the literature (from Table 1), it can be seen (in Table 4) that as many as six items are common in both the top lists, barring flexibility, organizational skill, decision making, delegation, and problem solving. On the other hand, industry job advertisements are very specific in terms of time and cost management, educational background, and project management certifications. Comparing the industry job advertisement results with the project management competencies literature, most of the literature and industry job advertisements emphasize more skills based on KSAs; however, the importance of skills is in a different order and depends on other factors, including country or specific industry.

KSAs Under Country Category

We explored job advertisements to identify any existing country-specific competency requirements between Australia and New Zealand. Comparing the frequency of sought after KSAs; we find that Australian project management jobs are looking for more KSAs in their advertisements. On average, job advertisements from Australia mention seven different KSAs per advertisement, whereas in New Zealand the number is five. For both countries, all top ten KSAs are common. We found in Australia, the most popular KSAs are cost management and communication, whereas the New Zealand market emphasizes communication and technical skills. In both markets, stakeholder management and leadership skills are equally emphasized. Details of the top ten sought after KSAs are shown in Figure 2. Australian job advertisements are more concerned about time and cost management than the New Zealand market. Nearly 25% more of Australian job advertisements mention planning as a desirable quality. Similar differences have been marked regarding time management, education, and cost management skill. This is perhaps because the Australian
job market is bigger and more competitive; and where there are project managers with the required technical skills, the issues are who can complete the project on time and within budget. Moreover, in the Australian National Competency Standards for Project Management (2008), there is also more emphasis on time and cost competencies, which are reflected in the job advertisement. On the other hand, New Zealand job advertisements value technical skills compared with formal education.

Overall, identified trends of the job market are worthwhile for the project management community. Close investigation shows that some KSAs are highly sought after and there are some differences in job requirements between the two countries.

**KSAs Under Project Industry Category**

We combined data for Australia and New Zealand to identify and profile the type of project industry or employer who will employ the potential project manager. The advertisement data are mostly from eight major project industries: (1) information and communication technology (52%); (2) construction (25.7%); (3) engineering (11.2%); (4) government and defense (6.2%); (5) healthcare (2.8%); (6) mining; (7) manufacturing, transport, and logistics; and (8) arts and media. We work out the average number of KSAs sought per job advertisement from eight major industries. We found that the mining, resources, and energy sectors seek the highest number of KSA requirements per advertisement (8.3), followed by manufacturing, transport, and logistics (8) and information technology projects (7), whereas healthcare advertisements are the least elaborate, with only 4.8 requirements on average.

We compare the top five industries (that represent most of our collected data) and the top five competencies for respective industries (Table 5). It can be seen that communication is present in all five industries under one of the top three requirements, and cost management and technical skills are present across four industries. Planning is emphasized more in government sector projects. Although the construction, engineering, and healthcare sectors consider both technical skills and education as key requirements, government sector advertisements do not consider either education or technical skills as one of the top requirements.

Overall, we found that, across industries, the most common highly in demand KSAs are: communication, education, stakeholder management,
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Table 5: Top five sought KSAs for the top five project industries.

<table>
<thead>
<tr>
<th>Industry</th>
<th>Top Five KSAs</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICT</td>
<td>Education, Communication, Technical skills, Time management, Stakeholder management</td>
</tr>
<tr>
<td>Construction</td>
<td>Education, Communication, Technical skills, Time management, Stakeholder management</td>
</tr>
<tr>
<td>Engineering</td>
<td>Education, Communication, Technical skills, Time management, Stakeholder management</td>
</tr>
<tr>
<td>Government</td>
<td>Communication, Technical skills, Risk management, Stakeholder management, Cost management</td>
</tr>
<tr>
<td>Healthcare</td>
<td>Technical skills, Communication, Education, Stakeholder management, Time management</td>
</tr>
</tbody>
</table>

Figure 3: KSAs demanded in different project industries.

Discussion and Conclusions

Project management is increasingly ubiquitous in most industries and organizations. The pervasiveness of this professional discipline in modern organizations has drawn commentators to describe the “projectification” of work as failing to address the social and political consequences for both project managers and the project managed (Cicmil, Hodgson, Lindgren, & Packendorff, 2009; Hodgson & Cicmil, 2007). Past research has noted that through the organized efforts of professional bodies such as PMI, project management techniques and procedures have been framed, promoted, and packaged to become part of the established “toolkit” in many management fields (Paton, Hodgson, & Cicmil, 2010). As a result, for better or worse and throughout significant controversies and tensions (see Hodgson & Cicmil, 2007; Hodgson, Paton, & Cicmil, 2011), project management has been gaining significant influence in contemporary organizations. Our study attempts to build on the examination of the project manager role in organizations by explicating the competency requirements of the project manager role for both the “professional project manager” and his or her employers.

From the market data, we identify sought after KSAs competencies of project managers. Technical skills, and cost management (see Table 5). We further conducted statistical analysis to ascertain whether different industries require different KSAs at different weights. We consider the null hypothesis ‘the required level of KSAs is the same across the project industries’ (i.e., KSAs are not industry specific). Based on the ANOVA analysis (at a 5% significance level), we reject the null hypothesis ($F = 3.921, F_{crit} = 2.5, p = 0.0071$) and conclude that priorities of sought after KSAs are different for different industries. From Figure 3, it is apparent that KSA requirements for project managers vary with project industry. For example, among the top sought after KSAs, the importance of technical skills is different for different industries. Across industries, 41% construction projects, 50% ICT projects, 37% engineering projects, 4% government projects, and 33% healthcare projects require technical skills from a project manager.
managers across several industries in the Australasian region. We used 762 online project management job advertisements; 55.6% of the jobs advertised were from Australia and 44.4% were from New Zealand. The analyzed project jobs were mostly from construction (25.7%) and the information and communications industry (52%). This study compares cited project manager’s KSAs from the project management literature, and contrasts these with the requirements of project managers from industry through job advertisements. We analyzed the competencies in relation to the KSA framework in order to aid in the comparison and categorize the function systematically. Analysis showed that, in general, the top five sought after KSAs are all skills based; these competencies are: communications, technical, stakeholder management, and time and cost management. In the knowledge category, the top two competencies are educational background and project management certification. The ability category items are not frequently emphasized; a highly demanded KSA within this category is “results oriented project manager.”

This research is the only one of its kind in project management literature to analyze KSA-based project manager competencies from job advertisements for multiple sectors and across countries. Cross-country analysis shows the Australian job market demands more KSAs than that of New Zealand. In Australia, the most popular KSAs are cost management and communication, whereas the New Zealand market emphasizes communication and technical skills. Project industry-wise data show communication to be one of the top four requirements in all five major industries (construction, IT, engineering, government, healthcare), and cost management and technical skills are requirements among all major industries, with the exception of healthcare. In contrast, previous studies focus on a particular industry, such as ICT (Skulmoski & Hartman, 2010; Stevenson & Starkweather, 2010) and country, for example the United States (Stevenson & Starkweather, 2010). Our study analyzes KSA competencies across different regions and industries, delineating the roles and differences of project manager competencies across KSA dimensions. For a better analysis, we compare ICT job KSAs with those found by Stevenson and Starkweather (2010). It can be seen that in Australia and New Zealand, ICT project manager core KSAs are in different order. For ICT projects, the major KSAs are technical skills, communication, stakeholder management, certification, and time management. On the other hand, in the United States (Stevenson & Starkweather, 2010), although communication is cited within the core KSAs, technical skills in ICT projects are cited as low valuation. Perhaps the U.S. recruiters are less concerned with the project manager’s technical expertise gained from other companies and are more interested in training their project managers in-house, with their own technology (Stevenson & Starkweather, 2010). In comparison, Australian and New Zealand ICT recruiters are looking for more readily available project managers with technical skills. In Australia and New Zealand, ICT projects require more stakeholder management skills; whereas in the United States, stakeholder management is not among the top 15 skill competencies. For other important KSAs, both studies identify certification as among the most valued competency, although the ranking is different: project management certification is ranked 15 in the United States by Stevenson and Starkweather, (2010), whereas our research ranks it fourth. Comparing the top ten KSAs across industries and countries, with Stevenson and Starkweather (2010), it can be seen that technical skills, stakeholder management, and time and cost management are special requirements in the Australian and New Zealand project manager job markets. This could be a result of the unique project manager development in Australasia, borrowing from the traditions of international research and developing competency requirements within this region. Such implications demonstrate the requirements of generic versus specific understanding of competencies for not only project and organizational features but also regions and countries. For example, in certain countries, the requirements for technical skills may be more important compared with people skills (Huemann et al., 2007).

This study has extended the previous research by highlighting the complexity of competencies and their utilization through “industry signals.” This has important implications for the readiness and dissemination of supply-side project manager professionalization. The findings allow us to highlight several important implications for the demands required of project managers as a professional group. The results from this study allow us to compare the demands of the project manager role with those of the espoused project manager’s competencies from the literature and our findings regarding sought after KSAs from job advertisements. However, the relative emphases of KSAs across industries are different and highlight the subtle differences of functions required. This has profound implications for both the practice and management of project managers. On the one hand, although our results indicate the underlying generic KSAs required in all industries and countries (such as communication), our results also indicate that for different industries, the KSAs required can vary and that implies a different function for the project manager role. Such differences can be a function of the project manager role in the industry, and thus the demands for these KSAs can be seen as a function of the work and industrial requirements. Significant attention thus needs to be

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paid to industry variations of project managers. These industrial and regional variations may form the basis of how project management is conceptualized and understood. The promotion of project management has created, to some extent, the organizational and social contexts within which technical specialists in various sectors see the project manager role as one that promises status, influence, and authority within particular organizational settings. However, as Hodgson, Paton, and Cicmil (2011) recently pointed out, “the post-transition experience in the actual ‘day to day’ life of a project manager is almost the opposite of the hype” (p. 380). This critical observation allows us to postulate that the project manager role will continue to change in response to the requirements of the labor market, professional and organizational demands, and changing technologies. Future research thus could examine how organizational recruitment and selection of project managers continue to redefine the types of managerial competencies demanded in the profession, including tracking how the profession and its subsequent professional bodies manage the demands of the changing work environment and cross-cultural influences. In addition, although the advertisements in our sample reflect organizational needs, further research into how potential recruits select and apply for these positions will reflect the “readiness” of project managers, including an insight into the ‘supply’ side of the profession.

This research has many practical implications. We believe our research findings will stimulate discussion on how project managers select their career paths and how these career paths may influence the types and design of work and projects in different industries (Crawford & Cabanis-Brewin, 2006; Hodgson et al., 2011; Hölzle, 2010). The increasing demands for the profession, such as the intensity of work and time pressures, and resource limitations has placed a premium on competent project managers to meet these organizational needs. This research allows an insight into the potential KSA competencies and requirements for potential managers to develop and set goals to meet these market needs. These research findings will also help existing project managers consider how the project management market across industries and countries looks and allow decisions on how their organizational needs could be met for the future.

This research examines KSA competencies of the project manager role. In general, it was found that the PMCD framework for project managers could be better utilized with specific KSAs for different industries and regions. In addition, practitioners in the project manager role could better understand the areas around the human capital (KSA) that would be developed for their particular careers and roles. Although the PMCD framework is generic, this study has demonstrated that supply-side competencies need to be matched with the demand-side and include considerations of regional and industrial differences. In addition to clarifying and explicating the job competency requirements for project managers, our research is a knowledge base for human resource managers. It will help human resource managers perform the recruitment process more effectively. Particularly when a human resource manager needs to prepare a job advertisement for an industry specific project manager job, our research can provide guidelines to identify the required knowledge, skills, and abilities and prepare the job advertisement accordingly to find the right person for the project. This highlights the increasing importance of competency-based recruitment by utilizing specific generic and context-based competencies in creating a quality pool of applicants and allowing self-selection of potential candidates (Ahadzie, Proverbs, Olomolaiye, & Ankrah, 2009; Ling, 2003).

This research can be extended to find some time influence on job requirement data. In the future, this research can be extended to consider other Organization for Economic Co-operation and Development (OECD) country data. Overall, we believe our research opens up a new research direction in the project human resource management area.

References


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implementation of TQM, TPM or RCM. *International of quality and reliability management*, 20(9), 993–1008.


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