

In search of the competent project manager

Crawford, L

Project Management Program, University of Technology, Sydney, PO Box 123 Broadway NSW Australia 2007

As project management matures as a profession there is increasing international interest in the concept of project management competence. Demand for added value and the impact of the information age on work practices has meant that we are constantly required to deliver more for less with increasing emphasis on the competence to deliver value. Whether we recognise it or not, in every aspect of our lives, we are increasingly delivering results through projects. This places emphasis on competence of people who manage and contribute to projects. A major international research project is enhancing understanding of the project management role and of the environments in which projects are managed. It is providing clues in the search for the competent project manager.

1. Introduction

Project management is often referred to as the 'accidental profession' [1]. It is also a profession in formation, and much of the attention given to project management competence reflects attempts to pin down, or better understand the evolving nature of project management and the role of the project manager. Although there has been focus on the search for the competent project manager, there is growing appreciation that projects will be delivered more effectively if there is synergy between the project management competence of individuals and of the organisations in which they operate. The development of competent project managers is integral to the broader development of organisational competence.

In a rapidly changing environment, individuals and teams need the competence to work effectively without rules and reference to precedent. As Stewart [2] says 'the knowledge economy demands skills many workers simply do not have; and of almost all workers, it demands flexibility, alertness, and the ability to make decisions without consulting a manual'. Organisations must be equally agile in their support, providing organisational environments that foster and sustain competent project management teams and through them, effective resource utilisation and successful project outcomes.

Development of project management standards and certification programs is one aspect of this interest in competence. Other manifestations are - internal project management training and accreditation programs developed by organisations, corporate project management methodologies and the establishment of corporate Project Management Centres of Excellence.

Despite considerable attention being given to project management, both in practice and in literature, much of the information available on the nature of the project management role and the competence required to carry out and support that role is subjective, with little foundation in research. This paper reports on a research project in search of the profile of the competent project manager. Under the direction of the University of Technology, Sydney, and funded by the Australian Research Council, in collaboration with the Australian Institute of Project Management, the NSW Department of Public Works and Services and the NSW Department of Housing, this project set out to research and develop

- Competency profiles of effective project personnel in a range of project environments
- Guidelines for assessment of project management competence
- Guidelines for design of project management roles

The background to the research and rationale for the research design were reported at the 1997 AIPM National Conference [3]. Some clues in the search for the competent project manager are offered here.

2. The Research Partners

Funding for this search has been provided by the Australian Research Council (ARC) and industry partners (Australian Institute of Project Management, Caliper International, NSW Department of Public Works and Services, NSW Department of Housing). International partners in the research are IPMA (International Project Management Association), APM (Association for Project Management), PMI (Project Management Institute), PMISA (Project Management Institute South Africa) and Human Systems Limited.

The initial research funding covered the conduct of the research project in Australia. International data collection has been funded by participating organisations in the United Kingdom, the United States, South Africa and Brazil. Through participation in the project these organisations have received internationally benchmarked organisational competency profiles which they have used in assessment and development of the project management competence of their organisation and their people. Participating project personnel have received individual competency profiles that provide feedback and guidance for professional development.

3. The Sample

This research includes data relating to the educational background, project management knowledge, practices, personal competences and project environment characteristics of over 350 project project personnel, from five countries.

Although data have been collected from South Africa and Brazil, they have been excluded from analysis at this stage as current sample sizes are considered to be too small to be representative. As the Australian sample was funded by the collaborative research grant, the proposed sample size of 210 has been achieved. Data collection in North America and the United Kingdom will continue and country representation will be increased through research collaborations and industry participation. Growth of the dataset enhances opportunities for refinement of analysis of environment specific project management competence.

Figure 1
Distribution of sample by Region

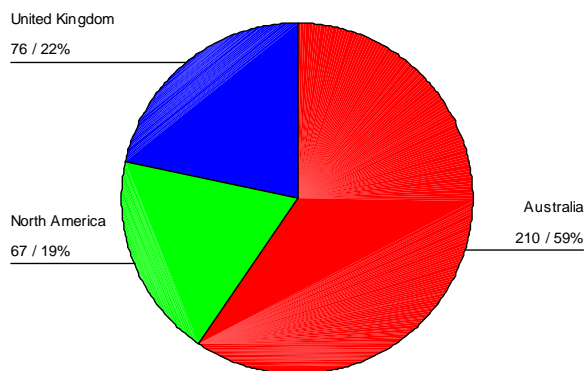
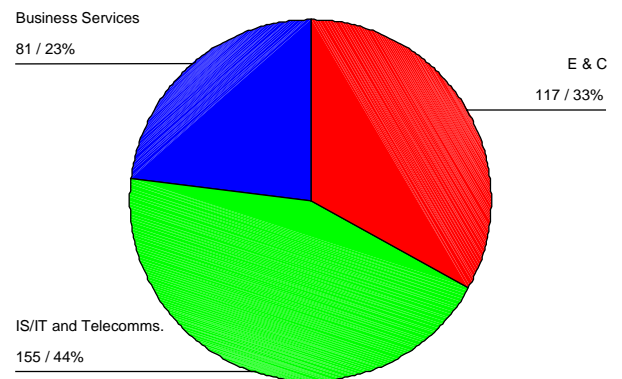
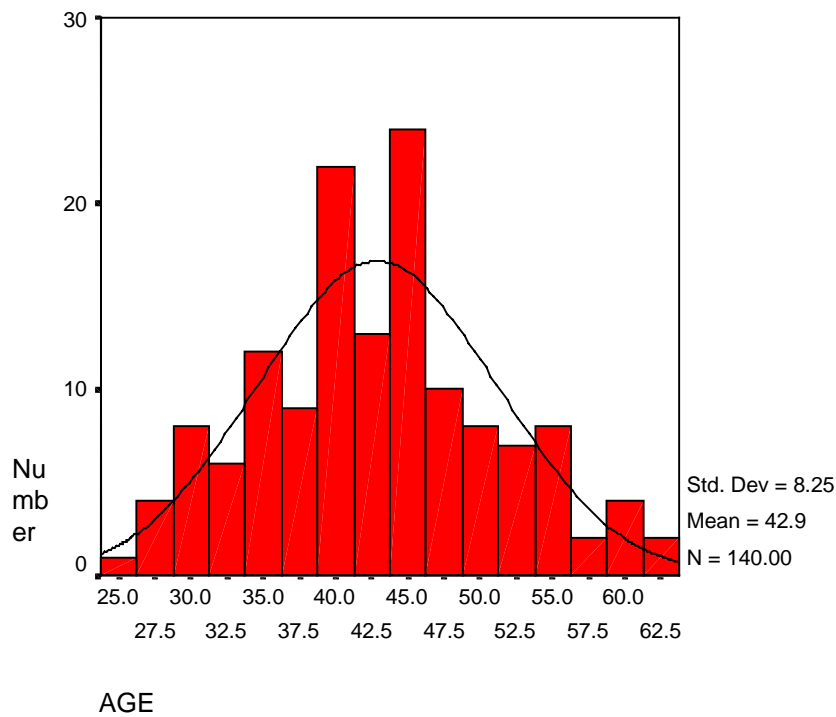


Figure 2
Distribution of sample by industry sector of organisation



For the current sample of project personnel, the average age is 43 years (Figure 3).

Figure 3
Age distribution of project personnel in sample



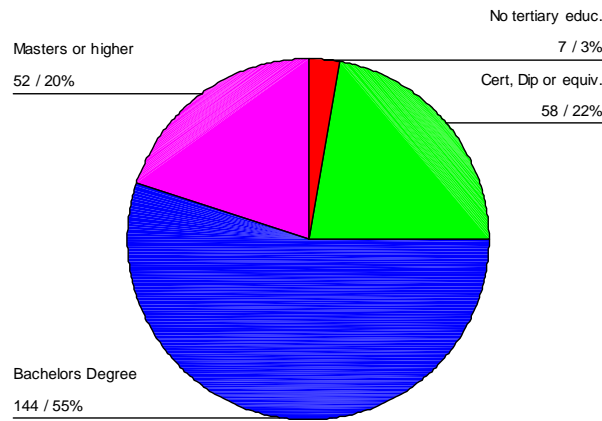
Those in the IS/IT and Telecommunications sector have an average of 15 years project management experience, compared with 13 years for the Engineering and Construction sector. In Business Services, average experience is only 8 years, reflecting the more recent adoption of project management in this sector. It is tempting to attribute the longer average project management experience in IS/IT and Telecommunications to the sustained growth in this sector compared with the cyclical nature of Engineering and Construction (Figure 4). Another interpretation is that the title of Project Manager is conferred earlier and more widely in IS/IT and Telecommunications.

Figure 4
Total years project management experience

Industry Sector of Organisation	Total Years PM Experience				
	Count	Max	Minimum	Mean	Median
Engineering & Construction	117	47	1	13	11
IS/IT and Telecommunications	155	46	0.5	15	13.5
Business Services	81	35	1	8	7.5
Total	353	47	0.5	13	11

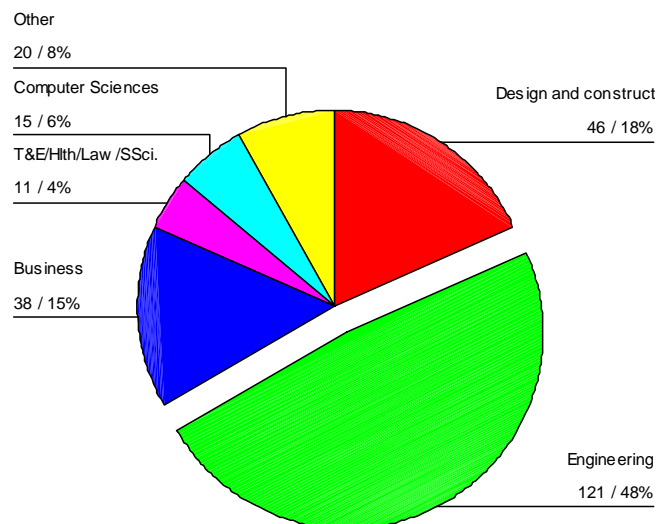
Level of education is consistent across all three industry sectors, with over 75% of respondents (n=261) reporting that they hold a Bachelor's Degree or higher.

Figure 5
Highest level of tertiary education



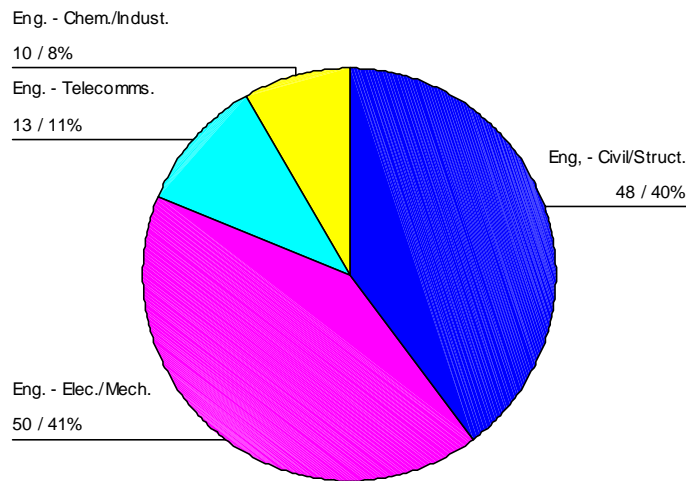
Just under 50% of this sample have primary qualifications in engineering, demonstrating the traditional affinity of this discipline with the practice of project management. A third of the sample have primary qualifications in areas less closely associated with project based activities including business, law and social sciences.

Figure 6
Primary disciplines of respondents



Within engineering, the dominant sub-disciplines are electrical/mechanical engineering (41%), civil/structural engineering (40%), telecommunications (11%) and chemical/industrial engineering (8%).

Figure 7
Engineering sub-disciplines of respondents



The majority of respondents (59.3%) indicated that their current primary role was that of Project Manager. However, the dimensions of the role vary considerably both within and between organisations.

Figure 8
Primary Project Role

Primary Project role	Frequency	Percent
Team Member	27	8.3%
Team Leader	45	13.9%
Project Manager	192	59.3%
Project Director	22	6.8%
Programme Manager/Director	25	7.7%
Unspecified	13	4%
Total	324	100%

4. The Role of Standards

In searching for the competent project manager, we need some measure or standard against which an assessment of competence can be made. Such standards or measures also provide guidance for development [4].

Standards have been developed for project management for various purposes. The following standards have been developed to describe the practice of project management, to provide guidelines for those involved in managing projects, to provide commonly accepted definitions of terms and processes; and as a basis for assessment of aspects of project management competence for professional certification or registration:

- A Guide to the Project Management Body of Knowledge (PMBOK™ Guide) [5]
- ICB: International Project Management Association (IPMA) Competence Baseline [6]
- Australian National Competency Standards for Project Management [7]

All three standards are intentionally generic, for use across application areas.

Figure 9
Standards and related forms of assessment

Standard	Level	Description	Form(s) of assessment
PMBOK™ Guide	PMP	Project Management Professional	Multiple choice exam Record of experience Record of education
ICB: IPMA Competence Baseline	Level A	Programme or Projects Director	Application, self-assessment, project proposal Project report Interview
	Level B	Project Manager	Application, self-assessment, project proposal Project report Interview
	Level C	Project Management Professional	Application, project experience, self-assessment Formal examination with direct questions and intellectual tasks Interview
	Level D	Project Management Practitioner	Application Formal examination, direct questions and open essays
Australian National Competency Standards for Project Management	Level 6	MPD - Master Project Director	Assessment of portfolio of evidence of competence against Level 6 of the standards by a registered workplace assessor
	Level 5	RegRM – Registered Project Manager	Assessment of portfolio of evidence of competence against Level 6 of the standards by a registered workplace assessor
	Level 4	QPP – Qualified Project Professional	Assessment of portfolio of evidence of competence against Level 6 of the standards by a registered workplace assessor

The International Project Management Association, in describing its professional certification program, specifically states it 'shall be an incentive for the project managers and the members of the project management teams (ie the project management personnel) [6] to

- Expand and improve their knowledge, experience and personal attitude
- Continue their education
- Improve the quality of project management
- Last but not least – better achieve project objectives

The IPMA program also purports to assess knowledge, experience and personal attitude. The IPMA Competence Baseline, as a basis for assessment, includes a guide to what constitutes the required knowledge and experience for an effective project manager, a taxonomy for identifying the extent of knowledge and experience required at each level of competence and a profile of the personality characteristics and attitudes that are expected in a project manager.

Competency standards, such as the Australian National Competency Standards are specifically designed for recognition of current competence, independent of how that competence has been achieved. They also encourage self assessment, reflection and personal development in order to provide evidence of competence against the performance criteria presented in the standards.

Standards do not, however provide the total solution for assessment and development of project management competence. Firstly, they tend to be based on a static interpretation of past experience. Secondly, the standards

described above are intentionally generic standards and do not capture the complexities and variations of specific project environments. Research [8, 9, 10], has shown that apart from generic project management skills and knowledge, project managers, to be effective, need knowledge and understanding of

- The technology of the project or project application area
- The organisation or organisations in which the project is located
- The market in which the organisation or organisations are operating

Thirdly, with the exception of the IPMA Competence Baseline, the standards do not directly address the personality characteristics of project managers, although research [8,9,10,11,12] repeatedly highlights the importance of interpersonal skills, communication and other personality driven characteristics as factors in effective project management performance.

Finally, all of these standards have been developed through consultation with practitioners as to what they believe project managers need to know and do, and the attitudes and behaviours they need for competent performance. They are based on accepted wisdom rather than objective observation. Project management standards, and associated certification programs, developed primarily by the project management professional associations therefore provide a guide in the search for the competent project manager, but this guide needs to be complemented by research that objectively identifies that performance against these standards is supported by observed effective performance in the workplace. It also needs to be complemented by assessment of specific competence relating to the technology of the project, organisational context and business environment.

5. Assessment against Standards

The knowledge and practices of the project personnel in our study were assessed against the PMBOK™ Guide and the Australian National Competency Standards for Project Management. Results for project personnel in the sample have to date shown no significant differences for core project management knowledge and practice areas of scope, time and cost, regardless of country or application area [13] suggesting that standards for these core areas can be used as a basis for assessment, independent of differences in project environment. Results for human resource management, communications, risk, procurement and to a lesser extent, quality were sufficiently different according to country and/or application area to suggest that assessment of skills and knowledge in these areas may need to be modified to take account of differences in the project environment.

6. In Search of the Competent Project Manager

What is the profile of the competent project manager and how can we assess that competence? The project manager identified by our sample is, on average, well educated and according to the results from the Caliper profile, used in our research project, has higher levels of abstract reasoning than the general population. Project managers have a primary discipline, which is not project management, but is very likely to be engineering and very few of them have any form of formal project management qualifications or professional certification (less than 15% of sample). Project managers in the Engineering and Construction and IS/IT and Telecommunications sectors have, on average, more experience in project management than those in Business Services.

Widely accepted project management standards provide a basis for assessing competence in core areas of Scope, Time and Cost, but competency requirements in Human Resources, Communications, Risk and Procurement vary according to application area, organisation and local conditions.

Further results from this extensive research project, in the form of competency profiles of effective personnel, assessment and job role guidelines will be made available through project management professional associations at the conclusion of this project in 2000. Meanwhile, standards such as the PMBOK Guide [5] and the Australian National Competency Standards for Project Management [7] provide excellent guides for project personnel who wish to assess and develop their knowledge and practices as project managers.

7. References

- [1] Pinto, Jeffrey K and Kharbanda, Om P. (1995) Lessons for an accidental profession. *Business Horizons*; 38(2):41-51.

- [2] Stewart, Thomas A. (1999) *Intellectual capital: the new wealth of organizations*. New York: Doubleday. p. xi.
- [3] Crawford, Lynn. (1997) *A Global Approach to Project Management Competence*. in *Proceedings of the 1997 AIPM National Conference*; Gold Coast, Queensland. pp 220-228. Sydney, AIPM
- [4] Gonczi, A; Hager, P, and Athanasou, J. (1993) *The Development of Competency-Based Assessment Strategies for the Professions*. Canberra: Australian Government Publishing Service; NOOSR Research Paper No. 8.
- [5] PMI. (1996) *A Guide to the Project Management Body of Knowledge*. Upper Darby, PA: Project Management Institute (USA)
- [6] IPMA. (1999) *ICB: IPMA Competence Baseline*. Caupin, G; Knopfel, H; Morris, P; Motzel, E, and Pannenbacker, O, Editorial Committee. Germany: International Project Management Association.
- [7] AIPM (Sponsor). (1996) *National Competency Standards for Project Management*. Australian Institute of Project Management.
- [8] Thamhain, Hans J. (1991) Developing project management skills. *Project Management Journal*. 1991; XXII(3).
- [9] Einsiedel, Albert A. (1987) Profile of Effective Project Managers. *Project Management Journal*. XVII(5, December):51-56.
- [10] Pettersen, N. (1991) Selecting project managers: An integrated list of predictors. *Project Management Journal*. XXII(2):21-25.
- [11] Posner, Barry Z. (1987) What it takes to be a good project manager. *Project Management Journal*. March 51-54.
- [12] Gadeken, D. O. C and Cullen, B. J. (1990) *A Competency Model of Project Managers in the DOD Acquisition Process*. Defense Systems Management College.
- [13] Crawford, Lynn H. (1998) *Standards for a Global Profession - Project Management*. PMI 29th Annual Seminars and Symposium; Long Beach, California. Project Management Institute.