Project Management Competency Elements Valued by Project Managers in Construction Industry

Abstract—Identifying and developing project managers’ competencies are becoming more and more important in today’s competitive market. This importance also has absorbed the attention of main project management institutions such as Project Management Institute (PMI) and Australian institute of Project management (AIPM). These professional project management institutes have developed project managers’ competency standards and have addressed required competency elements for project managers in different industries and sectors. The aim of this research is to identify the importance degree of project management competency elements valued by less experienced project managers (Project managers with less than 10 years’ experience) in construction industry in Malaysia. The results of this research show that project managers in Malaysia construction industry believe that among 34 project management competency elements, 7 competency elements are considered as very important or core competency elements. These core competency elements are “Defining the project context”, “Guiding development of project scope definition”, “Implementing scope controls”, “Determining project Schedule”, “Implementing project schedule”, “Assessing time management outcomes”, and “Determining quality requirement”.

Keywords-component; Project manager; project management competency elements; Construction industry

I. INTRODUCTION

Improvement of performance is always a challenge for management (Boxall, 2007; Lengnick-Hall & Lengnick-Hall, 1988). Traditional measures for performance only considered out-put measures such as time, cost, and quality (Dainty, Cheng, & Moore, 2004); however, by application of competency-based measures, not only it is possible to predict performance (Motowildo, Borman, & Schmit, 1997), but also Competency-based measures actually are eluding of problems that traditional measures are facing (Dainty, Cheng, & Moore, 2003; Dainty, et al., 2004). Therefore, competency-based measures due to identification of appropriate measures are becoming increasingly pivotal in human resource management practices. Competency-based measures via continuous performance improvement result in achieving higher levels of performance (Ahadzie, Proverbs, & Olomolaiye, 2008).

II. PERFORMANCE MEASUREMENT & PERFORMANCE PREDICTION OF MANAGERS

Traditionally, for performance measuring of construction project managers, only time, cost and quality were being hired (Ahadzie, et al., 2008). There are some researches that discussed the limitation of these measures (Fraser & Zarkada-Fraser, 2003; Latham, Fay, & Saari, 1979). As contended by Ahadzie et al. (2008), these lagging measures are not useful for engendering and development of construction project managers and to avoid jeopardizing project performance, project team must possess required competencies (“A Guide to the Project Management Body of Knowledge (PMBOK Guide) 4th Ed.”, 2008). Application of traditional measures in construction project management context is not applicable due to a lot of factors that affect achievement of outputs which are out of project manager’s control (Dainty, et al., 2004). Furthermore, these output measures set at the
beginning of the project while the least is known about project and also quality is based on peoples’ attitude and over project life-cycle changes(Atkinson, 1999).

Since project management personnel competence has an important effect on project performance, hence, it is crucial to address it (Beer, Eisenstat, & Spectre, 1990; Karpin, 1995; Pinto & Kharbanda, 1995; J. Smith, Carson, & Alexander, 1984). There is a connection between overall performance of project and also competencies of top team members (Kakabadase, 1991). In fact, there are some researches that prove performance of the projects is affected by project managers’ competencies (Jaselskis & Ashley, 1991). As quoted by Bredillet(2005), project management is grown from project oriented function to the strategic-oriented function. Currently, there are some project management standards that are widely used for assessment, developing, and certifying of project managers (L. Crawford, 2005) such as “Project Manager Competency Development (PMCD) Framework” or “AIPM Professional Competency Standard”.

III. COMPETENCY DEFINITION

As described by (“Project Manager Competency Development (PMCD Framework,” 2002) competency is measurable against a standard, it can be improved via training and development, it can be broken down to its competency-elements, and it is correlated to performance. Competence in dictionary is defined as “Power, ability or capacity (to do, for a task etc.)” (Brown & Trumble, 2002). (Robotham & Jubb, 1996) contended that there are different meanings for “competence” and in organizational literature this terminology is one of the most diffusing term. Kochanski(1996) defined competencies as “success factors in an employee’s organization”. For instance, competencies can be referred as factors that distinguish higher performers from average performers in an organization. Kennedy and Dresser (2005) defined competencies as anything that an employee has which contributes to success of organization.

IV. PROJECT SUCCESS AND PROJECT MANAGERS’ COMPETENCIES

According to Cheng et al. (2005) there is a link between project success and project managers’ competencies in construction industry. In fact, for project success, it is crucial to develop project team (Ng & Tang, 2010; Sung Ho, 2009). By developing project team, skills and technical competencies of team members as well as project performance enhance (Morris & Pinto, 2007). It is critical to assess competencies, skills, knowledge, and personal characteristics of team members to assure choosing a team which is capable to succeed (Morris & Pinto, 2007). According to Mumford et. al. (2000) , if personal characteristics of project managers meet the job requirements there is more chance for their success(Mumford, et al., 2000).

In the changing working environment, the importance of project management is increasing more and more (Cleland, 1994; Turner, 1993). Crawford (L.H. Crawford, 2000) suggested that the more project management is demanded, the more required project manager skills and standards for developing and assessment of project managers’ competencies demanded. Organizations in order to achieve their strategic goals need to consider a crucial contributor which is project managers’ competencies (Boyatzis, 1982; Shenhar, 1997).

The importance of project management competence come from this point that if the people who are working in the project, to be competent, they would perform effectively which results to the project success and organization success (Beer, et al., 1990; Karpin, 1995; P. Smith, 1976).

V. STANDARDS COMPARISON

A. Background

PMCD framework- This framework was a project sponsored by Project Management Institute (PMI) in 1998. The input was collected from the frameworks published by PMI, National Competency Standard developed by the Australian Institute of Project Management, Competency Dictionary developed by Lyne and Signe Spencer(1993), Project Management Professional (PMP) Role Delineation Study, and Project Management Experience Knowledge Self-Assessment Manual and some other information from international organizations and industries. After some revisions, the draft was submitted to public for their comments and after reviewing the comments, the final version of the framework was issued in 2002.

AIPM Professional Competency Standard- the Australian institute of project management is a non-profit organization, and it acts as the main project management body in Australia, developed the “National Competency Standards for Project Management “in 1996, and based on “Registered Project Manager’s program” it awarded certificates in three levels of the project director, project manager and project practitioner. In order to upgrade this standard and based on requirements of professionalism in the project management, AIPM developed the “AIPM professional competency standards for project management” in 2008. Compared to the previous AIPM Competency Standard, this standard has the three advantages.
The first advantage is that it is a rigorous assessment method. Next, it can be used for the senior management level, and finally, it is able to meet industry needs.

B. Concept and Overview

PMCD framework- This framework is intentionally designed to be applicable in most projects, industries, and organizations. This means that the size of projects, the project complexity and the project nature are not considered in this framework. PMDC framework is a performance-based framework. Based on Gonczi and Hager(1993), performance-based approach means being able to perform in certain pre-accepted level of performance. This standard proposes a methodology for project management development through the definition of the key components of competencies, which affect project manager’s performance in most projects. However, in PMCD framework, the degree of importance of each competency element is not considered. Thus, in addressing this weakness, organizations, which want to employ this standard need to define the degree of importance of each of the competency elements. PMCD framework is aligned with “A Guide of Project Management Body of Knowledge”, “Project Management Professional (PMP) Role Delineation Study” and “Project Management Experience and Knowledge Self-Assessment Manual”. The purpose of this standard is to define a methodology that can be used by individuals and organizations for developing project managers. This standard does not address organizational context and project type. Hence, organizations need to address organizational context and project type if they are interested to use this standard. In this standard, the description of competency is based on the definition made by Crawford(1997). She defined competency according to three dimensions, which are project management knowledge, project management performance, and personal competencies. Thus, a competent project manager should fulfill all three dimensions requirements. According to the PMCD framework, a project in order to be successful needs a competent project manager and a matured organization. If any of these two is not there, it leads to project failure.

As mentioned before, in the PMCD framework, the industry-specific competencies are not addressed and only the project management competencies as the general basis for project managers in a workplace are addressed. Therefore, individuals and organizations use this standard need to include industry-specific competency to the general competencies. Because of the two reasons, this standard is designed to have general natures. Firstly, competencies are transferable from one industry to another industry. Secondly, since the PMCD framework proposes a general competency, the industries can use it as a base and include their own supplement competencies.

The purpose of the PMCD framework is not for the selection of project managers or neither for evaluation of project managers’ performance. Its purpose is just to provide guidance for individuals and their organizations for developing project managers.

AIPM Professional Competency Standard- The purpose of this standard is to fulfill the requirement of the project management profession. This standard is designed to cover most industries and most projects from the simple one to the more complicated ones. Assessment of nominates is based on the project managers’ workplace performance. This standard covers the higher level of management, which is the senior management level in organizations.

In this standard, being competent means to have the minimum predefined levels of knowledge and skills in project management and to be able to apply this knowledge and skills at the workplace. . From “Project Practitioner Level” to “Project Manager Level”, or from “Project Manager Level” to “Project Director Level”, level of the responsibility and minimum requirements for the knowledge, skills, and experience increase as well.

C. Design and Structure

PMCD framework- In the PMCD framework, project manager’s competency components are defined according to three dimensions. They are project management knowledge, project management performance, and personal competencies. The project management knowledge and performance are defined based on nine knowledge areas of PMBOK. These knowledge areas are scope, integration, cost, time, quality, risk, human resource, communication, and procurement management. These nine areas of project management knowledge are assessed in five clusters of project management process groups as outlined in PMBOK. These clusters are called initiating, planning, executing, controlling, and closing. In addition of the Project Management Knowledge and performance competencies, the Personal competencies are also addressed in the PMCD framework. The project management performance competencies describe how a project manager is able to apply project management knowledge at the workplace. In assessing project management knowledge, mechanism such as Project Management Professional (PMP) exams can be used. In assessing the performance competencies,
the project manager’s actual work or outputs can be reviewed.

Based on these nine units of project management knowledge and the five clusters of the project process, a total of 45 competency components is defined. They are then classified into elements of competency and competence criteria. These elements and criteria are used in measuring the project management knowledge and performance in each unit of competency.

In addressing the personal competencies’ structures, the PMCD framework is based on the competency dictionary by Lyne and Singe Spencer(1993). There are six units of competencies in this dictionary. They are achievement and action, helping and human service, impact and influence, and managerial competencies. Each unit is classified into clusters, which describe the required behavior in each unit.

D. Certification Assessment

D.1. Certification System

AIPM Professional Competency Standard- AIPM Professional Competency Standard certification is in four levels, which are Project Practitioner, Project Manager, Project Director, and Executive Project Director, and based on these levels, the titles awarded to successful candidates are: Certified Practicing Project Practitioners (CPPP), Certified Practicing Project Manager (CPPM), Certified Practicing Project Director (CPPD), and Executive Project Director (Exec PD). Responsibility increases from Project Practitioner level to Executive Project Director Level.

The assessment carried out in this standard is the performance-based assessment. It means that in the process of assessing candidates, the project manager’s application of knowledge and skills at the workplace are evaluated. These competencies are defined based on units of competencies that explain the kinds of competency required for an effective performance in the workplace.

D.2. Assessment Method

AIPM Professional Competency Standard- AIPM Professional Competency standard is a performance-based standard. According to this standard, in order for a candidate to achieve certification, he or she needs to collect evidences based on his or her performance. Then, assessors evaluate these evidences and they will advise the AIPM on the candidate’s certification level. AIPM has defined a guideline for assessors in order for them to give a fair assessment and follow AIPM policies.

An assessment can be carried out by one assessor who is chosen by a candidate through the list of candidates available on the AIPM website. All assessors are based in Australia and some of them are able to evaluate candidates from outside Australia. Usually, the candidate meets the assessor twice. In the first session, the assessor usually notifies the candidate on the necessary evidences and documents that the candidate needs to submit. In the second session, all the necessary documents and evidences should have been compiled by the candidate. If there is a need to have more sessions for a more rigorous assessment, the assessor will notify the candidate accordingly. The assessor will report to AIPM on the evaluation of the candidate and almost one month after that, the certificate will be issued by AIPM to the candidate.

D.3. Assessment Requirement

AIPM Professional Competency Standard- In this standard prerequisite for application for higher level is that nominee must implement one or two projects in lower level. For instance, to apply for the “Project Manager Level”, the nominee must prove that he or she has implemented at least one or two projects in the “Project Practitioner level”.

At the Project Practitioners Level, members are not responsible for the overall project outcomes. Their responsibility is just limited to their own output. Project Practitioners just apply project performance tools. The minimum requirement at the Project Practitioner level is having competency in applying Scope, Time, and Quality Management Techniques and also having competency in one of the Cost, Human Resource, Communication, Risk, and Procurement Management Techniques. At the Project Manager Level, members are responsible for the overall project outcomes. Candidates in this level need to demonstrate competency in planning and managing all nine units of competencies, which are scope, time, cost, quality, human resource, communication, risk, procurement, and integration management. At the Project Director Level, candidates are responsible for the Program Management. They must demonstrate competency in directing and managing all the nine units of competency.

Another AIPM assessment requirement is called the “Recognition of Current Competency” which means if a candidate intends to apply in a level, his or her recent experience must be in that level. For instance, if a candidate is going to apply for project director level, he or she must work as the Project Director at the time of applying.

VI. Project Management Competency Elements
As it is described in “PMCD framework” and “AIPM professional competency standards for project management”, project management is included of nine units: Scope Management, Time Management, Cost Management, Quality Management, Human Resource Management, Communication Management, Risk Management, Procurement Management, and Integration Management. Each unit comprises competency elements.

“Scope Management” comprises “Defining the project context (var01)” which means defining project objectives to all stakeholders, establishing deliverables, developing project acceptance criteria, and developing project charter, “Guiding development of project scope definition (var02)” which means seeking agreement on measurable outcome criteria, establishing project assumption, constraints, establishing scope management plan, and developing the statement of work breakdown to work package level, and “implementing scope controls (var03)” which means implementing agreed scope management procedures & processes, using agreed key performance indicators to monitor project outcomes, managing the impact of scope changes, and regularly reviewing & evaluating project progress and outcomes.

“Time Management” comprises “Determining project schedule (var04)” which means determining the duration, sequence & dependencies of tasks, ensuring project schedule include all tasks, developing time management plan, obtaining agreement on the schedule and time management plan, “Implementing project schedule (var05)” which means implementing mechanism to measure, record and report progress of activities, using project schedule as the basis for progress measurement, regularly identifying variances and forecasting impacts of changes on schedule, and “Assessing time management outcomes (var06)” which means reviewing project progress to determine the effectiveness of time management, identifying time management lessons learned and recommending improvements.

The competency elements of “cost Management” include “Determining project budget (var07)” which means determining resource requirements, estimating project costs and developing project budgets, developing a cost management plan to effectively manage project costs, “Monitoring and controlling project budget and costs (var08)” which means implementing budget, monitoring and controlling processes, monitoring actual project billings, analyzing budget variations and determining causes, implementing actions to maintain project budget objective, and “Conducting project financial completion activities (var09)” which means using appropriate project financial close-out procedures, reviewing project cost performance, identifying financial management lessons learned and recommending improvement.

The competency elements of “Quality Management” are “Determining quality requirements (var10)” which means determining quality objectives, standards and levels, establishing quality management plan, selecting quality management methods, and identifying quality criteria, “Implementing quality assurance (var11)” which means measuring and documenting results of project activities to determining their compliance with quality standards, conducting inspections, identifying causes of unsatisfactory outcomes and submission recommendations, and “Implementing project quality improvement (var12)” which means reviewing quality processes and implementing agreed changes to ensure continuous improvement to quality, reviewing outcomes to determine effectiveness of quality management processes and identifying quality management lessons learned.

“Human Resource Management” comprises “Implementing human resources & stakeholders planning activities (var13)” which means establishing project organization structure, allocating staff within the project, using appropriate HR method and tools to effectively managing HR systems, “Implementing staff training & development (var14)” which means communicating designated staff responsibilities, authority and personal performance measurement criteria, identifying and taking action to rectify gaps in individuals and group skills & knowledge, and implementing staff development and training, “Managing the project team & stakeholders (var15)” which means monitoring internal and external influences on individuals, implementing procedures for interpersonal communication, solving conflict resolutions, regularly reviewing stakeholders expectations, and maintaining the desired cultural environment, and “Assessing human resource outcomes (var16)” which means reviewing project progress, issues and outcomes to determine effectiveness of HRM processes, procedures & tools, identifying HRM lessons learned and recommending improvements.

“Communication Management” comprises of “Planning communications processes (var17)” which means identifying, documenting and analyzing information requirements, developing and implementing the communication management plan, and establishing project management information system, “Managing information (var18)” which means managing the generation, gathering, storage, analyzing, and dissemination of information by project staff, monitoring and controlling information validation, implementing communication networks between staff, client, and stakeholders, “Managing project reporting (var19)” which means managing & validating project reporting according to standards, drafting project
reports and validating their contents, and maintaining stakeholder relationship with established guidelines, and “Assessing communication management outcomes (var20)” which means reviewing project progress, issues and outcomes to determine the effectiveness of communication management processes, identifying communication management lessons learned and recommending improvement.

The competency elements of “Risk Management” are “Determining project risk events (var21)” which means identifying, documenting and analyzing risks and opportunities, using established risk management techniques, developing risk management plan, and assigning risk management responsibilities to those who are in best position, “Monitoring & managing opportunities (var22)” which means monitoring project opportunities, documenting opportunities and assessing against project progress, presenting opportunities to higher authority for consideration, and implementing changes when necessary to take advantage of new opportunities, “Monitoring & managing project risks (var23)” which means monitoring and managing project risks including external factors, and implementing risk management strategies, and “Assessing risk management outcomes (var24)” which means reviewing project progress, issues and outcomes to determine effectiveness of risk management processes, identifying risk management lessons learned and recommending improvement to higher project authority

The competency elements of “Procurement Management” are “Determining procurement requirements (var25)” which means identifying procurement requirements, establishing and maintaining an agreed procurement management plan, “Following agreed procurement processes (var26)” which means obtaining information from sources capable of fulfilling procurement requirements, adopting established selection processes and selection criteria to choose contractors and suppliers, “Conducting contracting & procurement activities (var27)” which means communicating requirements & specifications to prospective contractors, evaluating responses from potential suppliers and selecting preferred ones, conducting negotiations with preferred contractors or suppliers, and establishing a positive relationship with them, “Implementing contract and/orProcurement (var28)” which means implementing an established procurement management plan to ensure achievement of objectives, managing procurement issues and changes to ensure timely completion of tasks, reporting procurement issues with recommendation to higher project authority, and “Managing contract & procurement finalization procedures (var29)” which means managing finalization activities to ensure contract deliverables meet contractual requirements, reviewing project progress to determine effectiveness of procurement processes, identifying procurement lessons learned and recommending improvements.

“Integration Management” comprises of “Agreeing & establishing life cycle reporting & measurement systems (var30)” which means agreeing& implementing project life cycle & project reporting & performance management systems, determining appropriate project phases, approved points & reviewing points throughout the project life cycle, “Managing integration of all project management functions (var31)” which means identifying project stakeholders & their interest, analyzing all project management functions, developing project management plan, creating a safe environment for project personnel, and displaying effective leadership, “Coordinating internal & external environment (var32)” which means managing the project within an established internal working environment, maintaining established links to align project objectives with strategic organizational objectives, seeking assistance from senior personnel when necessary to solve conflicts, “Implementing project activities throughout life cycle (var33)” which means incorporating project phases, approval points, integrated phases to monitor risks for maximizing opportunities, establishing & managing finalization plans & procedures, reviewing project plans & general project documentation, and “Assessing project integration outcomes (var34)” which means reviewing project issues & outcomes to determine effectiveness of processes & procedures, identifying integration management lessons learned & recommending improvements.

VII. Research Methodology

In this research the project managers with less than 10 years’ experience in construction industry, are considered as less-experienced project managers. The questionnaire distributed among these project managers in construction industry in Malaysia and totally 112 usable responded questionnaires were collected. The project managers have been asked to mark the importance degree of all 34 Project management competency elements based on five-point Likert scale which 1 means the least important and 5 mean the most important. Then the data analyzed by SPSS. The results of the analysis are shown in table1.

Project management competency elements with mean of 4.25 and higher are considered as very important or core competency element required for project managers and if the mean to be between 3.7 to 4.25, that competency element is considered as important for project managers.
As shown in the table 1, the mean for “Determining Competency elements of “Time Management”—either 4 or 5. Approximately 80% of them ranked its importance mean of this competency element is 4.25 and approximately 85% of them ranked its importance either 4 or 5. The results for this competency element show that project managers believe that this competency is very important (core competency element) for project managers. The results for “Assessing time management outcomes” competency element show that project managers believe that this competency element is very important (core competency element) for project managers. The mean of this competency element is 4.30 and approximately 90% of them ranked its importance either 4 or 5.

Competency elements of “Cost Management”—As shown in the table 1, the mean for “Determining project context” competency element is 4.29 and approximately 85% of project managers ranked its importance either 4 or 5. Based on these results, this competency element is ranked as very important or core competency element for project managers. The mean for “Implementing project schedule” marked by project managers is 4.25 and approximately 85% of them ranked its importance either 4 or 5. The results for this competency element show that project managers believe that this competency is very important (core competency element) for project managers. The results for “Implementing project schedule” marked by project managers is 4.25 and approximately 85% of them ranked its importance either 4 or 5. The results for this competency element show that project managers believe that this competency is very important (core competency element) for project managers. The mean of this competency element is 4.30 and approximately 90% of them ranked its importance either 4 or 5.

VIII. Results

Competency elements of “Scope Management”—As shown in the table 1, the mean for “Defining the project context” competency element is 4.29 and approximately 85% of project managers ranked its importance either 4 or 5. Based on these results, this competency element is ranked as very important or core competency element for project managers. The mean for “Guiding development of project scope definition” marked by project managers is 4.30 and approximately 90% of them ranked its importance either 4 or 5. The results for this competency element show that project managers believe that this competency is very important (core competency element) for project managers. The results for “Implementing scope controls” competency element show that project managers believe that this competency element is very important (core competency element) for project managers. The results for “Implementing scope controls” competency element show that project managers believe that this competency element is ranked as very important or core competency element for project managers. The mean of this competency element is 4.25 and approximately 80% of them ranked its importance either 4 or 5.

Competency elements of “Time Management”—As shown in the table 1, the mean for “Determining project Schedule” competency element is 4.35 and approximately 85% of project managers ranked its importance either 4 or 5. Based on these results, this competency element is ranked as very important or core competency element for project managers. The mean for “Implementing project schedule” marked by project managers is 4.25 and approximately 85% of them ranked its importance either 4 or 5. The results for this competency element show that project managers believe that this competency is very important (core competency element) for project managers. The results for “Assessing time management outcomes” competency element show that project managers believe that this competency element is very important (core competency element) for project managers. The mean of this competency element is 4.30 and approximately 90% of them ranked its importance either 4 or 5.

Competency elements of “Quality Management”—As shown in the table 1, the mean for “Determining quality requirement” competency element is 4.29 and approximately 85% of project managers ranked its importance either 4 or 5. Based on these results, this competency element is ranked as very important or core competency element for project managers. The mean for “Implementing quality assurance” marked by project managers is 4.25 and approximately 85% of them ranked its importance either 4 or 5. The results for this competency element show that project managers believe that this competency is very important (core competency element) for project managers. The results for “Implementing project financial completion activities” competency element show that project managers believe that this competency element is very important (core competency element) for project managers. The mean of this competency element is 4.10 and approximately 85% of them ranked its importance either 4 or 5.

Competency elements of “Human Resource Management”—As shown in the table 1, the mean for “Implementing human resources & stakeholder planning activities” competency element is 3.89 and approximately 70% of project managers ranked its importance either 4 or 5. Based on these results, this
competency element is ranked as important competency element for project managers. The mean for “Implementing staff training & development” marked by project managers is 3.74 and approximately 60% of them ranked its importance either 4 or 5. The results for this competency element show that project managers believe that this competency is important for project managers. The results for “Managing the project team & stakeholders” competency element show that project managers believe that this competency element is important for project managers. The mean of this competency element is 3.79 and approximately 60% of them ranked its importance either 4 or 5. The mean for “Assessing human resource outcomes” competency element is 3.75 and approximately 65% of project managers ranked its importance either 4 or 5. Based on these results, this competency element is ranked as important competency element for project managers.

Competency elements of “Communication Management”- As shown in the table1, the mean for “Planning communications processes” competency element is 3.89 and approximately 70% of project managers ranked its importance either 4 or 5. Based on these results, this competency element is ranked as important competency element for project managers. The mean for “Managing information” marked by project managers is 4.05 and approximately 90% of them ranked its importance either 4 or 5. The results for this competency element show that project managers believe that this competency is important for project managers. The results for “Managing project reporting” competency element show that project managers believe that this competency element is important for project managers. The mean of this competency element is 3.99 and approximately 80% of them ranked its importance either 4 or 5. The mean for “Assessing communication management outcomes” competency element is 3.90 and approximately 75% of project managers ranked its importance either 4 or 5. Based on these results, this competency element is ranked as important competency element for project managers.

Competency elements of “Risk Management”- As shown in the table1, the mean for “Determining project risk events” competency element is 4.00 and approximately 75% of project managers ranked its importance either 4 or 5. Based on these results, this competency element is ranked as important competency element for project managers. The mean for “Monitoring & managing opportunities” marked by project managers is 3.81 and approximately 75% of them ranked its importance either 4 or 5. The results for this competency element show that project managers believe that this competency is important for project managers. The results for “Monitoring & managing project risks” competency element show that project managers believe that this competency element is important for project managers. The mean of this competency element is 4.10 and approximately 82% of them ranked its importance either 4 or 5. The mean for “Assessing risk management outcomes” competency element is 4.01 and approximately 82% of project managers ranked its importance either 4 or 5. Based on these results, this competency element is ranked as important competency element for project managers.

Competency elements of “Procurement Management”- As shown in the table1, the mean for “Determining procurement requirements” competency element is 3.65 and approximately 66% of project managers ranked its importance either 4 or 5. Based on these results, this competency element is not important for project managers. The mean for “Following agreed procurement processes” marked by project managers is 3.65 and approximately 67% of them ranked its importance either 4 or 5. The results for this competency element show that project managers believe that this competency is not important for project managers. The results for “Conducting contract & procurement activities” competency element show that project managers believe that this competency element is not important for project managers. The mean for “Implementing contract & procurement” competency element is 3.68 and approximately 68% of project managers ranked its importance either 4 or 5. Based on these results, this competency element is not important for project managers. The mean for “Managing contract & procurement finalization procedures” marked by project managers is 3.78 and approximately 75% of them ranked its importance either 4 or 5. The results for this competency element show that project managers believe that this competency is important for project managers.

Competency elements of “Integration Management”- As shown in the table1, the mean for “Agreeing & establishing life cycle reporting & measurement systems” competency element is 3.79 and approximately 65% of project managers ranked its importance either 4 or 5. Based on these results, this competency element is ranked as important competency element for project managers. The mean for “Managing integration of all project management functions” marked by project managers is 4.06 and approximately 78% of them ranked its importance either 4 or 5. The results for this competency element show that project managers believe that this competency is important for project managers. The results for “Coordinating internal & external environment” competency element show that project managers believe that this competency element is important for project managers. The mean of this competency element is 4.12 and approximately 88% of them ranked its importance either 4 or 5. The mean for “Implementing project activities throughout life cycle” competency element is 3.78 and approximately 68% of project managers ranked its importance either 4 or 5. Based on these results, this competency element is ranked as important competency element for project managers. The mean for “Assessing project integration outcomes” marked by project managers is 3.75 and
approximately 68% of them ranked its importance either 4 or 5. The results for this competency element show that project managers believe that this competency is important for project managers.

**IX. Conclusion**

Based on the results of this research, project managers with less than 10 years experiences in Malaysia construction industry, believe that all competency elements of “Scope Management”, and “Time Management” are very important (core competency elements) for project managers. Besides, they believe that all competency elements of “Cost Management”, “Human Resource Management”, “Communication Management”, “Risk Management” and “Integration Management” are important for project managers. However, these competency elements are not core competency elements for project managers. Furthermore, for “Quality Management”, they ranked “Determining quality requirements”, as core competency element and ranked the other two competency elements as important. However, they believe that for “Procurement Management”, only “Managing contract & procurement finalization procedures” is important for project managers and other procurement management competency elements are not important for project managers.

**REFERENCES**


