Job competencies for the malaysian consultant project managers

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Abstract: *Architects, engineers and quantity surveyors are among the main players in construction. Coming from different background and professional background, these professionals bring in their own respective styles and methods of project management practices. There is now a body of opinion among industry people and academics alike that the industry needs to establish competency standard especially for project managers. Irrespective of their professional background, competent project managers should hypothetically deliver high quality services to the clients. A study was conducted at the School of Housing, Building and Planning, University of Science Malaysia (USM), to develop a job competence model for Consultant Project Managers (CPMs). It attempts to determine a set of minimum standards of skills and competencies for CPMs. This paper reports the findings of the study. It provides an insight into the type of competencies needed by CPMs based on the "Job Competence Model for Consultant Project Managers" developed from the study.*

Key words: Project Management, Consultant Project Managers; Job Competence; Construction Industry.

Introduction

Project managers are responsible for the overall success of delivering the owner's physical development within the constraints of cost, schedule, quality and safety requirements. as such, they play a crucial role not only in the operational activities of architectural and engineering construction companies but also the development of infrastructure

in every country. From the beginning of the 1990s the business climate in the construction industry has witnessed unprecedented dynamics as organizations respond to increasing competition within a stagnant or declining market (Edum-Fotwe and Mccaffer, 2000). The industry's procurement methods also changed with clients allocating greater risks to contractors (Bedelian, 1996). The emergence of design-and-construct contracts as an alternative to the more traditional options of open competitive tendering for procuring public projects, and their widespread adoption is impacting on the role of project managers. Equally, the renewed demand for quality, productivity and performance is leading many organizations, and particularly construction companies, to question traditional philosophies and principles associated with their management processes and business practices (Hayden, 1996). Within such a changing industry climate, project managers increasingly find themselves accountable not just for the technical content of the project but also the engineering and construction accuracy, reliability of the facility, and within-cost performance. Project managers find themselves confronted by issues, and undertaking additional roles, that have traditionally not been part of their responsibility (Gilleard and Chong, 1996; Shenhar et al., 1997). both, Ceran and Dorman (1995) and Russell et al., (1997) recognized this changing role for consultant project managers and argued that they must supplement their traditional functions with other non-engineering knowledge and skills to meet today's professional demands for which they become responsible, Adum-Fotwe and Mccaffer (2000) equally emphasized the need for the project management function itself to adapt to these changing industry conditions in order to maintain its relevance for project delivery well into the future. Ahmad (1997) presented the solution to such adaptation as pairing the project management function with information technology (it). The significance of such pairing becomes more apparent when viewed against the 70% proportion of construction project managers who considered their it resources inadequate to deal with the demands of their job (Essec, 1997). Although this is relevant to developing future project managers, it does not cover all the different issues that project managers operating in today's industry environment are likely to encounter. For example, Volckmann (1997) sees the management of relationships as an essential ingredient that is increasingly impacting on successful project delivery. It is true to say that the management of relationships can be facilitated by technology and engineering principles. However, the very essence of relationships is non-technical and often social-oriented skills. Many practicing project managers in performing their duties and roles, naturally, reflect these skills. The industry can gain valuable lessons and insight for expanding the scope and coverage of the functions required of project managers by establishing the additional skills and knowledge that these practitioners have to continuously acquire in order to retain marketable services. These additional requirements often encompass the broader social aspects such as societal expectations for environmentally responsible behavior, and maintaining the right relationships that will have a positive impact on the project outcome. For the construction industry, the essence in focusing on improving competency of project managers derives also from the impact

of projects on the company's business. Each project forms a significant proportion of the company's overall turnover. The failure of a single project can therefore trigger the failure of the whole company (Jannadi, 1988; Kangari, 1988). The development of job competence model and the requisite knowledge and skills that contained needed to perform this expanding role have traditionally relied on engineering degree programs that are pursued in academic institutions. Construction and engineering degree programs for educating project managers traditionally reflect a technological content. to ensure their continued relevance in an industry, consultant project managers often rely on various learning activities that help them to fulfill for the project, both the construction specific and the non-construction functions demanded of them. Identifying the routes and mechanisms by which these consultant project managers acquire such requisite skills should provide options for addressing the training of future consultant project managers (Bentil, 1996). A more significant aspect of the study however, is identifying potential lessons for management development policy that construction organizations may adopt. This paper reports on the findings of the development of job competence model for consultant project managers. It seeks to identify what are the main components of consultant project manager's competence?

Defining project management competence

The IPMA defined competence as "knowledge + experience + personal attitude". Knowledge and experience relate to function and attitude relates to behavior (IPMA, 2002). Hornby and Thomas (1989) define competency as the knowledge, skills and qualities of effective managers, and point to the ability to perform effectively the functions associated with management in the work situation. Hogg (1993) states that competencies are the characteristics of a manager that leads to the demonstration of skills and abilities, which result in effective performance within an occupational area. Competency is linked with individual behavior and job performance. Regarding the effective performance in a job, Boyatzis (1982) states that: "effective performance of a job is the attainment of specific results (i.e. outcomes) required by the job through specific actions while maintaining or being consistent with policies, procedures and conditions of the organizational environment". In short, Competencies are specific knowledge, skills, abilities, characteristics, and behaviors that enhance job performance. However, a number of writers have identified competencies which they believe are generic, common to all occupations and spanning all other competencies. Some of these may be necessary prerequisites to the development of more role-specific competencies. Linstead (1991), Hyland (1992) and Nordhaug (1990), use the term "meta-competencies" to describe similar characteristics. Nordhaug offers as examples: communication, problem-solving and analytical capacities. Cheetham and Chivers in their model too, followed the latter authors in adopting the term "meta-competencies". The concept of meta-competence, while falling short of providing a holistic model of professional competence, nonetheless identifies an important principle which ought to be taken into account when constructing such a model; namely that there are certain

key competencies which overarch a whole range of others. The model developed by Cheetham and Chivers (1996) mentioned the competencies / skills; "Communication, Self-development, Creativity, Analysis, and Problem solving" are generic and are said to be fundamental to effective performance in all (or most) occupations. At the "core" of the model are four key "components" of professional competence. These are:

Knowledge/Cognitive Competence: - the possession of appropriate work-related knowledge and the ability to put them to effective use. The linkage of cognitive competence with knowledge emphasizes the importance of the latter part of the definition, i.e. the ability to apply knowledge in a variety of ways.

Functional Competence: - The ability to perform a range of work-based tasks effectively to produce specific outcomes.

Personal or Behavioral Competence: - The ability to adopt appropriate, observable behaviors in work-related situations.

Values / Ethical Competence: - The possession of appropriate personal and professional values and the ability to make sound judgments based upon these in work-related situations.

Project Management Competency

The project management competencies are the capability to manage projects professionally, by applying best practices regarding the design of the project management process, and the application of project management methods. Project management competencies require knowledge and experience in the subject, which enables the project to meet its deadlines and objectives (Gareis and Huemann, 1999). The principal competencies of a project manager, as stated by Morris (1994) are: 1) skills in project management methods and tools; 2) team and people skills; 3) basic business and management skills; 4) knowledge of project sponsor role; 5) knowledge and awareness of project environment; 6) technical knowledge (specialized discipline skills), and; 7) Integrative abilities of the above skills and knowledge. Project management professionals working in projects where technical issues are important must have the competency to deal with them. Project Managers must be able to recognize the issue and be confident that appropriate action has been taken to deal with them. Technical issues can cause a project to fail and often have done. Professional project management competencies are achieved by the combination of education and the knowledge acquired during training, the skills developed through experience, and application of such acquired knowledge and experience.

The Need to Identify Project Management Competencies

A competence-based approach in education and training provides the opportunity to identify and develop people with the competencies required for performing the job. Organizations create such situations to help to improve the knowledge and skills of individuals, and ultimately to improve the competitiveness and productivity of the organization itself. Boam and Sparrow (1992) suggested that a competency approach in an organization allows one to: 1) improve the selection process; 2) improve the assessment of career potential; 3) improve the performance review process; 4) provide a common

language system to convey the nature of effective performance; 5) facilitate self-assessment and development; 6) provide a basis for coaching and training; 7) provide an essential tool for developing the business culture; 8) provide a tool for building a successful team; and 10) provide a method for identifying the implications for job and organizational design. As a consequence, Competence has been defined as the underlying characteristics of a person that enables that person to demonstrate superior performance in a job.

Research Methodology

At the beginning of the main study 3 practical models of project management competence were reviewed. These are the COIB model, PMI model and the CIDB Malaysian model. Comparisons were made and similarities and differences were noted. These were then compared with those of Thomsett (job of project managers) and the model of professional competence by Cheetham & Chivers. Based on this initial study, a "job competence model for consultant project managers" was developed. The newly developed model was sent to all 128 consultant project management (PMC) firms registered with the ministry of finance, Malaysia. Since all firms operating in the country must register with the ministry, the number represents the whole population of PMC. Of these 44 responses were received. The objective of the study was to ascertain the core components of the consultant project managers job competencies. The study focused on the 4 key components of the model which outlined what competence components that construction professionals had to acquire in order to become consultant project managers. each of the key components is made up of a number of requisite skills/competence components required of consultant project managers i.e. knowledge/cognitive competence which consists of 64 variables, values/ethical competence which consists of 47 variables, personal/behavioral competence which consists of 42 variables and functional competence which consists of 46 variables. in all, a total 199 core competence components are listed in the model. The perception of practicing consultant project managers regarding the relative importance of the core components to their professional performance will provide useful options for designing training programs of future consultant project managers. The data are processed and analyzed by using the statistical package for social science (SPSS) software utilizing quantitative analysis method as follows:

- **Descriptive statistics**: to ascertain firms/company & personal information and elements of sub-competence components headings.
- **Pearson correlation**: expression on nature of the relationship between sub-competence components and core competence components headings.
- **One-sample t-test**: to compare the sub-competence components, core competence components, and the job competence model.

Results and discussion

Job competencies of consultant project

Managers Table 1 shows the comparison between the values of the mean difference for the whole independent variables/ core competence components. The knowledge/

cognitive competence is shown to have the largest value of mean difference which equals 105.04. Since the value is limited between the lower and upper values of 97.91 - 112.18, of the confidence interval of the difference, the null hypotheses which states that this competence component is required as one of the core competence components forming the job competence model is accepted. On the other hand, the functional competence has the smallest value of mean difference which is 66.15. However, the value falls within the lower and upper values of the confidence interval of the difference. Accordingly, the null hypotheses which states that this competence component is required as one of the core competence components forming the job competence model is affirmed. Likewise, the estimation for the 2 remaining key competence components with their mean difference values falling between the lower and upper limits are accepted. Thus, the null hypothesis of all 4 core competence component, which states that there are requirements for the components in the job competence model, were accepted (refer table 1). Since the mean difference values of all key competence components falls between the lower and upper limits, all the 4 key components were accepted as forming part of the job competency model, at 95% confidence interval. Such validation, from the industry people is significant for the acceptability of the model. The percentage distribution of the 4 key components within the model is as follows (see also figure 1):

- Knowledge/cognitive competence - 34%.
- Values / ethical competence - 24%.
- Personal or behavioral competence - 21%.
- - Functional competence - 21%.

Dependent variable & Independent variables	Statistics					
	Test Value = 0.05					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Job Competence Model						
Knowledge / cognitive competence	28.607	43	.000	322.22	299.51	344.94
Functional competence	29.689	43	.000	105.04	97.91	112.18
Personal or behavioral competence	23.458	43	.000	66.15	60.47	71.84
Values/ ethical competence	22.244	43	.000	66.36	60.34	72.38
	23.713	43	.000	75.00	68.62	81.37

Table 1: *One-Sample T-test of Job Competence Model Variables*

Table 2: *Pearson Correlation Relationship of Job Competence Model Variables*

Variables	Statistics	Variables				
		Job Competence Model	*Knowledge / cognitive competence*	*Functional competence*	*Personal or behavioral competence*	*Values / ethical competence*
Job Competence Model	Pearson Correlation Sig. (2- tailed)	1 . 44				
Knowledge / cognitive competence		.831** .000 44	1 . 44			
Functional competence		.902** .000 44	.744** .000 44	1 . 44		
Personal or behavioral competence		.896** .000 44	.570** .000 44	.714** .000 44	1 . 44	
Values/ ethical competence		.883** .000 44	.531** .000 44	.681** .000 44	.916** .000 44	1 . 44

***. = Correlations is significant at the 0.01 level (2-tailed)*

Table 2 shows the Pearson correlation results for the 4 key competence components of the model. it is evident that the value for functional competence is 0.902** which suggested a very strong correlation between job competence model and its variable functional competence. Coming next is the personal/behavioral competence at 0.896**, the values/ethical competence at 0.883**, and the knowledge/cognitive competence, at 0.831**, all of which also indicating a strong correlation with the model. The stars (**) over the values indicate that the correlation is significant at the 0.01 level (2-tailed). As in Figure 2, 'scatter plot' for the dependent variable job competence model, the concentration of the variables› values are scattered around the standard deviations line indicating the strong relationship between core competence components and the newly developed job competence model. Accordingly, the strength of the relationship in term of rank is as follows:

- Functional competence.
- Personal or behavioral competence.
- Values/ethical competence.
- Knowledge/cognitive competence.

Discussion of the finding

Different professions will require a different mix of the core components. For example, a barrister will require a strong cadre of personal competencies, such as self-confidence, presentation skills and ability to "think on feet". in contrast, a research chemist may not require such highly developed personal competencies but will instead need a very strong knowledge base and a high order of cognitive competence. For him, or her, the ability to apply theory, transfer, synthesize and extrapolate knowledge may be all-important. Similarly, a different mix of the core components may be necessary for different branches within the same profession. These differences may seem obvious, yet they are often not fully reflected in initial professional development programs either in what is taught, in the development methods used, or in the assessment processes applied. A better understanding of the relative importance of each of the core components, and possibly different meta-competencies to different occupations could help improve the design of professional training by placing appropriate emphasis on the various components (Cheetham & Chivers, 1996). The potential differences between and within professions generally, and within project management area, especially, have led to the development of a linked occupational competence mix model i.e. the "job competence model" for consultant project managers. the relative importance of each of the core components to different occupations is indicated by the size of the segments, as the situation for the model of job competence, the relative importance of each of the four core competence components, indicated by their effect percentage on job competence model, whereas; knowledge/cognitive competence represented 34%, values / ethical competence represented 24%, personal or behavioral competence represented 21%, and functional competence represented 21%. The model also incorporates meta-competencies (in the outer circle), which is illustrated in figure 3. In addition, figure 4 shows a three-dimensional version of the model referred to consultant project managers› competence mix. This illustrates the competence mix actually attained by the particular experienced consultant project manager. It indicates that

even after the necessary occupational competence mix for the profession has been acquired, consultant project manager may continue to develop each one of the components further, increasing the depth of competence within each towards the highest levels of excellence in terms of professional performance. However, ongoing development is likely to proceed at different rates within different core component areas, and this is illustrated by the variation in heights between segments. For simplicity, meta-competencies have not been included in the illustration but these are also likely to be differentially developed. Table 1 shows one-sample t-test analysis for variables/core competence components with their job competence model. Table 2 shows the relationship of pearson correlation of independent variables/core competence components with dependent variable job competence model.

Conclusion

Results of the survey indicated that the «job competence model for consultant project manages» have been accepted by practicing PMCs. Out of the total of 199 job competence components listed in the model, 190 which represented 95.19% are accepted. This high acceptance rate suggested the applicability and validity of the competence component and hence the model. The model can be used for various purposes including raising the awareness of consultant project managers about their need of knowledge, training and skills to carry out their professions competently.

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