

# PROJECT MANAGEMENT COMPETENCE FOR STRATEGY REALISATION

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## Abstract

Project management is being increasingly adopted for the implementation of strategic change. Globalisation, and extension of project management beyond traditional application areas has increased the demand for project managers and for globally consistent, generic standards addressing the project management competence of individuals and organisations.

In this context, this paper reports on progress of a major international research project which is being conducted with the support of international project management professional associations, and industry. It presents some preliminary results which contribute to the debate on the feasibility of generic, globally consistent project management standards to assist organisations and individuals in the effective management of projects designed to realise strategic change.

Keywords: project management, competence; strategic change, globalisation

## 1. Introduction

Strategies and projects are natural companions. While *strategic initiatives can be conceived and handled as projects* (Pellegrinelli(1)), projects should not be initiated or progressed without business or strategic justification (Hastings(2)). Project management is the management of change, and corporate strategies involve the introduction of change in organisations. Yet despite the apparent synergies between strategic and project management, serious application of project management approaches to strategy implementation is only now gaining momentum (Adams(3)).

Project management has been developed primarily in sectors such as construction and information technology which contract and sell their services through projects (Lord(4)). It is increasingly being used beyond traditional areas to achieve strategic objectives. Large functional organisations are realising that project management provides a systematic, phased approach which enables them to implement strategic initiatives that are outside the scope of their on-going business (Pellegrinelli(1)). As Adams et al point out:

*Organisations have reached the point where the process of modifying the organization itself requires the concentrated management attention that can be provided only by competent, committed, well-organized and knowledgeable project teams (Adams(3))*

Increasing pressure for corporate performance and the need for more effective ways to realise corporate strategies are important reasons for a growing interest in the competence of project managers and project teams. Adoption of project management approaches beyond traditional

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application areas increases the demand for project personnel and the need for project training for functional and general management personnel who are called upon to take responsibility for projects either as a full time role or in addition to their routine work (Pellegrinelli(1)).

There is another important strategic driver behind the emerging interest in project management competence and related certification and registration programs that can provide some assurance of levels of competence. Globalisation is an issue both for multi-national corporations (MNC's) and for locally based corporations required to service consumer needs which are becoming more internationally homogenised through communication technologies and travel. Individual and corporate customers are demanding consistency in *products and services regardless of location* (Ives(5)). Organisations are benchmarking their operations against 'world class' standards and assembling teams of knowledge workers from around the world.

Globalisation has led to a need for shared understanding of basic project management terminology and techniques not only throughout organisations but across national boundaries. Project management professional organisations have recognised this need for generic, globally consistent project management standards, but the real demand comes from corporations and project personnel.

The feasibility of project management standards which are applicable and useful across organisations, industries and national boundaries has been the subject of considerable debate. This debate has primarily been conducted through the Global Project Management Forums held in association with major international project management conferences since 1994. The issue of the global vs the local is not, however, restricted to project management, but is actively pursued in the corporate globalisation literature (Ives(5)), (Tractinsky(6)), (Hedlund(7)), (Bartlett(8)).

In practice, while the debate about feasibility of globally consistent and generic project management standards continues, there are a some existing standards which have achieved a degree of international acceptance. ISO Quality standards have achieved international acceptance. In project management, *PMI's Guide to the Project Management Body of Knowledge* (PMBOK(9)), and PMP Certification process; the Australian National Competency Standards for Project Management (AIPM(10))and the RegPM process and the Association for Project Management's APMP have attracted considerable interest and in some cases a significant following. All standards address aspects of the project management competence of individuals and organisations.

An important question is whether any or all of these standards are relevant and valid across industries and national boundaries. This is one of the questions which are being addressed by a major international research project, titled *Development Assessment of Project Management Competence* which is being conducted with the support of International Project Management Association, Association Project Management and Project Management Institute and other international organisations, with funding from the Australian Research Council and founding partners, Australian Institute of Project Management, the Department of Public Works and Services, NSW Department of Housing and Caliper International.

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Data for the project are being collected from organisations and project personnel in Australia, USA, United Kingdom, Europe, South Africa and New Zealand with possibility for extension to Asia, Latin America and Canada. Data collection commenced in October 1997 and is due to be substantially complete by June 1998. This is therefore a working paper only, utilising some preliminary results based on data collected to mid December 1997. The intention is to report to stakeholders on the nature and direction of the research. Data collected to December 1997 from two countries (Australia and USA) and two industry sectors (Construction and Information Systems & Movement), have been analysed to provide some insights into the feasibility of generic, globally consistent project management standards for project management competence.

## 2. Methods

### 2.1 The Project

In May 1996 the University of Technology, Sydney (UTS) in partnership with the Australian Institute of Project Management (AIPM) and other industry partners, lodged a grant application with the Australian Research Council, Australia's foremost research funding body, under the Council's Collaborative Grant Scheme. The application was successful and the project commenced in February 1997.

The purpose of the project is:

*to develop profiles of underlying knowledge, attitudes and behaviours which lead to high performance in a range of project management roles and to provide a framework for both attribute and performance based competency assessment and development, job design and selection of project personnel for improved project performance.*

The initial research funding covered the conduct of the research project in Australia. The researchers and industry partners recognised the contribution the project could make in establishing a sound research base for development of globally consistent project management standards. This would require the project to be conducted internationally. To facilitate this, project management professional organisations and corporations, worldwide, were invited to participate in the project.

### 2.2 Project management competence

Interest in project management competence stems from the very reasonable and widely held assumption that if people who manage and work on projects are competent, they will perform effectively and that this will lead to successful projects and successful organisations ((Karpin(11)); (Beer(12));(Smith(13))).

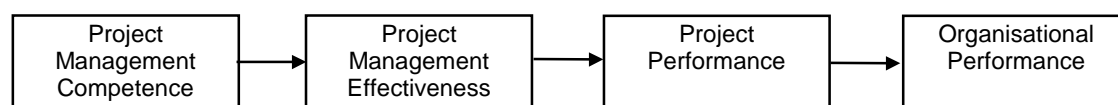


Figure 1. Relationship between Project Management Competence and Organisational Performance

One of the first challenges of this project is the development of a shared global understanding of what constitutes competence. Competence is a term which is widely used but which has come to mean different things to different people. It is generally accepted, however, as encompassing knowledge, skills, attitudes and behaviours that are causally related to superior job performance (Boyatzis(14)). This understanding of competence has been described as attribute based inference of competence (Heywood(15)). To this can be added what is referred to as the performance based approach to competence which assumes that competence can be inferred from demonstrated performance at pre-defined acceptable standards, in the workplace (Gonczi(16)). The performance based approach is the basis for what has become known as the Competency Standards Movement that underpins the National Vocational Qualifications in the United Kingdom, and the Australian Competency Standards Framework (now the Australian Qualifications Framework).

Australia's Competency Standards for Project Management, were developed over a three year period, from 1993 to 1996, in association with industry, under the sponsorship of the Australian Institute of Project Management and with funding from both Government and industry. The standards were endorsed, as cross industry standards, by the Australian Government in 1996. As the first government endorsed performance based competency standards for project management, the Australian National Competency Standards for Project Management (AIPM(10)) may be considered as a de facto international standard for what project managers are expected to be able to **do**.

The PMI's *A Guide to the Project Management Body of Knowledge* (PMBOK(9)) can be considered as a de facto international standard for what project personnel can be expected to **know**.

### 2.3 Methodology

The concern of this research project is the relationship between project management competence and project management effectiveness as a basis for developing competency profiles of effective project personnel in a range of project environments. To investigate this relationship it is necessary to establish measures of both project management competence and project management effectiveness.

For the purposes of the research project, instruments have been developed to provide measures of project management competence which encompass both attribute and performance based approaches. This has been further broken down into a framework of input, process and output competencies (Finn(17)), where competence is considered as a combination of:

<b>Knowledge</b> (qualifications) + <b>Skills</b> (ability to do a task)	<b>Input Competencies:</b>	the knowledge and understanding, skills and abilities that a person brings to a job
+	+	
<b>Core Personality Characteristics</b> (Motives + Traits + Self-Concept)	<b>Process Competencies:</b>	the core personality characteristics underlying a persons capability to do a job
+	+	

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**Demonstrable performance** in accordance with occupational / professional / organisational Competency Standards.

**Output Competencies:**

the ability to perform the activities within an occupational area to the levels of performance expected in employment

Figure 2. Dimensions of competence

This understanding of the dimensions of competence has been translated into the following integrated model of project management competence:

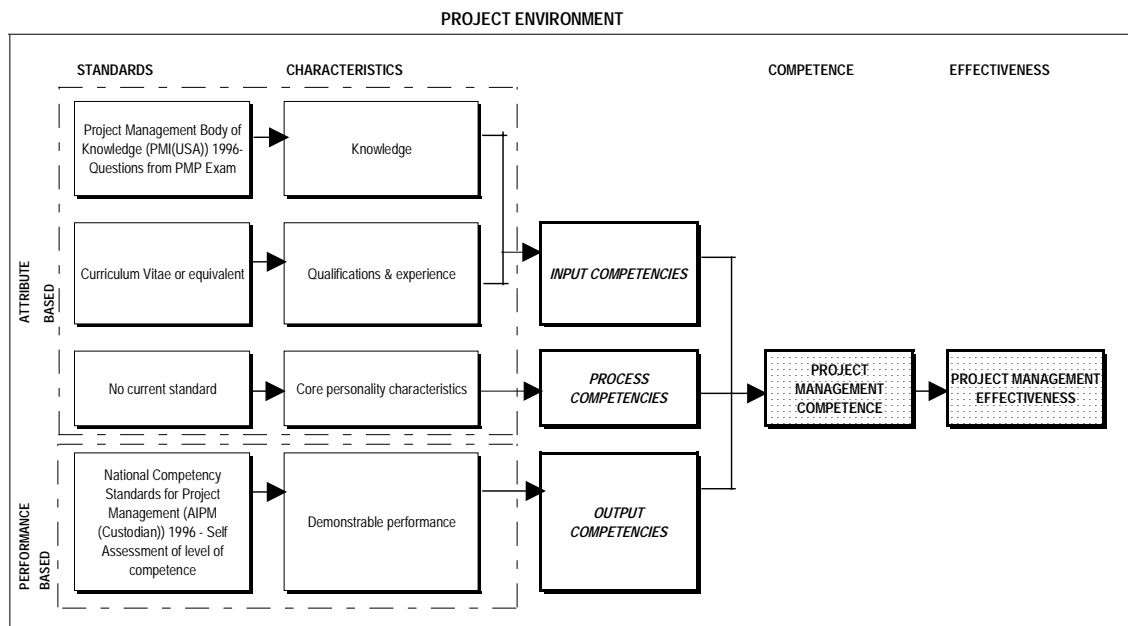


Figure 3. An integrated model of project management competence

The preliminary results in this paper are based on only three of the data collection instruments used in the project, namely:

- 1.1 **Project Management Knowledge:** a test, using the PMI's *A Guide to the Project Management Body of Knowledge (PMBOK(9))* as the knowledge standard. The test is based on the PMI's Project Management Professional (PMP) exam and is intended to identify the extent of a person's knowledge of formal project management processes and terminology.
- 1.2 **Performance based competence:** self assessment against Australian National Competency Standards for Project Management (AIPM(10))
- 1.3 **Project Environment:** a questionnaire which establishes the nature of the project environment in which the person normally operates, including such factors as:
  - Job title
  - Project size and duration
  - Number of projects
  - Project complexity

- Application area and industry

The data collection process is conducted as three hours of pre-work, followed by a half day workshop conducted in a location to suit the participating organisations. (For a more complete account of the research methodology refer to (Crawford(18)).)

### 3. Preliminary Results

At mid December 1997 data had been collected from over 90 organisations in Australia and the United States. Of these 24 were in the Construction industry in Australia, and 47 were in the Information Systems and Movement sector, 20 from Australia and 27 from the United States, giving a total sample size of 71. The additional cases, from other industries, have not been included in the results reported here. The Construction Industry and Information Systems and Movement samples have been analysed to provide some very preliminary results and indicate to stakeholders the type of feedback which can be expected from this project as the databank grows and the research process proceeds.

#### 3.1 Project Management Knowledge

As stated above, the data collection instrument used is a multiple choice test, using the PMI's *A Guide to the Project Management Body of Knowledge (PMBOK(9))* as the knowledge standard. The test is based on the PMI's Project Management Professional (PMP) exam and is intended to identify the extent of a person's knowledge of formal project management processes and terminology, against that standard. The results for the full sample, the Construction and Information Systems and Movement sectors and Australian vs USA samples, at December 1997, are shown graphically in Figures 4 and 5 below.

This instrument was specifically designed to test knowledge of what might be considered project management jargon and key project management techniques, as identified in the *Guide to the Project Management Body of Knowledge (PMBOK(9))*. There has been considerable conjecture that the Guide, having been developed primarily in North America, would not be suitable for use in other parts of the world. It should be also be noted that although several of the project personnel represented in the USA sample had completed the full PMP exam, none of those in the Australian sample had done so. It is interesting therefore that the mean scores for both Australia and USA are so close, and understandable that the USA scores should be, on the whole, slightly higher. The higher Australian score in the Human Resources Management area can possibly be explained by the very high level of reliance, in this knowledge area, on theory and practice from general management.

The similarity of results from the Australian and USA samples, at this point in the data collection, appears to provide support for a globally consistent standard for project management knowledge.

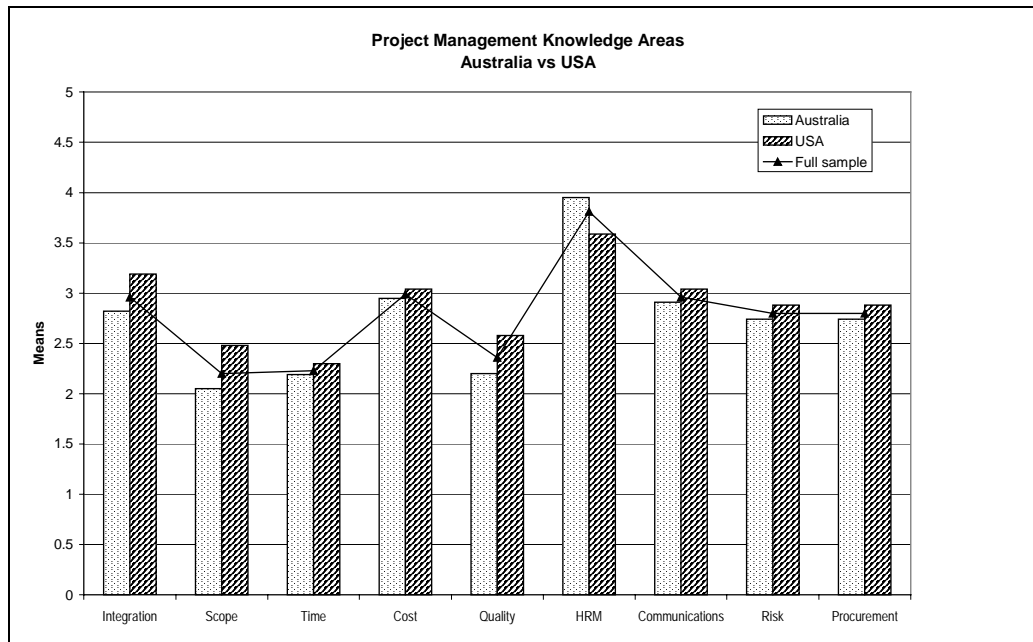


Figure 4: Project Management Knowledge - Full sample, Australia and USA

A cross industry comparison of results between Information Systems & Movement and Construction (Figure 5) provides a similar pattern to that between countries in Figure 4. Regardless of assumptions of the differences between Construction Industry and the Information Systems and Movement sectors, the results for both sectors are remarkably similar, again suggesting support for generic or cross industry standards. Higher scores in the Information Systems and Movement sector may be attributable to the USA component in this part of the sample. The Construction industry sample includes only Australian project personnel.

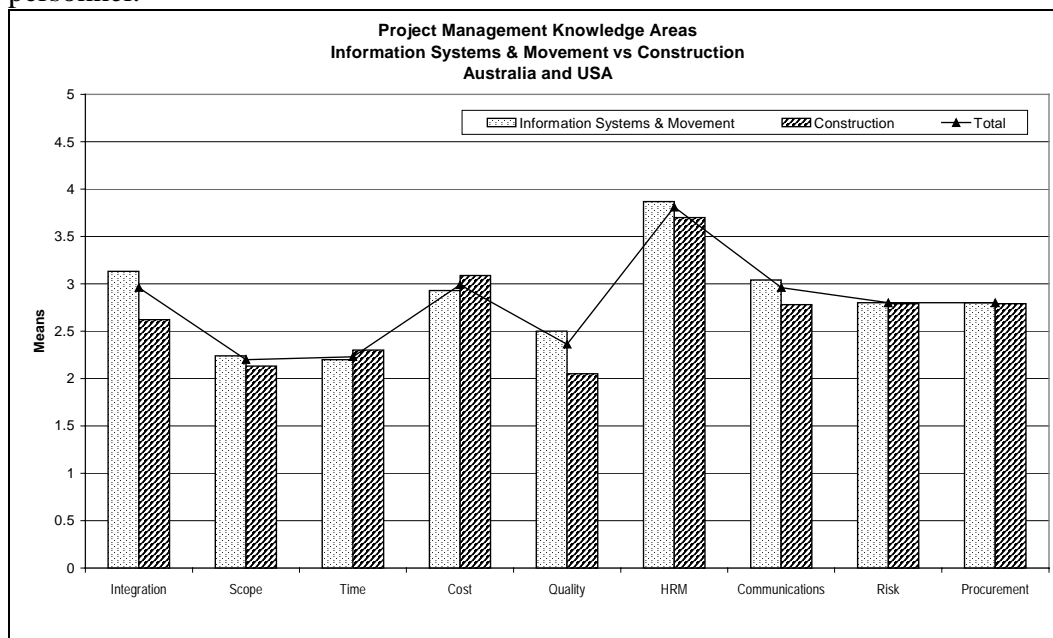


Figure 5: Project Management Knowledge - Full sample, Information Systems & Movement and Construction

### 3.2 Project Management - Performance based competency.

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The data collection instrument used here is a self assessment against the Australian National Competency Standards for Project Management (AIPM(10)). Project personnel were asked to rate themselves, against each of 93 project management performance criteria, according to the following scale:

- 1 I have never done or participated in doing this
- 2 I have done or do this under supervision
- 3 I have occasionally done or do this myself
- 4 I have often done or do this myself
- 5 I have done or managed this across multiple projects or sub projects

It is a requirement of assessment against the Australian National Competency Standards for Project Management (AIPM(10)), that applicants must be able to provide evidence to support all claims of competence. The rating scale was devised on the basis that if a person has **done** something, they will be able to provide evidence whereas if they **have not done** it they will not be able to provide evidence. The intention was to ask the question in a manner which would require the least amount of potentially variable judgment on the part of each individual. There are three levels in the Australian National Competency Standards for Project Management (AIPM(10)). The results from this instrument are presented to indicate the level at which an individual could reasonably apply for assessment against Competency Standards. The three levels roughly correspond to the following project management roles:

- Level 4: Project team member or specialist
- Level 5: Project manager of a fairly well defined project or sub-project
- Level 6: Project or programme director responsible for multiple projects or a portfolio of projects

In interpreting results, an individual with a result between 4 and 4.75 should consider applying for assessment at Level 4; between 4.75 and 5.75, at Level 5 and above 5.75, at Level 6. The results for the full sample disguise performance at both upper and lower levels. The Standard Deviation across the Units varied from .38 for Project Integration to .46 for Quality.

It can be noted that although the instruments used for collection of data on project management knowledge and performance based competency are quite different, the pattern of results from both instruments are remarkably similar. Interesting differences are:

- Time performance is relatively stronger than Time knowledge
- Cost performance is relatively weaker than Cost knowledge
- Human Resource Management performance is relatively weaker than Human Resource Management knowledge
- Australian Human Resource Management performance is lower than that for the USA, although the reverse is true for knowledge.

Looking at cross industry profiles, differences between results for the Information Systems and Movement sector and for construction are more marked for performance (Figure 7) than for knowledge (Figure 5). The stronger performance of the Construction sector in both Cost and Procurement may in part be explained by results from the Project Environment Questionnaire which indicate that 91.7% of the Construction industry sample have clients external to their organisation, while only 45.7% of the Information Systems and Movement sector have external clients. The Information Systems and Movement sector may place more emphasis on communications than is the case in Construction projects because, of those in the

Construction sector sample, 79.2% reported that goals were clearly defined at the start of projects, and 78.3% reported that methods were well defined, compared with 55.3% for well defined goals and 60.9% for well defined methods in the Information Systems and Movement sector. This supports the model proposed by Turner and Cochrane (Turner(19)).

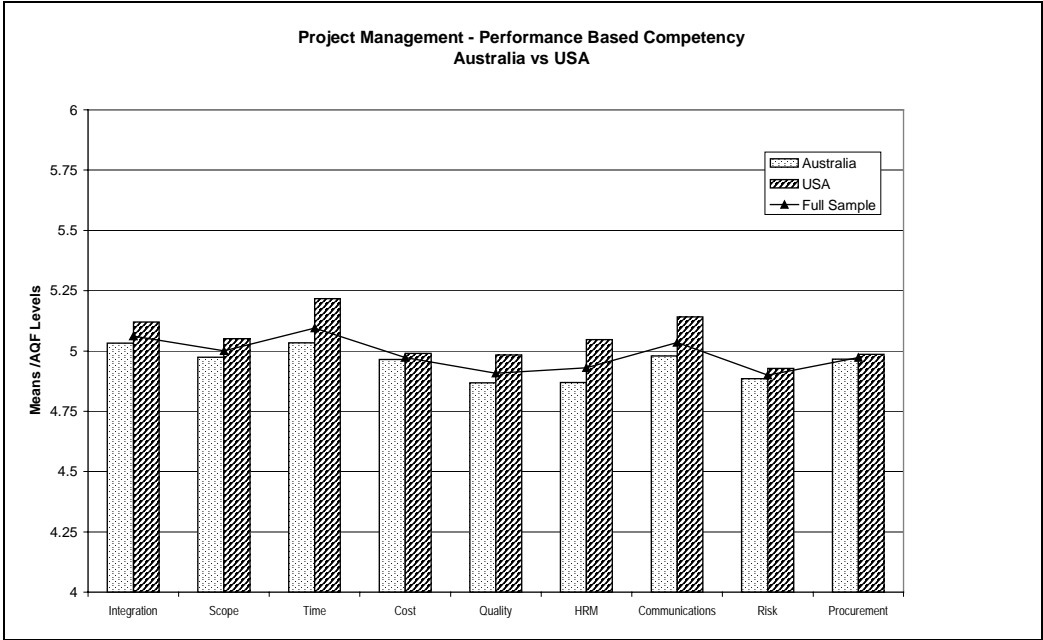


Figure 6: Project Management - Performance Based Competency - Full sample, Australia vs USA

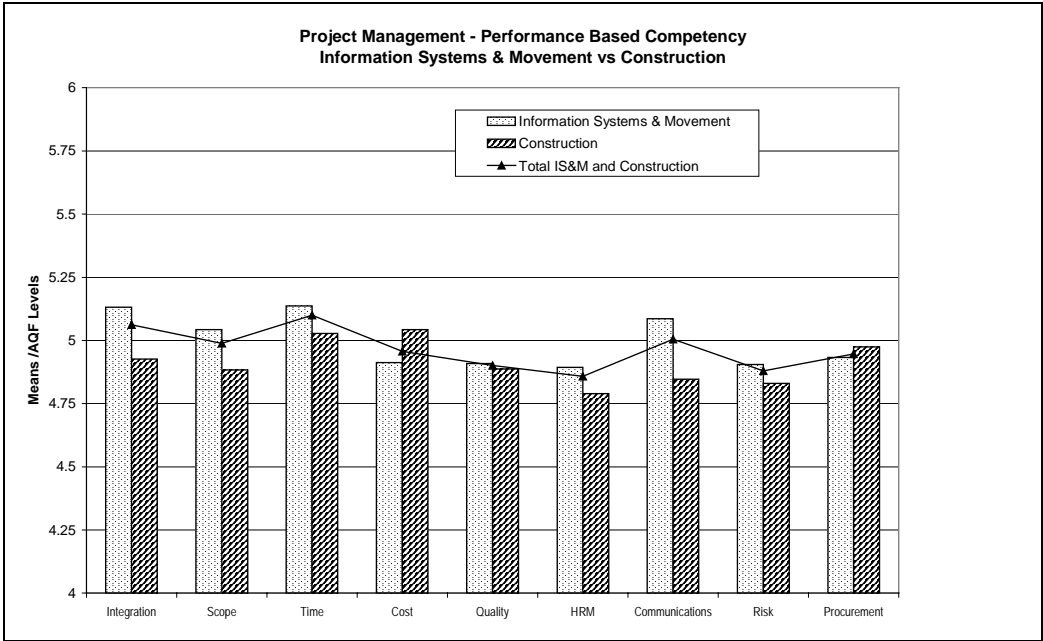


Figure 7. Project Management - Performance Based Competency - Full Sample, Information Systems & Movement and Construction

Another instrument in the data collection process asks project personnel to rate the importance of the units in the Australian National Competency Standards for Project Management (AIPM(10)) in terms of their importance in successful performance of their project role. In Figure 8, the relative importance of the units is graphed against the Performance Based

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Competency for the full Australian and United States sample at December 1997. The relatively high rating of Risk versus the relatively weak performance in Risk attracts immediate interest.

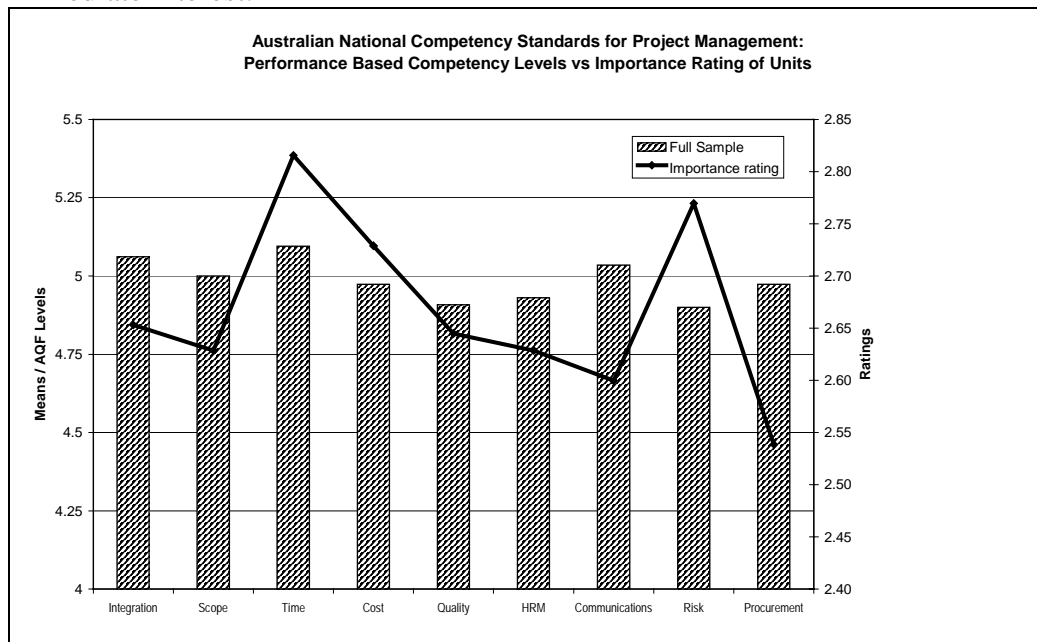


Figure 8: Performance Based Competency Levels vs Importance Rating of Units (Full Sample)

#### 4. Conclusions

The research results published here are preliminary only and should be treated with extreme caution. However, at this point in the study, and subject to further more detailed analysis, there appears to be some support for the feasibility of generic (cross industry), global project management standards primarily due to the apparent similarity of results from a comparison between two industry sectors, Information Systems and Movement and two countries, Australia and the United States. Analysis of data from a wider range of industry sectors and countries is required to explore this further.

It should be noted that the standards used are at a fairly high level and leave ample scope for customisation at local levels, to accommodate national regulations, practices and cultural differences where required.

Aspects of the research study upon which it is too early to report here are:

- the validity of the two standards (*Guide to the Project Management Body of Knowledge (PMBOK(9))* and *Australian National Competency Standards for Project Management(AIPM(10))*) relative to effective project management performance ie does meeting these standards ensure that project personnel will be effective in their project roles;
- the impact of project management training, education and work experience on effective performance in project management roles; and
- the impact of core personality characteristics on effective performance in project management roles.

Characteristics of the project environment and their impact on project roles and performance has been touched on briefly here. The research study can be expected to provide considerable insight into the ways project management is practised and the organisational environments in which it occurs.

*Projects are vehicles for change and, as with any vehicle, they require a driver - the project manager (Pellegrinelli(1)).* In the same way we expect drivers to be licensed to ensure that they are competent to drive, corporations are looking for evidence that the drivers or project manager of strategic change projects are competent for the role. If we take this analogy further, however, we realise that even the most competent drivers will have difficulties in hostile environments, so will project managers. To enhance project performance we must attend not only to the competence of project personnel but to the support provided by the environment in which they operate.

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