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Ming Gang Shao

AUTEUR DE LA THÈSE / AUTHOR OF THESIS

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TITRE DE LA THÈSE / TITLE OF THESIS

Professor Michael Miles

DIRECTEUR (DIRECTRICE) DE LA THÈSE / THESIS SUPERVISOR

CO-DIRECTEUR (CO-DIRECTRICE) DE LA THÈSE / THESIS CO-SUPERVISOR

EXAMINATEURS (EXAMINATRICES) DE LA THÈSE / THESIS EXAMINERS

Professor David Large

Professor Jerome Doutriaux

Gary W. Slater

Le Doyen de la Faculté des études supérieures et postdoctorales / Dean of the Faculty of Graduate and Postdoctoral Studies

**Development of Project Manager Selection Tool  
Based on Project Manager Competency**

Ming Gang SHAO

Supervisor: Professor Michael Miles

School of Management

University of Ottawa

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$PFAR_n = PFS_n \times PFI_n \times W_n$ (3)	.....	31
$PFAR = \sum_{n=1}^{62} PFAR_n$ (4)	.....	31
$PSAR_n = PSS_n \times W_n$ (5)	.....	31
$PSAR = \sum_{n=1}^{40} PSAR_n$ (6)	.....	31
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## **Abstract**

Project management is entering into every aspect of our work with high speed but a relatively low success rate. Based on research into the current project management literature, this thesis concludes that three elements - a competent project manager, right project definition and right project organization are the key factors that determine the project success. This study focuses on the first of these three factors: selection of a competent project manager. The research process uses a web formed questionnaire based on the 102 Project Management Institute competency elements designed to measure Project Manager Knowledge, Performance and Personal competency. This questionnaire was used to gather data concerning real-world experience of critical project management skills from 16 people who have professional project experiences. Based on this data, a new project management tool was developed to highlight effective project manager selection considerations and effective organizational use of project management analysis and problem solving processes. This new tool attempts to assist the combination of project manager capabilities and organizational capabilities to achieve more effective project success.

As a pilot survey, 16 respondents who have project experiences using a project-management approach were invited to complete the study project management questionnaire. The responses concerning the importance of the various elements named in the questionnaire were analyzed.

The analysis resulted in a profile representing the critical skills associated with project management from the view of the expert respondents. This thesis proposes this profile as a project manager selection method. It also analyzes organizational project management problems in light of the selection model proposed as a way of helping the project manager, project, and organization move toward more sustainable development. As a part of future research, the

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effectiveness of this tool in distinguishing between effective and less effective project managers will form the basis of potential future research.

## **Keywords**

Project Manager, Competency, Project Success, Project Management

---

## **Acknowledgements**

I would like to gratefully acknowledge my supervisor Professor Michael Miles from School of Management whose direction, suggestions and encouragement helped me in all the time of research and writing of this thesis.

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---

# 1 Introduction

Project management is the application of knowledge, skills, tools, and techniques to project activities to meet project requirements (PMI, 2002). It was formally presented in 1958, when the United States Department of Defense invented the Program Evaluation and Review Technique or PERT, and DuPont Corporation invented a similar model called CPM (critical path method). PERT was later extended to include tools associated with “work breakdown structure” or WBS. In 1980’s and 1990’s, together with computerization, the project management method quickly spread into many enterprises.

However, maybe because of the technical base to its origin, current project management methods are almost focused on technical tools, such as WBS (Work Breakdown Structure), EVM (Earned Value Management), PDM (Precedence Diagramming Method), and GERT (Graphical Evaluation and Review Technique), or project management software such as Microsoft Project that integrates the above techniques. They are most focused on analysis designed to develop “right organization” (i.e. to organize those factors associated with projects in the most effective manner) to select, design and implement the right project. But so far, few methods exist for selecting the effective project manager and analyzing the project management problems of the corporation.

Following with the development of project management and based on the ongoing development of practice and theory, quantitative analysis of project results to support more effective selection of “right project managers” has been possible and is becoming a new trend. Meanwhile, the fact that project success rate is less than 30% (Johnson, 2001) spurs the demands of organizations to solve project management problems on a more urgent basis.

In general terms, a project manager is defined as a person who employs the

---

project management process (Cagle, 2005). Choosing the competent project manager is one of the three key project success factors. The other two are designing the right project and implementing the right organization (Daw, 2004). Of the three factors, however, Daw's research proposes that it is the competency of the manager that has the strongest impact on overall project success.

Review of the literature related to the history of project management and the comparison to project manager competency standards of 5 separate prominent project management organizations (the Project Management Institute, the Association for Project Management, The International Project Management Association, The Australian Institute for Project Management, and The Global Steering Committee), and elsewhere in the literature identified a number of potential project management skills and competency frameworks. By far the most widely referenced was the Project Manager Competency Development (PMCD) Framework (PMI, 2002) developed by the Project Management Institute in Pennsylvania. Based on the relative frequency of use of this framework at the corporate level, this framework was adopted by this thesis as an organizing theoretical and application framework to guide data gathering and analysis.

This study developed a web formatted questionnaire based on the PMCD framework, and its URL is:

<http://137.122.146.213/miles/ming/projectmanagement/index.htm>.

The final instrument had 3 competency dimensions that included knowledge competency, performance competency and personal competency. Across the three competency areas there were 102 separate competency elements. These elements are outlined in Appendix 2.

Based on this 3 competency dimension model, a listing of potential criteria for the selection of "right project managers" was developed and a model and

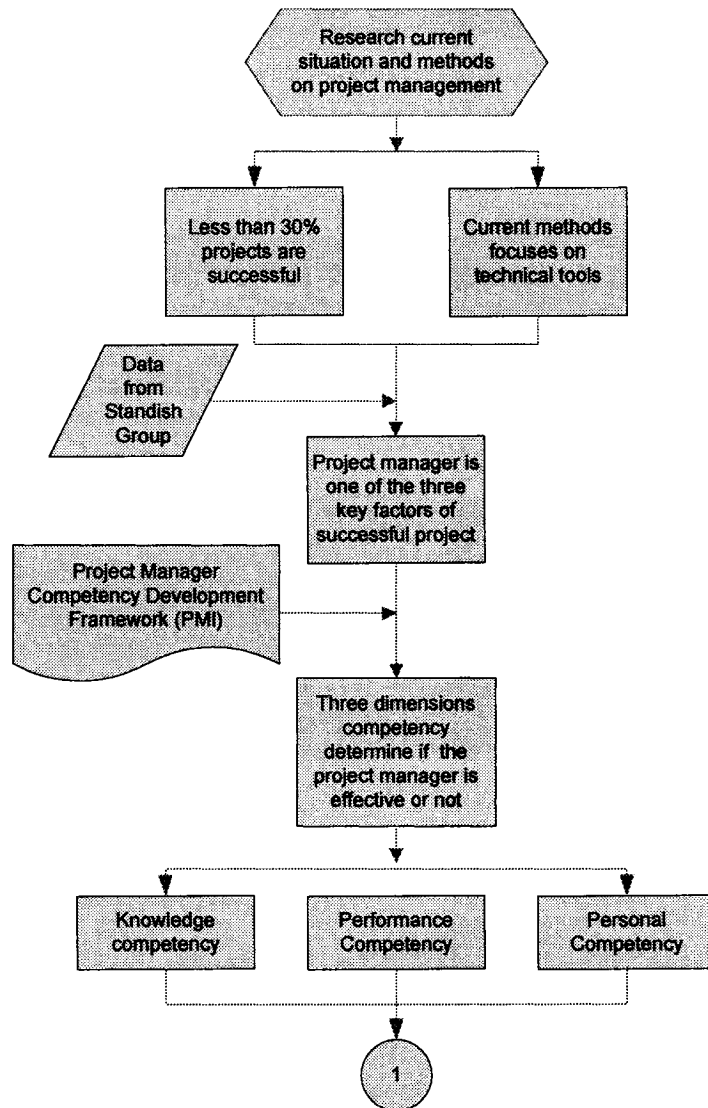
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algorithm were built to support selection of competent project managers. In order to anchor the model in the actual world of project management, 16 respondents with project experience were invited to fill out the questionnaire and indicate the relative importance of these elements based on their own experience.

Finally, according to the responses of study participants, the specific project manager selection method was developed and is presented as the result of this study. The goal is to benefit the project manager through more effective project manager selection, the project through better planning and implementation capabilities of the project manager, and the organization through better project manager competency development, project success, organizational project management maturity and sustainable development.

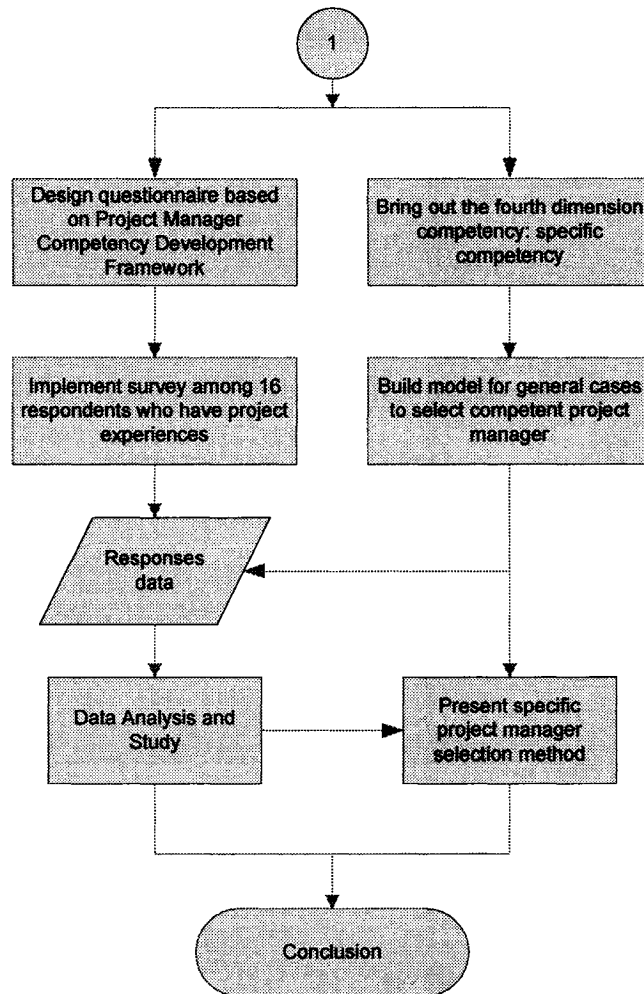
The study process of this thesis is illustrated in Figure 1. The works in the boxes with red borders are main contributions of this thesis.

Figure 1 1 Study Process



(Continued Next Page)

Figure 2 Study Process (continued)



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## 2 Background

### 2.1 Project Success Rate

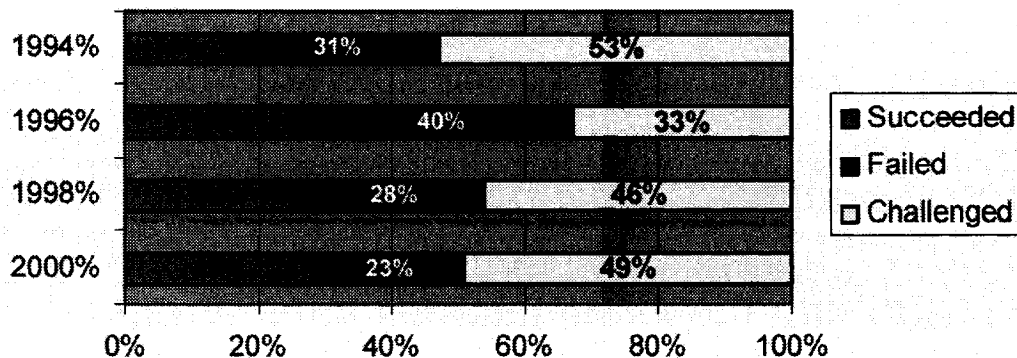
From the 1960's to now, project management is being applied to almost every field of research and development, manufacture and service. Beyond past scope, it is predicted that 21st century will be the era of project management (Gray, 2000). Actual practice, however, is not so optimistic.

According to the Standish Group (Johnson, 2001), success is measured by the extent, a successful project is:

- Delivered on time,
- On budget,
- With all features and functions as originally specified.

Based on the analysis of 30,000 application projects in large, medium, and small cross-industry U.S. companies tested by The Standish Group since 1994, Figure 3 demonstrates that more than 70% projects are considered not totally successful.

Figure 3 Project success rates of National Averages (Johnson, 2001)

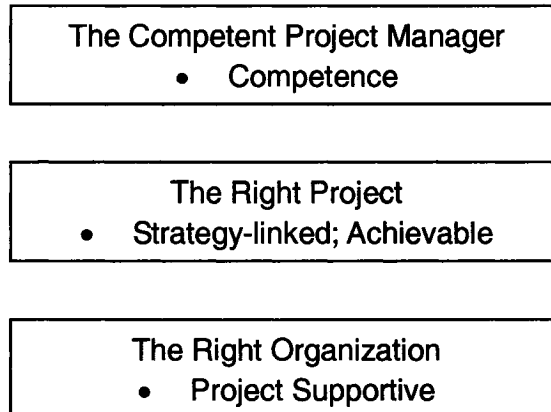


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## 2.2 Project Success Factors

Figure 4 summarizes the work of the Standish Group with various weighting criteria according to level of influence on project success. It shows that the top three key project success factors are:

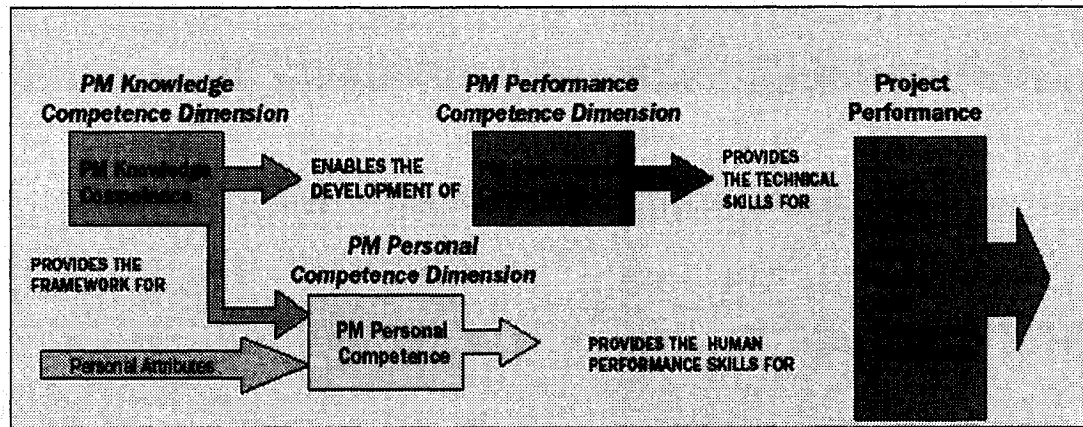
Figure 4 Key Project Success Factors (Daw, 2004)



The above three success factors suggest that it is essential to select a competent project manager. The Project Manager Competency Development (PMCD) Framework (PMI, 2002) identifies Project Manager's competencies in three dimensions: **Knowledge** (i.e., "what they know about what is to be done" and "why they have to do it"), **Performance** (i.e., "what they are able to do or accomplish while applying their project management knowledge") and **Personal** (i.e., "how they behave when performing the project or activity"). These dimensions are described graphically in Figure 5.

Figure 5 Dimensions of Competency (PMI, 2002)

## Dimensions of Competency



In summary, we know that the effective project manager is one of the top three project success factors, and we also know that there are three dimensions of competency that can influence the project manager's performance which in turn influence the final success of the project.

The focal question of this thesis focuses on this summary. It asks how we can choose the right project manager based on the three competency dimensions to ensure the success of project.

The main goal of the study proposed in this thesis is to develop a survey to get the opinion of different roles in an organization about the priority of each competence element, and then use the analysis of the data as a tool to select effective project managers, to benefit the project manager, project and organization.

### 2.3 Current Method of Project Manager Selection

The PMCD Framework developed by PMI (PMI, 2002) produces a Project Manager Competency Scorecard (Figure 6). The framework states that "this

approach allows a project manager to obtain a composite view of one's overall level of competence as a project manager". The study further proposes that "using this approach allows the organization to focus on building those areas of competence where its project managers do not rank at the levels desired by the organization." (PMI, 2002)

Figure 6 Project Manager Competency Scorecard (PMI, 2002)

**Project Manager Competency Summary Scorecard**

PM Knowledge & Performance Competencies      Project Manager:      Assessment Date:      Assessor:

Competency (PMI's Knowledge Area)	Initiation		Planning		Execution		Monitoring		Closing	
	Knowledge	Performance	Knowledge	Performance	Knowledge	Performance	Knowledge	Performance	Knowledge	Performance
Project Integration Management										
Project Scope Management										
Project Time Management										
Project Cost Management										
Project Quality Management										
Project Human Resources Management										
Project Communications Management										
Project Risk Management										
Project Procurement Management										
# areas with no score										
# areas with score of 100										

From the above statement we can see that the score card can be used for project managers to assess themselves or for organizations to identify areas in which it considers it necessary to train project managers. To date, however, it has not been used to select project managers due to limitation of understanding of the relative weighting that must be applied to the various elements. In this very direct sense, PMI knows what competencies are *generally* useful for project management but has not identified the relative importance of those items related to project success (and the selection of effective project managers to guide that success).

---

## **3 Methodology**

The methodology to be used in this thesis is composed of three elements:

- 1) Review of literature on project management
- 2) Development of a selection tool
- 3) Pilot study of the tool and analysis

### **3.1 Literature Review**

#### **3.1.1 Project Management History**

The Project Management (PM) method has been used in ancient era, from Pyramids, Roman aqueducts, Great Wall, to Inca/Mayan temples and cities, but was not presented systemically.

Concomitantly with conversion from agrarian to industrial organizations in 1800's and development of large-scale plants and organizations in 1900's, a basis for work measurement and production scheduling was established, and Taylor brought forward "Scientific Management". During World War I, the Gantt chart was used for logistics, and during World War II, the importance of critical scheduling was reinforced ([http://homepages.stmartin.edu/facstaff/dstout/EM612/Class%202%20History%20of%](http://homepages.stmartin.edu/facstaff/dstout/EM612/Class%202%20History%20of%20)).

Project Management as an approach was formally presented in 1958 when the United States Department of Defense invented the Program Evaluation and Review Technique or PERT, as part of the Polaris missile submarine program. At the same time, the DuPont Corporation invented a similar model called CPM, or critical path method. PERT was later extended with a work breakdown structure or WBS ([http://en.wikipedia.org/wiki/Project\\_management](http://en.wikipedia.org/wiki/Project_management)).

---

In the 1960's, large scale applications such as nuclear power plants and NASA Apollo required widespread computer aided planning and control, and Government added PERT-related processes in contracts to track schedule/cost elements. In 1961, IBM began to use PM commercially across its functional lines. In 1970, the "Earned Value" concept was developed for monitoring schedule and cost.

With computerization in the 1980's, hardware/software proliferation made PM tools accessible to smaller firms. This somewhat balanced the growing technological sophistication in projects that was increasing the complexity of projects and their management.

Currently, the Project Management method has extended into every field of our work, from military affairs, industry, business to agriculture. Clients want the project "on time, on budget and on expectation" and use PM to achieve those ends.

### **3.1.2 Project Management Organizations**

Along with the development of project management as an approach, many project management organizations and associations have developed to support PM implementation. Four of the most well recognized include the Project Management Institute (PMI), the Association for Project Management (APM), the International Project Management Association (IPMA), and the Australian Institute for Project Management (AIPM). Review of the literature (Cagle, 2005; Daw, 2004) and professional project management organization sites (PMFORUM, the Project Management Wisdom site, and the Project Management Knowledge Base) support the conclusion that these four organizations represent the most complete sources of project management knowledge publicly available. For a complete list of the primary links accessed in relation to the Project Management literature review, please refer to Appendix 22. Figure 7 provides a comparison of these four project management

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organizations from a structural and service perspective. It is interesting to note that all four of these organizations were started within 10 years of each other in the late 60's and 70's at the time when quality and effectiveness were becoming critical factors in organization success (Juran and Godfrey, 2003). The motivation in the business community to "professionalize" its approach to management clearly was strong at this point of the evolution of the management effectiveness movement (Trist and Murray, 1993).

Figure 7 Comparisons of Four Project Management Organizations

Name	Project Management Institute (PMI)	Association for Project Management (APM)	International Project Management Association (IPMA)	Australian Institute for Project Management (AIPM)
<b>Formed</b>	1969	1972 (1999)	1965 (1998)	1976
<b>Headquarter</b>	USA	UK	Switzerland	Australia
<b>Body of Knowledge</b>	Project Management Body of Knowledge (PMBOK) 1986	APM Body of Knowledge 4th Edition 2000	IPMA Competence Baseline (ICB) 1999	Project Management Body of Knowledge (PMBOK) 1986
<b>Competency Standards</b>	Project Manager Competency Development Framework (PMCD Framework) 2002	National Occupational Standards for Project Management 2003	IPMA Competence Baseline( ICB) 1999 IPMA Certification Yearbook	Australian National Competency Standards for Project Management (NCSPM) mid-2004
<b>Certification</b>	<ul style="list-style-type: none"> <li>Project Management Professional (PMP)</li> <li>Certified Associate Project Manager (CAPM)</li> </ul>	<ul style="list-style-type: none"> <li>Introductory Certificate</li> <li>APMP (IPMA Level D)</li> <li>Practitioner Qualification (IPMA Level C)</li> <li>Certificated Project Manager (IPMA Level B)</li> </ul>	<ul style="list-style-type: none"> <li>IPMA Level A Certified Projects Director</li> <li>IPMA Level B Certified Project Manager</li> <li>IPMA Level C Certified Project Management Professional</li> <li>IPMA Level D Certified Project Management Practitioner</li> </ul>	<ul style="list-style-type: none"> <li>Level 4 (Qualified Project Practitioner)</li> <li>Level 5 (Registered Project Manager)</li> <li>and Level 6 (Master Program Director)</li> </ul>
<b>Members (till 2005)</b>	Over 100,000	over 13,500	50,000	3,000
<b>Influence</b>	125 countries	UK and abroad	Europe and abroad	Australia
<b>Certified by ISO</b>	YES	NO	NO	NO
<b>Relationship</b>	N/A	is a founder member of IPMA	spawned by the APM	adopted the PMBOK of PMI as the knowledge-base for the NCSPM

---

### **3.1.3 Project Manager Competency Standards**

All the four project management organizations have published their own project manager competency standards. The following section summarizes and compares these standards (please refer to Appendix 2 for details of the competency elements).

#### **3.1.3.1 Project Manager Competency Development Framework (PMCD Framework)**

In PMI's *Project Management Body of Knowledge (PMBOK)* published in 1986, project management is organized within 9 areas (Integration, Scope, Time, Cost, Quality, Human Resource, Communications, Risk, and Procurement) and 5 processes (Initiating, Planning, Executing, Controlling and Closing). Meanwhile, the 5 processes are subdivided into 39 activities distributed across the 9 areas.

Based on the PMBOK, in 1997, PMI proposed its first standard to address the theme of "Improving the Performance of Project Personnel." In 2002, it published the formal competency standards titled *The Project Manager Competency Development Framework (PMCD Framework)*.

This framework presents 62 knowledge/performance competency elements matched to the 39 activities. It was in this formalized system of framework knowledge that there was the first recognition that the personality of project manager influences how the PM applies knowledge within the project environment. In this way, the PM himself or herself is recognized also as one important contributor to project manager competency. Within the PMI framework, the characteristics of the PM are reviewed across 6 elements (Achievement and Action Orientation, Helping and Human Service, Impact and Influence, Managerial Skills, Cognitive Abilities and Personal Effectiveness). These are further sub-divided into 40 analysis elements.

---

### **3.1.3.2 National Occupational Standards for Project Management**

APM published its *Body of Knowledge* 4th Edition in 2000, and in March 2003, APM published *National Occupational Standards for Project Management* which is fully compatible with the APM Body of Knowledge.

In the *Body of Knowledge*, the project management is organized within 6 areas (Strategic, Control, Technical, Commercial, Organizational and People) and 39 elements. The *National Occupational Standards for Project Management* maintains a categorization system compatible with the *APM Body of Knowledge*, listing 51 PM competence units, including such detailed measures as “Develop strategic objectives for the project” to “Manage the performance of teams and individuals - provide feedback to teams and individuals on their performance”.

APM describes the characteristics that the project management professionals should possess in their *Body of Knowledge*. These they place in the categories of Attitude, Common sense, Open mindedness, Adaptability, Inventiveness, Prudent risk taker, Fairness and Commitment.

### **3.1.3.3 IPMA Competence Baseline (ICB)**

The IPMA created their *International Project Management Base Competence Baseline* (ICB) in 1999 and uses them as the base for their certifications. In the ICB, the competencies associated with project management knowledge are classified into 28 Core Elements (including, for example, “Projects and Project Management” and “Project Quality”) and 14 Additional Elements (at the level of detail such as “Informatics in Projects” and “Finance and Accounting”).

The personal attitudes of the project management personnel include 8 specific elements. These include:

1. Ability to communicate
2. Initiative, engagement, enthusiasm, ability of motivation

- 
3. Ability of getting in contact, openness
  4. Sensibility, self control, ability of value appreciation, readiness for responsibility, personal integrity
  5. Conflict solving, argumentation culture, fairness
  6. Ability to find solutions, holistic thinking
  7. Loyalty, solidarity, readiness for helping
  8. Leadership abilities

These are further sub-divided into 62 elements sub-elements.

#### **3.1.3.4 Australian National Competency Standards for Project Management (NCSPM)**

The *National Competency Standards for Project Management* (NCSPM) was developed by the AIPM in consultation with industry and under the auspices of the Australian National Training Authority (ANTA). Their standards categorize the competencies into 26 elements including, for example, “Apply scope management techniques” and “Direct procurement and contracts of multiple projects/programs”.

(<http://www.ntis.gov.au/cgi-bin/waxhtml/~ntis2/pkg.wxh?page=82&inputRef=166#Units%20of%20Competency>)

#### **3.1.3.5 Global Performance Based Standards for Project Management Personnel (GPBSPMP)**

As described above, different organizations have proposed different competency standards. In 2002 an organization named the Global Steering Committee tried to “develop an agreed [Project Management] competency standards framework that can be used by businesses, academic institutions, professional associations, and government standards and qualifications bodies globally” (<http://esvc000939.wic004u.server-web.com/global/public/global.asp>).

In August 2002, this organization held its first meeting in London, and also

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put up a competency-organizing framework. This document organizes the competencies into 7 units (Manage Stakeholder Relationships, Manage Interpersonal Relationships, Develop the Plan for the Project, Manage Project Progress, Manage Product Acceptance, Manage Project Transitions, Evaluate and Improve Project Performance) and 25 sub-elements.

These five prominent competency standards are compared and contrasted in Figure 8.

Analysis of these five frameworks shows that they all regard project management knowledge and personal behavior and attitude are core competency to a project manager (Kliem and Ludin, 1992). But how to use the knowledge well with the good attitude to achieve the project success should be the ultimate judgment to a project manager in real business life (Jessen, 1992, Mochal, 2003, and Cagle, 2005). Regretfully, only PMI broached the Performance as a third competency dimension to a project manager, and propounded performance example in PMCD Framework.

Another noticeable point is that only PMI and APM have their own project management knowledge system book, and published the competency standards based on their knowledge book, which means their competency standards are more practical in the integration with project management than others. However, compared between these two organizations, APM delineated the project management only into 6 areas (Strategic, Control, Technical, Commercial, Organizational, and People), but the knowledge book of PMI defined the project management into 9 areas and 5 processes as described in Chapter 3.1.3.1. Obviously, the later is more general and comprehensive.

From the actual application in the world, PMI published the competency standards earliest in 1997, republished in 2002, has the most over 100,000 members distributed in 125 countries which means its competency system are most widely accepted and has been the factual standards of the world.

Figure 8 Comparison of five prominent competency standards

Organization	Project Management Institute (PMI)	Association for Project Management (APM)	International Project Management Association (IPMA)	Australian Institute for Project Management (AIPM)	Global Steering Committee
Competency Standards	Project Manager Competency Development Framework (PMCD Framework)	National Occupational Standards for Project Management	IPMA Competence Baseline( ICB)	Australian National Competency Standards for Project Management (NCSPM)	Global Performance Based Standards for Project Management Personnel (GPBSPMP)
Published	1997 , 2002	2003	1999	2004	2002
Competency Dimension	Knowledge Performance Personal	N/A	N/A	N/A	N/A
Relationship with Project Management	Based on the 9 areas and 5 processes	Based on 6 areas	N/A	N/A	N/A
Knowledge Competency Elements	9 units, 62 elements	51 elements	28 Core Elements, 14 Additional Elements	Combined in 26 elements	Combined in 7 units, 25 elements
Personal Competency Elements	6 units, 40 elements	8 elements	8 units, 62 elements		
Performance Competency Elements	9 units, 62 elements	N/A	N/A	N/A	N/A
Examples	Yes	Yes	Yes	Yes	No
Accepted	All the world	UK and abroad	Europe and abroad	Australia	Is not recognized now

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### 3.1.3.6 Other Literature

The standards outlined above summarize much of the work that has been done in the area of project management over the last 40 years. Beyond the development of standards, however, much has been learned about critical aspects of project management practice. Frame (1999), a former director of certification at the Project Management Institute (PMI), concludes that elements of project management practice can be sub-divided into three groups (Knowledge-Based Competence, People Management Skills, and Business-Related Competence). Culp and Smith (1991) focus on the technical skills of project management, maintaining that the process of designing and managing the planning process is the critical factor to project success. Kliem and Ludin (1992) focus more on the balance between technical and human skills, with an emphasis on the ability of the project manager to pull the human resources together around whatever plan there is. Their view is strongly supported by Davis and Pharro (2003), whose book *The Relationship Manager* proposes that the human element makes or breaks any project implementation effort. Cagle's more recent survey of the literature concludes that there are 47 project and program skills which he subsequently divides into 5 sets (Basic Skill Set, Advanced Skill Set, Expert Skill Set, Specialist Skill Set and Principal Skill Set) and 3 types (Firm, Soft, and Combination of Firm and Soft) (Cagle, 2005). His conclusion is that any selection process that focuses on only one or a limited set of skills dooms the project to failure. In his eyes, selection of the project manager is the critical factor in overall project success. Finally, the broader inclusion of project management into the "Maturity Model" literature (Baca, 2005) indicates that the selection of managers for their balanced skills in the technical and human side of project management ensures increased rates of project success.

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### 3.1.4 Summary

The word competence comes from the Latin *competens*, which is the present participle of the verb *competere*. This verb consists of two parts: *com*, which means “together”, and *petere*, which means “to strive.” Thus *competere* literally means “to strive together.” (Frame, 1999)

When applied to project management, competence can be described as consisting of three separate dimensions (Crawford, 1997):

1. What individual project managers bring to a project or project-related activity through their knowledge and understanding of project management. This dimension is called Project Management Knowledge (i.e., what they know about project management).

2. What individual project managers are able to demonstrate in their ability to successfully manage the project or complete project-related activities. This dimension is called Project Management Performance (i.e., what they are able to do or accomplish while applying their project management knowledge).

3. The core personality characteristics underlying a person’s capability to do a project or project activity (Finn 1993; Crawford, 1997). This dimension is called Personal Competency (i.e., how individuals behave when performing the project or activity; their attitudes and core personality traits) (PMI, 2002).

The literature (PMI, 2002; Baca, 2005; Kliem and Ludin, 1992) proposes that, to be recognized as fully competent, an individual would need to be evaluated successfully against each of these dimensions. It would be impossible for project managers to be judged competent if they did not possess the “right” combination of knowledge, performance, and personal competence. The questionnaire that has been designed as part of this thesis builds on this conclusion and measures all three of these dimensions using the framework put forward by PMI.

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## 3.2 Tool Development

### 3.2.1 Competency Elements

The PMCD Framework (PMI, 2002) has defined the three Project Management competency dimensions as Knowledge Competence, Performance Competence, and Personal Competence. These are further divided into four levels:

\_\_\_ . # Unit of Competence

\_\_\_ . #. # Competency Cluster

\_\_\_ . #. #. # Element (specific to each Competency Cluster)

\_\_\_ . #. #. #. # Performance Criterion (specific to each Element)

The Project Management (PM) Knowledge and Performance Competence dimensions draw upon the 9 knowledge areas of project management, as well as the 5 project management process groups, as outlined in the PMBOK® Guide.

PMI has named the 5 project processes in a project life are Initiating, Planning, Executing, Controlling, and Closing. The 9 project management knowledge areas utilized at various stages in these 5 processes include Integration Management, Scope Management, Time Management, Cost Management, Quality Management, Human Resource Management, Communications Management, Risk Management, and Procurement Management. Within the scope of each knowledge area there are different activities. For example, Project Scope Management consists of initiation, scope planning, scope definition, scope verification, and scope change control. The 62 knowledge/performance competency elements and 40 personal competency elements, distributed across the 5 Project Management processes are outlined in Table form in Figure 9 and Figure 10.

Figure 9 Project Manager Knowledge/Performance Competency Elements

NO.	Project Management Areas	Project Management Processes	Knowledge/Performance Competency Elements	
1	1. Integration Management	1. Initiating	1.1.1 Identify and Document Project Needs; Developing Project-Related Product or Service Descriptions	
2			1.1.2 Perform an Initial Project Feasibility Study and Analysis	
3			2. Planning	1.2.1 Conduct Project Plan Development
4			3. Executing	1.3.1 Conduct Project Plan Execution
5			4. Controlling	1.4.1 Conduct Integrated Change Control
6			5. Closing	1.5.1 Conduct Project Closure with Regard to Integration
7	2. Scope Management	1. Initiating	2.1.1 Prepare Project Charter	
8			2.2.1 Conduct Scope Planning	
9			2. Planning	2.2.2 Conduct Scope Definition
10		3. Executing	2.3.1 Execute Scope	
11			2.4.1 Conduct Scope Verification	
12		4. Controlling	2.4.2 Conduct Scope Change Control	
13		5. Closing	2.5.1 Conduct Project Closure with Regard to Scope	
14	3. Time Management	1. Initiating	3.1.1 Preliminary Planning Activities	
15			3.2.1 Conduct Activity Definition	
16			2. Planning	3.2.2 Conduct Activity Sequencing
17				3.2.3 Conduct Activity Duration Estimating
18				3.2.4 Conduct Schedule Development
19		3. Executing	3.3.1 Implement Project Schedule	

Figure 9 Project Manager Knowledge/Performance Competency Elements (cont.)			
20	3. Time Management	4.Controlling	3.4.1 Conduct Schedule Control
21		5.Closing	3.5.1 Conduct Project Closure with Regard to Time
22		1.Initiating	4.1.1 High-Level Budget Development Preparation
23			4.2.1 Conduct Resource Planning
24		2.Planning	4.2.2 Conduct Cost Estimating
25	4. Cost Management		4.2.3 Conduct Cost Budgeting
26		3.Executing	4.3.1 Execute Cost Baseline
27		4.Controlling	4.4.1 Conduct Cost Control
28		5.Closing	4.5.1 Conduct Project Closure with Regard to Cost
29		1.Initiating	5.1.1 Determine Quality Requirements
30		2.Planning	5.2.1 Conduct Quality Planning
31	5. Quality Management	3.Executing	5.3.1 Conduct Quality Assurance
32		4.Controlling	5.4.1 Conduct Quality Control
33		5.Closing	5.5.1 Conduct Project Closure with Regard to Quality
34		1.Initiating	6.1.1 Conduct Organizational Definition
35		2.Planning	6.2.1 Conduct Organizational Planning
36	6. Human Resources Management		6.2.2 Conduct Staff Acquisition
37		3.Executing	6.3.1 Conduct Team Development
38		4.Controlling	6.4.1 Manage Human Resources
39		5.Closing	6.5.1 Conduct Project Closure with Regard to HR Management
40		1.Initiating	7.1.1 Preliminary Communications Planning
41	7. Communications Management	2.Planning	7.2.1 Conduct Communications Planning
42			7.3.1 Conduct Information Distribution
43		3.Executing	7.3.2 Implement Project Time Reporting
44		4.Controlling	7.4.1 Conduct Project Performance Reporting

Figure 9 Project Manager Knowledge/Performance Competency Elements (cont.)			
45	7. Communications Management	5.Closing	7.5.1 Conduct Administrative Closeout
46		1.Initiating	8.1.1 Conduct Preliminary Risk Planning
47			8.2.1 Develop Risk Management Plan
48			8.2.2 Conduct Risk Identification
49		2.Planning	8.2.3 Conduct Qualitative Risk Analysis
50	8. Risk Management		8.2.4 Conduct Quantitative Risk Analysis
51			8.2.5 Conduct Risk Response Planning
52		3.Executing	8.3.1 Execute Risk Response Plan
53		4.Controlling	8.4.1 Conduct Risk Monitoring and Control
54		5.Closing	8.5.1 Conduct Project Closure with Regard to Risk Management
55		1.Initiating	9.1.1 Preliminary Procurement Planning
56			9.2.1 Conduct Procurement Planning
57		2.Planning	9.2.2 Conduct Solicitation Planning
58	9. Procurement Management		9.3.1 Conduct Solicitation
59		3.Executing	9.3.2 Conduct Source Selection/Contract Development
60			9.3.3 Conduct Contract Administration
61		4.Controlling	9.4.1 Manage and Review Contract Performance
62		5.Closing	9.5.1 Conduct Contract Closeout

Figure 1 0 Personal Competency Elements

NO.	Unit of Personal Competency	Cluster of Personal Competency	Personal Competency Elements
1		1.1 Achievement Orientation	1.1.1 Operates with Intensity to Achieve Project Goals
2			1.1.2 Motivates Project Stakeholders in a Positive Way
3			1.1.3 Provides New Solutions in Planning and Delivering Projects
4	1. Achievement and Action	1.2 Concern for Order, Quality, and Accuracy	1.1.4 Operates with Individual Integrity and Personal Professionalism
5			1.2.1 Manages Projects in an Ordered, Accurate Way
6			1.2.2 Provides Accurate and Truthful Information
7			1.3.1 Takes Initiative When Required
8		1.3 Initiative	1.3.2 Takes Accountability for and Delivers Project
9			1.3.3 Seeks New Opportunities
10			1.3.4 Strives for Best Practice
11	2. Helping and Human Service	1.4 Information Seeking	1.4.1 Ensures Information Used to Manage Project is Complete and Accurate
12		2.1 Customer Service Orientation	2.1.1 Represents the Client Inside the Project
13			

Figure 1 0 Personal Competency Elements (cont.)	
14	2.2 Interpersonal Understanding
15	2.2.1 Strives to Understand All Project Stakeholders' Thoughts, Feelings, and Concerns
16	2.2.2 Listens and Responds to Others
17	3.1 Impact and Influence
18	3.1.1 Takes Appropriate Actions to Influence Others
19	3.1.2 Influences Across Projects and Organizations
20	3.1.3 Understands and Influences Project Team Members
21	3.2 Organization Awareness
22	3.2.1 Understands the Organization
23	3.2.2 Understands the Project
24	3.3 Relationship Building
25	3.3.1 Builds and Maintains Suitable Relationships with Project Stakeholders
26	3.3.2 Establishes and Maintains Relationships at the Right Level Inside and Outside the Organizations
27	4.1 Teamwork and Cooperation
28	4.1.1 Builds Team Orientation Within the Project
29	4.1.2 Molds Core Project Stakeholders into a Team
30	4.1.3 Undertakes Team-Building Activities
31	4.2 Developing Others
	4.2.1 Builds a Project Culture Where Personal Development Is Encouraged
	4.2.2 Develops Project Members to Effectively Build Project Culture
	4.3 Team Leadership
	4.3.1 Demonstrates Leadership of the Project
	4.3.2 Leads the Project Team
	4.4 Directiveness: Assertiveness and use of Positional Power
	4.4.1 Uses Assertiveness When Necessary
	4.4.2 Manages the Complete Project

Figure 1 0 Personal Competency Elements (cont.)

32	5. Cognitive	5.1 Analytical Thinking	5.1.1 Understands at a Suitable Level All Issues Associated with the Project
33			5.1.2 Facilitates Solutions Across All Issues Related to the Project
34	5.2 Conceptual thinking	5.2.1 Sees the Project in a Holistic Way	
35			6.1.1 Maintains Self-Control
36	6. Personal Effectiveness	6.2 Self-Confidence	6.2.1 Creates an Environment of Confidence
37			6.2.2 Accepts Failure Positively
38			6.3.1 Changes to Meet the Needs of the Project
39	6.3 Flexibility	6.3.2 Changes at the Required Pace	
40			6.4 Organizational Commitment
			6.4.1 Demonstrates Commitment to the Project

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Figure 9 and 10 outline in detail the three dimensions of the competency elements described in PMCD Framework. Different organizations and different project types may have different requirements to project managers' competency (Cagle, 2005). Based on this observation, any tool that is developed must represent a fourth dimension competency, which is referred to in this thesis as a company or project "Specific Competency". For example, a software development project manager may have to have experience in software development, but this same competency may not necessary for a construction project manager. The following table (Figure 11) describes the main duties of an E-Business manager (Lientz, 2001). The specific duties of this position demand that certain of the project management skills highlighted in the PMI framework might be considered as more significant *for this position* and the project that would be associated with it than other less technical projects. It is the intent of this thesis to develop a tool and process that will help managers clarify such differences and select Project Managers most appropriate to the technical and project demands associated with specific contexts.

Figure 1 1 Duties of an E-Business Manager (Lientz, 2001)

Type	Start of Implementation	During Implementation	End of Implementation
<b>Major duties</b>	<ul style="list-style-type: none"> <li>• Define Alternative implementation concepts</li> <li>• Get approval for one concept</li> <li>• Develop the plan</li> <li>• Define and gather the team</li> <li>• Market the effort</li> </ul>	<ul style="list-style-type: none"> <li>• Identify and address issues</li> <li>• Interact with line managers and the team</li> <li>• Monitor actual work</li> <li>• Control the interfaces between subprojects</li> <li>• Deal with E-Business changes</li> </ul>	<ul style="list-style-type: none"> <li>• Identify new opportunities for E-Business</li> <li>• Gather and use lessons learned</li> <li>• Measure results of the implementation</li> </ul>
<b>Administrative duties</b>	<ul style="list-style-type: none"> <li>• Setup implementation files</li> <li>• Establish project reporting</li> </ul>	<ul style="list-style-type: none"> <li>• Update status</li> <li>• Perform budget vs. actual analysis</li> <li>• Revise schedules</li> </ul>	<ul style="list-style-type: none"> <li>• Clean up and store E-Business implementation files</li> <li>• Follow up on loose ends</li> <li>• Create a final budget vs. actual analysis</li> </ul>
<b>Background duties</b>	<ul style="list-style-type: none"> <li>• Conduct casual marketing</li> <li>• Line up staff for later in the implementation</li> </ul>	<ul style="list-style-type: none"> <li>• Track what is going on in other projects</li> <li>• Coordinate the leaders of the subprojects</li> </ul>	<ul style="list-style-type: none"> <li>• Apply lessons learned</li> <li>• Place team members on new subprojects</li> </ul>

## 3.2.2 General Method

### 3.2.2.1 Goal

Based on the literature (Cagle, 2005), effective managers should have relative high total score on all evaluation elements. The process of selecting effective project managers from candidates this involves gathering data concerning their relative strengths on all of the elements associated with each of the Project Management dimensions and scoring the candidate relative scores. Since in different contexts and for different projects, the competencies will have different relative importance, specific scoring systems need to be developed to compensate. This involves the process of acquiring “weight” to each of the individual competencies and judging the relative score accordingly.

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### 3.2.2.2 Weighting System

In the calculation of the final scores related to a candidates' individual Project Management capability, the following terms are used as follows:

**For each element,**

$W_n$ : **Weight** of the  $n^{th}$  element

$S_n$ : The  $n^{th}$  competency element **Score**

**For Knowledge Competency element,**

$KDS_n$ : The  $n^{th}$  **KnowleDge** competency element **Score**

$KDL_n$ : The  $n^{th}$  **KnowleDge** competency element **Learning Ability**.

$KDAR_n$ : The  $n^{th}$  **KnowleDge** competency element **Assessment Result**

$KDAR$ : Sum of all **KnowleDge** competency elements **Assessment Result**

So

$$KDAR_n = KDS_n \times KDL_n \times W_n \quad (1)$$

And

$$KDAR = \sum_{n=1}^{62} KDAR_n \quad (2)$$

**For Performance Competency element,**

$PFS_n$ : The  $n^{th}$  **PerFormance** competency element **Score**

$PFI_n$ : The  $n^{th}$  **PerFormance** competency element **Improving Ability**

$PFAR_n$ : The  $n^{th}$  **PerFormance** competency element **Assessment**

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**Result**

*PFAR* : Sum of all **Per**Formance competency elements **Assessment Result**

So

$$PFAR_n = PFS_n \times PFI_n \times W_n \quad (3)$$

And

$$PFAR = \sum_{n=1}^{62} PFAR_n \quad (4)$$

**For Personal Competency element,**

*PSS<sub>n</sub>* : The *n*<sup>th</sup> **Per**Sonal competency element **Score**

*PSAR<sub>n</sub>* : The *n*<sup>th</sup> **Per**Sonal competency element **Assessment Result**

*PSAR* : Sum of all **Per**Sonal competency elements **Assessment Result**

So

$$PSAR_n = PSS_n \times W_n \quad (5)$$

And

$$PSAR = \sum_{n=1}^{40} PSAR_n \quad (6)$$

**For Specific Competency element,**

*SCS<sub>n</sub>* : The *n*<sup>th</sup> **Spe**Cific competency element **Score**

*SCAR<sub>n</sub>* : The *n*<sup>th</sup> **Spe**Cific competency element **Assessment Result**

*SCAR* : Sum of all **Spe**Cific competency elements **Assessment Result**

So

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$$SCAR_n = SCS_n \times W_n \quad (7)$$

And

$$SCAR = \sum_{n=1}^i SCAR_n \quad (8)$$

Where  $i$  is a specific identification number assigned to a specific competency.

If we apply this formula to each candidate project manager, the **Total Assessment Result** will be calculated as follows:

$$TAR = KDAR + PFAR + PSAR + SCAR \quad (9)$$

Because project management is a process, that means during the project management period, the project managers can learn the new knowledge and improve their ability. So in the weighting system, this thesis uses  $KDL_n$  to evaluate the project manager's **KnowleDge** competency element **Learning Ability**, and uses  $PFI_n$  to evaluate project manager's **PerFormance** competency element **Improving Ability**.

The following charts (Figures 12, 13 & 14) provide sample assessment forms for the knowledge, performance and personal three dimensions of project management competency.

Figure 1 2 Knowledge Competency Assessment Form Example

NO.	Project Management Areas	Project Management Processes	Knowledge Competency Elements	Score $KDS_n$	Learning Ability $KDI_n$	Weight $W_n$	Assessment Result $KDAR_n$ $= KDS_n \times KDI_n \times W_n$
1	1.Integration Management	1.Initiating	1.1.1 Identify and Document Project Needs; Developing Project-Related Product or Service Descriptions				
2			1.1.2 Perform an Initial Project Feasibility Study and Analysis				
	...	...	...				
61	9. Procurement Management	4. Controlling	9.4.1 Manage and Review Contract Performance				
62		5. Closing	9.5.1 Conduct Contract Closeout				
Sum of all Knowledge competency elements Assessment Result				$KDAR = \sum_{n=1}^{62} KDAR_n$			

Figure 1 3 Performance Competency Assessment Form Example

NO.	Project Management Areas	Project Management Processes	Performance Competency Elements	Score $PFS_n$	Improving Ability $PFI_n$	Weight $W_n$	Assessment Result $PFAR_n$ $= PFS_n \times PFI_n \times W_n$
1	1.Integration Management	1.Initiating	1.1.1 Identify and Document Project Needs; Developing Project-Related Product or Service Descriptions				
2			1.1.2 Perform an Initial Project Feasibility Study and Analysis				
	...	...	...				
61	9. Procurement Management	4. Controlling	9.4.1 Manage and Review Contract Performance				
62		5. Closing	9.5.1 Conduct Contract Closeout				
Sum of all Performance competency elements Assessment Result				$PFAR = \sum_{n=1}^{62} PFAR_n$			

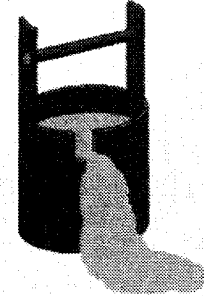
Figure 1 4 Personal Competency Assessment Form Example

NO.	Unit of Personal Competency	Cluster of Personal Competency	Personal Competency Elements	Score	Weight	Assessment Result
1	1. Achievement and Action	1.1 Achievement Orientation	1.1.1 Operates with Intensity to Achieve Project Goals	$PSS_n$	$W_n$	$PSAR_n = PSS_n \times W_n$
2			1.1.2 Motivates Project Stakeholders in a Positive Way			
...	...	...	...			
38	6. Personal Effectiveness	6.3 Flexibility	6.3.1 Changes to Meet the Needs of the Project			
39			6.3.2 Changes at the Required Pace			
40		6.4 Organizational Commitment	6.4.1 Demonstrates Commitment to the Project			
Sum of all Personal competency elements Assessment Result						
			$PSAR = \sum_{n=1}^{40} PSAR_n$			

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### 3.2.2.3 Limits

The competency of project manager is a systematic conception. It obeys the "cask theory" ---- the cubage of a cask is dependent on the shortest wood plate.



So the effective project manager should not only have a higher total score based on evaluation across all of the competencies, but the lowest score of some elements should be higher than limits set to determine cut-off levels at the lower end. That is to say, the lowest score of one element should not be the shortest wood plate of the "project management" cask; otherwise it will become the weakest link leading to fatal negative effects on project success.

In calculation of the lower limits, the limits can be marked as

$$S_k \geq S_{kl}$$

Here,  $S_k$  means the  $k^{th}$  competency element score, and  $S_{kl}$  means limit score for the  $k^{th}$  competency element

### 3.2.2.4 Algorithm

Now the effective project manager selection method resulting from the combination of these factors can be formulated as the following function:

The objective is to select the project manager that has maximum Total Assessment Result

$$\text{Maximize}(TAR_{m, m > 0, \in \mathbb{N}}) \quad (10)$$

Subject to

$$S_k \geq S_{kl}, \quad k = 1, \dots, n \quad (11)$$

Where  $m$  is the number of project manager candidates. When we get the

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practical weight for each element in a specific organization, formula (9) and (10) can be used to select the optimally effective project manager in the specific organization. This point is discussed further in chapter 4.1.

### **3.2.3 Pilot Study**

In order to establish the weight of each element related to the combined knowledge competency, performance competency and personal competency, a web based questionnaire was developed. Sixteen people with enriched project experience completed the survey and indicated their opinions on the relative importance of each of the elements.

#### **3.2.3.1 Questionnaire**

The questionnaire was developed based on the PMCD framework, and was distributed in two language versions: English and Chinese. For the purpose of getting representative opinions from North America and Asia, the questionnaire is designed for use in two countries: Canada and China.

The questionnaire was divided into three sections:

##### **Part I. General Information**

In this part, the items focused on respondents' project management experience. Information focused on such issues as the respondent's level in the organization, formal training and work experience of the respondent related to Project Management, length of tenure in the organization, and a general evaluation by the respondent of the current level of sophistication of their organization in relation to Project Management.

##### **Part II. Project Management Knowledge/Performance Competency Elements**

In this part, there were 9 questions including 62 elements in 5 project management processes and 9 areas, as described in Figure 9. Respondents were asked to evaluate the relative importance of each element and process as

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a way of establishing some sense of hierarchy of importance among the elements and across PM processes.

### Part III. Project Management Personal Competency Elements

In this part, there were 6 questions focusing on 40 elements related to personal characteristics (core personality, behavior, and attitudes) underlying a person's capability to manage a project. Please refer to Figure 10 for a complete outline of the characteristics.

Part II and Part III of the questionnaire utilized a 5-point Likert scale with the scale items ranging from *Not Important to Critical*. For Part II, data was gathered through the Likert-scale entry and also through a qualitative entry link that allowed respondents to expand on their quantitative score with criteria and examples. In Part III of the questionnaire, due to the nature of the items being scored, there was only a Likert-scale link provided for each element with criteria. The full questionnaire is available on for viewing at

<http://137.122.146.213/miles/ming/projectmanagement/index.htm>

#### **3.2.3.2 Survey Administration**

Sixteen respondents with either active project management experience or expert/advisory status related to project management were invited to complete the questionnaire. Figure 15 summarizes the demographic data concerning the respondent base. The sample was chosen based on opportunistic linkages to the individual respondents. The final list of respondents, however, was restricted to individuals who were either currently or in the past project managers, managers, or advisors to organizations who actively used project management as a professional management tool.

Figure 1 5 Participant Demographic Data and PM Profiles

Present Position	Project Manager	6	Total
	Project Team Member	3	
	Professional in PMO	0	
	Manager in PMO	1	
	Executive	0	
	Manager not directly supervision projects	2	
	Professional not directly supervision projects	1	
	Consultant	2	
	Other	5	
Others	PMP Certificated or not	1 PMP	Average
	Number of projects have participated	7.84	
	Largest team member number have led	8-19	
Years of Experience	As Project Manager	1.88-2.94	Average
	As Project Team Member	3.12-3.81	
	As Manager in the PMO	0.135-0.31	
	As Executive	0	
	As Manager elsewhere in the organization	1.5-2	
	As Other Role	1-1.5	
	Total work Experience	6.25-7.75	
Organization	China Europe International Business School (CEIBS)		
	Stanford University, USA		
	John Molson School of Business, Canada		
	IBM, Canada		
	Shanghai Baosteel Group Corporation, China		
	Fortinet Corporation, Canada		
	MetaSolv Software Corporation, Canada		

## 4 Data Analysis and Results

### 4.1 Competency Elements and Weights

Of the nineteen questionnaires completed and entered, three were deemed to be invalid due to apparent confusion by the respondents in relation to their project experience information provided in first part of the questionnaire. Data from the 16 remaining questionnaires was analyzed. The average value for each element from the 16 valid responses was calculated to determine its perceived relative weighted importance in relation to the other items. Using this system the analysis determined and ranked by weight the relative importance of all 102 elements. The listing of weights organized by importance is outlined in Appendix 2. A sample of this list is provided in Figure 16.

Figure 1 6 Example of Elements and Weights

NO.	Competency Elements			Weight
1	1. Integration Management	1. Initiating	1.1.1 Identify and Document Project Needs; Developing Project-Related Product or Service Descriptions	3.75
2			1.1.2 Perform an Initial Project Feasibility Study and Analysis	3.88
...	...	...	...	...
101	6. Personal Effectiveness	6.4	6.3.2 Changes at the Required Pace	3.69
102		Organizational Commitment	6.4.1 Demonstrates Commitment to the Project	3.69

As described in chapter 3.2.2, if these weights are put into Formula (10), we can get the specific project manager selection method for this organization.

## 4.2 Priority of Competency Elements

### 4.2.1 Top 10 Competency Elements

The data sorting of all the elements by their weights in descending sequence as listed in Appendix 3, yields a ranking of the top 10 elements with largest weights. This allows us to identify the top 10 Personal competency elements and the top 10 Knowledge/Performance competency elements. These are summarized in Figure 17, 18 and Figure 19 respectively.

Figure 17 Top 10 All Competency Elements

NO.	Competency Elements			Weight
1	1. Achievement and Action	1.3 Initiative	1.3.2 Takes Accountability for and Delivers the Project	4.38
2	5. Quality Management	4.Controlling	5.4.1 Conduct Quality Control	4.31
3	3. Time Management	4.Controlling	3.4.1 Conduct Schedule Control	4.31
4	3. Time Management	3.Executing	3.3.1 Implement Project Schedule	4.25
5	4. Managerial	4.1 Teamwork and Cooperation	4.1.2 Molds Core Project Stakeholders into a Team	4.19
6	4. Cost Management	4.Controlling	4.4.1 Conduct Cost Control	4.19
7	9. Procurement Management	4.Controlling	9.4.1 Manage and Review Contract Performance	4.13
8	8. Risk Management	3.Executing	8.3.1 Execute Risk Response Plan	4.13
9	8. Risk Management	4.Controlling	8.4.1 Conduct Risk Monitoring and Control	4.13
10	5. Cognitive	5.2 Conceptual thinking	5.2.1 Sees the Project in a Holistic Way	4.13

From analysis of Figure 17, we can observe that the Personal Competency elements “Takes Accountability for and Delivers the Project” in the unit of “Achievement and Action” get the No.1 position in all the elements. This result suggests that, in organization that has experience with or support Project Management as a discipline, there is a relatively strong value related to results orientation.

Analysis of the data in Figure 18 related to the top 10 Knowledge and

Performance Competencies suggests that three of the nine project management areas – Time Management, Cost Management and Quality Management – make up 50% of the top ten knowledge and performance competency elements. This is consistent with the project success factors (“Delivered on Time (Time), Delivered on Budget (Cost), and Delivered per Specification (Quality) described in Chapter 2.1.

Figure 1 8 Top 10 Knowledge and Performance Competency Elements

Knowledge/Performance Competency Elements			Weight
3. Time Management	4.Controlling	3.4.1 Conduct Schedule Control	4.31
5. Quality Management	4.Controlling	5.4.1 Conduct Quality Control	4.31
3. Time Management	3.Executing	3.3.1 Implement Project Schedule	4.25
4. Cost Management	4.Controlling	4.4.1 Conduct Cost Control	4.19
8. Risk Management	3.Executing	8.3.1 Execute Risk Response Plan	4.13
8. Risk Management	4.Controlling	8.4.1 Conduct Risk Monitoring and Control	4.13
9. Procurement Management	4.Controlling	9.4.1 Manage and Review Contract Performance	4.13
1. Integration Management	4.Controlling	1.4.1 Conduct Integrated Change Control	4.06
5. Quality Management	3.Executing	5.3.1 Conduct Quality Assurance	4.06
7. Communications Management	3.Executing	7.3.2 Implement Project Time Reporting	4.06

Further analysis shows that Executing and Controlling are the only 2 of 5 project processes in the top 10 knowledge and performance competency elements. The other remaining three (Initiating, Planning, and Closing), though important in the overall scheme of good project management, clearly are perceived as more secondary to keeping the project moving along.

Figure 1 9 Top 10 Personal Competency Elements

Personal Competency Elements			Weight
1. Achievement and Action	1.3 Initiative	1.3.2 Takes Accountability for and Delivers Project	4.38
4. Managerial	4.1 Teamwork and Cooperation	4.1.2 Molds Core Project Stakeholders into a Team	4.19
1. Achievement and Action	1.4 Information Seeking	1.4.1 Ensures Information Used to Manage Project is Complete and Accurate	4.13
5. Cognitive	5.2 Conceptual thinking	5.2.1 Sees the Project in a Holistic Way	4.13
3. Impact and Influence	3.1 Impact and Influence	3.1.3 Understands and Influences Project Team Members	4.06
3. Impact and Influence	3.2 Organization Awareness	3.2.2 Understands the Project	4.06
2. Helping and Human Service	2.2 Interpersonal Understanding	2.2.2 Listens and Responds to Others	4.00
1. Achievement and Action	1.1 Achievement Orientation	1.1.4 Operates with Individual Integrity and Personal Professionalism	3.94
2. Helping and Human Service	2.1 Customer Service Orientation	2.1.2 Takes Initiatives to Provide Excellent Client Service	3.94
3. Impact and Influence	3.3 Relationship Building	3.3.1 Builds and Maintains Suitable Relationships with Project Stakeholders	3.94

Analysis of the Personal Competency Elements shows a similar dominance of a limited number of elements in terms of perceived importance. When ranked in a “Top 10” format, three elements of personal competency (Achievement and Action, Helping and Human Service, and Impact and Influence) comprise 80% of the top 10 personal competency elements. Figure 19 summarizes the Personal Competency Top 10 data.

#### 4.2.2 T-Test Result

T-test is the most commonly used method to evaluate the differences in means between two groups. Theoretically, the t-test can be used even if the sample sizes are very small (e.g., as small as 10) (<http://www.statsoft.com>)

/textbook/stbasic.html#t-test%20for%20independent%20samples).

In order to confirm if differences are significant, this study carried out the t-Test between the Top 10 All Competency Elements and All Competency Elements, between Top 10 Knowledge/Performance Competency Elements and All Knowledge/Performance Competency Elements, and also between Top 10 Personal Competency Elements and All Personal Competency Elements. The following three figures illustrated the test result.

Figure 2 0 t-Test of Top 10 All Competency Elements and All Competency Elements

	All Competency Elements	Top 10 All Competency Elements
Mean	3.764411765	4.215
Variance	0.065525888	0.008516667
Observations	102	10
Pooled Variance	0.060861497	
Hypothesized Mean Difference	0	
df	110	
t Stat	-5.511878128	
P(T<=t) one-tail	1.18354E-07	
t Critical one-tail	1.658822839	
P(T<=t) two-tail	2.36709E-07	
t Critical two-tail	1.981766218	

Figure 2 1 t-Test of Top 10 Knowledge/Performance Competency Elements and All Knowledge/Performance Competency Elements

	All Knowledge & Performance Competency Elements	Top 10 Knowledge & Performance Competency Elements
Mean	3.740322581	4.163
Variance	0.076239238	0.009623333
Observations	62	10
Pooled Variance	0.067674336	
Hypothesized Mean Difference	0	
df	70	
t Stat	-4.76789454	
P(T<=t) one-tail	4.90238E-06	
t Critical one-tail	1.666915068	
P(T<=t) two-tail	9.80475E-06	
t Critical two-tail	1.994435479	

Figure 2 2 t-Test of Top 10 Personal Competency Elements and All Personal Competency Elements

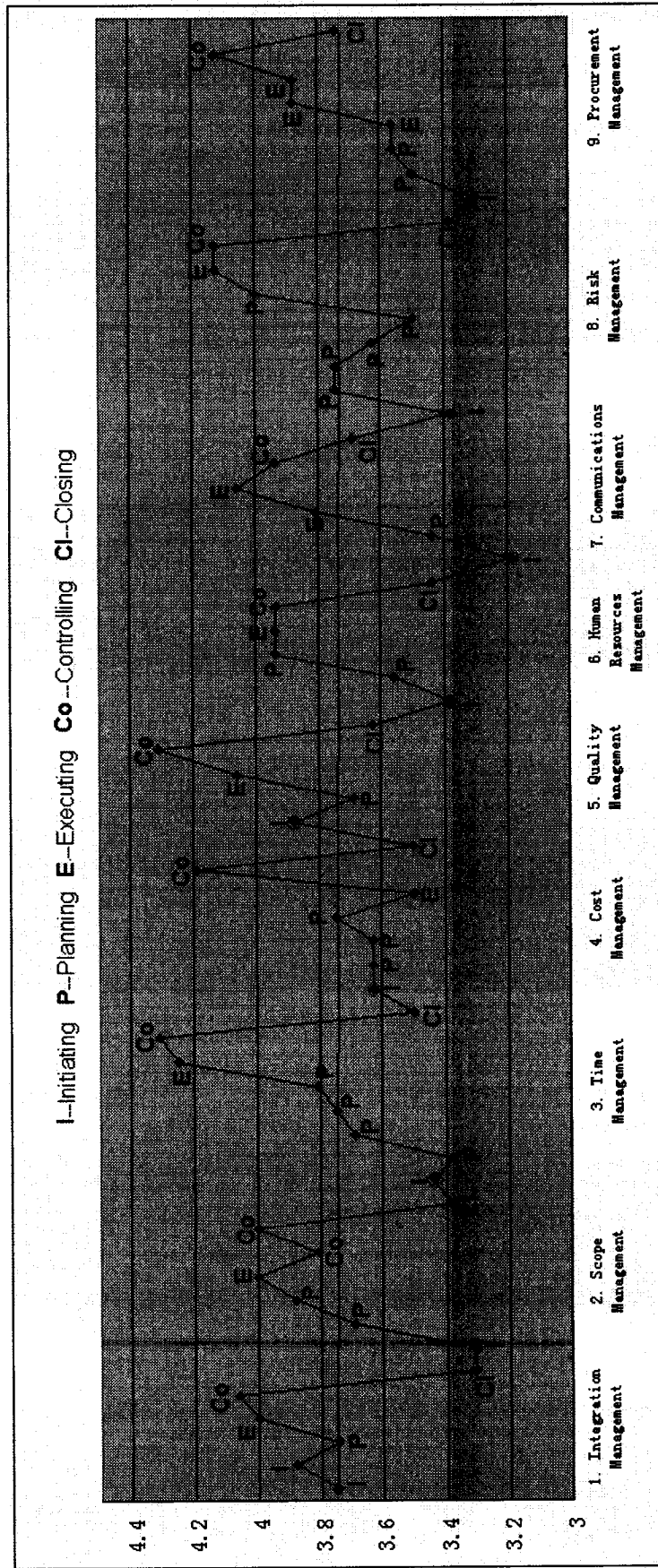
	All Personal Competency Elements	Top 10 Personal Competency Elements
Mean	3.80175	4.077
Variance	0.048096859	0.019223333
Observations	40	10
Pooled Variance	0.042683073	
Hypothesized Mean Difference	0	
df	48	
t Stat	-3.768291424	
P(T<=t) one-tail	0.00022487	
t Critical one-tail	1.677224191	
P(T<=t) two-tail	0.00044974	
t Critical two-tail	2.01063358	

The above results show that all the P value are smaller than 0.05. Accordingly, the differences between all Top 10 All Competency Elements and all Competency Elements are significant. The same can be said for all Top 10 Knowledge/Performance Competency Elements all Knowledge/Performance Competency Elements. The Top 10 Personal Competency Elements also have significant differences with All Personal Competency Elements.

### 4.2.3 Priority of 9 Project Management Areas Across 5 Project Management Processes

The analytical process of aligning all 62 knowledge/performance competency elements in their 9 project management focal areas in each area, results in a graphic representation of the differentiation in range of perceived priority across 5 project management processes. This data is summarized in Figure 20.

Figure 2.3 Priority of 9 Project Management Areas across 5 Project Management Processes



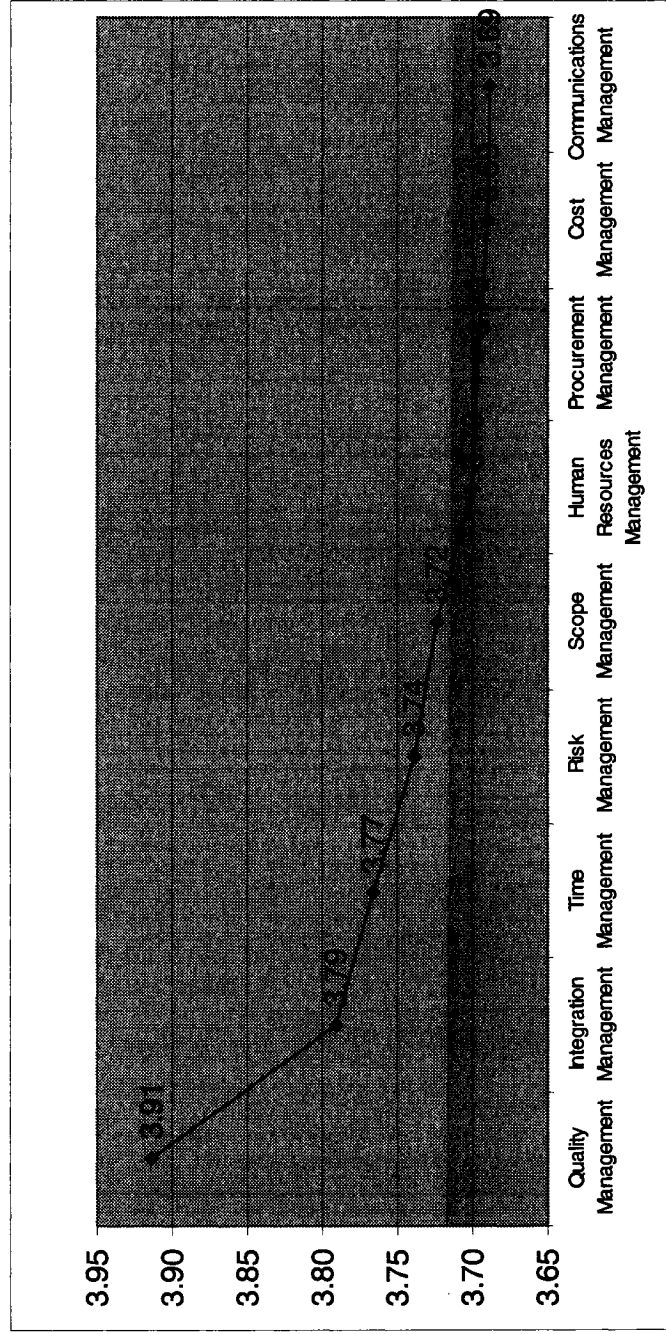
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Analysis of the data in Figure 20 demonstrates that, on one hand, Executing and Controlling are the two of 5 processes that have highest weighing score in each of 9 project management areas, which is consistent with the conclusion from Figure 18. On the other hand, Time Management, Cost Management and Quality Management have 5 elements with higher weighting among the top 10 Knowledge and Performance competency elements, which is compatible with the deduction from Figure 18 and Chapter 2.1.

Through computation of the average weight for each area, and through arrangement of the areas in order of their perceived importance in descending sequence, we can develop a graphical representation of the relative order and weight of perceived importance. This data is summarized in Figure 21. The range of respondent responses is 3.69 to 3.91. With such a small range across such a small sample group, the data summarized by the figures strongly suggest that, across this study's respondents, there is no strongly perceived difference of priority or importance among these 9 project management areas.

Of all the project management areas, Communications Management has the lowest assigned priority. This could be perceived to imply that respondents do not regard communication as such an important factor in project management as the other project management areas. Qualitative comments by the respondents, however, suggest another potential implication of this result. Two respondents indicated that, in their experience, communication was generally effective in organizations that used a structured project management system. In their experience, if people have communicated well, there was no need to improve communications management. They did indicate, however, that if people had problems in communications among each other, the importance of this factor could be quite high. The range depicted in Figure 21 around Communication Management (3.19 - 4.06) is among the highest on the chart. The implication is that Communications Management must indeed be seen as an important project management area and addressed as such.

Figure 2 4 Average Priority Sequence of 9 Project Management Areas



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## **4.2.4 Priority of 5 Project Management Processes Across 9 Project Management Areas**

Analysis of the 5 project management processes requires that we align all 62 knowledge/performance competency elements in the 9 project management areas, in sequence of the project management processes (Initiating, Planning, Executing, Controlling and Closing). By aligning the competency elements in the sequence of the project management areas (Integration Management, Scope Management, Time Management, Cost Management, Quality Management, Human Resources Management, Communications Management, and Risk Management to Procurement Management) we arrive at a statement of the perceived priority in importance of the 5 project management processes as outlined in Figure 22.

Through further computation of the average weight for each process, and arranging them by descending sequence, we produce a graphic representation of the perceived relative importance of the 5 areas of project management in descending order of importance. This hierarchical representation of the PM areas is outlined in Figure 23. The two figures suggest that, in the eyes of the study respondents, Executing and Controlling are perceived as issues of higher priority while Closing gets relatively lower priority.

As in the case with Communications Management, respondents provided some potentially mitigating qualitative data that forms the context of this relatively straightforward quantitative analysis. They indicated that, in their opinion, the close of a project is also very important, because only at the closing of a project are the results delivered to the client and accepted by project stakeholders. So if the close is handled well, that means they do not need to improve in this area – it is perceived as less significant. On the other hand, if they have problems at the closing stage of the project process, the data in Figure 23 suggests that they may have to pay more attention to it to improve.

Figure 2.5 Priority of 5 Project Management Processes across 9 Project Management Areas

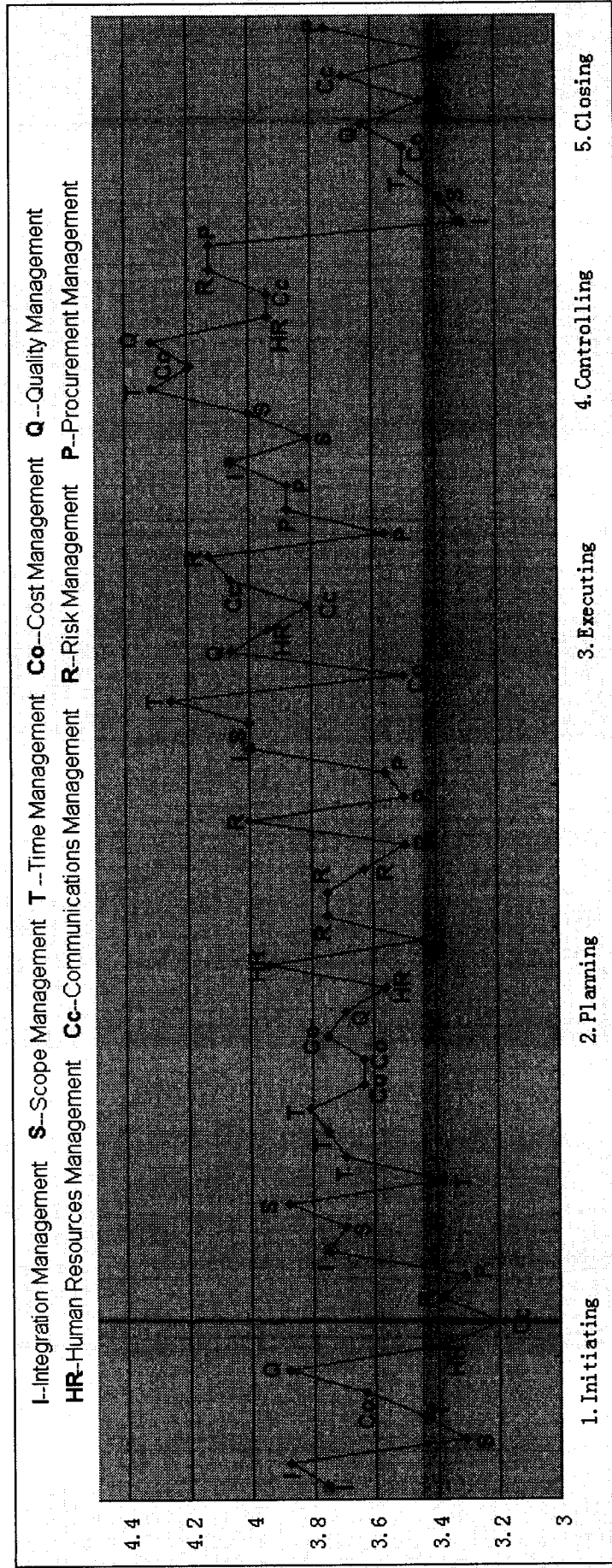
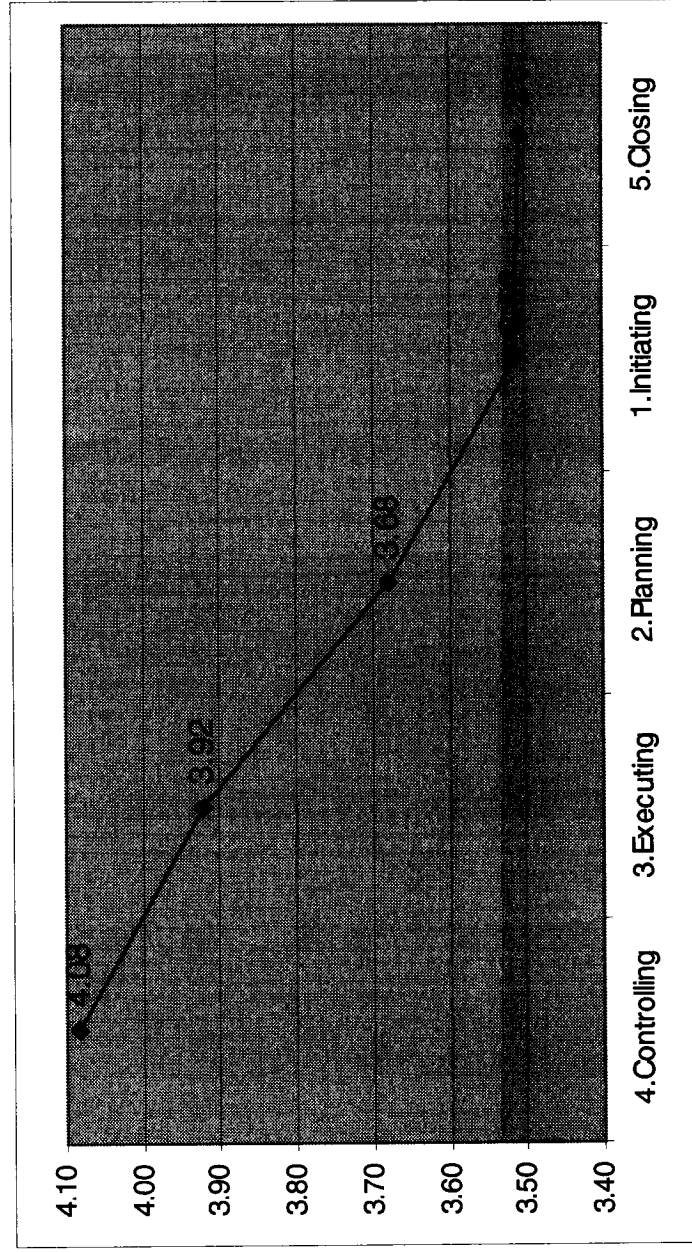


Figure 2 6 Average Priority Sequence of 5 Project Management Processes

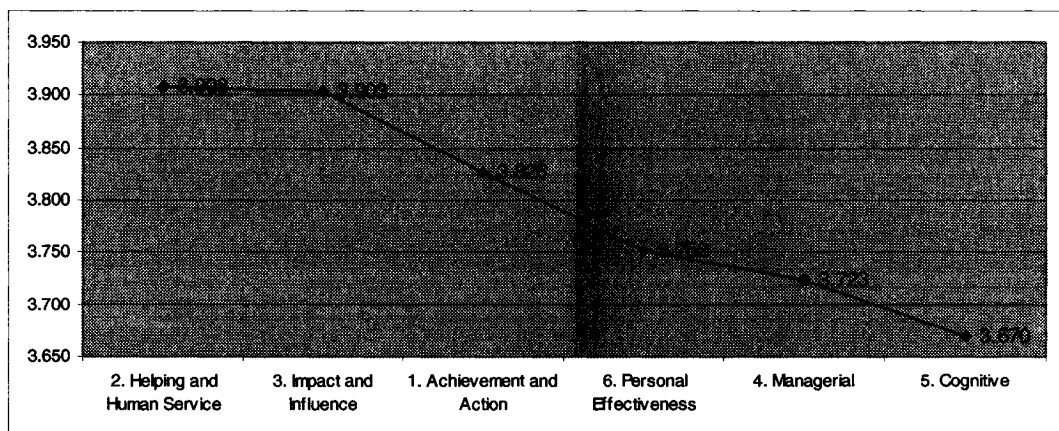


## 4.2.5 Priority of 6 Personal Competency Units

Calculating the average weights of 6 personal competency units and arranging them by descending sequence, we can develop a graphical depiction of the perceived relative importance of the Project Manager Personal Competencies. Results of the data analysis are provided in Figure 24. Analysis indicates that Helping and Human Service receives the highest weight and Cognitive Ability receives the lowest weighting in the eyes of the respondents.

Further analysis notices that, “Helping and Human Services”, and “Impact and Influence” that are more focused on Human Resources aspects have almost same weighting and get first and second important priority separately. This result is supported by Kliem and Ludin (1992) discussed in Chapter 3.1.3.6, especially agreed by Davis and Pharro (2003) in their book *The Relationship Manager: the Next Generation of Project Management*.

Figure 2 7 Priority Sequence of 6 Personal Competency Units



## 4.3 Competency Elements Priority Evaluated By Project Mangers

The following three tables list the top 10 competency elements, top 10

knowledge/performance competency elements and top 10 personal competency elements as selected by project managers.

Figure 2 8 Top 10 Competency Elements Selected By Project Managers

NO.	Top 10 Competency Elements			Weight
1	1. Integration Management	4.Controlling	1.4.1 Conduct Integrated Change Control	4.67
2	2. Scope Management	4.Controlling	2.4.2 Conduct Scope Change Control	4.67
3	1. Achievement and Action	1.3 Initiative	1.3.2 Takes Accountability for and Delivers Project	4.5
4	1. Achievement and Action	1.4 Information Seeking	1.4.1 Ensures Information Used to Manage Project is Complete and Accurate	4.5
5	2. Helping and Human Service	2.2 Interpersonal Understanding	2.2.2 Listens and Responds to Others	4.5
6	2. Scope Management	2.Planning	2.2.2 Conduct Scope Definition	4.5
7	2. Scope Management	3.Executing	2.3.1 Execute Scope	4.5
8	2. Scope Management	4.Controlling	2.4.1 Conduct Scope Verification	4.5
9	3. Impact and Influence	3.1 Impact and Influence	3.1.3 Understands and Influences Project Team Members	4.5
10	3. Time Management	4.Controlling	3.4.1 Conduct Schedule Control	4.5

Figure 2 9 Top 10 Knowledge/Performance Competency Elements Selected by Project Managers

NO.	Top 10 Knowledge/Performance Competency Elements			Weight
1	1. Integration Management	4.Controlling	1.4.1 Conduct Integrated Change Control	4.67
2	2. Scope Management	4.Controlling	2.4.2 Conduct Scope Change Control	4.67
3	2. Scope Management	2.Planning	2.2.2 Conduct Scope Definition	4.5
4	2. Scope Management	3.Executing	2.3.1 Execute Scope	4.5
5	2. Scope Management	4.Controlling	2.4.1 Conduct Scope Verification	4.5
6	3. Time Management	4.Controlling	3.4.1 Conduct Schedule Control	4.5
7	3. Time Management	3.Executing	3.3.1 Implement Project Schedule	4.33
8	4. Cost Management	4.Controlling	4.4.1 Conduct Cost Control	4.33
9	8. Risk Management	3.Executing	8.3.1 Execute Risk Response Plan	4.33
10	1. Integration Management	1.Initiating	1.1.1 Identify and Document Project Needs; Developing Project-Related Product or Service Descriptions	4.17

Figure 3 0 Top 10 Personal Competency Elements Selected By Project Managers

NO.	Top 10 Personal Competency Elements			Weight
1	1. Achievement and Action	1.3 Initiative	1.3.2 Takes Accountability for and Delivers Project	4.5
2	1. Achievement and Action	1.4 Information Seeking	1.4.1 Ensures Information Used to Manage Project is Complete and Accurate	4.5
3	2. Helping and Human Service	2.2 Interpersonal Understanding	2.2.2 Listens and Responds to Others	4.5
4	3. Impact and Influence	3.1 Impact and Influence	3.1.3 Understands and Influences Project Team Members	4.5
5	3. Impact and Influence	3.2 Organization Awareness	3.2.2 Understands the Project	4.33
6	4. Managerial	4.1 Teamwork and Cooperation	4.1.2 Molds Core Project Stakeholders into a Team	4.33
7	6. Personal Effectiveness	6.1 Self-Control	6.1.1 Maintains Self-Control	4.33
8	1. Achievement and Action	1.1 Achievement Orientation	1.1.4 Operates with Individual Integrity and Personal Professionalism	4.17
9	1. Achievement and Action	1.2 Concern for Order, Quality, and Accuracy	1.2.1 Manages Projects in an Ordered, Accurate Way	4.17
10	1. Achievement and Action	1.3 Initiative	1.3.4 Strives for Best Practice	4.17

As indicated in Figure 25, project managers perceive that, “Conduct Integrated Change Control” and “Conduct Scope Change Control” should receive the first two highest priorities with same weight. This finding suggests that project managers focus strongly on the significance of controlling project changes and scope creep. In both Figure 25 and 26, Scope Management across all three of Planning, Executing and Controlling processes, absorbs 40% of the top 10 identified items, when we analyze the elements in Figure 26 in-depth, we note that they all focus on scope definition, control and risk response.

Analysis of the Personal Competency elements (Figure 27) results in identification of a heavy focus on “Achievement and Action Orientation”. This

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one set of competencies occupies 50% of the identified items among the 10 elements. This confirms the conclusion from Figure 17 described in chapter 4.2.1 that organizations possess a strong culture and experience with project management focus on result oriented project management.

## **4.4 Summary**

The data received from respondents in this study provides some clear and compelling indications of priority in relation to the requisite skills, abilities, and attitudes of project managers. Primary among the conclusions that can be drawn from the analysis of the study data is the conclusion that project managers must have a strong predisposition for “Achievement and Action”. This predisposition must translate into the ability to demonstrate his or her ability and willingness to “Take Accountability for and Deliver Projects”. The most highly and positively perceived project processes were in the areas of “Executing” and “Controlling”, reinforcing the frequently noted declaration of PMI that “ project management organizations are results oriented” (PMI, 2002).

Among the knowledge/performance competency elements 50% of the items focus on in the top 10 focus on time, cost and quality, suggesting that healthy project management focuses strongly on these concrete measures. This suggests further that selection of a high quality project manager needs to focus on acquiring personnel possessing the knowledge and performance skills outlined in the questionnaire that deal with this area of project management practice. Additionally, selection of project managers should focus on the ability to control scope change and project processes and be skilled in responding to project risk events.

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## 4.5 Application of Data Analysis to Project Manager Selection

To select the effective project manager in a real organization, the step can be described as follows based on the method and tool presented in this thesis:

1. Imitate the questionnaire pattern developed in this study,

<http://137.122.146.213/miles/ming/projectmanagement/index.htm>

to design the Specific Competency elements questionnaire found on the specific requirements of the organization and project.

2. Carry out the survey among the relative sponsors with the questionnaire developed in this study and step 1, to achieve their concern for all the four Knowledge, Performance, Personal and Specific dimensions competency elements priority.

3. Calculate the weighting of all the elements.

4. Simulate the assessment forms developed in this study (please refer to page 33 and 34) to design assessment form of Specific Competency elements.

5. Assess each project manager candidate to get the score with Formula (1) to (9).

6. Based on the actual case to build the elements limitation according to the "Cask Theory", as described in Chapter 3.2.2.3.

7. Solve the function with Formula (10) and (11) listed in Chapter 3.2.2.4 and get the optimized solution.

8. Combine the solution and consider the factual circumstance of the project and organizational to select the effective project manager.

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## **4.6 Application of Data Analysis to Project Manager Development**

The project manager selection tool and method presented in this study extends another approach different with the one of PMI discussed in Chapter 2.3, which can be used to evaluate and develop current project manager in the organization. The first three steps are same with project manager selection approach in Chapter 4.5 that is to get the priority weightings of all the competency elements. The other following steps can be depicted as:

4. Evaluate the current project manager and get score for each element.
5. Compare the score from step 4 and weighting from step 3.
6. If the project manager gets a low score on the element that has high priority that means the competency of this manager at this point has a gap between the expectations of the organization, so this competency should be developed and strengthened.

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## **5 Study Limitation and Future Research**

### **5.1 Study Limitation**

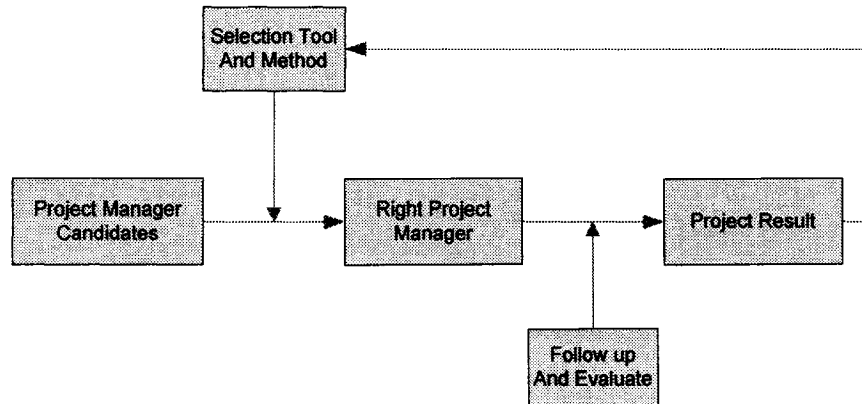
As described in Chapter 3.2.1, each project or company has its “Specific Competency”. However, the 16 respondents in this study come from different organizations, so the elements weighting of this fourth dimension competency – Specific Competency were not analyzed in this thesis.

Meanwhile, because of the time limit, this study only built the project manager selection tool, and gave out one group of representative elements weighting, but did not use it to select project manager in a real organization for an actual project. This research will be done in future out of this thesis and be used to verify the method proposed in this study.

### **5.2 Project Manager Evaluation**

To achieve project success in our hyper-competitive world of business, project managers must understand all of the facets of the project management system and its organizational environment. This includes not only the latest tools and techniques, but also the people, business processes, cultures, and value systems of the organization.

Figure 3 1 Project Manager Selection and Evaluation Process



The environment of a complex business, however, is dynamic (Thamhin, 2004), implying that the skills and knowledge requirements and demands on a right project manager will vary during the process of a project. So to select a “right” project manager at the beginning of a project implies that the project manager, once selected, should be both flexible in his competencies and possess the ability to learn to apply new skills and learning throughout the implementation process of the project.

On the other hand, with the development of project management theory, project manager selection methodologies using tools such as the questionnaire developed for this project to identify project manager relative skills in the critical areas of project management will be improving continuously. So both the project manager and selection method are continuously optimized during the project process, as illustrated in Figure 28.

### 5.3 Project Management Problems Analysis

Analysis of the data generated through the questionnaire completion and submission by respondents indicates that the issue of “Quality Management” is perceived as #.2 (Please refer to Appendix 3) out of the 102 competency elements. In the view of project managers, however, it is ranked 29<sup>th</sup> (Please

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refer to Appendix 11) and among employees it is ranked 14<sup>th</sup> (Please refer to Appendix 17). When considering these different views among respondents, we might draw the conclusion that the people who manage the implementation of the project are not concerned about quality as much as the people who do not participate actively in direct management activity related to the project. These people might include managers in the Project Management Office (PMO) who just evaluate the project performance from a distance. Because quality is identified as one of the three key project success criteria – and in fact the number one Project Management area in terms of perceived importance – differences of opinion in relation to it will be a potentially important obstacle preventing project success.

Similarly, other people that will have other different standpoints, based on their own project experiences such as the number and scope of projects in which they have participated, size of teams they have led, years of experiences as project manager and other roles, etc. The relationships among their experiences and views will influence their competency which in turn further impacts project success.

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## 6 Conclusion

From the 1960's to now, project management has entered into every aspect of our work with high speed but questionable rates of success. Recruiting or developing the "Right Project Manager" is one of three key factors that influence the success of the project. Currently, however there are few tools available to evaluate project management skills and to use as a quality selection method. Organizations have many project management problems but with few tools that can combine project manager's competencies to analyze them.

This thesis develops a new methodology and tool based on the work of PMI to screen and select "right project managers" using four dimensions of competency. Through development of a questionnaire tool and analysis of data gathered from practicing project managers and expert advisors, a ranking of the relative importance of project management competencies, knowledge, and project management process was established. The questionnaire tool can now be used in reverse to test for the competencies and knowledge of prospective project managers and compare them to the profiles developed in this study. The method establishes a new standpoint to select effective project managers, and has the potential to benefit project manager competency development, organizational project management maturity and sustainable development in organizations where project management is accepted as a legitimate organization process.

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## Appendices

### Appendix 1 Initial data from all 16 respondents

Q1_1	1	0	1	0	0	0	0	0	0	1	1	1	0	0	1	0	0
Q1_2	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0
Q1_3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Q1_4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Q1_5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Q1_6	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Q1_7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Q1_8	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Q1_9	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	1	0
Q2	3	2	1	2	3	3	3	2	2	2	3	3	4	2	3	5	3
Q3	2	1	5	5	4	5	1	1	5	3	2	2	2	5	4	4	2
Q4	3	2	4	2	2	2	2	2	2	2	3	2	2	2	2	2	5
Q5_A_1	4	2	4	4	1	3	3	3	2	2	3	2	1	3	5	2	3
Q5_A_2	3	3	3	4	3	1	3	3	4	3	4	3	4	4	7	2	4
Q5_A_3	2	1	2	1	1	1	1	1	1	1	1	1	1	1	3	1	1
Q5_A_4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Q5_A_5	1	4	3	1	1	1	4	3	1	3	1	3	1	4	1	1	1
Q5_A_6	1	3	3	1	1	1	3	1	4	1	2	1	4	1	3	1	1
Q5_A_7	1	5	7	6	3	4	5	4	5	5	5	5	4	5	7	3	5

Q6	3	1	3	5	2	2	2	4	3	1	2	1	2	1	2	1	2	1	2
Q7	5	3	4	2	2	2	2	2	4	3	4	4	3	5	3	4	3	4	4
Q8_A_1	5	3	4	3	3	2	2	3	4	4	3	4	5	5	5	3	4	4	4
Q8_A_2	5	3	5	4	4	4	4	2	4	4	3	4	5	4	4	3	4	3	4
Q8_A_3	4	4	5	4	3	5	4	2	3	4	3	5	5	3	3	4	3	4	3
Q8_A_4	4	4	5	4	4	4	4	3	4	5	3	5	5	3	3	5	3	5	3
Q8_A_5	5	5	5	5	4	2	2	1	4	5	3	5	5	3	5	4	4	4	4
Q8_A_6	4	3	5	3	3	1	3	3	4	4	3	3	5	3	3	3	3	3	3
Q9_A_1	3	3	4	3	3	2	2	2	3	3	3	3	5	5	3	3	3	3	5
Q9_A_2	4	3	5	3	4	2	2	2	3	4	4	4	5	4	4	3	3	3	5
Q9_A_3	5	4	5	3	4	2	2	2	3	5	4	4	5	4	4	4	4	3	5
Q9_A_4	5	4	5	4	4	3	3	2	3	5	5	4	5	3	3	3	4	4	5
Q9_A_5	4	3	5	5	3	2	2	1	3	5	4	5	5	3	4	4	4	4	5
Q9_A_6	4	5	5	5	4	1	1	1	3	5	4	5	5	3	3	5	4	4	5
Q9_A_7	4	3	4	4	3	1	3	3	3	4	4	3	5	3	3	3	2	2	5
Q10_A_1	4	2	4	3	3	4	4	2	3	4	4	4	5	5	3	2	2	3	3
Q10_A_2	3	3	4	3	3	2	3	3	3	4	3	4	5	4	3	2	2	5	5
Q10_A_3	3	4	4	3	4	4	4	2	3	4	3	5	5	4	3	4	4	4	4
Q10_A_4	3	3	4	4	4	5	2	2	3	5	3	5	5	4	3	3	3	4	4
Q10_A_5	3	4	4	4	4	4	3	3	3	4	4	4	5	4	4	3	3	4	4
Q10_A_6	4	5	5	5	4	5	2	2	3	5	4	5	5	4	3	5	5	4	4
Q10_A_7	4	5	5	5	4	4	4	2	3	5	4	5	5	4	4	4	4	5	5
Q10_A_8	4	4	4	4	3	2	3	3	3	4	4	3	5	4	3	2	2	4	4
Q11_A_1	4	4	4	3	3	3	3	3	4	4	4	2	5	5	3	2	2	5	5
Q11_A_2	4	3	4	4	3	3	3	2	4	4	4	3	5	4	4	4	2	5	5
Q11_A_3	4	3	4	5	4	4	3	2	4	4	4	3	5	3	3	3	3	4	4

Q11_A_4	3	4	4	4	5	4	3	3	4	4	4	4	5	3	3	3	3	4
Q11_A_5	3	4	4	3	5	3	3	2	3	3	5	3	5	3	3	3	3	4
Q11_A_6	3	5	5	4	5	4	3	2	4	5	4	5	5	5	4	3	5	
Q11_A_7	4	3	4	4	4	4	3	3	3	4	4	2	5	4	3	2	4	
Q12_A_1	4	4	5	4	3	4	4	3	3	4	4	3	5	5	4	2	5	
Q12_A_2	4	4	4	4	4	4	3	2	4	4	4	3	5	5	3	2	4	
Q12_A_3	4	5	4	4	5	4	3	2	3	5	4	3	5	5	4	5	4	
Q12_A_4	4	5	5	4	5	4	4	2	4	5	4	3	5	5	4	5	5	
Q12_A_5	4	4	4	4	4	4	3	3	3	4	4	3	5	4	3	2	4	
Q13_A_1	4	3	3	3	3	3	2	3	3	3	4	3	5	5	3	2	5	
Q13_A_2	4	4	3	3	4	3	3	2	3	4	4	3	5	5	3	2	5	
Q13_A_3	4	4	4	4	4	5	2	3	4	5	4	3	5	4	3	5	4	
Q13_A_4	4	5	5	5	4	5	3	2	3	5	4	2	5	4	3	4	5	
Q13_A_5	4	4	4	4	5	5	2	2	4	5	4	2	5	4	4	5	4	
Q13_A_6	4	3	4	4	4	4	2	2	3	4	4	2	5	4	3	3	4	
Q14_A_1	3	3	4	3	3	3	1	1	3	4	4	5	5	3	3	2	4	
Q14_A_2	4	3	4	4	4	4	2	2	3	5	3	4	5	4	3	2	3	
Q14_A_3	4	4	4	4	4	4	3	3	3	5	4	4	5	5	2	2	5	
Q14_A_4	4	5	4	4	4	4	3	3	4	5	4	5	5	4	3	4	4	
Q14_A_5	3	4	5	4	4	4	4	2	4	5	3	4	5	4	3	4	5	
Q14_A_6	3	4	4	4	4	3	4	3	4	4	4	4	5	3	3	3	4	
Q15_A_1	4	3	4	4	4	3	2	1	3	3	4	3	5	4	4	3	4	
Q15_A_2	4	4	4	4	4	4	2	1	4	4	4	4	5	4	4	3	5	
Q15_A_3	4	4	4	4	4	4	2	1	4	4	4	5	5	4	3	4	4	
Q15_A_4	4	4	4	4	4	4	2	2	4	4	3	4	5	4	3	3	4	
Q15_A_5	4	4	4	4	4	3	2	1	4	4	4	3	5	5	3	3	4	

Q15_A_6	4	5	4	4	5	4	4	2	2	4	4	4	4	3	5	5	4	4	5	4	4	5
Q15_A_7	4	5	5	4	4	4	4	2	1	4	4	4	4	5	5	5	4	4	5	4	4	4
Q15_A_8	4	5	4	4	5	4	4	2	2	4	5	5	3	3	5	4	4	4	5	5	4	5
Q15_A_9	3	4	3	3	4	3	4	2	2	3	4	3	3	3	5	4	3	3	4	4	4	4
Q16_A_1	4	3	3	3	3	3	4	3	2	3	4	4	4	3	5	4	3	3	3	3	3	3
Q16_A_2	4	4	3	3	3	3	4	3	2	4	4	4	4	3	5	3	3	3	3	3	3	5
Q16_A_3	4	4	4	4	3	4	4	3	2	4	4	4	4	3	4	3	3	3	3	3	3	5
Q16_A_4	3	4	4	4	4	4	4	3	3	3	5	4	4	3	4	3	3	3	3	3	3	4
Q16_A_5	3	5	5	4	4	4	4	2	3	4	5	4	4	3	5	4	3	3	4	4	4	4
Q16_A_6	4	5	5	4	5	4	4	2	2	4	4	3	3	3	4	5	4	4	4	4	4	4
Q16_A_7	4	5	5	5	5	5	5	2	2	4	5	4	4	3	4	4	4	4	4	4	4	5
Q16_A_8	4	4	4	4	5	4	4	3	2	3	4	4	4	3	5	4	3	4	4	4	4	4
Q17a_A_1	4	4	4	4	2	3	4	4	2	4	5	4	4	3	4	3	3	3	3	3	3	3
Q17a_A_2	4	5	4	4	2	4	4	4	1	4	5	4	4	3	4	4	4	4	4	4	4	5
Q17a_A_3	3	3	5	3	3	3	4	4	1	4	4	4	4	3	4	3	2	4	4	4	4	4
Q17a_A_4	4	3	4	4	5	4	4	5	1	4	5	4	4	3	4	5	5	3	3	3	4	4
Q17b_A_1	4	4	4	4	3	4	4	3	3	4	5	3	3	5	3	4	4	4	4	4	4	5
Q17b_A_2	4	5	4	4	4	4	4	4	1	4	4	3	5	5	4	5	3	3	3	3	4	4
Q17c_A_1	4	3	4	4	4	4	4	5	3	4	5	3	3	3	3	3	3	4	4	4	4	4
Q17c_A_2	4	5	4	4	5	4	4	5	3	4	5	4	5	5	4	4	5	4	4	4	5	5
Q17c_A_3	4	4	4	4	5	4	4	4	1	4	5	4	4	4	3	4	3	3	3	3	4	4
Q17c_A_4	4	4	4	4	4	4	4	4	2	4	5	4	4	4	4	4	4	4	4	4	4	5
Q17d_A_1	4	5	5	4	4	4	4	4	2	5	5	4	4	5	3	5	4	4	3	3	4	4
Q18a_A_1	4	3	4	4	4	4	4	3	1	4	5	4	4	3	4	4	4	5	4	5	5	5
Q18a_A_2	3	4	4	4	5	4	4	4	1	4	5	4	4	5	3	4	4	3	3	4	3	5
Q18b_A_1	4	4	5	4	4	4	4	4	1	4	5	4	4	4	3	4	3	4	4	4	4	4



## Appendix 2 All Competency Elements Weights Selected By All Respondents

NO.	Competency Elements		Weight
1	1. Initiating	1.1.1 Identify and Document Project Needs; Developing Project-Related Product or Service Descriptions	3.75
2		1.1.2 Perform an Initial Project Feasibility Study and Analysis	3.88
3	2. Planning	1.2.1 Conduct Project Plan Development	3.75
4	3. Executing	1.3.1 Conduct Project Plan Execution	4
5	4. Controlling	1.4.1 Conduct Integrated Change Control	4.06
6	5. Closing	1.5.1 Conduct Project Closure with Regard to Integration	3.31
7	1. Initiating	2.1.1 Prepare Project Charter	3.31
8	2. Planning	2.2.1 Conduct Scope Planning	3.69
9		2.2.2 Conduct Scope Definition	3.88

10			3.Executing	2.3.1 Execute Scope	4
11			4.Controlling	2.4.1 Conduct Scope Verification	3.81
12		2.4.2 Conduct Scope Change Control		4	
13			5.Closing	2.5.1 Conduct Project Closure with Regard to Scope	3.38
14			1.Initiating	3.1.1 Preliminary Planning Activities	3.44
15				3.2.1 Conduct Activity Definition	3.38
16				3.2.2 Conduct Activity Sequencing	3.69
17			2.Planning	3.2.3 Conduct Activity Duration Estimating	3.75
18		3. Time Management		3.2.4 Conduct Schedule Development	3.81
19			3.Executing	3.3.1 Implement Project Schedule	4.25
20			4.Controlling	3.4.1 Conduct Schedule Control	4.31
21			5.Closing	3.5.1 Conduct Project Closure with Regard to Time	3.5
22		4. Cost Management	1.Initiating	4.1.1 High-Level Budget Development Preparation	3.63

23				4.2.1 Conduct Resource Planning	3.63
24		2.Planning		4.2.2 Conduct Cost Estimating	3.63
25				4.2.3 Conduct Cost Budgeting	3.75
26		3.Executing		4.3.1 Execute Cost Baseline	3.5
27		4.Controlling		4.4.1 Conduct Cost Control	4.19
28		5.Closing		4.5.1 Conduct Project Closure with Regard to Cost	3.5
29		1.Initiating		5.1.1 Determine Quality Requirements	3.88
30		2.Planning		5.2.1 Conduct Quality Planning	3.69
31		3.Executing	5. Quality Management	5.3.1 Conduct Quality Assurance	4.06
32		4.Controlling		5.4.1 Conduct Quality Control	4.31
33		5.Closing		5.5.1 Conduct Project Closure with Regard to Quality	3.63
34		1.Initiating	6. Human Resources Management	6.1.1 Conduct Organizational Definition	3.38
35		2.Planning		6.2.1 Conduct Organizational Planning	3.56

36				6.2.2 Conduct Staff Acquisition	3.94
37		3.Executing		6.3.1 Conduct Team Development	3.94
38		4.Controlling		6.4.1 Manage Human Resources	3.94
39		5.Closing		6.5.1 Conduct Project Closure with Regard to HR Management	3.44
40		1.Initiating		7.1.1 Preliminary Communications Planning	3.19
41		2.Planning		7.2.1 Conduct Communications Planning	3.44
42		3.Executing		7.3.1 Conduct Information Distribution	3.81
43			7. Communications Management	7.3.2 Implement Project Time Reporting	4.06
44		4.Controlling		7.4.1 Conduct Project Performance Reporting	3.94
45		5.Closing		7.5.1 Conduct Administrative Closeout	3.69
46		1.Initiating		8.1.1 Conduct Preliminary Risk Planning	3.38
47		2.Planning	8. Risk Management	8.2.1 Develop Risk Management Plan	3.75
48				8.2.2 Conduct Risk Identification	3.75

49				8.2.3 Conduct Qualitative Risk Analysis	3.63
50				8.2.4 Conduct Quantitative Risk Analysis	3.5
51				8.2.5 Conduct Risk Response Planning	4
52		3.Executing		8.3.1 Execute Risk Response Plan	4.13
53		4.Controlling		8.4.1 Conduct Risk Monitoring and Control	4.13
54		5.Closing		8.5.1 Conduct Project Closure with Regard to Risk Management	3.38
55		1.Initiating		9.1.1 Preliminary Procurement Planning	3.31
56			9. Procurement Management	9.2.1 Conduct Procurement Planning	3.5
57		2.Planning		9.2.2 Conduct Solicitation Planning	3.56
58				9.3.1 Conduct Solicitation	3.56
59		3.Executing		9.3.2 Conduct Source Selection/Contract Development	3.88
60				9.3.3 Conduct Contract Administration	3.88
61		4.Controlling		9.4.1 Manage and Review Contract Performance	4.13

62		5.Closing	9.5.1 Conduct Contract Closeout	3.75		
63		1.1 Achievement Orientation	1.1.1 Operates with Intensity to Achieve Project Goals	3.44		
64			1.1.2 Motivates Project Stakeholders in a Positive Way	3.81		
65			1.1.3 Provides New Solutions in Planning and Delivering Projects	3.38		
66			1.1.4 Operates with Individual Integrity and Personal Professionalism	3.94		
67		1.2 Concern for Order, Quality, and Accuracy	1.2.1 Manages Projects in an Ordered, Accurate Way	3.88		
68	1. Achievement and Action	1.3 Initiative	1.2.2 Provides Accurate and Truthful Information	3.81		
69				1.3.1 Takes Initiative When Required	3.69	
70				1.3.2 Takes Accountability for and Delivers Project	4.38	
71				1.3.3 Seeks New Opportunities	3.75	
72			1.3.4 Strives for Best Practice	3.88		
73		1.4 Information Seeking	1.4.1 Ensures Information Used to Manage Project is Complete and Accurate	4.13		
74	2. Helping and Human Service	2.1 Customer Service	2.1.1 Represents the Client Inside the Project	3.88		

75			Orientation	2.1.2 Takes Initiatives to Provide Excellent Client Service	3.94
76			2.2 Interpersonal Understanding	2.2.1 Strives to Understand All Project Stakeholders' Thoughts, Feelings, and Concerns	3.81
77				2.2.2 Listens and Responds to Others	4
78				3.1.1 Takes Appropriate Actions to Influence Others	3.81
79			3.1 Impact and Influence	3.1.2 Influences Across Projects and Organizations	3.69
80				3.1.3 Understands and Influences Project Team Members	4.06
81			3.2 Organization	3.2.1 Understands the Organization	3.88
82			Awareness	3.2.2 Understands the Project	4.06
83			3.3 Relationship Building	3.3.1 Builds and Maintains Suitable Relationships with Project Stakeholders	3.94
84				3.3.2 Establishes and Maintains Relationships at the Right Level Inside and Outside the Organizations	3.88
85		4. Managerial	4.1 Teamwork and Cooperation	4.1.1 Builds Team Orientation Within the Project	3.69
86				4.1.2 Molds Core Project Stakeholders into a Team	4.19

87			4.1.3 Undertakes Team-Building Activities	3.75
88			4.2.1 Builds a Project Culture Where Personal Development Is Encouraged	3.5
89		4.2 Developing Others	4.2.2 Develops Project Members to Effectively Build Project Culture	3.56
90			4.3.1 Demonstrates Leadership of the Project	3.88
91		4.3 Team Leadership	4.3.2 Leads the Project Team	3.75
92			4.4.1 Uses Assertiveness When Necessary	3.5
93		4.4 Directiveness: Assertiveness and use of Positional Power	4.4.2 Manages the Complete Project	3.69
94			5.1.1 Understands at a Suitable Level All Issues Associated with the Project	3.44
95	5. Cognitive	5.1 Analytical Thinking	5.1.2 Facilitates Solutions Across All Issues Related to the Project	3.44
96		5.2 Conceptual thinking	5.2.1 Sees the Project in a Holistic Way	4.13
97	6. Personal Effectiveness	6.1 Self-Control	6.1.1 Maintains Self-Control	3.88
98		6.2 Self-Confidence	6.2.1 Creates an Environment of Confidence	3.75

99			6.2.2 Accepts Failure Positively	3.75
100		6.3 Flexibility	6.3.1 Changes to Meet the Needs of the Project	3.75
101			6.3.2 Changes at the Required Pace	3.69
102		6.4 Organizational Commitment	6.4.1 Demonstrates Commitment to the Project	3.69

### Appendix 3 All Competency Elements Priority Selected By All Respondents

NO.	Competency Elements			Weight
1	1. Achievement and Action	1.3 Initiative	1.3.2 Takes Accountability for and Delivers Project	4.38
2	5. Quality Management	4. Controlling	5.4.1 Conduct Quality Control	4.31
3	3. Time Management	4. Controlling	3.4.1 Conduct Schedule Control	4.31
4	3. Time Management	3. Executing	3.3.1 Implement Project Schedule	4.25
5	4. Managerial	4.1 Teamwork and Cooperation	4.1.2 Molds Core Project Stakeholders into a Team	4.19
6	4. Cost Management	4. Controlling	4.4.1 Conduct Cost Control	4.19
7	9. Procurement Management	4. Controlling	9.4.1 Manage and Review Contract Performance	4.13
8	8. Risk Management	3. Executing	8.3.1 Execute Risk Response Plan	4.13
9	8. Risk Management	4. Controlling	8.4.1 Conduct Risk Monitoring and Control	4.13
10	5. Cognitive	5.2 Conceptual thinking	5.2.1 Sees the Project in a Holistic Way	4.13
11	1. Achievement and Action	1.4 Information Seeking	1.4.1 Ensures Information Used to Manage Project is Complete and Accurate	4.13
12	7. Communications Management	3. Executing	7.3.2 Implement Project Time Reporting	4.06
13	5. Quality Management	3. Executing	5.3.1 Conduct Quality Assurance	4.06
14	3. Impact and Influence	3.1 Impact and Influence	3.1.3 Understands and Influences Project Team Members	4.06
15	3. Impact and Influence	3.2 Organization Awareness	3.2.2 Understands the Project	4.06

16	1. Integration Management	4. Controlling	1.4.1 Conduct Integrated Change Control	4.06
17	8. Risk Management	2. Planning	8.2.5 Conduct Risk Response Planning	4
18	2. Scope Management	3. Executing	2.3.1 Execute Scope	4
19	2. Scope Management	4. Controlling	2.4.2 Conduct Scope Change Control	4
20	2. Helping and Human Service	2.2 Interpersonal Understanding	2.2.2 Listens and Responds to Others	4
21	1. Integration Management	3. Executing	1.3.1 Conduct Project Plan Execution	4
22	7. Communications Management	4. Controlling	7.4.1 Conduct Project Performance Reporting	3.94
23	6. Human Resources Management	2. Planning	6.2.2 Conduct Staff Acquisition	3.94
24	6. Human Resources Management	3. Executing	6.3.1 Conduct Team Development	3.94
25	6. Human Resources Management	4. Controlling	6.4.1 Manage Human Resources	3.94
26	3. Impact and Influence	3.3 Relationship Building	3.3.1 Builds and Maintains Suitable Relationships with Project Stakeholders	3.94
27	2. Helping and Human Service	2.1 Customer Service Orientation	2.1.2 Takes Initiatives to Provide Excellent Client Service	3.94
28	1. Achievement and Action	1.1 Achievement Orientation	1.1.4 Operates with Individual Integrity and Personal Professionalism	3.94
29	9. Procurement Management	3. Executing	9.3.2 Conduct Source Selection/Contract Development	3.88
30	9. Procurement Management	3. Executing	9.3.3 Conduct Contract Administration	3.88
31	6. Personal Effectiveness	6.1 Self-Control	6.1.1 Maintains Self-Control	3.88
32	5. Quality Management	1. Initiating	5.1.1 Determine Quality Requirements	3.88
33	4. Managerial	4.3 Team Leadership	4.3.1 Demonstrates Leadership of the Project	3.88

34	3. Impact and Influence	3.2 Organization Awareness	3.2.1 Understands the Organization	3.88
35	3. Impact and Influence	3.3 Relationship Building	3.3.2 Establishes and Maintains Relationships at the Right Level Inside and Outside the Organizations	3.88
36	2. Scope Management	2.Planning	2.2.2 Conduct Scope Definition	3.88
37	2. Helping and Human Service	2.1 Customer Service Orientation	2.1.1 Represents the Client Inside the Project	3.88
38	1. Integration Management	1.Initiating	1.1.2 Perform an Initial Project Feasibility Study and Analysis	3.88
39	1. Achievement and Action	1.2 Concern for Order, Quality, and Accuracy	1.2.1 Manages Projects in an Ordered, Accurate Way	3.88
40	1. Achievement and Action	1.3 Initiative	1.3.4 Strives for Best Practice	3.88
41	7. Communications Management	3.Executing	7.3.1 Conduct Information Distribution	3.81
42	3. Time Management	2.Planning	3.2.4 Conduct Schedule Development	3.81
43	3. Impact and Influence	3.1 Impact and Influence	3.1.1 Takes Appropriate Actions to Influence Others	3.81
44	2. Scope Management	4.Controlling	2.4.1 Conduct Scope Verification	3.81
45	2. Helping and Human Service	2.2 Interpersonal Understanding	2.2.1 Strives to Understand All Project Stakeholders' Thoughts, Feelings, and Concerns	3.81
46	1. Achievement and Action	1.1 Achievement Orientation	1.1.2 Motivates Project Stakeholders in a Positive Way	3.81
47	1. Achievement and Action	1.2 Concern for Order, Quality, and	1.2.2 Provides Accurate and Truthful Information	3.81

		Accuracy		
48	9. Procurement Management	5.Closing	9.5.1 Conduct Contract Closeout	3.75
49	8. Risk Management	2.Planning	8.2.1 Develop Risk Management Plan	3.75
50	8. Risk Management	2.Planning	8.2.2 Conduct Risk Identification	3.75
51	6. Personal Effectiveness	6.2 Self-Confidence	6.2.1 Creates an Environment of Confidence	3.75
52	6. Personal Effectiveness	6.2 Self-Confidence	6.2.2 Accepts Failure Positively	3.75
53	6. Personal Effectiveness	6.3 Flexibility	6.3.1 Changes to Meet the Needs of the Project	3.75
54	4. Managerial	4.1 Teamwork and Cooperation	4.1.3 Undertakes Team-Building Activities	3.75
55	4. Managerial	4.3 Team Leadership	4.3.2 Leads the Project Team	3.75
56	4. Cost Management	2.Planning	4.2.3 Conduct Cost Budgeting	3.75
57	3. Time Management	2.Planning	3.2.3 Conduct Activity Duration Estimating	3.75
58	1. Integration Management	1.Initiating	1.1.1 Identify and Document Project Needs; Developing Project-Related Product or Service Descriptions	3.75
59	1. Integration Management	2.Planning	1.2.1 Conduct Project Plan Development	3.75
60	1. Achievement and Action	1.3 Initiative	1.3.3 Seeks New Opportunities	3.75
61	7. Communications Management	5.Closing	7.5.1 Conduct Administrative Closeout	3.69
62	6. Personal Effectiveness	6.3 Flexibility	6.3.2 Changes at the Required Pace	3.69
63	6. Personal Effectiveness	6.4 Organizational Commitment	6.4.1 Demonstrates Commitment to the Project	3.69
64	5. Quality Management	2.Planning	5.2.1 Conduct Quality Planning	3.69
65	4. Managerial	4.1 Teamwork and	4.1.1 Builds Team Orientation Within the Project	3.69

		Cooperation		
66	4. Managerial	4.4 Directiveness: Assertiveness and use of Positional Power	4.4.2 Manages the Complete Project	3.69
67	3. Time Management	2.Planning	3.2.2 Conduct Activity Sequencing	3.69
68	3. Impact and Influence	3.1 Impact and Influence	3.1.2 Influences Across Projects and Organizations	3.69
69	2. Scope Management	2.Planning	2.2.1 Conduct Scope Planning	3.69
70	1. Achievement and Action	1.3 Initiative	1.3.1 Takes Initiative When Required	3.69
71	8. Risk Management	2.Planning	8.2.3 Conduct Qualitative Risk Analysis	3.63
72	5. Quality Management	5.Closing	5.5.1 Conduct Project Closure with Regard to Quality	3.63
73	4. Cost Management	1.Initiating	4.1.1 High-Level Budget Development Preparation	3.63
74	4. Cost Management	2.Planning	4.2.1 Conduct Resource Planning	3.63
75	4. Cost Management	2.Planning	4.2.2 Conduct Cost Estimating	3.63
76	9. Procurement Management	2.Planning	9.2.2 Conduct Solicitation Planning	3.56
77	9. Procurement Management	3.Executing	9.3.1 Conduct Solicitation	3.56
78	6. Human Resources Management	2.Planning	6.2.1 Conduct Organizational Planning	3.56
79	4. Managerial	4.2 Developing Others	4.2.2 Develops Project Members to Effectively Build Project Culture	3.56
80	9. Procurement Management	2.Planning	9.2.1 Conduct Procurement Planning	3.5
81	8. Risk Management	2.Planning	8.2.4 Conduct Quantitative Risk Analysis	3.5
82	4. Managerial	4.2 Developing Others	4.2.1 Builds a Project Culture Where Personal Development Is Encouraged	3.5

83	4. Managerial	4.4 Directiveness: Assertiveness and use of Positional Power	4.4.1 Uses Assertiveness When Necessary	3.5
84	4. Cost Management	3.Executing	4.3.1 Execute Cost Baseline	3.5
85	4. Cost Management	5.Closing	4.5.1 Conduct Project Closure with Regard to Cost	3.5
86	3. Time Management	5.Closing	3.5.1 Conduct Project Closure with Regard to Time	3.5
87	7. Communications Management	2.Planning	7.2.1 Conduct Communications Planning	3.44
88	6. Human Resources Management	5.Closing	6.5.1 Conduct Project Closure with Regard to HR Management	3.44
89	5. Cognitive	5.1 Analytical Thinking	5.1.1 Understands at a Suitable Level All Issues Associated with the Project	3.44
90	5. Cognitive	5.1 Analytical Thinking	5.1.2 Facilitates Solutions Across All Issues Related to the Project	3.44
91	3. Time Management	1.Initiating	3.1.1 Preliminary Planning Activities	3.44
92	1. Achievement and Action	1.1 Achievement Orientation	1.1.1 Operates with Intensity to Achieve Project Goals	3.44
93	8. Risk Management	1.Initiating	8.1.1 Conduct Preliminary Risk Planning	3.38
94	8. Risk Management	5.Closing	8.5.1 Conduct Project Closure with Regard to Risk Management	3.38
95	6. Human Resources Management	1.Initiating	6.1.1 Conduct Organizational Definition	3.38
96	3. Time Management	2.Planning	3.2.1 Conduct Activity Definition	3.38
97	2. Scope Management	5.Closing	2.5.1 Conduct Project Closure with Regard to Scope	3.38

98	1. Achievement and Action	1.1 Achievement Orientation	1.1.3 Provides New Solutions in Planning and Delivering Projects	3.38
99	9. Procurement Management	1. Initiating	9.1.1 Preliminary Procurement Planning	3.31
100	2. Scope Management	1. Initiating	2.1.1 Prepare Project Charter	3.31
101	1. Integration Management	5. Closing	1.5.1 Conduct Project Closure with Regard to Integration	3.31
102	7. Communications Management	1. Initiating	7.1.1 Preliminary Communications Planning	3.19

## Appendix 4 Knowledge and Performance Competency Elements Weights Selected By All Respondents

NO.	Competency Elements		Weight
1	1. Initiating	1.1.1 Identify and Document Project Needs; Developing Project-Related Product or Service Descriptions	3.75
2		1.1.2 Perform an Initial Project Feasibility Study and Analysis	3.88
3	2. Planning	1.2.1 Conduct Project Plan Development	3.75
4	3. Executing	1.3.1 Conduct Project Plan Execution	4
5	4. Controlling	1.4.1 Conduct Integrated Change Control	4.06
6	5. Closing	1.5.1 Conduct Project Closure with Regard to Integration	3.31
7	1. Initiating	2.1.1 Prepare Project Charter	3.31
8		2.2.1 Conduct Scope Planning	3.69
9	2. Planning	2.2.2 Conduct Scope Definition	3.88
10	3. Executing	2.3.1 Execute Scope	4



24			4.2.2 Conduct Cost Estimating	3.63
25			4.2.3 Conduct Cost Budgeting	3.75
26		3.Executing	4.3.1 Execute Cost Baseline	3.5
27		4.Controlling	4.4.1 Conduct Cost Control	4.19
28		5.Closing	4.5.1 Conduct Project Closure with Regard to Cost	3.5
29		1.Initiating	5.1.1 Determine Quality Requirements	3.88
30		2.Planning	5.2.1 Conduct Quality Planning	3.69
31	5. Quality Management	3.Executing	5.3.1 Conduct Quality Assurance	4.06
32		4.Controlling	5.4.1 Conduct Quality Control	4.31
33		5.Closing	5.5.1 Conduct Project Closure with Regard to Quality	3.63
34	6. Human Resources Management	1.Initiating	6.1.1 Conduct Organizational Definition	3.38
35		2.Planning	6.2.1 Conduct Organizational Planning	3.56
36			6.2.2 Conduct Staff Acquisition	3.94



50			8.2.4 Conduct Quantitative Risk Analysis	3.5
51			8.2.5 Conduct Risk Response Planning	4
52		3.Executing	8.3.1 Execute Risk Response Plan	4.13
53		4.Controlling	8.4.1 Conduct Risk Monitoring and Control	4.13
54		5.Closing	8.5.1 Conduct Project Closure with Regard to Risk Management	3.38
55		1.Initiating	9.1.1 Preliminary Procurement Planning	3.31
56		2.Planning	9.2.1 Conduct Procurement Planning	3.5
57			9.2.2 Conduct Solicitation Planning	3.56
58			9.3.1 Conduct Solicitation	3.56
59		3.Executing	9.3.2 Conduct Source Selection/Contract Development	3.88
60			9.3.3 Conduct Contract Administration	3.88
61		4.Controlling	9.4.1 Manage and Review Contract Performance	4.13
62		5.Closing	9.5.1 Conduct Contract Closeout	3.75

9. Procurement Management

## Appendix 5 Knowledge and Performance Competency Elements Priority Selected By All Respondents

Knowledge/Performance Competency Elements			Weight
3. Time Management	4. Controlling	3.4.1 Conduct Schedule Control	4.31
5. Quality Management	4. Controlling	5.4.1 Conduct Quality Control	4.31
3. Time Management	3. Executing	3.3.1 Implement Project Schedule	4.25
4. Cost Management	4. Controlling	4.4.1 Conduct Cost Control	4.19
8. Risk Management	3. Executing	8.3.1 Execute Risk Response Plan	4.13
8. Risk Management	4. Controlling	8.4.1 Conduct Risk Monitoring and Control	4.13
9. Procurement Management	4. Controlling	9.4.1 Manage and Review Contract Performance	4.13
1. Integration Management	4. Controlling	1.4.1 Conduct Integrated Change Control	4.06
5. Quality Management	3. Executing	5.3.1 Conduct Quality Assurance	4.06

7. Communications Management	3.Executing	7.3.2 Implement Project Time Reporting	4.06
1. Integration Management	3.Executing	1.3.1 Conduct Project Plan Execution	4
2. Scope Management	3.Executing	2.3.1 Execute Scope	4
2. Scope Management	4.Controlling	2.4.2 Conduct Scope Change Control	4
8. Risk Management	2.Planning	8.2.5 Conduct Risk Response Planning	4
6. Human Resources Management	2.Planning	6.2.2 Conduct Staff Acquisition	3.94
6. Human Resources Management	3.Executing	6.3.1 Conduct Team Development	3.94
6. Human Resources Management	4.Controlling	6.4.1 Manage Human Resources	3.94
7. Communications Management	4.Controlling	7.4.1 Conduct Project Performance Reporting	3.94
1. Integration Management	1.Initiating	1.1.2 Perform an Initial Project Feasibility Study and Analysis	3.88
2. Scope Management	2.Planning	2.2.2 Conduct Scope Definition	3.88
5. Quality Management	1.Initiating	5.1.1 Determine Quality Requirements	3.88
9. Procurement Management	3.Executing	9.3.2 Conduct Source Selection/Contract Development	3.88

9. Procurement Management	3.Executing	9.3.3 Conduct Contract Administration	3.88
2. Scope Management	4.Controlling	2.4.1 Conduct Scope Verification	3.81
3. Time Management	2.Planning	3.2.4 Conduct Schedule Development	3.81
7. Communications Management	3.Executing	7.3.1 Conduct Information Distribution	3.81
1. Integration Management	1.Initiating	1.1.1 Identify and Document Project Needs; Developing Project-Related Product or Service Descriptions	3.75
1. Integration Management	2.Planning	1.2.1 Conduct Project Plan Development	3.75
3. Time Management	2.Planning	3.2.3 Conduct Activity Duration Estimating	3.75
4. Cost Management	2.Planning	4.2.3 Conduct Cost Budgeting	3.75
8. Risk Management	2.Planning	8.2.1 Develop Risk Management Plan	3.75
8. Risk Management	2.Planning	8.2.2 Conduct Risk Identification	3.75
9. Procurement Management	5.Closing	9.5.1 Conduct Contract Closeout	3.75
2. Scope Management	2.Planning	2.2.1 Conduct Scope Planning	3.69

3. Time Management	2.Planning	3.2.2 Conduct Activity Sequencing	3.69
5. Quality Management	2.Planning	5.2.1 Conduct Quality Planning	3.69
7. Communications Management	5.Closing	7.5.1 Conduct Administrative Closeout	3.69
4. Cost Management	1. Initiating	4.1.1 High-Level Budget Development Preparation	3.63
4. Cost Management	2.Planning	4.2.1 Conduct Resource Planning	3.63
4. Cost Management	2.Planning	4.2.2 Conduct Cost Estimating	3.63
5. Quality Management	5.Closing	5.5.1 Conduct Project Closure with Regard to Quality	3.63
8. Risk Management	2.Planning	8.2.3 Conduct Qualitative Risk Analysis	3.63
6. Human Resources Management	2.Planning	6.2.1 Conduct Organizational Planning	3.56
9. Procurement Management	2.Planning	9.2.2 Conduct Solicitation Planning	3.56
9. Procurement Management	3.Executing	9.3.1 Conduct Solicitation	3.56
3. Time Management	5.Closing	3.5.1 Conduct Project Closure with Regard to Time	3.5
4. Cost Management	3.Executing	4.3.1 Execute Cost Baseline	3.5

4. Cost Management	5.Closing	4.5.1 Conduct Project Closure with Regard to Cost	3.5
8. Risk Management	2.Planning	8.2.4 Conduct Quantitative Risk Analysis	3.5
9. Procurement Management	2.Planning	9.2.1 Conduct Procurement Planning	3.5
3. Time Management	1.Initiating	3.1.1 Preliminary Planning Activities	3.44
6. Human Resources Management	5.Closing	6.5.1 Conduct Project Closure with Regard to HR Management	3.44
7. Communications Management	2.Planning	7.2.1 Conduct Communications Planning	3.44
2. Scope Management	5.Closing	2.5.1 Conduct Project Closure with Regard to Scope	3.38
3. Time Management	2.Planning	3.2.1 Conduct Activity Definition	3.38
6. Human Resources Management	1.Initiating	6.1.1 Conduct Organizational Definition	3.38
8. Risk Management	1.Initiating	8.1.1 Conduct Preliminary Risk Planning	3.38
8. Risk Management	5.Closing	8.5.1 Conduct Project Closure with Regard to Risk Management	3.38
1. Integration Management	5.Closing	1.5.1 Conduct Project Closure with Regard to Integration	3.31
2. Scope Management	1.Initiating	2.1.1 Prepare Project Charter	3.31

9. Procurement Management	1. Initiating	9.1.1 Preliminary Procurement Planning	3.31
7. Communications Management	1. Initiating	7.1.1 Preliminary Communications Planning	3.19

## Appendix 6 Personal Competency Elements Weights Selected By All Respondents

Competency Elements		Weight
1	1.1.1 Operates with Intensity to Achieve Project Goals	3.44
2	1.1.2 Motivates Project Stakeholders in a Positive Way	3.81
3	1.1.3 Provides New Solutions in Planning and Delivering Projects	3.38
4	1.1.4 Operates with Individual Integrity and Personal Professionalism	3.94
5	1.2.1 Manages Projects in an Ordered, Accurate Way	3.88
6	1.2.2 Provides Accurate and Truthful Information	3.81
7	1.3.1 Takes Initiative When Required	3.69
8	1.3.2 Takes Accountability for and Delivers Project	4.38
9	1.3.3 Seeks New Opportunities	3.75
10	1.3.4 Strives for Best Practice	3.88
11	1.4.1 Ensures Information Used to Manage Project is Complete and Accurate	4.13
12	2.1.1 Represents the Client Inside the Project	3.88
13	2.1.2 Takes Initiatives to Provide Excellent Client Service	3.94
14	2.2.1 Strives to Understand All Project Stakeholders' Thoughts, Feelings, and Concerns	3.81
15	2.2.2 Listens and Responds to Others	4
16	3.1.1 Takes Appropriate Actions to Influence Others	3.81
17	3.1.2 Influences Across Projects and Organizations	3.69



36	Effectiveness	6.2 Self-Confidence	6.2.1 Creates an Environment of Confidence	3.75
37			6.2.2 Accepts Failure Positively	3.75
38		6.3 Flexibility	6.3.1 Changes to Meet the Needs of the Project	3.75
39			6.3.2 Changes at the Required Pace	3.69
40		6.4 Organizational Commitment	6.4.1 Demonstrates Commitment to the Project	3.69

## Appendix 7 Personal Competency Elements Weights Selected By All Respondents

Personal Competency Elements			Weight
1. Achievement and Action	1.3 Initiative	1.3.2 Takes Accountability for and Delivers Project	4.38
4. Managerial	4.1 Teamwork and Cooperation	4.1.2 Molds Core Project Stakeholders into a Team	4.19
1. Achievement and Action	1.4 Information Seeking	1.4.1 Ensures Information Used to Manage Project is Complete and Accurate	4.13
5. Cognitive	5.2 Conceptual thinking	5.2.1 Sees the Project in a Holistic Way	4.13
3. Impact and Influence	3.1 Impact and Influence	3.1.3 Understands and Influences Project Team Members	4.06
3. Impact and Influence	3.2 Organization Awareness	3.2.2 Understands the Project	4.06
2. Helping and Human Service	2.2 Interpersonal Understanding	2.2.2 Listens and Responds to Others	4
1. Achievement and Action	1.1 Achievement Orientation	1.1.4 Operates with Individual Integrity and Personal Professionalism	3.94
2. Helping and Human Service	2.1 Customer Service Orientation	2.1.2 Takes Initiatives to Provide Excellent Client Service	3.94
3. Impact and Influence	3.3 Relationship Building	3.3.1 Builds and Maintains Suitable Relationships with Project Stakeholders	3.94
1. Achievement and Action	1.2 Concern for Order, Quality, and Accuracy	1.2.1 Manages Projects in an Ordered, Accurate Way	3.88

1. Achievement and Action	1.3 Initiative	1.3.4 Strives for Best Practice	3.88
2. Helping and Human Service	2.1 Customer Service Orientation	2.1.1 Represents the Client Inside the Project	3.88
3. Impact and Influence	3.2 Organization Awareness	3.2.1 Understands the Organization	3.88
3. Impact and Influence	3.3 Relationship Building	3.3.2 Establishes and Maintains Relationships at the Right Level Inside and Outside the Organizations	3.88
4. Managerial	4.3 Team Leadership	4.3.1 Demonstrates Leadership of the Project	3.88
6. Personal Effectiveness	6.1 Self-Control	6.1.1 Maintains Self-Control	3.88
1. Achievement and Action	1.1 Achievement Orientation	1.1.2 Motivates Project Stakeholders in a Positive Way	3.81
1. Achievement and Action	1.2 Concern for Order, Quality, and Accuracy	1.2.2 Provides Accurate and Truthful Information	3.81
2. Helping and Human Service	2.2 Interpersonal Understanding	2.2.1 Strives to Understand All Project Stakeholders' Thoughts, Feelings, and Concerns	3.81
3. Impact and Influence	3.1 Impact and Influence	3.1.1 Takes Appropriate Actions to Influence Others	3.81
1. Achievement and Action	1.3 Initiative	1.3.3 Seeks New Opportunities	3.75
4. Managerial	4.1 Teamwork and Cooperation	4.1.3 Undertakes Team-Building Activities	3.75
4. Managerial	4.3 Team Leadership	4.3.2 Leads the Project Team	3.75

6. Personal Effectiveness	6.2 Self-Confidence	6.2.1 Creates an Environment of Confidence	3.75
6. Personal Effectiveness	6.2 Self-Confidence	6.2.2 Accepts Failure Positively	3.75
6. Personal Effectiveness	6.3 Flexibility	6.3.1 Changes to Meet the Needs of the Project	3.75
1. Achievement and Action	1.3 Initiative	1.3.1 Takes Initiative When Required	3.69
3. Impact and Influence	3.1 Impact and Influence	3.1.2 Influences Across Projects and Organizations	3.69
4. Managerial	4.1 Teamwork and Cooperation	4.1.1 Builds Team Orientation Within the Project	3.69
4. Managerial	4.4 Directiveness: Assertiveness and use of Positional Power	4.4.2 Manages the Complete Project	3.69
6. Personal Effectiveness	6.3 Flexibility	6.3.2 Changes at the Required Pace	3.69
6. Personal Effectiveness	6.4 Organizational Commitment	6.4.1 Demonstrates Commitment to the Project	3.69
4. Managerial	4.2 Developing Others	4.2.2 Develops Project Members to Effectively Build Project Culture	3.56
4. Managerial	4.2 Developing Others	4.2.1 Builds a Project Culture Where Personal Development Is Encouraged	3.5
4. Managerial	4.4 Directiveness: Assertiveness and use of Positional Power	4.4.1 Uses Assertiveness When Necessary	3.5
1. Achievement and Action	1.1 Achievement Orientation	1.1.1 Operates with Intensity to Achieve Project Goals	3.44

5. Cognitive	5.1 Analytical Thinking	5.1.1 Understands at a Suitable Level All Issues Associated with the Project	3.44
5. Cognitive	5.1 Analytical Thinking	5.1.2 Facilitates Solutions Across All Issues Related to the Project	3.44
1. Achievement and Action	1.1 Achievement Orientation	1.1.3 Provides New Solutions in Planning and Delivering Projects	3.38

## Appendix 8 Priority of 9 Project Management Areas across 5 Project Management Processes

Competency Elements in 9 Project Management Areas		Weight
1. Integration Management	1. Initiating 1.1.1 Identify and Document Project Needs; Developing Project-Related Product or Service Descriptions	3.75
1. Integration Management	1. Initiating 1.1.2 Perform an Initial Project Feasibility Study and Analysis	3.88
1. Integration Management	2. Planning 1.2.1 Conduct Project Plan Development	3.75
1. Integration Management	3. Executing 1.3.1 Conduct Project Plan Execution	4
1. Integration Management	4. Controlling 1.4.1 Conduct Integrated Change Control	4.06
1. Integration Management	5. Closing 1.5.1 Conduct Project Closure with Regard to Integration	3.31
2. Scope Management	1. Initiating 2.1.1 Prepare Project Charter	3.31
2. Scope Management	2. Planning 2.2.1 Conduct Scope Planning	3.69
2. Scope Management	2. Planning 2.2.2 Conduct Scope Definition	3.88

2. Scope Management	3.Executing	2.3.1 Execute Scope	4
2. Scope Management	4.Controlling	2.4.1 Conduct Scope Verification	3.81
2. Scope Management	4.Controlling	2.4.2 Conduct Scope Change Control	4
2. Scope Management	5.Closing	2.5.1 Conduct Project Closure with Regard to Scope	3.38
3. Time Management	1.Initiating	3.1.1 Preliminary Planning Activities	3.44
3. Time Management	2.Planning	3.2.1 Conduct Activity Definition	3.38
3. Time Management	2.Planning	3.2.2 Conduct Activity Sequencing	3.69
3. Time Management	2.Planning	3.2.3 Conduct Activity Duration Estimating	3.75
3. Time Management	2.Planning	3.2.4 Conduct Schedule Development	3.81
3. Time Management	3.Executing	3.3.1 Implement Project Schedule	4.25
3. Time Management	4.Controlling	3.4.1 Conduct Schedule Control	4.31
3. Time Management	5.Closing	3.5.1 Conduct Project Closure with Regard to Time	3.5
4. Cost Management	1.Initiating	4.1.1 High-Level Budget Development Preparation	3.63
4. Cost Management	2.Planning	4.2.1 Conduct Resource Planning	3.63

4. Cost Management	2.Planning	4.2.2 Conduct Cost Estimating	3.63
4. Cost Management	2.Planning	4.2.3 Conduct Cost Budgeting	3.75
4. Cost Management	3.Executing	4.3.1 Execute Cost Baseline	3.5
4. Cost Management	4.Controlling	4.4.1 Conduct Cost Control	4.19
4. Cost Management	5.Closing	4.5.1 Conduct Project Closure with Regard to Cost	3.5
5. Quality Management	1.Initiating	5.1.1 Determine Quality Requirements	3.88
5. Quality Management	2.Planning	5.2.1 Conduct Quality Planning	3.69
5. Quality Management	3.Executing	5.3.1 Conduct Quality Assurance	4.06
5. Quality Management	4.Controlling	5.4.1 Conduct Quality Control	4.31
5. Quality Management	5.Closing	5.5.1 Conduct Project Closure with Regard to Quality	3.63
6. Human Resources Management	1.Initiating	6.1.1 Conduct Organizational Definition	3.38
6. Human Resources Management	2.Planning	6.2.1 Conduct Organizational Planning	3.56
6. Human Resources Management	2.Planning	6.2.2 Conduct Staff Acquisition	3.94
6. Human Resources Management	3.Executing	6.3.1 Conduct Team Development	3.94

6. Human Resources Management	4. Controlling	6.4.1 Manage Human Resources	3.94
6. Human Resources Management	5. Closing	6.5.1 Conduct Project Closure with Regard to HR Management	3.44
7. Communications Management	1. Initiating	7.1.1 Preliminary Communications Planning	3.19
7. Communications Management	2. Planning	7.2.1 Conduct Communications Planning	3.44
7. Communications Management	3. Executing	7.3.1 Conduct Information Distribution	3.81
7. Communications Management	3. Executing	7.3.2 Implement Project Time Reporting	4.06
7. Communications Management	4. Controlling	7.4.1 Conduct Project Performance Reporting	3.94
7. Communications Management	5. Closing	7.5.1 Conduct Administrative Closeout	3.69
8. Risk Management	1. Initiating	8.1.1 Conduct Preliminary Risk Planning	3.38
8. Risk Management	2. Planning	8.2.1 Develop Risk Management Plan	3.75
8. Risk Management	2. Planning	8.2.2 Conduct Risk Identification	3.75
8. Risk Management	2. Planning	8.2.3 Conduct Qualitative Risk Analysis	3.63
8. Risk Management	2. Planning	8.2.4 Conduct Quantitative Risk Analysis	3.5

8. Risk Management	2.Planning	8.2.5 Conduct Risk Response Planning	4
8. Risk Management	3.Executing	8.3.1 Execute Risk Response Plan	4.13
8. Risk Management	4.Controlling	8.4.1 Conduct Risk Monitoring and Control	4.13
8. Risk Management	5.Closing	8.5.1 Conduct Project Closure with Regard to Risk Management	3.38
9. Procurement Management	1.Initiating	9.1.1 Preliminary Procurement Planning	3.31
9. Procurement Management	2.Planning	9.2.1 Conduct Procurement Planning	3.5
9. Procurement Management	2.Planning	9.2.2 Conduct Solicitation Planning	3.56
9. Procurement Management	3.Executing	9.3.1 Conduct Solicitation	3.56
9. Procurement Management	3.Executing	9.3.2 Conduct Source Selection/Contract Development	3.88
9. Procurement Management	3.Executing	9.3.3 Conduct Contract Administration	3.88
9. Procurement Management	4.Controlling	9.4.1 Manage and Review Contract Performance	4.13
9. Procurement Management	5.Closing	9.5.1 Conduct Contract Closeout	3.75

## Appendix 9 Priority of 5 Project Management Processes across 9 Project Management Areas

Competency Elements in 5 Project Management Processes		Weight
1. Initiating	1. Integration Management 1.1.1 Identify and Document Project Needs; Developing Project-Related Product or Service Descriptions	3.75
1. Initiating	1. Integration Management 1.1.2 Perform an Initial Project Feasibility Study and Analysis	3.88
1. Initiating	2. Scope Management 2.1.1 Prepare Project Charter	3.31
1. Initiating	3. Time Management 3.1.1 Preliminary Planning Activities	3.44
1. Initiating	4. Cost Management 4.1.1 High-Level Budget Development Preparation	3.63
1. Initiating	5. Quality Management 5.1.1 Determine Quality Requirements	3.88
1. Initiating	6. Human Resources Management 6.1.1 Conduct Organizational Definition	3.38
1. Initiating	7. Communications Management 7.1.1 Preliminary Communications Planning	3.19
1. Initiating	8. Risk Management 8.1.1 Conduct Preliminary Risk Planning	3.38

1.Initiating	9. Procurement Management	9.1.1 Preliminary Procurement Planning	3.31
2.Planning	1. Integration Management	1.2.1 Conduct Project Plan Development	3.75
2.Planning	2. Scope Management	2.2.1 Conduct Scope Planning	3.69
2.Planning	2. Scope Management	2.2.2 Conduct Scope Definition	3.88
2.Planning	3. Time Management	3.2.1 Conduct Activity Definition	3.38
2.Planning	3. Time Management	3.2.2 Conduct Activity Sequencing	3.69
2.Planning	3. Time Management	3.2.3 Conduct Activity Duration Estimating	3.75
2.Planning	3. Time Management	3.2.4 Conduct Schedule Development	3.81
2.Planning	4. Cost Management	4.2.1 Conduct Resource Planning	3.63
2.Planning	4. Cost Management	4.2.2 Conduct Cost Estimating	3.63
2.Planning	4. Cost Management	4.2.3 Conduct Cost Budgeting	3.75
2.Planning	5. Quality Management	5.2.1 Conduct Quality Planning	3.69
2.Planning	6. Human Resources Management	6.2.1 Conduct Organizational Planning	3.56

2.Planning	6. Human Resources Management	6.2.2 Conduct Staff Acquisition	3.94
2.Planning	7. Communications Management	7.2.1 Conduct Communications Planning	3.44
2.Planning	8. Risk Management	8.2.1 Develop Risk Management Plan	3.75
2.Planning	8. Risk Management	8.2.2 Conduct Risk Identification	3.75
2.Planning	8. Risk Management	8.2.3 Conduct Qualitative Risk Analysis	3.63
2.Planning	8. Risk Management	8.2.4 Conduct Quantitative Risk Analysis	3.5
2.Planning	8. Risk Management	8.2.5 Conduct Risk Response Planning	4
2.Planning	9. Procurement Management	9.2.1 Conduct Procurement Planning	3.5
2.Planning	9. Procurement Management	9.2.2 Conduct Solicitation Planning	3.56
3.Executing	1. Integration Management	1.3.1 Conduct Project Plan Execution	4
3.Executing	2. Scope Management	2.3.1 Execute Scope	4
3.Executing	3. Time Management	3.3.1 Implement Project Schedule	4.25
3.Executing	4. Cost Management	4.3.1 Execute Cost Baseline	3.5

3.Executing	5. Quality Management	5.3.1 Conduct Quality Assurance	4.06
3.Executing	6. Human Resources Management	6.3.1 Conduct Team Development	3.94
3.Executing	7. Communications Management	7.3.1 Conduct Information Distribution	3.81
3.Executing	7. Communications Management	7.3.2 Implement Project Time Reporting	4.06
3.Executing	8. Risk Management	8.3.1 Execute Risk Response Plan	4.13
3.Executing	9. Procurement Management	9.3.1 Conduct Solicitation	3.56
3.Executing	9. Procurement Management	9.3.2 Conduct Source Selection/Contract Development	3.88
3.Executing	9. Procurement Management	9.3.3 Conduct Contract Administration	3.88
4.Controlling	1. Integration Management	1.4.1 Conduct Integrated Change Control	4.06
4.Controlling	2. Scope Management	2.4.1 Conduct Scope Verification	3.81
4.Controlling	2. Scope Management	2.4.2 Conduct Scope Change Control	4
4.Controlling	3. Time Management	3.4.1 Conduct Schedule Control	4.31
4.Controlling	4. Cost Management	4.4.1 Conduct Cost Control	4.19

4.Controlling	5. Quality Management	5.4.1 Conduct Quality Control	4.31
4.Controlling	6. Human Resources Management	6.4.1 Manage Human Resources	3.94
4.Controlling	7. Communications Management	7.4.1 Conduct Project Performance Reporting	3.94
4.Controlling	8. Risk Management	8.4.1 Conduct Risk Monitoring and Control	4.13
4.Controlling	9. Procurement Management	9.4.1 Manage and Review Contract Performance	4.13
5.Closing	1. Integration Management	1.5.1 Conduct Project Closure with Regard to Integration	3.31
5.Closing	2. Scope Management	2.5.1 Conduct Project Closure with Regard to Scope	3.38
5.Closing	3. Time Management	3.5.1 Conduct Project Closure with Regard to Time	3.5
5.Closing	4. Cost Management	4.5.1 Conduct Project Closure with Regard to Cost	3.5
5.Closing	5. Quality Management	5.5.1 Conduct Project Closure with Regard to Quality	3.63
5.Closing	6. Human Resources Management	6.5.1 Conduct Project Closure with Regard to HR Management	3.44
5.Closing	7. Communications Management	7.5.1 Conduct Administrative Closeout	3.69
5.Closing	8. Risk Management	8.5.1 Conduct Project Closure with Regard to Risk Management	3.38
5.Closing	9. Procurement Management	9.5.1 Conduct Contract Closeout	3.75

## Appendix 10 All Competency Elements Weights Selected By Project Managers

NO.	Competency Elements			Weight
1	1. Integration Management	1. Initiating	1.1.1 Identify and Document Project Needs; Developing Project-Related Product or Service Descriptions	4.17
2	1. Integration Management	1. Initiating	1.1.2 Perform an Initial Project Feasibility Study and Analysis	4.17
3	1. Integration Management	2. Planning	1.2.1 Conduct Project Plan Development	4
4	1. Integration Management	3. Executing	1.3.1 Conduct Project Plan Execution	4.17
5	1. Integration Management	4. Controlling	1.4.1 Conduct Integrated Change Control	4.67
6	1. Integration Management	5. Closing	1.5.1 Conduct Project Closure with Regard to Integration	3.67
7	2. Scope Management	1. Initiating	2.1.1 Prepare Project Charter	3.17
8	2. Scope Management	2. Planning	2.2.1 Conduct Scope Planning	4.17
9	2. Scope Management	2. Planning	2.2.2 Conduct Scope Definition	4.5
10	2. Scope Management	3. Executing	2.3.1 Execute Scope	4.5
11	2. Scope Management	4. Controlling	2.4.1 Conduct Scope Verification	4.5
12	2. Scope Management	4. Controlling	2.4.2 Conduct Scope Change Control	4.67
13	2. Scope Management	5. Closing	2.5.1 Conduct Project Closure with Regard to Scope	3.67
14	3. Time Management	1. Initiating	3.1.1 Preliminary Planning Activities	3.83
15	3. Time Management	2. Planning	3.2.1 Conduct Activity Definition	3.5
16	3. Time Management	2. Planning	3.2.2 Conduct Activity Sequencing	3.67
17	3. Time Management	2. Planning	3.2.3 Conduct Activity Duration Estimating	3.83
18	3. Time Management	2. Planning	3.2.4 Conduct Schedule Development	3.83
19	3. Time Management	3. Executing	3.3.1 Implement Project Schedule	4.33

20	3. Time Management	4. Controlling	3.4.1 Conduct Schedule Control	4.5
21	3. Time Management	5. Closing	3.5.1 Conduct Project Closure with Regard to Time	3.67
22	4. Cost Management	1. Initiating	4.1.1 High-Level Budget Development Preparation	3.5
23	4. Cost Management	2. Planning	4.2.1 Conduct Resource Planning	3.83
24	4. Cost Management	2. Planning	4.2.2 Conduct Cost Estimating	3.67
25	4. Cost Management	2. Planning	4.2.3 Conduct Cost Budgeting	3.67
26	4. Cost Management	3. Executing	4.3.1 Execute Cost Baseline	3.5
27	4. Cost Management	4. Controlling	4.4.1 Conduct Cost Control	4.33
28	4. Cost Management	5. Closing	4.5.1 Conduct Project Closure with Regard to Cost	3.5
29	5. Quality Management	1. Initiating	5.1.1 Determine Quality Requirements	4
30	5. Quality Management	2. Planning	5.2.1 Conduct Quality Planning	3.67
31	5. Quality Management	3. Executing	5.3.1 Conduct Quality Assurance	4
32	5. Quality Management	4. Controlling	5.4.1 Conduct Quality Control	4.17
33	5. Quality Management	5. Closing	5.5.1 Conduct Project Closure with Regard to Quality	3.67
34	6. Human Resources Management	1. Initiating	6.1.1 Conduct Organizational Definition	3.33
35	6. Human Resources Management	2. Planning	6.2.1 Conduct Organizational Planning	3.5
36	6. Human Resources Management	2. Planning	6.2.2 Conduct Staff Acquisition	3.83
37	6. Human Resources Management	3. Executing	6.3.1 Conduct Team Development	3.83
38	6. Human Resources Management	4. Controlling	6.4.1 Manage Human Resources	3.83
39	6. Human Resources Management	5. Closing	6.5.1 Conduct Project Closure with Regard to HR Management	3.5

40	7. Communications Management	1. Initiating	7.1.1 Preliminary Communications Planning	3.83
41	7. Communications Management	2. Planning	7.2.1 Conduct Communications Planning	3.83
42	7. Communications Management	3. Executing	7.3.1 Conduct Information Distribution	3.83
43	7. Communications Management	3. Executing	7.3.2 Implement Project Time Reporting	4.17
44	7. Communications Management	4. Controlling	7.4.1 Conduct Project Performance Reporting	3.83
45	7. Communications Management	5. Closing	7.5.1 Conduct Administrative Closeout	3.67
46	8. Risk Management	1. Initiating	8.1.1 Conduct Preliminary Risk Planning	3.67
47	8. Risk Management	2. Planning	8.2.1 Develop Risk Management Plan	4
48	8. Risk Management	2. Planning	8.2.2 Conduct Risk Identification	4
49	8. Risk Management	2. Planning	8.2.3 Conduct Qualitative Risk Analysis	3.67
50	8. Risk Management	2. Planning	8.2.4 Conduct Quantitative Risk Analysis	3.5
51	8. Risk Management	2. Planning	8.2.5 Conduct Risk Response Planning	3.83
52	8. Risk Management	3. Executing	8.3.1 Execute Risk Response Plan	4.33
53	8. Risk Management	4. Controlling	8.4.1 Conduct Risk Monitoring and Control	4.17
54	8. Risk Management	5. Closing	8.5.1 Conduct Project Closure with Regard to Risk Management	3.17
55	9. Procurement Management	1. Initiating	9.1.1 Preliminary Procurement Planning	3.5
56	9. Procurement Management	2. Planning	9.2.1 Conduct Procurement Planning	3.5
57	9. Procurement Management	2. Planning	9.2.2 Conduct Solicitation Planning	3.67
58	9. Procurement Management	3. Executing	9.3.1 Conduct Solicitation	3.67

59	9. Procurement Management	3.Executing	9.3.2 Conduct Source Selection/Contract Development	3.83
60	9. Procurement Management	3.Executing	9.3.3 Conduct Contract Administration	3.83
61	9. Procurement Management	4.Controlling	9.4.1 Manage and Review Contract Performance	4.17
62	9. Procurement Management	5.Closing	9.5.1 Conduct Contract Closeout	3.67
63	1. Achievement and Action	1.1 Achievement Orientation	1.1.1 Operates with Intensity to Achieve Project Goals	3.83
64	1. Achievement and Action	1.1 Achievement Orientation	1.1.2 Motivates Project Stakeholders in a Positive Way	4
65	1. Achievement and Action	1.1 Achievement Orientation	1.1.3 Provides New Solutions in Planning and Delivering Projects	3.5
66	1. Achievement and Action	1.1 Achievement Orientation	1.1.4 Operates with Individual Integrity and Personal Professionalism	4.17
67	1. Achievement and Action	1.2 Concern for Order, Quality, and Accuracy	1.2.1 Manages Projects in an Ordered, Accurate Way	4.17
68	1. Achievement and Action	1.2 Concern for Order, Quality, and Accuracy	1.2.2 Provides Accurate and Truthful Information	3.83
69	1. Achievement and Action	1.3 Initiative	1.3.1 Takes Initiative When Required	3.67
70	1. Achievement and Action	1.3 Initiative	1.3.2 Takes Accountability for and Delivers Project	4.5
71	1. Achievement and Action	1.3 Initiative	1.3.3 Seeks New Opportunities	4
72	1. Achievement and Action	1.3 Initiative	1.3.4 Strives for Best Practice	4.17
73	1. Achievement and Action	1.4 Information Seeking	1.4.1 Ensures Information Used to Manage Project is Complete and Accurate	4.5
74	2. Helping and Human Service	2.1 Customer Service Orientation	2.1.1 Represents the Client Inside the Project	4

75	2. Helping and Human Service	2.1 Customer Service Orientation	2.1.2 Takes Initiatives to Provide Excellent Client Service	4.17
76	2. Helping and Human Service	2.2 Interpersonal Understanding	2.2.1 Strives to Understand All Project Stakeholders' Thoughts, Feelings, and Concerns	4.17
77	2. Helping and Human Service	2.2 Interpersonal Understanding	2.2.2 Listens and Responds to Others	4.5
78	3. Impact and Influence	3.1 Impact and Influence	3.1.1 Takes Appropriate Actions to Influence Others	4
79	3. Impact and Influence	3.1 Impact and Influence	3.1.2 Influences Across Projects and Organizations	4
80	3. Impact and Influence	3.1 Impact and Influence	3.1.3 Understands and Influences Project Team Members	4.5
81	3. Impact and Influence	3.2 Organization Awareness	3.2.1 Understands the Organization	4.17
82	3. Impact and Influence	3.2 Organization Awareness	3.2.2 Understands the Project	4.33
83	3. Impact and Influence	3.3 Relationship Building	3.3.1 Builds and Maintains Suitable Relationships with Project Stakeholders	4.17
84	3. Impact and Influence	3.3 Relationship Building	3.3.2 Establishes and Maintains Relationships at the Right Level Inside and Outside the Organizations	4
85	4. Managerial	4.1 Teamwork and Cooperation	4.1.1 Builds Team Orientation Within the Project	3.83
86	4. Managerial	4.1 Teamwork and Cooperation	4.1.2 Molds Core Project Stakeholders into a Team	4.33

87	4. Managerial	4.1 Teamwork and Cooperation	4.1.3 Undertakes Team-Building Activities	3.67
88	4. Managerial	4.2 Developing Others	4.2.1 Builds a Project Culture Where Personal Development Is Encouraged	3.83
89	4. Managerial	4.2 Developing Others	4.2.2 Develops Project Members to Effectively Build Project Culture	3.67
90	4. Managerial	4.3 Team Leadership	4.3.1 Demonstrates Leadership of the Project	4
91	4. Managerial	4.3 Team Leadership	4.3.2 Leads the Project Team	3.83
92	4. Managerial	4.4 Directiveness: Assertiveness and use of Positional Power	4.4.1 Uses Assertiveness When Necessary	3.67
93	4. Managerial		4.4.2 Manages the Complete Project	3.83
94	5. Cognitive	5.1 Analytical Thinking	5.1.1 Understands at a Suitable Level All Issues Associated with the Project	3.67
95	5. Cognitive	5.1 Analytical Thinking	5.1.2 Facilitates Solutions Across All Issues Related to the Project	3.83
96	5. Cognitive	5.2 Conceptual thinking	5.2.1 Sees the Project in a Holistic Way	4
97	6. Personal Effectiveness	6.1 Self-Control	6.1.1 Maintains Self-Control	4.33
98	6. Personal Effectiveness	6.2 Self-Confidence	6.2.1 Creates an Environment of Confidence	4
99	6. Personal Effectiveness	6.2 Self-Confidence	6.2.2 Accepts Failure Positively	3.67
100	6. Personal Effectiveness	6.3 Flexibility	6.3.1 Changes to Meet the Needs of the Project	4
101	6. Personal Effectiveness	6.3 Flexibility	6.3.2 Changes at the Required Pace	4

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102	6. Personal Effectiveness	6.4 Organizational Commitment	6.4.1 Demonstrates Commitment to the Project	3.83
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## Appendix 11 All Competency Elements Priority Selected By Project Managers

NO.		Competency Elements			Weight
1	1. Integration Management	4. Controlling	1.4.1 Conduct Integrated Change Control	4.67	
2	2. Scope Management	4. Controlling	2.4.2 Conduct Scope Change Control	4.67	
3	1. Achievement and Action	1.3 Initiative	1.3.2 Takes Accountability for and Delivers Project	4.5	
4	1. Achievement and Action	1.4 Information Seeking	1.4.1 Ensures Information Used to Manage Project is Complete and Accurate	4.5	
5	2. Helping and Human Service	2.2 Interpersonal Understanding	2.2.2 Listens and Responds to Others	4.5	
6	2. Scope Management	2. Planning	2.2.2 Conduct Scope Definition	4.5	
7	2. Scope Management	3. Executing	2.3.1 Execute Scope	4.5	
8	2. Scope Management	4. Controlling	2.4.1 Conduct Scope Verification	4.5	
9	3. Impact and Influence	3.1 Impact and Influence	3.1.3 Understands and Influences Project Team Members	4.5	
10	3. Time Management	4. Controlling	3.4.1 Conduct Schedule Control	4.5	
11	3. Impact and Influence	3.2 Organization Awareness	3.2.2 Understands the Project	4.33	
12	3. Time Management	3. Executing	3.3.1 Implement Project Schedule	4.33	
13	4. Cost Management	4. Controlling	4.4.1 Conduct Cost Control	4.33	
14	4. Managerial	4.1 Teamwork and Cooperation	4.1.2 Molds Core Project Stakeholders into a Team	4.33	
15	6. Personal Effectiveness	6.1 Self-Control	6.1.1 Maintains Self-Control	4.33	
16	8. Risk Management	3. Executing	8.3.1 Execute Risk Response Plan	4.33	

17	1. Achievement and Action	1.1 Achievement Orientation	1.1.4 Operates with Individual Integrity and Personal Professionalism	4.17
18	1. Achievement and Action	1.2 Concern for Order, Quality, and Accuracy	1.2.1 Manages Projects in an Ordered, Accurate Way	4.17
19	1. Achievement and Action	1.3 Initiative	1.3.4 Strives for Best Practice	4.17
20	1. Integration Management	1. Initiating	1.1.1 Identify and Document Project Needs; Developing Project-Related Product or Service Descriptions	4.17
21	1. Integration Management	1. Initiating	1.1.2 Perform an Initial Project Feasibility Study and Analysis	4.17
22	1. Integration Management	3. Executing	1.3.1 Conduct Project Plan Execution	4.17
23	2. Helping and Human Service	2.1 Customer Service Orientation	2.1.2 Takes Initiatives to Provide Excellent Client Service	4.17
24	2. Helping and Human Service	2.2 Interpersonal Understanding	2.2.1 Strives to Understand All Project Stakeholders' Thoughts, Feelings, and Concerns	4.17
25	2. Scope Management	2. Planning	2.2.1 Conduct Scope Planning	4.17
26	3. Impact and Influence	3.2 Organization Awareness	3.2.1 Understands the Organization	4.17
27	3. Impact and Influence	3.3 Relationship Building	3.3.1 Builds and Maintains Suitable Relationships with Project Stakeholders	4.17
28	5. Quality Management	4. Controlling	5.4.1 Conduct Quality Control	4.17
29	7. Communications Management	3. Executing	7.3.2 Implement Project Time Reporting	4.17
30	8. Risk Management	4. Controlling	8.4.1 Conduct Risk Monitoring and Control	4.17
31	9. Procurement Management	4. Controlling	9.4.1 Manage and Review Contract Performance	4.17
32	1. Achievement and Action	1.1 Achievement Orientation	1.1.2 Motivates Project Stakeholders in a Positive Way	4

33	1. Achievement and Action	1.3 Initiative	1.3.3 Seeks New Opportunities	4
34	1. Integration Management	2.Planning	1.2.1 Conduct Project Plan Development	4
35	2. Helping and Human Service	2.1 Customer Service Orientation	2.1.1 Represents the Client Inside the Project	4
36	3. Impact and Influence	3.1 Impact and Influence	3.1.1 Takes Appropriate Actions to Influence Others	4
37	3. Impact and Influence	3.1 Impact and Influence	3.1.2 Influences Across Projects and Organizations	4
38	3. Impact and Influence	3.3 Relationship Building	3.3.2 Establishes and Maintains Relationships at the Right Level Inside and Outside the Organizations	4
39	4. Managerial	4.3 Team Leadership	4.3.1 Demonstrates Leadership of the Project	4
40	5. Cognitive	5.2 Conceptual thinking	5.2.1 Sees the Project in a Holistic Way	4
41	5. Quality Management	1.Initiating	5.1.1 Determine Quality Requirements	4
42	5. Quality Management	3.Executing	5.3.1 Conduct Quality Assurance	4
43	6. Personal Effectiveness	6.2 Self-Confidence	6.2.1 Creates an Environment of Confidence	4
44	6. Personal Effectiveness	6.3 Flexibility	6.3.1 Changes to Meet the Needs of the Project	4
45	6. Personal Effectiveness	6.3 Flexibility	6.3.2 Changes at the Required Pace	4
46	8. Risk Management	2.Planning	8.2.1 Develop Risk Management Plan	4
47	8. Risk Management	2.Planning	8.2.2 Conduct Risk Identification	4
48	1. Achievement and Action	1.1 Achievement Orientation	1.1.1 Operates with Intensity to Achieve Project Goals	3.83
49	1. Achievement and Action	1.2 Concern for Order, Quality, and Accuracy	1.2.2 Provides Accurate and Truthful Information	3.83
50	3. Time Management	1.Initiating	3.1.1 Preliminary Planning Activities	3.83
51	3. Time Management	2.Planning	3.2.3 Conduct Activity Duration Estimating	3.83
52	3. Time Management	2.Planning	3.2.4 Conduct Schedule Development	3.83
53	4. Cost Management	2.Planning	4.2.1 Conduct Resource Planning	3.83

54	4. Managerial	4.1 Teamwork and Cooperation	4.1.1 Builds Team Orientation Within the Project	3.83
55	4. Managerial	4.2 Developing Others	4.2.1 Builds a Project Culture Where Personal Development Is Encouraged	3.83
56	4. Managerial	4.3 Team Leadership	4.3.2 Leads the Project Team	3.83
57	4. Managerial		4.4.2 Manages the Complete Project	3.83
58	5. Cognitive	5.1 Analytical Thinking	5.1.2 Facilitates Solutions Across All Issues Related to the Project	3.83
59	6. Human Resources Management	2.Planning	6.2.2 Conduct Staff Acquisition	3.83
60	6. Human Resources Management	3.Executing	6.3.1 Conduct Team Development	3.83
61	6. Human Resources Management	4.Controlling	6.4.1 Manage Human Resources	3.83
62	6. Personal Effectiveness	6.4 Organizational Commitment	6.4.1 Demonstrates Commitment to the Project	3.83
63	7. Communications Management	1.Initiating	7.1.1 Preliminary Communications Planning	3.83
64	7. Communications Management	2.Planning	7.2.1 Conduct Communications Planning	3.83
65	7. Communications Management	3.Executing	7.3.1 Conduct Information Distribution	3.83
66	7. Communications Management	4.Controlling	7.4.1 Conduct Project Performance Reporting	3.83
67	8. Risk Management	2.Planning	8.2.5 Conduct Risk Response Planning	3.83
68	9. Procurement Management	3.Executing	9.3.2 Conduct Source Selection/Contract Development	3.83
69	9. Procurement Management	3.Executing	9.3.3 Conduct Contract Administration	3.83
70	1. Achievement and Action	1.3 Initiative	1.3.1 Takes Initiative When Required	3.67
71	1. Integration Management	5.Closing	1.5.1 Conduct Project Closure with Regard to Integration	3.67
72	2. Scope Management	5.Closing	2.5.1 Conduct Project Closure with Regard to Scope	3.67
73	3. Time Management	2.Planning	3.2.2 Conduct Activity Sequencing	3.67
74	3. Time Management	5.Closing	3.5.1 Conduct Project Closure with Regard to Time	3.67
75	4. Cost Management	2.Planning	4.2.2 Conduct Cost Estimating	3.67

76	4. Cost Management	2.Planning	4.2.3 Conduct Cost Budgeting	3.67
77	4. Managerial	4.1 Teamwork and Cooperation	4.1.3 Undertakes Team-Building Activities	3.67
78	4. Managerial	4.2 Developing Others	4.2.2 Develops Project Members to Effectively Build Project Culture	3.67
79	4. Managerial	4.4 Directiveness: Assertiveness and use of Positional Power	4.4.1 Uses Assertiveness When Necessary	3.67
80	5. Cognitive	5.1 Analytical Thinking	5.1.1 Understands at a Suitable Level All Issues Associated with the Project	3.67
81	5. Quality Management	2.Planning	5.2.1 Conduct Quality Planning	3.67
82	5. Quality Management	5.Closing	5.5.1 Conduct Project Closure with Regard to Quality	3.67
83	6. Personal Effectiveness	6.2 Self-Confidence	6.2.2 Accepts Failure Positively	3.67
84	7. Communications Management	5.Closing	7.5.1 Conduct Administrative Closeout	3.67
85	8. Risk Management	1.Initiating	8.1.1 Conduct Preliminary Risk Planning	3.67
86	8. Risk Management	2.Planning	8.2.3 Conduct Qualitative Risk Analysis	3.67
87	9. Procurement Management	2.Planning	9.2.2 Conduct Solicitation Planning	3.67
88	9. Procurement Management	3.Executing	9.3.1 Conduct Solicitation	3.67
89	9. Procurement Management	5.Closing	9.5.1 Conduct Contract Closeout	3.67
90	1. Achievement and Action	1.1 Achievement Orientation	1.1.3 Provides New Solutions in Planning and Delivering Projects	3.5
91	3. Time Management	2.Planning	3.2.1 Conduct Activity Definition	3.5
92	4. Cost Management	1.Initiating	4.1.1 High-Level Budget Development Preparation	3.5
93	4. Cost Management	3.Executing	4.3.1 Execute Cost Baseline	3.5
94	4. Cost Management	5.Closing	4.5.1 Conduct Project Closure with Regard to Cost	3.5
95	6. Human Resources Management	2.Planning	6.2.1 Conduct Organizational Planning	3.5

96	6. Human Resources Management	5.Closing	6.5.1 Conduct Project Closure with Regard to HR Management	3.5
97	8. Risk Management	2.Planning	8.2.4 Conduct Quantitative Risk Analysis	3.5
98	9. Procurement Management	1.Initiating	9.1.1 Preliminary Procurement Planning	3.5
99	9. Procurement Management	2.Planning	9.2.1 Conduct Procurement Planning	3.5
100	6. Human Resources Management	1.Initiating	6.1.1 Conduct Organizational Definition	3.33
101	2. Scope Management	1.Initiating	2.1.1 Prepare Project Charter	3.17
102	8. Risk Management	5.Closing	8.5.1 Conduct Project Closure with Regard to Risk Management	3.17

## Appendix 12 Knowledge and Performance Competency Elements Weights Selected By Project Managers

NO.	Competency Elements			Weight
1	1. Integration Management	1. Initiating	1.1.1 Identify and Document Project Needs; Developing Project-Related Product or Service Descriptions	4.17
2	1. Integration Management	1. Initiating	1.1.2 Perform an Initial Project Feasibility Study and Analysis	4.17
3	1. Integration Management	2. Planning	1.2.1 Conduct Project Plan Development	4
4	1. Integration Management	3. Executing	1.3.1 Conduct Project Plan Execution	4.17
5	1. Integration Management	4. Controlling	1.4.1 Conduct Integrated Change Control	4.67
6	1. Integration Management	5. Closing	1.5.1 Conduct Project Closure with Regard to Integration	3.67
7	2. Scope Management	1. Initiating	2.1.1 Prepare Project Charter	3.17
8	2. Scope Management	2. Planning	2.2.1 Conduct Scope Planning	4.17
9	2. Scope Management	2. Planning	2.2.2 Conduct Scope Definition	4.5
10	2. Scope Management	3. Executing	2.3.1 Execute Scope	4.5
11	2. Scope Management	4. Controlling	2.4.1 Conduct Scope Verification	4.5
12	2. Scope Management	4. Controlling	2.4.2 Conduct Scope Change Control	4.67
13	2. Scope Management	5. Closing	2.5.1 Conduct Project Closure with Regard to Scope	3.67
14	3. Time Management	1. Initiating	3.1.1 Preliminary Planning Activities	3.83
15	3. Time Management	2. Planning	3.2.1 Conduct Activity Definition	3.5
16	3. Time Management	2. Planning	3.2.2 Conduct Activity Sequencing	3.67
17	3. Time Management	2. Planning	3.2.3 Conduct Activity Duration Estimating	3.83

18	3. Time Management	2.Planning	3.2.4 Conduct Schedule Development	3.83
19	3. Time Management	3.Executing	3.3.1 Implement Project Schedule	4.33
20	3. Time Management	4.Controlling	3.4.1 Conduct Schedule Control	4.5
21	3. Time Management	5.Closing	3.5.1 Conduct Project Closure with Regard to Time	3.67
22	4. Cost Management	1.Initiating	4.1.1 High-Level Budget Development Preparation	3.5
23	4. Cost Management	2.Planning	4.2.1 Conduct Resource Planning	3.83
24	4. Cost Management	2.Planning	4.2.2 Conduct Cost Estimating	3.67
25	4. Cost Management	2.Planning	4.2.3 Conduct Cost Budgeting	3.67
26	4. Cost Management	3.Executing	4.3.1 Execute Cost Baseline	3.5
27	4. Cost Management	4.Controlling	4.4.1 Conduct Cost Control	4.33
28	4. Cost Management	5.Closing	4.5.1 Conduct Project Closure with Regard to Cost	3.5
29	5. Quality Management	1.Initiating	5.1.1 Determine Quality Requirements	4
30	5. Quality Management	2.Planning	5.2.1 Conduct Quality Planning	3.67
31	5. Quality Management	3.Executing	5.3.1 Conduct Quality Assurance	4
32	5. Quality Management	4.Controlling	5.4.1 Conduct Quality Control	4.17
33	5. Quality Management	5.Closing	5.5.1 Conduct Project Closure with Regard to Quality	3.67
34	6. Human Resources Management	1.Initiating	6.1.1 Conduct Organizational Definition	3.33
35	6. Human Resources Management	2.Planning	6.2.1 Conduct Organizational Planning	3.5
36	6. Human Resources Management	2.Planning	6.2.2 Conduct Staff Acquisition	3.83
37	6. Human Resources Management	3.Executing	6.3.1 Conduct Team Development	3.83
38	6. Human Resources Management	4.Controlling	6.4.1 Manage Human Resources	3.83

39	6. Human Resources Management	5.Closing	6.5.1 Conduct Project Closure with Regard to HR Management	3.5
40	7. Communications Management	1.Initiating	7.1.1 Preliminary Communications Planning	3.83
41	7. Communications Management	2.Planning	7.2.1 Conduct Communications Planning	3.83
42	7. Communications Management	3.Executing	7.3.1 Conduct Information Distribution	3.83
43	7. Communications Management	3.Executing	7.3.2 Implement Project Time Reporting	4.17
44	7. Communications Management	4.Controlling	7.4.1 Conduct Project Performance Reporting	3.83
45	7. Communications Management	5.Closing	7.5.1 Conduct Administrative Closeout	3.67
46	8. Risk Management	1.Initiating	8.1.1 Conduct Preliminary Risk Planning	3.67
47	8. Risk Management	2.Planning	8.2.1 Develop Risk Management Plan	4
48	8. Risk Management	2.Planning	8.2.2 Conduct Risk Identification	4
49	8. Risk Management	2.Planning	8.2.3 Conduct Qualitative Risk Analysis	3.67
50	8. Risk Management	2.Planning	8.2.4 Conduct Quantitative Risk Analysis	3.5
51	8. Risk Management	2.Planning	8.2.5 Conduct Risk Response Planning	3.83
52	8. Risk Management	3.Executing	8.3.1 Execute Risk Response Plan	4.33
53	8. Risk Management	4.Controlling	8.4.1 Conduct Risk Monitoring and Control	4.17
54	8. Risk Management	5.Closing	8.5.1 Conduct Project Closure with Regard to Risk Management	3.17
55	9. Procurement Management	1.Initiating	9.1.1 Preliminary Procurement Planning	3.5
56	9. Procurement Management	2.Planning	9.2.1 Conduct Procurement Planning	3.5
57	9. Procurement Management	2.Planning	9.2.2 Conduct Solicitation Planning	3.67

58	9. Procurement Management	3.Executing	9.3.1 Conduct Solicitation	3.67
59	9. Procurement Management	3.Executing	9.3.2 Conduct Source Selection/Contract Development	3.83
60	9. Procurement Management	3.Executing	9.3.3 Conduct Contract Administration	3.83
61	9. Procurement Management	4.Controlling	9.4.1 Manage and Review Contract Performance	4.17
62	9. Procurement Management	5.Closing	9.5.1 Conduct Contract Closeout	3.67

## Appendix 13 Knowledge and Performance Competency Elements Priority Selected By Project Managers

NO.	Competency Elements			Weight
1	1. Integration Management	4. Controlling	1.4.1 Conduct Integrated Change Control	4.67
2	2. Scope Management	4. Controlling	2.4.2 Conduct Scope Change Control	4.67
3	2. Scope Management	2. Planning	2.2.2 Conduct Scope Definition	4.5
4	2. Scope Management	3. Executing	2.3.1 Execute Scope	4.5
5	2. Scope Management	4. Controlling	2.4.1 Conduct Scope Verification	4.5
6	3. Time Management	4. Controlling	3.4.1 Conduct Schedule Control	4.5
7	3. Time Management	3. Executing	3.3.1 Implement Project Schedule	4.33
8	4. Cost Management	4. Controlling	4.4.1 Conduct Cost Control	4.33
9	8. Risk Management	3. Executing	8.3.1 Execute Risk Response Plan	4.33
10	1. Integration Management	1. Initiating	1.1.1 Identify and Document Project Needs; Developing Project-Related Product or Service Descriptions	4.17
11	1. Integration Management	1. Initiating	1.1.2 Perform an Initial Project Feasibility Study and Analysis	4.17
12	1. Integration Management	3. Executing	1.3.1 Conduct Project Plan Execution	4.17
13	2. Scope Management	2. Planning	2.2.1 Conduct Scope Planning	4.17
14	5. Quality Management	4. Controlling	5.4.1 Conduct Quality Control	4.17
15	7. Communications Management	3. Executing	7.3.2 Implement Project Time Reporting	4.17

16	8. Risk Management	4.Controlling	8.4.1 Conduct Risk Monitoring and Control	4.17
17	9. Procurement Management	4.Controlling	9.4.1 Manage and Review Contract Performance	4.17
18	1. Integration Management	2.Planning	1.2.1 Conduct Project Plan Development	4
19	5. Quality Management	1.Initiating	5.1.1 Determine Quality Requirements	4
20	5. Quality Management	3.Executing	5.3.1 Conduct Quality Assurance	4
21	8. Risk Management	2.Planning	8.2.1 Develop Risk Management Plan	4
22	8. Risk Management	2.Planning	8.2.2 Conduct Risk Identification	4
23	3. Time Management	1.Initiating	3.1.1 Preliminary Planning Activities	3.83
24	3. Time Management	2.Planning	3.2.3 Conduct Activity Duration Estimating	3.83
25	3. Time Management	2.Planning	3.2.4 Conduct Schedule Development	3.83
26	4. Cost Management	2.Planning	4.2.1 Conduct Resource Planning	3.83
27	6. Human Resources Management	2.Planning	6.2.2 Conduct Staff Acquisition	3.83
28	6. Human Resources Management	3.Executing	6.3.1 Conduct Team Development	3.83
29	6. Human Resources Management	4.Controlling	6.4.1 Manage Human Resources	3.83
30	7. Communications Management	1.Initiating	7.1.1 Preliminary Communications Planning	3.83
31	7. Communications Management	2.Planning	7.2.1 Conduct Communications Planning	3.83
32	7. Communications Management	3.Executing	7.3.1 Conduct Information Distribution	3.83
33	7. Communications Management	4.Controlling	7.4.1 Conduct Project Performance Reporting	3.83
34	8. Risk Management	2.Planning	8.2.5 Conduct Risk Response Planning	3.83

35	9. Procurement Management	3.Executing	9.3.2 Conduct Source Selection/Contract Development	3.83
36	9. Procurement Management	3.Executing	9.3.3 Conduct Contract Administration	3.83
37	1. Integration Management	5.Closing	1.5.1 Conduct Project Closure with Regard to Integration	3.67
38	2. Scope Management	5.Closing	2.5.1 Conduct Project Closure with Regard to Scope	3.67
39	3. Time Management	2.Planning	3.2.2 Conduct Activity Sequencing	3.67
40	3. Time Management	5.Closing	3.5.1 Conduct Project Closure with Regard to Time	3.67
41	4. Cost Management	2.Planning	4.2.2 Conduct Cost Estimating	3.67
42	4. Cost Management	2.Planning	4.2.3 Conduct Cost Budgeting	3.67
43	5. Quality Management	2.Planning	5.2.1 Conduct Quality Planning	3.67
44	5. Quality Management	5.Closing	5.5.1 Conduct Project Closure with Regard to Quality	3.67
45	7. Communications Management	5.Closing	7.5.1 Conduct Administrative Closeout	3.67
46	8. Risk Management	1.Initiating	8.1.1 Conduct Preliminary Risk Planning	3.67
47	8. Risk Management	2.Planning	8.2.3 Conduct Qualitative Risk Analysis	3.67
48	9. Procurement Management	2.Planning	9.2.2 Conduct Solicitation Planning	3.67
49	9. Procurement Management	3.Executing	9.3.1 Conduct Solicitation	3.67
50	9. Procurement Management	5.Closing	9.5.1 Conduct Contract Closeout	3.67
51	3. Time Management	2.Planning	3.2.1 Conduct Activity Definition	3.5
52	4. Cost Management	1.Initiating	4.1.1 High-Level Budget Development Preparation	3.5
53	4. Cost Management	3.Executing	4.3.1 Execute Cost Baseline	3.5
54	4. Cost Management	5.Closing	4.5.1 Conduct Project Closure with Regard to Cost	3.5

55	6. Human Resources Management	2.Planning	6.2.1 Conduct Organizational Planning	3.5
56	6. Human Resources Management	5.Closing	6.5.1 Conduct Project Closure with Regard to HR Management	3.5
57	8. Risk Management	2.Planning	8.2.4 Conduct Quantitative Risk Analysis	3.5
58	9. Procurement Management	1.Initiating	9.1.1 Preliminary Procurement Planning	3.5
59	9. Procurement Management	2.Planning	9.2.1 Conduct Procurement Planning	3.5
60	6. Human Resources Management	1.Initiating	6.1.1 Conduct Organizational Definition	3.33
61	2. Scope Management	1.Initiating	2.1.1 Prepare Project Charter	3.17
62	8. Risk Management	5.Closing	8.5.1 Conduct Project Closure with Regard to Risk Management	3.17

## Appendix 14 Personal Competency Elements Weights Selected By Project Managers

NO.	Competency Elements			Weight
1	1. Achievement and Action	1.1 Achievement Orientation	1.1.1 Operates with Intensity to Achieve Project Goals	3.83
2	1. Achievement and Action	1.1 Achievement Orientation	1.1.2 Motivates Project Stakeholders in a Positive Way	4
3	1. Achievement and Action	1.1 Achievement Orientation	1.1.3 Provides New Solutions in Planning and Delivering Projects	3.5
4	1. Achievement and Action	1.1 Achievement Orientation	1.1.4 Operates with Individual Integrity and Personal Professionalism	4.17
5	1. Achievement and Action	1.2 Concern for Order, Quality, and Accuracy	1.2.1 Manages Projects in an Ordered, Accurate Way	4.17
6	1. Achievement and Action	1.2 Concern for Order, Quality, and Accuracy	1.2.2 Provides Accurate and Truthful Information	3.83
7	1. Achievement and Action	1.3 Initiative	1.3.1 Takes Initiative When Required	3.67
8	1. Achievement and Action	1.3 Initiative	1.3.2 Takes Accountability for and Delivers Project	4.5
9	1. Achievement and Action	1.3 Initiative	1.3.3 Seeks New Opportunities	4
10	1. Achievement and Action	1.3 Initiative	1.3.4 Strives for Best Practice	4.17
11	1. Achievement and Action	1.4 Information Seeking	1.4.1 Ensures Information Used to Manage Project is Complete and Accurate	4.5
12	2. Helping and Human Service	2.1 Customer Service Orientation	2.1.1 Represents the Client Inside the Project	4
13	2. Helping and Human Service	2.1 Customer Service Orientation	2.1.2 Takes Initiatives to Provide Excellent Client Service	4.17

14	2. Helping and Human Service	2.2 Interpersonal Understanding	2.2.1 Strives to Understand All Project Stakeholders' Thoughts, Feelings, and Concerns	4.17
15	2. Helping and Human Service	2.2 Interpersonal Understanding	2.2.2 Listens and Responds to Others	4.5
16	3. Impact and Influence	3.1 Impact and Influence	3.1.1 Takes Appropriate Actions to Influence Others	4
17	3. Impact and Influence	3.1 Impact and Influence	3.1.2 Influences Across Projects and Organizations	4
18	3. Impact and Influence	3.1 Impact and Influence	3.1.3 Understands and Influences Project Team Members	4.5
19	3. Impact and Influence	3.2 Organization Awareness	3.2.1 Understands the Organization	4.17
20	3. Impact and Influence	3.2 Organization Awareness	3.2.2 Understands the Project	4.33
21	3. Impact and Influence	3.3 Relationship Building	3.3.1 Builds and Maintains Suitable Relationships with Project Stakeholders	4.17
22	3. Impact and Influence	3.3 Relationship Building	3.3.2 Establishes and Maintains Relationships at the Right Level Inside and Outside the Organizations	4
23	4. Managerial	4.1 Teamwork and Cooperation	4.1.1 Builds Team Orientation Within the Project	3.83
24	4. Managerial	4.1 Teamwork and Cooperation	4.1.2 Molds Core Project Stakeholders into a Team	4.33
25	4. Managerial	4.1 Teamwork and Cooperation	4.1.3 Undertakes Team-Building Activities	3.67
26	4. Managerial	4.2 Developing Others	4.2.1 Builds a Project Culture Where Personal Development is Encouraged	3.83
27	4. Managerial	4.2 Developing Others	4.2.2 Develops Project Members to Effectively Build Project Culture	3.67
28	4. Managerial	4.3 Team Leadership	4.3.1 Demonstrates Leadership of the Project	4
29	4. Managerial	4.3 Team Leadership	4.3.2 Leads the Project Team	3.83
30	4. Managerial	4.4 Directiveness: Assertiveness and use of Positional Power	4.4.1 Uses Assertiveness When Necessary	3.67
31	4. Managerial		4.4.2 Manages the Complete Project	3.83

32	5. Cognitive	5.1 Analytical Thinking	5.1.1 Understands at a Suitable Level All Issues Associated with the Project	3.67
33	5. Cognitive	5.1 Analytical Thinking	5.1.2 Facilitates Solutions Across All Issues Related to the Project	3.83
34	5. Cognitive	5.2 Conceptual thinking	5.2.1 Sees the Project in a Holistic Way	4
35	6. Personal Effectiveness	6.1 Self-Control	6.1.1 Maintains Self-Control	4.33
36	6. Personal Effectiveness	6.2 Self-Confidence	6.2.1 Creates an Environment of Confidence	4
37	6. Personal Effectiveness	6.2 Self-Confidence	6.2.2 Accepts Failure Positively	3.67
38	6. Personal Effectiveness	6.3 Flexibility	6.3.1 Changes to Meet the Needs of the Project	4
39	6. Personal Effectiveness	6.3 Flexibility	6.3.2 Changes at the Required Pace	4
40	6. Personal Effectiveness	6.4 Organizational Commitment	6.4.1 Demonstrates Commitment to the Project	3.83

## Appendix 15 Personal Competency Elements Priority Selected By Project Managers

NO.	Competency Elements			Weight
	Achievement and Action	Initiative	Competency Elements	
1	1. Achievement and Action	1.3 Initiative	1.3.2 Takes Accountability for and Delivers Project	4.5
2	1. Achievement and Action	1.4 Information Seeking	1.4.1 Ensures Information Used to Manage Project is Complete and Accurate	4.5
3	2. Helping and Human Service	2.2 Interpersonal Understanding	2.2.2 Listens and Responds to Others	4.5
4	3. Impact and Influence	3.1 Impact and Influence	3.1.3 Understands and Influences Project Team Members	4.5
5	3. Impact and Influence	3.2 Organization Awareness	3.2.2 Understands the Project	4.33
6	4. Managerial	4.1 Teamwork and Cooperation	4.1.2 Molds Core Project Stakeholders into a Team	4.33
7	6. Personal Effectiveness	6.1 Self-Control	6.1.1 Maintains Self-Control	4.33
8	1. Achievement and Action	1.1 Achievement Orientation	1.1.4 Operates with Individual Integrity and Personal Professionalism	4.17
9	1. Achievement and Action	1.2 Concern for Order, Quality, and Accuracy	1.2.1 Manages Projects in an Ordered, Accurate Way	4.17
10	1. Achievement and Action	1.3 Initiative	1.3.4 Strives for Best Practice	4.17
11	2. Helping and Human Service	2.1 Customer Service Orientation	2.1.2 Takes Initiatives to Provide Excellent Client Service	4.17
12	2. Helping and Human Service	2.2 Interpersonal Understanding	2.2.1 Strives to Understand All Project Stakeholders' Thoughts, Feelings, and Concerns	4.17

13	3. Impact and Influence	3.2 Organization Awareness	3.2.1 Understands the Organization	4.17
14	3. Impact and Influence	3.3 Relationship Building	3.3.1 Builds and Maintains Suitable Relationships with Project Stakeholders	4.17
15	1. Achievement and Action	1.1 Achievement Orientation	1.1.2 Motivates Project Stakeholders in a Positive Way	4
16	1. Achievement and Action	1.3 Initiative	1.3.3 Seeks New Opportunities	4
17	2. Helping and Human Service	2.1 Customer Service Orientation	2.1.1 Represents the Client Inside the Project	4
18	3. Impact and Influence	3.1 Impact and Influence	3.1.1 Takes Appropriate Actions to Influence Others	4
19	3. Impact and Influence	3.1 Impact and Influence	3.1.2 Influences Across Projects and Organizations	4
20	3. Impact and Influence	3.3 Relationship Building	3.3.2 Establishes and Maintains Relationships at the Right Level Inside and Outside the Organizations	4
21	4. Managerial	4.3 Team Leadership	4.3.1 Demonstrates Leadership of the Project	4
22	5. Cognitive	5.2 Conceptual thinking	5.2.1 Sees the Project in a Holistic Way	4
23	6. Personal Effectiveness	6.2 Self-Confidence	6.2.1 Creates an Environment of Confidence	4
24	6. Personal Effectiveness	6.3 Flexibility	6.3.1 Changes to Meet the Needs of the Project	4
25	6. Personal Effectiveness	6.3 Flexibility	6.3.2 Changes at the Required Pace	4
26	1. Achievement and Action	1.1 Achievement Orientation	1.1.1 Operates with Intensity to Achieve Project Goals	3.83
27	1. Achievement and Action	1.2 Concern for Order, Quality, and Accuracy	1.2.2 Provides Accurate and Truthful Information	3.83
28	4. Managerial	4.1 Teamwork and Cooperation	4.1.1 Builds Team Orientation Within the Project	3.83
29	4. Managerial	4.2 Developing Others	4.2.1 Builds a Project Culture Where Personal Development Is Encouraged	3.83

30	4. Managerial	4.3 Team Leadership	4.3.2 Leads the Project Team	3.83
31	4. Managerial		4.4.2 Manages the Complete Project	3.83
32	5. Cognitive	5.1 Analytical Thinking	5.1.2 Facilitates Solutions Across All Issues Related to the Project	3.83
33	6. Personal Effectiveness	6.4 Organizational Commitment	6.4.1 Demonstrates Commitment to the Project	3.83
34	1. Achievement and Action	1.3 Initiative	1.3.1 Takes Initiative When Required	3.67
35	4. Managerial	4.1 Teamwork and Cooperation	4.1.3 Undertakes Team-Building Activities	3.67
36	4. Managerial	4.2 Developing Others	4.2.2 Develops Project Members to Effectively Build Project Culture	3.67
37	4. Managerial	4.4 Directiveness: Assertiveness and use of Positional Power	4.4.1 Uses Assertiveness When Necessary	3.67
38	5. Cognitive	5.1 Analytical Thinking	5.1.1 Understands at a Suitable Level All Issues Associated with the Project	3.67
39	6. Personal Effectiveness	6.2 Self-Confidence	6.2.2 Accepts Failure Positively	3.67
40	1. Achievement and Action	1.1 Achievement Orientation	1.1.3 Provides New Solutions in Planning and Delivering Projects	3.5

## Appendix 16 All Competency Elements Weights Selected By Team Members

NO.	Competency Elements			Weight
1	1. Integration Management	1. Initiating	1.1.1 Identify and Document Project Needs; Developing Project-Related Product or Service Descriptions	4.00
2	1. Integration Management	1. Initiating	1.1.2 Perform an Initial Project Feasibility Study and Analysis	4.33
3	1. Integration Management	2. Planning	1.2.1 Conduct Project Plan Development	4.00
4	1. Integration Management	3. Executing	1.3.1 Conduct Project Plan Execution	4.67
5	1. Integration Management	4. Controlling	1.4.1 Conduct Integrated Change Control	4.67
6	1. Integration Management	5. Closing	1.5.1 Conduct Project Closure with Regard to Integration	4.00
7	2. Scope Management	1. Initiating	2.1.1 Prepare Project Charter	3.67
8	2. Scope Management	2. Planning	2.2.1 Conduct Scope Planning	4.33
9	2. Scope Management	2. Planning	2.2.2 Conduct Scope Definition	4.67
10	2. Scope Management	3. Executing	2.3.1 Execute Scope	4.67
11	2. Scope Management	4. Controlling	2.4.1 Conduct Scope Verification	4.33
12	2. Scope Management	4. Controlling	2.4.2 Conduct Scope Change Control	4.67
13	2. Scope Management	5. Closing	2.5.1 Conduct Project Closure with Regard to Scope	4.00
14	3. Time Management	1. Initiating	3.1.1 Preliminary Planning Activities	4.00
15	3. Time Management	2. Planning	3.2.1 Conduct Activity Definition	4.00
16	3. Time Management	2. Planning	3.2.2 Conduct Activity Sequencing	4.33
17	3. Time Management	2. Planning	3.2.3 Conduct Activity Duration Estimating	4.67
18	3. Time Management	2. Planning	3.2.4 Conduct Schedule Development	4.33
19	3. Time Management	3. Executing	3.3.1 Implement Project Schedule	4.67

20	3. Time Management	4. Controlling	3.4.1 Conduct Schedule Control	4.67
21	3. Time Management	5. Closing	3.5.1 Conduct Project Closure with Regard to Time	4.00
22	4. Cost Management	1. Initiating	4.1.1 High-Level Budget Development Preparation	4.00
23	4. Cost Management	2. Planning	4.2.1 Conduct Resource Planning	4.00
24	4. Cost Management	2. Planning	4.2.2 Conduct Cost Estimating	4.33
25	4. Cost Management	2. Planning	4.2.3 Conduct Cost Budgeting	4.33
26	4. Cost Management	3. Executing	4.3.1 Execute Cost Baseline	4.33
27	4. Cost Management	4. Controlling	4.4.1 Conduct Cost Control	4.67
28	4. Cost Management	5. Closing	4.5.1 Conduct Project Closure with Regard to Cost	4.33
29	5. Quality Management	1. Initiating	5.1.1 Determine Quality Requirements	4.33
30	5. Quality Management	2. Planning	5.2.1 Conduct Quality Planning	4.33
31	5. Quality Management	3. Executing	5.3.1 Conduct Quality Assurance	4.67
32	5. Quality Management	4. Controlling	5.4.1 Conduct Quality Control	4.67
33	5. Quality Management	5. Closing	5.5.1 Conduct Project Closure with Regard to Quality	4.33
34	6. Human Resources Management	1. Initiating	6.1.1 Conduct Organizational Definition	3.67
35	6. Human Resources Management	2. Planning	6.2.1 Conduct Organizational Planning	4.00
36	6. Human Resources Management	2. Planning	6.2.2 Conduct Staff Acquisition	5.00
37	6. Human Resources Management	3. Executing	6.3.1 Conduct Team Development	5.00
38	6. Human Resources Management	4. Controlling	6.4.1 Manage Human Resources	5.00
39	6. Human Resources Management	5. Closing	6.5.1 Conduct Project Closure with Regard to HR Management	4.33

40	7. Communications Management	1. Initiating	7.1.1 Preliminary Communications Planning	4.00
41	7. Communications Management	2. Planning	7.2.1 Conduct Communications Planning	4.67
42	7. Communications Management	3. Executing	7.3.1 Conduct Information Distribution	4.67
43	7. Communications Management	3. Executing	7.3.2 Implement Project Time Reporting	4.67
44	7. Communications Management	4. Controlling	7.4.1 Conduct Project Performance Reporting	4.67
45	7. Communications Management	5. Closing	7.5.1 Conduct Administrative Closeout	4.00
46	8. Risk Management	1. Initiating	8.1.1 Conduct Preliminary Risk Planning	3.67
47	8. Risk Management	2. Planning	8.2.1 Develop Risk Management Plan	4.33
48	8. Risk Management	2. Planning	8.2.2 Conduct Risk Identification	4.33
49	8. Risk Management	2. Planning	8.2.3 Conduct Qualitative Risk Analysis	4.33
50	8. Risk Management	2. Planning	8.2.4 Conduct Quantitative Risk Analysis	4.00
51	8. Risk Management	2. Planning	8.2.5 Conduct Risk Response Planning	4.33
52	8. Risk Management	3. Executing	8.3.1 Execute Risk Response Plan	4.33
53	8. Risk Management	4. Controlling	8.4.1 Conduct Risk Monitoring and Control	4.67
54	8. Risk Management	5. Closing	8.5.1 Conduct Project Closure with Regard to Risk Management	4.00
55	9. Procurement Management	1. Initiating	9.1.1 Preliminary Procurement Planning	4.00

56	9. Procurement Management	2.Planning	9.2.1 Conduct Procurement Planning	4.00
57	9. Procurement Management	2.Planning	9.2.2 Conduct Solicitation Planning	4.00
58	9. Procurement Management	3.Executing	9.3.1 Conduct Solicitation	4.33
59	9. Procurement Management	3.Executing	9.3.2 Conduct Source Selection/Contract Development	4.67
60	9. Procurement Management	3.Executing	9.3.3 Conduct Contract Administration	4.00
61	9. Procurement Management	4.Controlling	9.4.1 Manage and Review Contract Performance	5.00
62	9. Procurement Management	5.Closing	9.5.1 Conduct Contract Closeout	4.33
63	1. Achievement and Action	1.1 Achievement Orientation	1.1.1 Operates with Intensity to Achieve Project Goals	4.00
64	1. Achievement and Action	1.1 Achievement Orientation	1.1.2 Motivates Project Stakeholders in a Positive Way	4.33
65	1. Achievement and Action	1.1 Achievement Orientation	1.1.3 Provides New Solutions in Planning and Delivering Projects	3.67
66	1. Achievement and Action	1.1 Achievement Orientation	1.1.4 Operates with Individual Integrity and Personal Professionalism	4.33
67	1. Achievement and Action	1.2 Concern for Order, Quality, and Accuracy	1.2.1 Manages Projects in an Ordered, Accurate Way	4.00
68	1. Achievement and Action	1.2 Concern for Order, Quality, and Accuracy	1.2.2 Provides Accurate and Truthful Information	4.00

69	1. Achievement and Action	1.3 Initiative	1.3.1 Takes Initiative When Required	4.00
70	1. Achievement and Action	1.3 Initiative	1.3.2 Takes Accountability for and Delivers Project	4.33
71	1. Achievement and Action	1.3 Initiative	1.3.3 Seeks New Opportunities	4.00
72	1. Achievement and Action	1.3 Initiative	1.3.4 Strives for Best Practice	3.67
73	1. Achievement and Action	1.4 Information Seeking	1.4.1 Ensures Information Used to Manage Project is Complete and Accurate	4.00
74	2. Helping and Human Service	2.1 Customer Service Orientation	2.1.1 Represents the Client Inside the Project	4.33
75	2. Helping and Human Service	2.1 Customer Service Orientation	2.1.2 Takes Initiatives to Provide Excellent Client Service	4.00
76	2. Helping and Human Service	2.2 Interpersonal Understanding	2.2.1 Strives to Understand All Project Stakeholders' Thoughts, Feelings, and Concerns	4.00
77	2. Helping and Human Service	2.2 Interpersonal Understanding	2.2.2 Listens and Responds to Others	4.00
78	3. Impact and Influence	3.1 Impact and Influence	3.1.1 Takes Appropriate Actions to Influence Others	4.33
79	3. Impact and Influence	3.1 Impact and Influence	3.1.2 Influences Across Projects and Organizations	3.67
80	3. Impact and Influence	3.1 Impact and Influence	3.1.3 Understands and Influences Project Team Members	4.00
81	3. Impact and Influence	3.2 Organization Awareness	3.2.1 Understands the Organization	4.00
82	3. Impact and Influence	3.2 Organization Awareness	3.2.2 Understands the Project	4.00

83	3. Impact and Influence	3.3 Relationship Building	3.3.1 Builds and Maintains Suitable Relationships with Project Stakeholders	4.33
84	3. Impact and Influence	3.3 Relationship Building	3.3.2 Establishes and Maintains Relationships at the Right Level Inside and Outside the Organizations	4.00
85	4. Managerial	4.1 Teamwork and Cooperation	4.1.1 Builds Team Orientation Within the Project	4.33
86	4. Managerial	4.1 Teamwork and Cooperation	4.1.2 Molds Core Project Stakeholders into a Team	4.33
87	4. Managerial	4.1 Teamwork and Cooperation	4.1.3 Undertakes Team-Building Activities	4.33
88	4. Managerial	4.2 Developing Others	4.2.1 Builds a Project Culture Where Personal Development Is Encouraged	4.33
89	4. Managerial	4.2 Developing Others	4.2.2 Develops Project Members to Effectively Build Project Culture	4.33
90	4. Managerial	4.3 Team Leadership	4.3.1 Demonstrates Leadership of the Project	4.00
91	4. Managerial	4.3 Team Leadership	4.3.2 Leads the Project Team	4.00
92	4. Managerial	4.4 Directiveness: Assertiveness and use of Positional Power	4.4.1 Uses Assertiveness When Necessary	3.67
93	4. Managerial		4.4.2 Manages the Complete Project	4.33
94	5. Cognitive	5.1 Analytical Thinking	5.1.1 Understands at a Suitable Level All Issues Associated with the Project	3.67
95	5. Cognitive	5.1 Analytical Thinking	5.1.2 Facilitates Solutions Across All Issues Related to the Project	3.67
96	5. Cognitive	5.2 Conceptual thinking	5.2.1 Sees the Project in a Holistic Way	4.33
97	6. Personal Effectiveness	6.1 Self-Control	6.1.1 Maintains Self-Control	4.33

98	6. Personal Effectiveness	6.2 Self-Confidence	6.2.1 Creates an Environment of Confidence	4.00
99	6. Personal Effectiveness	6.2 Self-Confidence	6.2.2 Accepts Failure Positively	4.00
100	6. Personal Effectiveness	6.3 Flexibility	6.3.1 Changes to Meet the Needs of the Project	4.00
101	6. Personal Effectiveness	6.3 Flexibility	6.3.2 Changes at the Required Pace	4.00
102	6. Personal Effectiveness	6.4 Organizational Commitment	6.4.1 Demonstrates Commitment to the Project	4.00

## Appendix 17 All Competency Elements Priority Selected By Team Members

NO.	Competency Elements				Weight
1	6. Human Resources Management	2.Planning	6.2.2 Conduct Staff Acquisition	5.00	
2	6. Human Resources Management	3.Executing	6.3.1 Conduct Team Development	5.00	
3	6. Human Resources Management	4.Controlling	6.4.1 Manage Human Resources	5.00	
4	9. Procurement Management	4.Controlling	9.4.1 Manage and Review Contract Performance	5.00	
5	1. Integration Management	3.Executing	1.3.1 Conduct Project Plan Execution	4.67	
6	1. Integration Management	4.Controlling	1.4.1 Conduct Integrated Change Control	4.67	
7	2. Scope Management	2.Planning	2.2.2 Conduct Scope Definition	4.67	
8	2. Scope Management	3.Executing	2.3.1 Execute Scope	4.67	
9	2. Scope Management	4.Controlling	2.4.2 Conduct Scope Change Control	4.67	
10	3. Time Management	2.Planning	3.2.3 Conduct Activity Duration Estimating	4.67	
11	3. Time Management	3.Executing	3.3.1 Implement Project Schedule	4.67	
12	3. Time Management	4.Controlling	3.4.1 Conduct Schedule Control	4.67	
13	4. Cost Management	4.Controlling	4.4.1 Conduct Cost Control	4.67	
14	5. Quality Management	3.Executing	5.3.1 Conduct Quality Assurance	4.67	
15	5. Quality Management	4.Controlling	5.4.1 Conduct Quality Control	4.67	
16	7. Communications Management	2.Planning	7.2.1 Conduct Communications Planning	4.67	
17	7. Communications Management	3.Executing	7.3.1 Conduct Information Distribution	4.67	
18	7. Communications Management	3.Executing	7.3.2 Implement Project Time Reporting	4.67	
19	7. Communications Management	4.Controlling	7.4.1 Conduct Project Performance Reporting	4.67	

20	8. Risk Management	4. Controlling	8.4.1 Conduct Risk Monitoring and Control	4.67
21	9. Procurement Management	3. Executing	9.3.2 Conduct Source Selection/Contract Development	4.67
22	1. Achievement and Action	1.1 Achievement Orientation	1.1.2 Motivates Project Stakeholders in a Positive Way	4.33
23	1. Achievement and Action	1.1 Achievement Orientation	1.1.4 Operates with Individual Integrity and Personal Professionalism	4.33
24	1. Achievement and Action	1.3 Initiative	1.3.2 Takes Accountability for and Delivers Project	4.33
25	1. Integration Management	1. Initiating	1.1.2 Perform an Initial Project Feasibility Study and Analysis	4.33
26	2. Helping and Human Service	2.1 Customer Service Orientation	2.1.1 Represents the Client Inside the Project	4.33
27	2. Scope Management	2. Planning	2.2.1 Conduct Scope Planning	4.33
28	2. Scope Management	4. Controlling	2.4.1 Conduct Scope Verification	4.33
29	3. Impact and Influence	3.1 Impact and Influence	3.1.1 Takes Appropriate Actions to Influence Others	4.33
30	3. Impact and Influence	3.3 Relationship Building	3.3.1 Builds and Maintains Suitable Relationships with Project Stakeholders	4.33
31	3. Time Management	2. Planning	3.2.2 Conduct Activity Sequencing	4.33
32	3. Time Management	2. Planning	3.2.4 Conduct Schedule Development	4.33
33	4. Cost Management	2. Planning	4.2.2 Conduct Cost Estimating	4.33
34	4. Cost Management	2. Planning	4.2.3 Conduct Cost Budgeting	4.33
35	4. Cost Management	3. Executing	4.3.1 Execute Cost Baseline	4.33
36	4. Cost Management	5. Closing	4.5.1 Conduct Project Closure with Regard to Cost	4.33

37	4. Managerial	4.1 Teamwork and Cooperation	4.1.1 Builds Team Orientation Within the Project	4.33
38	4. Managerial	4.1 Teamwork and Cooperation	4.1.2 Molds Core Project Stakeholders into a Team	4.33
39	4. Managerial	4.1 Teamwork and Cooperation	4.1.3 Undertakes Team-Building Activities	4.33
40	4. Managerial	4.2 Developing Others	4.2.1 Builds a Project Culture Where Personal Development Is Encouraged	4.33
41	4. Managerial	4.2 Developing Others	4.2.2 Develops Project Members to Effectively Build Project Culture	4.33
42	4. Managerial		4.4.2 Manages the Complete Project	4.33
43	5. Cognitive	5.2 Conceptual thinking	5.2.1 Sees the Project in a Holistic Way	4.33
44	5. Quality Management	1. Initiating	5.1.1 Determine Quality Requirements	4.33
45	5. Quality Management	2. Planning	5.2.1 Conduct Quality Planning	4.33
46	5. Quality Management	5. Closing	5.5.1 Conduct Project Closure with Regard to Quality	4.33
47	6. Human Resources Management	5. Closing	6.5.1 Conduct Project Closure with Regard to HR Management	4.33
48	6. Personal Effectiveness	6.1 Self-Control	6.1.1 Maintains Self-Control	4.33
49	8. Risk Management	2. Planning	8.2.1 Develop Risk Management Plan	4.33
50	8. Risk Management	2. Planning	8.2.2 Conduct Risk Identification	4.33
51	8. Risk Management	2. Planning	8.2.3 Conduct Qualitative Risk Analysis	4.33
52	8. Risk Management	2. Planning	8.2.5 Conduct Risk Response Planning	4.33
53	8. Risk Management	3. Executing	8.3.1 Execute Risk Response Plan	4.33
54	9. Procurement Management	3. Executing	9.3.1 Conduct Solicitation	4.33

55	9. Procurement Management	5.Closing	9.5.1 Conduct Contract Closeout	4.33
56	1. Achievement and Action	1.1 Achievement Orientation	1.1.1 Operates with Intensity to Achieve Project Goals	4.00
57	1. Achievement and Action	1.2 Concern for Order, Quality, and Accuracy	1.2.1 Manages Projects in an Ordered, Accurate Way	4.00
58	1. Achievement and Action	1.2 Concern for Order, Quality, and Accuracy	1.2.2 Provides Accurate and Truthful Information	4.00
59	1. Achievement and Action	1.3 Initiative	1.3.1 Takes Initiative When Required	4.00
60	1. Achievement and Action	1.3 Initiative	1.3.3 Seeks New Opportunities	4.00
61	1. Achievement and Action	1.4 Information Seeking	1.4.1 Ensures Information Used to Manage Project is Complete and Accurate	4.00
62	1. Integration Management	1.Initiating	1.1.1 Identify and Document Project Needs; Developing Project-Related Product or Service Descriptions	4.00
63	1. Integration Management	2.Planning	1.2.1 Conduct Project Plan Development	4.00
64	1. Integration Management	5.Closing	1.5.1 Conduct Project Closure with Regard to Integration	4.00
65	2. Helping and Human Service	2.1 Customer Service Orientation	2.1.2 Takes Initiatives to Provide Excellent Client Service	4.00
66	2. Helping and Human Service	2.2 Interpersonal Understanding	2.2.1 Strives to Understand All Project Stakeholders' Thoughts, Feelings, and Concerns	4.00
67	2. Helping and Human Service	2.2 Interpersonal Understanding	2.2.2 Listens and Responds to Others	4.00
68	2. Scope Management	5.Closing	2.5.1 Conduct Project Closure with Regard to Scope	4.00
69	3. Impact and Influence	3.1 Impact and Influence	3.1.3 Understands and Influences Project Team Members	4.00

70	3. Impact and Influence	3.2 Organization Awareness	3.2.1 Understands the Organization	4.00
71	3. Impact and Influence	3.2 Organization Awareness	3.2.2 Understands the Project	4.00
72	3. Impact and Influence	3.3 Relationship Building	3.3.2 Establishes and Maintains Relationships at the Right Level Inside and Outside the Organizations	4.00
73	3. Time Management	1. Initiating	3.1.1 Preliminary Planning Activities	4.00
74	3. Time Management	2. Planning	3.2.1 Conduct Activity Definition	4.00
75	3. Time Management	5. Closing	3.5.1 Conduct Project Closure with Regard to Time	4.00
76	4. Cost Management	1. Initiating	4.1.1 High-Level Budget Development Preparation	4.00
77	4. Cost Management	2. Planning	4.2.1 Conduct Resource Planning	4.00
78	4. Managerial	4.3 Team Leadership	4.3.1 Demonstrates Leadership of the Project	4.00
79	4. Managerial	4.3 Team Leadership	4.3.2 Leads the Project Team	4.00
80	6. Human Resources Management	2. Planning	6.2.1 Conduct Organizational Planning	4.00
81	6. Personal Effectiveness	6.2 Self-Confidence	6.2.1 Creates an Environment of Confidence	4.00
82	6. Personal Effectiveness	6.2 Self-Confidence	6.2.2 Accepts Failure Positively	4.00
83	6. Personal Effectiveness	6.3 Flexibility	6.3.1 Changes to Meet the Needs of the Project	4.00
84	6. Personal Effectiveness	6.3 Flexibility	6.3.2 Changes at the Required Pace	4.00
85	6. Personal Effectiveness	6.4 Organizational Commitment	6.4.1 Demonstrates Commitment to the Project	4.00
86	7. Communications Management	1. Initiating	7.1.1 Preliminary Communications Planning	4.00
87	7. Communications Management	5. Closing	7.5.1 Conduct Administrative Closeout	4.00
88	8. Risk Management	2. Planning	8.2.4 Conduct Quantitative Risk Analysis	4.00
89	8. Risk Management	5. Closing	8.5.1 Conduct Project Closure with Regard to Risk Management	4.00
90	9. Procurement Management	1. Initiating	9.1.1 Preliminary Procurement Planning	4.00

91	9. Procurement Management	2.Planning	9.2.1 Conduct Procurement Planning	4.00
92	9. Procurement Management	2.Planning	9.2.2 Conduct Solicitation Planning	4.00
93	9. Procurement Management	3.Executing	9.3.3 Conduct Contract Administration	4.00
94	1. Achievement and Action	1.1 Achievement Orientation	1.1.3 Provides New Solutions in Planning and Delivering Projects	3.67
95	1. Achievement and Action	1.3 Initiative	1.3.4 Strives for Best Practice	3.67
96	2. Scope Management	1.Initiating	2.1.1 Prepare Project Charter	3.67
97	3. Impact and Influence	3.1 Impact and Influence	3.1.2 Influences Across Projects and Organizations	3.67
98	4. Managerial	4.4 Directiveness: Assertiveness and use of Positional Power	4.4.1 Uses Assertiveness When Necessary	3.67
99	5. Cognitive	5.1 Analytical Thinking	5.1.1 Understands at a Suitable Level All Issues Associated with the Project	3.67
100	5. Cognitive	5.1 Analytical Thinking	5.1.2 Facilitates Solutions Across All Issues Related to the Project	3.67
101	6. Human Resources Management	1.Initiating	6.1.1 Conduct Organizational Definition	3.67
2	8. Risk Management	1.Initiating	8.1.1 Conduct Preliminary Risk Planning	3.67

## Appendix 18 Knowledge and Performance Competency Elements Weights Selected By Team Members

NO.	Competency Elements			Weight
1	1. Integration Management	1. Initiating	1.1.1 Identify and Document Project Needs; Developing Project-Related Product or Service Descriptions	4.00
2	1. Integration Management	1. Initiating	1.1.2 Perform an Initial Project Feasibility Study and Analysis	4.33
3	1. Integration Management	2. Planning	1.2.1 Conduct Project Plan Development	4.00
4	1. Integration Management	3. Executing	1.3.1 Conduct Project Plan Execution	4.67
5	1. Integration Management	4. Controlling	1.4.1 Conduct Integrated Change Control	4.67
6	1. Integration Management	5. Closing	1.5.1 Conduct Project Closure with Regard to Integration	4.00
7	2. Scope Management	1. Initiating	2.1.1 Prepare Project Charter	3.67
8	2. Scope Management	2. Planning	2.2.1 Conduct Scope Planning	4.33
9	2. Scope Management	2. Planning	2.2.2 Conduct Scope Definition	4.67
10	2. Scope Management	3. Executing	2.3.1 Execute Scope	4.67
11	2. Scope Management	4. Controlling	2.4.1 Conduct Scope Verification	4.33
12	2. Scope Management	4. Controlling	2.4.2 Conduct Scope Change Control	4.67
13	2. Scope Management	5. Closing	2.5.1 Conduct Project Closure with Regard to Scope	4.00
14	3. Time Management	1. Initiating	3.1.1 Preliminary Planning Activities	4.00
15	3. Time Management	2. Planning	3.2.1 Conduct Activity Definition	4.00
16	3. Time Management	2. Planning	3.2.2 Conduct Activity Sequencing	4.33
17	3. Time Management	2. Planning	3.2.3 Conduct Activity Duration Estimating	4.67

18	3. Time Management	2.Planning	3.2.4 Conduct Schedule Development	4.33
19	3. Time Management	3.Executing	3.3.1 Implement Project Schedule	4.67
20	3. Time Management	4.Controlling	3.4.1 Conduct Schedule Control	4.67
21	3. Time Management	5.Closing	3.5.1 Conduct Project Closure with Regard to Time	4.00
22	4. Cost Management	1.Initiating	4.1.1 High-Level Budget Development Preparation	4.00
23	4. Cost Management	2.Planning	4.2.1 Conduct Resource Planning	4.00
24	4. Cost Management	2.Planning	4.2.2 Conduct Cost Estimating	4.33
25	4. Cost Management	2.Planning	4.2.3 Conduct Cost Budgeting	4.33
26	4. Cost Management	3.Executing	4.3.1 Execute Cost Baseline	4.33
27	4. Cost Management	4.Controlling	4.4.1 Conduct Cost Control	4.67
28	4. Cost Management	5.Closing	4.5.1 Conduct Project Closure with Regard to Cost	4.33
29	5. Quality Management	1.Initiating	5.1.1 Determine Quality Requirements	4.33
30	5. Quality Management	2.Planning	5.2.1 Conduct Quality Planning	4.33
31	5. Quality Management	3.Executing	5.3.1 Conduct Quality Assurance	4.67
32	5. Quality Management	4.Controlling	5.4.1 Conduct Quality Control	4.67
33	5. Quality Management	5.Closing	5.5.1 Conduct Project Closure with Regard to Quality	4.33
34	6. Human Resources Management	1.Initiating	6.1.1 Conduct Organizational Definition	3.67
35	6. Human Resources Management	2.Planning	6.2.1 Conduct Organizational Planning	4.00
36	6. Human Resources Management	2.Planning	6.2.2 Conduct Staff Acquisition	5.00
37	6. Human Resources Management	3.Executing	6.3.1 Conduct Team Development	5.00
38	6. Human Resources Management	4.Controlling	6.4.1 Manage Human Resources	5.00
39	6. Human Resources Management	5.Closing	6.5.1 Conduct Project Closure with Regard to HR Management	4.33

40	7. Communications Management	1. Initiating	7.1.1 Preliminary Communications Planning	4.00
41	7. Communications Management	2. Planning	7.2.1 Conduct Communications Planning	4.67
42	7. Communications Management	3. Executing	7.3.1 Conduct Information Distribution	4.67
43	7. Communications Management	3. Executing	7.3.2 Implement Project Time Reporting	4.67
44	7. Communications Management	4. Controlling	7.4.1 Conduct Project Performance Reporting	4.67
45	7. Communications Management	5. Closing	7.5.1 Conduct Administrative Closeout	4.00
46	8. Risk Management	1. Initiating	8.1.1 Conduct Preliminary Risk Planning	3.67
47	8. Risk Management	2. Planning	8.2.1 Develop Risk Management Plan	4.33
48	8. Risk Management	2. Planning	8.2.2 Conduct Risk Identification	4.33
49	8. Risk Management	2. Planning	8.2.3 Conduct Qualitative Risk Analysis	4.33
50	8. Risk Management	2. Planning	8.2.4 Conduct Quantitative Risk Analysis	4.00
51	8. Risk Management	2. Planning	8.2.5 Conduct Risk Response Planning	4.33
52	8. Risk Management	3. Executing	8.3.1 Execute Risk Response Plan	4.33
53	8. Risk Management	4. Controlling	8.4.1 Conduct Risk Monitoring and Control	4.67
54	8. Risk Management	5. Closing	8.5.1 Conduct Project Closure with Regard to Risk Management	4.00
55	9. Procurement Management	1. Initiating	9.1.1 Preliminary Procurement Planning	4.00
56	9. Procurement Management	2. Planning	9.2.1 Conduct Procurement Planning	4.00

57	9. Procurement Management	2.Planning	9.2.2 Conduct Solicitation Planning	4.00
58	9. Procurement Management	3.Executing	9.3.1 Conduct Solicitation	4.33
59	9. Procurement Management	3.Executing	9.3.2 Conduct Source Selection/Contract Development	4.67
60	9. Procurement Management	3.Executing	9.3.3 Conduct Contract Administration	4.00
61	9. Procurement Management	4.Controlling	9.4.1 Manage and Review Contract Performance	5.00
62	9. Procurement Management	5.Closing	9.5.1 Conduct Contract Closeout	4.33

## Appendix 19 Knowledge and Performance Competency Elements Priority Selected By Team Members

NO.	Competency Elements			Weight
1	6. Human Resources Management	2.Planning	6.2.2 Conduct Staff Acquisition	5.00
2	6. Human Resources Management	3.Executing	6.3.1 Conduct Team Development	5.00
3	6. Human Resources Management	4.Controlling	6.4.1 Manage Human Resources	5.00
4	9. Procurement Management	4.Controlling	9.4.1 Manage and Review Contract Performance	5.00
5	1. Integration Management	3.Executing	1.3.1 Conduct Project Plan Execution	4.67
6	1. Integration Management	4.Controlling	1.4.1 Conduct Integrated Change Control	4.67
7	2. Scope Management	2.Planning	2.2.2 Conduct Scope Definition	4.67
8	2. Scope Management	3.Executing	2.3.1 Execute Scope	4.67
9	2. Scope Management	4.Controlling	2.4.2 Conduct Scope Change Control	4.67
10	3. Time Management	2.Planning	3.2.3 Conduct Activity Duration Estimating	4.67
11	3. Time Management	3.Executing	3.3.1 Implement Project Schedule	4.67
12	3. Time Management	4.Controlling	3.4.1 Conduct Schedule Control	4.67
13	4. Cost Management	4.Controlling	4.4.1 Conduct Cost Control	4.67
14	5. Quality Management	3.Executing	5.3.1 Conduct Quality Assurance	4.67
15	5. Quality Management	4.Controlling	5.4.1 Conduct Quality Control	4.67
16	7. Communications Management	2.Planning	7.2.1 Conduct Communications Planning	4.67
17	7. Communications Management	3.Executing	7.3.1 Conduct Information Distribution	4.67
18	7. Communications Management	3.Executing	7.3.2 Implement Project Time Reporting	4.67

19	7. Communications Management	4. Controlling	7.4.1 Conduct Project Performance Reporting	4.67
20	8. Risk Management	4. Controlling	8.4.1 Conduct Risk Monitoring and Control	4.67
21	9. Procurement Management	3. Executing	9.3.2 Conduct Source Selection/Contract Development	4.67
22	1. Integration Management	1. Initiating	1.1.2 Perform an Initial Project Feasibility Study and Analysis	4.33
23	2. Scope Management	2. Planning	2.2.1 Conduct Scope Planning	4.33
24	2. Scope Management	4. Controlling	2.4.1 Conduct Scope Verification	4.33
25	3. Time Management	2. Planning	3.2.2 Conduct Activity Sequencing	4.33
26	3. Time Management	2. Planning	3.2.4 Conduct Schedule Development	4.33
27	4. Cost Management	2. Planning	4.2.2 Conduct Cost Estimating	4.33
28	4. Cost Management	2. Planning	4.2.3 Conduct Cost Budgeting	4.33
29	4. Cost Management	3. Executing	4.3.1 Execute Cost Baseline	4.33
30	4. Cost Management	5. Closing	4.5.1 Conduct Project Closure with Regard to Cost	4.33
31	5. Quality Management	1. Initiating	5.1.1 Determine Quality Requirements	4.33
32	5. Quality Management	2. Planning	5.2.1 Conduct Quality Planning	4.33
33	5. Quality Management	5. Closing	5.5.1 Conduct Project Closure with Regard to Quality	4.33
34	6. Human Resources Management	5. Closing	6.5.1 Conduct Project Closure with Regard to HR Management	4.33
35	8. Risk Management	2. Planning	8.2.1 Develop Risk Management Plan	4.33
36	8. Risk Management	2. Planning	8.2.2 Conduct Risk Identification	4.33
37	8. Risk Management	2. Planning	8.2.3 Conduct Qualitative Risk Analysis	4.33
38	8. Risk Management	2. Planning	8.2.5 Conduct Risk Response Planning	4.33
39	8. Risk Management	3. Executing	8.3.1 Execute Risk Response Plan	4.33
40	9. Procurement Management	3. Executing	9.3.1 Conduct Solicitation	4.33

41	9. Procurement Management	5.Closing	9.5.1 Conduct Contract Closeout	4.33
42	1. Integration Management	1.Initiating	1.1.1 Identify and Document Project Needs; Developing Project-Related Product or Service Descriptions	4.00
43	1. Integration Management	2.Planning	1.2.1 Conduct Project Plan Development	4.00
44	1. Integration Management	5.Closing	1.5.1 Conduct Project Closure with Regard to Integration	4.00
45	2. Scope Management	5.Closing	2.5.1 Conduct Project Closure with Regard to Scope	4.00
46	3. Time Management	1.Initiating	3.1.1 Preliminary Planning Activities	4.00
47	3. Time Management	2.Planning	3.2.1 Conduct Activity Definition	4.00
48	3. Time Management	5.Closing	3.5.1 Conduct Project Closure with Regard to Time	4.00
49	4. Cost Management	1.Initiating	4.1.1 High-Level Budget Development Preparation	4.00
50	4. Cost Management	2.Planning	4.2.1 Conduct Resource Planning	4.00
51	6. Human Resources Management	2.Planning	6.2.1 Conduct Organizational Planning	4.00
52	7. Communications Management	1.Initiating	7.1.1 Preliminary Communications Planning	4.00
53	7. Communications Management	5.Closing	7.5.1 Conduct Administrative Closeout	4.00
54	8. Risk Management	2.Planning	8.2.4 Conduct Quantitative Risk Analysis	4.00
55	8. Risk Management	5.Closing	8.5.1 Conduct Project Closure with Regard to Risk Management	4.00
56	9. Procurement Management	1.Initiating	9.1.1 Preliminary Procurement Planning	4.00
57	9. Procurement Management	2.Planning	9.2.1 Conduct Procurement Planning	4.00
58	9. Procurement Management	2.Planning	9.2.2 Conduct Solicitation Planning	4.00
59	9. Procurement Management	3.Executing	9.3.3 Conduct Contract Administration	4.00

60	2. Scope Management	1. Initiating	2.1.1 Prepare Project Charter	3.67
61	6. Human Resources Management	1. Initiating	6.1.1 Conduct Organizational Definition	3.67
62	8. Risk Management	1. Initiating	8.1.1 Conduct Preliminary Risk Planning	3.67

## Appendix 20 Personal Competency Elements Weights Selected By Team Members

NO.		Competency Elements			Weight
1	1. Achievement and Action	1.1 Achievement Orientation	1.1.1 Operates with Intensity to Achieve Project Goals	4.00	
2	1. Achievement and Action	1.1 Achievement Orientation	1.1.2 Motivates Project Stakeholders in a Positive Way	4.33	
3	1. Achievement and Action	1.1 Achievement Orientation	1.1.3 Provides New Solutions in Planning and Delivering Projects	3.67	
4	1. Achievement and Action	1.1 Achievement Orientation	1.1.4 Operates with Individual Integrity and Personal Professionalism	4.33	
5	1. Achievement and Action	1.2 Concern for Order, Quality, and Accuracy	1.2.1 Manages Projects in an Ordered, Accurate Way	4.00	
6	1. Achievement and Action	1.2 Concern for Order, Quality, and Accuracy	1.2.2 Provides Accurate and Truthful Information	4.00	
7	1. Achievement and Action	1.3 Initiative	1.3.1 Takes Initiative When Required	4.00	
8	1. Achievement and Action	1.3 Initiative	1.3.2 Takes Accountability for and Delivers Project	4.33	
9	1. Achievement and Action	1.3 Initiative	1.3.3 Seeks New Opportunities	4.00	
10	1. Achievement and Action	1.3 Initiative	1.3.4 Strives for Best Practice	3.67	
11	1. Achievement and Action	1.4 Information Seeking	1.4.1 Ensures Information Used to Manage Project is Complete and Accurate	4.00	
12	2. Helping and Human Service	2.1 Customer Service Orientation	2.1.1 Represents the Client Inside the Project	4.33	
13	2. Helping and Human Service	2.1 Customer Service Orientation	2.1.2 Takes Initiatives to Provide Excellent Client Service	4.00	

14	2. Helping and Human Service	2.2 Interpersonal Understanding	2.2.1 Strives to Understand All Project Stakeholders' Thoughts, Feelings, and Concerns	4.00
15	2. Helping and Human Service	2.2 Interpersonal Understanding	2.2.2 Listens and Responds to Others	4.00
16	3. Impact and Influence	3.1 Impact and Influence	3.1.1 Takes Appropriate Actions to Influence Others	4.33
17	3. Impact and Influence	3.1 Impact and Influence	3.1.2 Influences Across Projects and Organizations	3.67
18	3. Impact and Influence	3.1 Impact and Influence	3.1.3 Understands and Influences Project Team Members	4.00
19	3. Impact and Influence	3.2 Organization Awareness	3.2.1 Understands the Organization	4.00
20	3. Impact and Influence	3.2 Organization Awareness	3.2.2 Understands the Project	4.00
21	3. Impact and Influence	3.3 Relationship Building	3.3.1 Builds and Maintains Suitable Relationships with Project Stakeholders	4.33
22	3. Impact and Influence	3.3 Relationship Building	3.3.2 Establishes and Maintains Relationships at the Right Level Inside and Outside the Organizations	4.00
23	4. Managerial	4.1 Teamwork and Cooperation	4.1.1 Builds Team Orientation Within the Project	4.33
24	4. Managerial	4.1 Teamwork and Cooperation	4.1.2 Molds Core Project Stakeholders into a Team	4.33
25	4. Managerial	4.1 Teamwork and Cooperation	4.1.3 Undertakes Team-Building Activities	4.33
26	4. Managerial	4.2 Developing Others	4.2.1 Builds a Project Culture Where Personal Development Is Encouraged	4.33
27	4. Managerial	4.2 Developing Others	4.2.2 Develops Project Members to Effectively Build Project Culture	4.33
28	4. Managerial	4.3 Team Leadership	4.3.1 Demonstrates Leadership of the Project	4.00
29	4. Managerial	4.3 Team Leadership	4.3.2 Leads the Project Team	4.00
30	4. Managerial	4.4 Directiveness: Assertiveness and use of Positional Power	4.4.1 Uses Assertiveness When Necessary	3.67
31	4. Managerial		4.4.2 Manages the Complete Project	4.33

32	5. Cognitive	5.1 Analytical Thinking	5.1.1 Understands at a Suitable Level All Issues Associated with the Project	3.67
33	5. Cognitive	5.1 Analytical Thinking	5.1.2 Facilitates Solutions Across All Issues Related to the Project	3.67
34	5. Cognitive	5.2 Conceptual thinking	5.2.1 Sees the Project in a Holistic Way	4.33
35	6. Personal Effectiveness	6.1 Self-Control	6.1.1 Maintains Self-Control	4.33
36	6. Personal Effectiveness	6.2 Self-Confidence	6.2.1 Creates an Environment of Confidence	4.00
37	6. Personal Effectiveness	6.2 Self-Confidence	6.2.2 Accepts Failure Positively	4.00
38	6. Personal Effectiveness	6.3 Flexibility	6.3.1 Changes to Meet the Needs of the Project	4.00
39	6. Personal Effectiveness	6.3 Flexibility	6.3.2 Changes at the Required Pace	4.00
40	6. Personal Effectiveness	6.4 Organizational Commitment	6.4.1 Demonstrates Commitment to the Project	4.00

## Appendix 21 Personal Competency Elements Priority Selected By Team Members

NO.	Competency Elements			Weight
	Achievement and Action	Achievement Orientation	Competency Elements	
1	1. Achievement and Action	1.1 Achievement Orientation	1.1.2 Motivates Project Stakeholders in a Positive Way	4.33
2	1. Achievement and Action	1.1 Achievement Orientation	1.1.4 Operates with Individual Integrity and Personal Professionalism	4.33
3	1. Achievement and Action	1.3 Initiative	1.3.2 Takes Accountability for and Delivers Project	4.33
4	2. Helping and Human Service	2.1 Customer Service Orientation	2.1.1 Represents the Client Inside the Project	4.33
5	3. Impact and Influence	3.1 Impact and Influence	3.1.1 Takes Appropriate Actions to Influence Others	4.33
6	3. Impact and Influence	3.3 Relationship Building	3.3.1 Builds and Maintains Suitable Relationships with Project Stakeholders	4.33
7	4. Managerial	4.1 Teamwork and Cooperation	4.1.1 Builds Team Orientation Within the Project	4.33
8	4. Managerial	4.1 Teamwork and Cooperation	4.1.2 Molds Core Project Stakeholders into a Team	4.33
9	4. Managerial	4.1 Teamwork and Cooperation	4.1.3 Undertakes Team-Building Activities	4.33
10	4. Managerial	4.2 Developing Others	4.2.1 Builds a Project Culture Where Personal Development Is Encouraged	4.33
11	4. Managerial	4.2 Developing Others	4.2.2 Develops Project Members to Effectively Build Project Culture	4.33
12	4. Managerial		4.4.2 Manages the Complete Project	4.33
13	5. Cognitive	5.2 Conceptual thinking	5.2.1 Sees the Project in a Holistic Way	4.33
14	6. Personal Effectiveness	6.1 Self-Control	6.1.1 Maintains Self-Control	4.33
15	1. Achievement and Action	1.1 Achievement Orientation	1.1.1 Operates with Intensity to Achieve Project Goals	4.00

16	1. Achievement and Action	1.2 Concern for Order, Quality, and Accuracy	1.2.1 Manages Projects in an Ordered, Accurate Way	4.00
17	1. Achievement and Action	1.2 Concern for Order, Quality, and Accuracy	1.2.2 Provides Accurate and Truthful Information	4.00
18	1. Achievement and Action	1.3 Initiative	1.3.1 Takes Initiative When Required	4.00
19	1. Achievement and Action	1.3 Initiative	1.3.3 Seeks New Opportunities	4.00
20	1. Achievement and Action	1.4 Information Seeking	1.4.1 Ensures Information Used to Manage Project is Complete and Accurate	4.00
21	2. Helping and Human Service	2.1 Customer Service Orientation	2.1.2 Takes Initiatives to Provide Excellent Client Service	4.00
22	2. Helping and Human Service	2.2 Interpersonal Understanding	2.2.1 Strives to Understand All Project Stakeholders' Thoughts, Feelings, and Concerns	4.00
23	2. Helping and Human Service	2.2 Interpersonal Understanding	2.2.2 Listens and Responds to Others	4.00
24	3. Impact and Influence	3.1 Impact and Influence	3.1.3 Understands and Influences Project Team Members	4.00
25	3. Impact and Influence	3.2 Organization Awareness	3.2.1 Understands the Organization	4.00
26	3. Impact and Influence	3.2 Organization Awareness	3.2.2 Understands the Project	4.00
27	3. Impact and Influence	3.3 Relationship Building	3.3.2 Establishes and Maintains Relationships at the Right Level Inside and Outside the Organizations	4.00
28	4. Managerial	4.3 Team Leadership	4.3.1 Demonstrates Leadership of the Project	4.00
29	4. Managerial	4.3 Team Leadership	4.3.2 Leads the Project Team	4.00
30	6. Personal Effectiveness	6.2 Self-Confidence	6.2.1 Creates an Environment of Confidence	4.00
31	6. Personal Effectiveness	6.2 Self-Confidence	6.2.2 Accepts Failure Positively	4.00
32	6. Personal Effectiveness	6.3 Flexibility	6.3.1 Changes to Meet the Needs of the Project	4.00

33	6. Personal Effectiveness	6.3 Flexibility	6.3.2 Changes at the Required Pace	4.00
34	6. Personal Effectiveness	6.4 Organizational Commitment	6.4.1 Demonstrates Commitment to the Project	4.00
35	1. Achievement and Action	1.1 Achievement Orientation	1.1.3 Provides New Solutions in Planning and Delivering Projects	3.67
36	1. Achievement and Action	1.3 Initiative	1.3.4 Strives for Best Practice	3.67
37	3. Impact and Influence	3.1 Impact and Influence	3.1.2 Influences Across Projects and Organizations	3.67
38	4. Managerial	4.4 Directiveness: Assertiveness and use of Positional Power	4.4.1 Uses Assertiveness When Necessary	3.67
39	5. Cognitive	5.1 Analytical Thinking	5.1.1 Understands at a Suitable Level All Issues Associated with the Project	3.67
40	5. Cognitive	5.1 Analytical Thinking	5.1.2 Facilitates Solutions Across All Issues Related to the Project	3.67

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## Appendix 22 Sites and Links accessed in relation to the Project Management Literature

### Review

- American Society for the Advancement of Project Management, Inc. <http://www.asapm.org/> - The American Society for the Advancement of Project Management, Inc., or asapm, is a not-for-profit professional society dedicated to advancing the project management discipline. Working with members, asapm provides the leadership for professional growth of both members and the profession.
- Association for Project Management <http://www.apm.org.uk/> - The Association for Project Management is the largest independent professional body of its kind in Europe. It has over 13,500 individual and 240 corporate members throughout the UK and abroad. APM's key objectives are to develop and promote excellence in project management across all sectors of industry and beyond.
- Australian Institute of Project Management (AIPM) <http://www.aipm.com.au/> - The Australian Institute of Project Management (AIPM) is the peak body for project management in Australia. Formed in 1976, as the Project Managers' Forum, the AIPM has been instrumental in progressing the profession of project management over the past 25 years.
- International Project Management Association <http://www.ipma.ch/> - IPMA is an international network of national project management societies that comprises over thirty National Associations representing approximately 20,000 members primarily in Europe but also in Africa and Asia. They promote project management professionalism under specific cultural requirements, in all types of projects.
- PMFORUM <http://www.pmforum.org/> - PMFORUM is a global project management community, for the purposes of enhancing project management understanding, disseminating information of interest to the project management community, and encouraging collegial cooperation on a global basis.

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- Project Management Institute <http://www.pmi.org/> - The Project Management Institute (PMI) is the world's leading not-for-profit project management professional association. PMI supports over 100,000 members in 125 countries worldwide. PMI members are individuals practicing and studying project management in many different industry areas, including aerospace, automotive, business management, construction, engineering, financial services, information technology, pharmaceuticals and telecommunications.