

## WHAT COMPETENCIES DO PROJECT MANAGERS NEED?

Assoc. Prof. Dr. Abdullah Mahmood<sup>1</sup>, Abdulkareem M. A. Hamidaddin<sup>2</sup> and  
Dr. Mohd Wira Mohd Shafiei<sup>3</sup>

School of Housing, Building and Planning, Universiti Sains Malaysia,  
11800 Minden, Penang, Malaysia  
[mabdull@usm.my](mailto:mabdull@usm.my)<sup>1</sup>, [ahamidaddin2002@yahoo.com](mailto:ahamidaddin2002@yahoo.com)<sup>2</sup>, [wira@usm.my](mailto:wira@usm.my)<sup>3</sup>

**ABSTRACT:** Professionals such as Architects, Civil Engineers and Quantity Surveyors are the main providers of project management services in the construction industry. Coming from different training and professional background, these professionals find themselves confronted by issues, and undertaking additional roles that have traditionally not been part of their responsibility. Thus, to meet today's professional demand and to ensure their continued relevance in the industry, they must continually improve themselves, in both construction specific and non-construction competencies demanded of them in order to fulfill for the project. A study was undertaken to identify what are the kind of job competencies that are required of a Project Managers. The study begin by examining 5 related job competency models to arrive at a list of 198 job competencies which are then organized to form a "Job Competence Model For Consultant Project Managers". The newly developed model was sent to 128 Consultant Project Management firms registered with the Ministry of Finance, Malaysia for validation. This article presents some initial insights into the findings of the study.

**Keywords:** Job Competence, Competencies, Consultant Project Managers, Construction Industry, Malaysia.

### 1. 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 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, Levy and Dvir, 1997). Both, Ceran and Dorman (1995) and Russell, Jaselski and Lawrence (1997) recognized this changing role for *consultant project managers* and argued that they must supplement their traditional functions with other knowledge and skills to meet today's professional demands for which they become responsible. Edum-Fotwe and McCaffer (2000) equally emphasized the need for project management functions to adapt to these changing industry conditions in order to maintain its relevance for project delivery well into the future.

The question then "What are the areas of knowledge and skills that are required by project management consultants?" And "What are the components of consultant project manager's competence?" This paper reports on the findings of an ongoing research into *the job competencies of consultant project managers*. It seeks to identify the type of skills and competencies needed by consultant project managers in order to fulfill for the project, both the construction specific and the non-construction functions demanded of them. Identifying those skills and competencies and the routes and mechanisms by which consultant project managers may acquire such requisite skills could provide options for addressing the training of future consultant project managers that will ensure their continued relevance in the industry?". More significant aspect however is identifying potential lessons for management development policy that construction organizations may adopt.

## 2. DEFINITIONS

### 2.1. Competence

International Project Management Association (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, which lead 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. It is the underlying characteristics of a person that enables that person to demonstrate superior performance in a job.

## **2.2. Project Management Competency**

The *project management competency* is 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). 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. *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.

## **2.3. 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) suggest that a competency approach in an organization allows one to:

- improve the selection process;
- improve the assessment of career potential;
- improve the performance review process;
- provide a common language system to convey the nature of effective performance;
- facilitate self-assessment and development;
- provide a basis for coaching and training;
- provide an essential tool for developing the business culture;
- provide a tool for building a successful team;
- provide a method for identifying the implications for job and organizational design.

### 3. METHODOLOGY

At the beginning of the study 3 practical models of Project Management Competence were reviewed. These are the CIOB model (CIOB, 1996), PMI model (PMI, 2000) and the CIDB Malaysia model (CIDB, 2002). Comparisons between these 3 models were made and similarities and differences were noted. These were then compared with Thomsett's Job of Project Managers (Thomsett, 1993) and the Model of Professional Competence by Cheetham & Chivers (1996). Based on this initial study, a "Job Competence Model for Consultant Project Managers" was developed. At the core of the model are 4 key components of professional competence which are as follows:

**a) Knowledge/Cognitive Competence (64 competent components)**

The possession of appropriate work-related knowledge and the ability to put this 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.

**b) Functional Competence (47 competent components)**

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

**c) Personal/Behavioral Competence (42 competent components)**

The ability to adopt appropriate, observable behaviors in work-related situations.

**d) Values/Ethical Competence (46 competent components)**

The possession of appropriate personal and professional values and the ability to make sound judgments based upon these in work-related situations. The linkage of ethical competence with values emphasizes the point that values, like knowledge, are of little use unless they are effectively applied. Thus, ethical competence refers to the effective and appropriate application of values in professional settings

In all a total of 199 competency variables, which are divided into the 4 core competence component, were listed in the model. The model was sent to a population of 128 Consultant Project Management firms registered with the Ministry Of Finance, Malaysia. Of these 44 responses were received and analyzed using Quantitative Analysis methods i.e. *Descriptive Statistics, Pearson Correlation and One Sample T-Tests*.

#### 4. RESULTS AND DISCUSSION

##### 4.1. Core Competencies of Consultant Project Managers

The first step in the analysis is to determine the acceptability of the 4 core competences listed in the new model. Table 1 shows the comparison between the values of the mean difference for the core competence. 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, it is accepted as one of the core competence required by Consultant Project Managers.

On the other hand, the *Functional Competence* has the smallest value of mean difference which is 66.15. However, since the value still falls within the lower and upper values of the confidence interval, this competence is also accepted as one of the core competence of Consultant Project Managers job. Likewise, the 2 remaining core competences i.e. *Personal/Behavioral Competence* and *Values/Ethical Competence* with their mean difference values falling between the lower and upper limits are also accepted. Thus, all 4 core competences were accepted as essential to Consultant Project Managers to perform their job.

Table 1. One-Sample T-Test of Core Competence

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	28.607	43	.000	322.22	299.51	344.94
1. Knowledge/cognitive competence	29.689	43	.000	<u>105.04</u>	97.91	112.18
2. Functional competence	23.458	43	.000	<u>66.15</u>	60.47	71.84
3. Personal or behavioral competence	22.244	43	.000	66.36	60.34	72.38
4. Values/ethical competence	23.713	43	.000	75.00	68.62	81.37

Table 2 below shows the *Pearson Correlation* results for the 4 core competence 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.

Table 2: Pearson Correlation of Core Competence Components

Variables	Statistics	Variables				
		Job Competence Model	1. Knowledge/cognitive competence	2. Functional competence	3. Personal or behavioral competence	4. Values/ethical competence
Job Competence Model	Pearson Correlation Sig. (2-tailed) N	1 . 44				
1. Knowledge/cognitive competence	Pearson Correlation Sig. (2-tailed) N	.831** .000 44	1 . 44			
2. Functional competence	Pearson Correlation Sig. (2-tailed) N	.902** .000 44	.774** .000 44	1 . 44		
3. Personal or behavioral competence	Pearson Correlation Sig. (2-tailed) N	.896** .000 44	.570** .000 44	.714** .000 44	1 . 44	
4. Values/ethical competence	Pearson Correlation Sig. (2-tailed) N	.883** .000 44	.531** .000 44	.681** .000 44	.916** .000 44	1 . 44

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

Figure 2 shows the scatter plot for dependent variables in the Job Competence Model. The concentration of the values around the standard deviation line yet again acknowledged the strong relationship between the core competence components and the newly developed Job Competence Model.

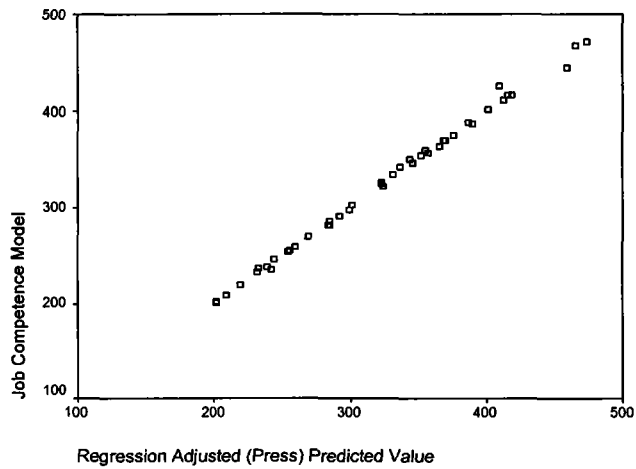


Figure . Scatter plot of Dependent Variable in the Job Competence Model

4.2. Components of Competence of Consultant Project Managers Job

The newly developed Job Competence Model which was sent to the study sample contained a total of 199 competence component variables. Analysis of the survey data using descriptive statistics indicated that 190 of the 199 competence component

listed in the model are accepted. The high acceptance rate (95.5%) suggested the applicability and validity of the model. The validated model, which contained the full list 4 core competences and 190 competence components are as shown in Figure 3. The occupational competence mix for Consultant project Managers are as in Figure 4.



Figure 3: Job Competence Components for Consultant Project Managers.

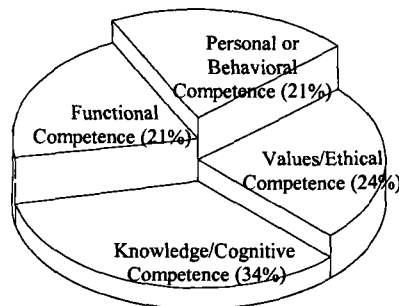


Figure 4: Consultant Project managers' Competence Mix Model

ICCI = 2006

## 5. CONCLUSIONS

Different professions 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 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 in the case of Consultant Project Managers, the ranking in order of importance is: 1) Knowledge/Cognitive Competence (34%); 2) Values/Ethical Competence (24%); 3) Personal or Behavioral Competence (21%); and 4) Functional Competence (21%).

Figure 4 which shows a three-dimensional version of the model referred to Consultant Project Managers' competence mix illustrates the competence mix actually attained by a 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.



## 6. REFERENCES

- Bedelian, H.M. (1996). Successful major projects in a changing industry. Proceedings of the Institution of Civil Engineers: Civil Engineering, 114, August, 117-123. Abstract-ScienceDirect Navigator | Abstract-Compendex.
- Boam, R. and Sparrow, P. (1992), Designing and Achieving Competency. A Competency-based Approach to Developing People and Organization, McGraw-Hill, London.
- Boyatzis, R.E. (1982). The Competent Manager: A Model for Effective Performance, John Wiley, New York, NY.
- Ceran, T. and Dorman, A.A. (1995). The complete project manager. *Journal of Architectural Engineering* 1 2, Pp. 67-72. Abstract-Compendex.
- Cheetham, Graham and Chivers, Geoff (1996). Towards a holistic model of professional competence. *Journal of European Industrial Training*. Pp. 20-30.
- CIDB (2002). CIDB's Suggested, "CPC Competency Profile Chart" For Construction Project Manager. *Construction Industry Development Board*, Malaysia.
- CIOB (1996). CODE OF PRACTICE FOR PROJECT MANAGEMENT FOR CONSTRUCTION AND DEVELOPMENT. *The Chartered Institute Of Building*: (2nd Ed.), UK.
- Edum-Fotwe F. T. And McCaffer, R. (March, 2000). Developing project management competency: perspectives from the construction industry. *International Journal of Project Management*, Volume 18, Issue 2, Pages 111-124.
- Gareis, R. and Huemman, M. (1999), *Specific Competencies in the Project-oriented Society*, Project Management Days '99: Projects and Competencies, Vienna, 18-19 November.
- Gilleard, J.D. And Chong, W.S. (1996). New challenges from Hong Kong's new airport. In: Langford DA, Retik A, editors. *The Organization and Management of Construction: Shaping Theory and Practice*, 2. Spon, London, Pp. 767-777.
- Hayden, B.Jr. (1996). Learning on the jagged edge. *Journal of Management in Engineering, ASCE* 12 1, Pp. 23-25. Abstract-Compendex.
- Hogg, B. (1993), "European managerial competences", *European Business Review*, Vol. 93 No. 2, pp. 21-6.
- Hornby, D. and Thomas, R. (1989), "Towards a better standard of management", *Personnel Management*, Pan, London.
- IPMA (2002), International Competence Baseline, *International Project Management Association*, available at: [www.ipma.ch/certification.html](http://www.ipma.ch/certification.html).
- PMI (2000). A GUIDE TO THE PROJECT MANAGEMENT BODY OF KNOWLEDGE (PMBOK). *Project Management Institute-Standards Committee*, U.S.
- Russell, J.S., Jaselski, E.J., and Lawrence, S.P. (1997). Continuous assessment of project performance. *Journal of Construction Engineering and Management* 123 1, Pp. 64-71.
- Shenhar, A.J., Levy, O. And Dvir, D. (1997). Mapping the dimensions of Project Success. *Project Management Journal* 28 2, Pp. 5-15.
- Thomsett, Rob. (1993) *Third Wave Project Management: A Handbook for Managing the Complex Information Systems for the 1990s*. Pp. 6, 7-8.
- Volckmann, R., (1997). The fourth constraint: relationships. *PM Network*, May, pp. 15-16.