

# Senior management perceptions of project management competence

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## Abstract

As more organisations adopt project management approaches and the demand for project managers grows, there is increasing interest in the competence of project managers and in standards for development and assessment of project management competence. Project management standards are being used extensively throughout the world in training and development, professional certification programmes and corporate project management methodologies on the assumption that there is a positive relationship between standards and effective workplace performance. However, there has been no empirical research reported that supports or indeed questions this assumption. This paper reports on research that explores the relationship between performance against standards and the effectiveness of project management performance in the workplace, as perceived by senior managers. Results suggest that there is no statistically significant relationship between performance against the widely used standards in their entirety, and senior management perceptions of effectiveness of workplace performance. Results suggest different perceptions and expectations of project management competence between project managers and their supervisors, senior management.

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## 1. Introduction

Project management has emerged as a field of practice that is being used increasingly by organisations to achieve their business goals. As organisations define more of their activities as projects, the demand for project managers grows, and there is increasing interest in project management competence. Competence of project management personnel is important as they are seen as having a major impact on project performance and therefore on business performance [1–4] (Fig. 1). As one senior manager says: “*The key to project success is to pick the right project manager*” [5].

Concern for project management competence has led to the development of standards for project management knowledge and practice that are used for assess-

ment, development and certification. Development of such standards has been largely qualitative, based on the collective opinion of experienced practitioners as to what project personnel need to know and what they need to be able to do in order to be considered competent. The assumption behind the development and use of project management standards is that the standards describe the requirement for effective performance of project management in the workplace and that those who meet the standards will therefore perform, or be perceived to perform, more effectively than those whose performance does not satisfy the standards.

Recognising that no research had been reported that validated or even questioned this assumption of a positive relationship between performance against standards, as a measure of project management competence, and perceptions of effective workplace performance, research was undertaken, using empirical methods, to explore validity of these assumptions. This paper reports

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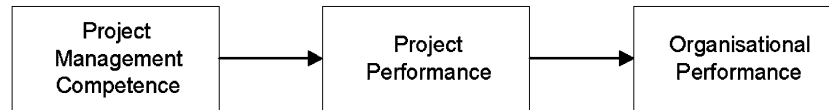


Fig. 1. Relationship between project management competence and organisational performance.

on the results of this research which suggest that there are differences in views of project managers and senior managers concerning those aspects of project management competence that distinguish the “right” project manager.

## 2. Background

### 2.1. Rationale for research

Review of the literature indicated that although some research has been conducted into the use of the performance based competency standards in management development [6] and in terms of the impact of management standards [7] on management practices [8], there has been no research conducted to identify whether performance against the standards relates positively to perceived performance in the workplace.

In project management, there has been research conducted [9–14] to identify aspects of competence which are characteristic of effective or high performing project managers. Such research is primarily based on the opinions of project management practitioners. Research and publication in project management has tended to focus on review of practical experience and literature, with relatively few papers drawing on empirical data and even fewer theoretical and model based contributions [15].

Although there has been some validation of the relationship between identified competencies and effective performance in the work of some researchers [11], this work has focused on behavioural or personal competencies in a particular role and environment, and these competencies are not covered by the standards used in assessment and certification of project managers.

The research reported in this paper used empirical research methods to question the assumptions or espoused theories [16,17] of project management practitioners, embedded in project management standards. Results suggest that there is a difference between the knowledge and practices valued by project management practitioners and those valued by senior managers.

### 2.2. An integrated model of project management competence

In exploring the relationship between assessment of project management competence and perceptions of performance in the workplace, it is first necessary to define

the term ‘competence’ and its derivatives and then to break the concept of competence down into component parts that can be measured against standards as a basis for analysis.

Competence was once a simple term, with dictionary definitions such as “*power, ability or capacity (to do, for a task etc.)*” [18] and “*due qualification or capacity, adequacy or sufficiency*” to do a task [19]. However, as Robotham and Jubb [20] state, “*the concept of competence*” has developed “*different meanings, and it remains one of the most diffuse terms in the organizational and occupational literature.*”

Two streams of initiatives, in the United States and in the United Kingdom, were the primary catalysts in the rise of interest and the wealth of rhetoric [21] surrounding the concept of competence from the mid to late 1980s onwards. The competency model, or attribute based competency approach has been most prevalent in the United States, while the competency standards, or demonstrable performance approach has formed the basis for national qualifications frameworks in the United Kingdom, Australia, New Zealand and South Africa.

The work of McClelland and McBer in the United States, beginning in the 1970s and reported by Boyatzis in the early 1980s [22] established what may be referred to as the competency model, or attribute based approach. Followers of this approach define a competency as an “*underlying characteristic of an individual that is causally related to criterion-referenced effective and/or superior performance in a job or situation*” [23]. Five competency characteristics were defined by Spencer and Spencer [23]. Two of these competency characteristics, namely knowledge, the information a person has in specific content areas; and skill, the ability to perform a certain physical or mental task, are considered to be surface competencies and the most readily developed and assessed through training and experience. Three core personality characteristics, motives, traits and self-concept, are considered difficult to assess and develop.

The following framework (Fig. 2) was developed, to bring together or reconcile the *competency model* or attribute based and *competency standards* (performance based) approaches to competence described above and provide a basis for identifying and measuring aspects of competence against standards.

This model recognises that competence is not a single construct. According to Heywood et al. [24], competence can be inferred from attributes, which include

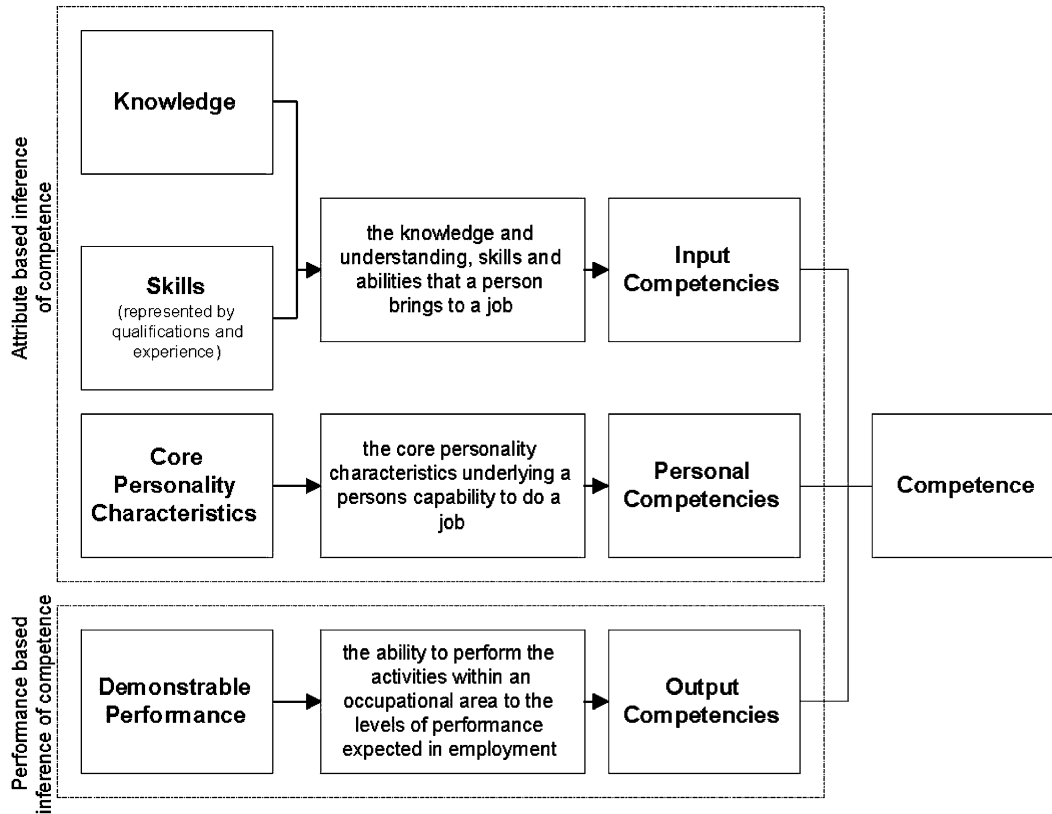


Fig. 2. Integrated model of competence identifying components of the overall construct.

knowledge, skills and experience, personality traits, attitudes and behaviours (attribute-based inference of competence). This is represented in the model by knowledge and skills, classified as input competencies (after Finn [25]) and personal competencies. Performance based inference of competence relies upon demonstrable performance, or use of practices in the workplace in accordance with occupational, professional or organisational competency standards. This is represented in the model as output competencies. Together, the attribute and performance based inference of competence or input, personal and output competencies, account for the various aspects of competence that are addressed in the literature and in a more limited way in standards.

Measurement requires standards against which such measurement can be made. There are only two aspects of competence identified in Fig. 2 for which there are recognised project management standards. These are:

- *Knowledge*, represented by bodies of knowledge such as the APM Body of Knowledge [26], the ICB: IPMA Competence Baseline [27] and PMBOK® Guide [28] and
- *Demonstrable performance or use of project management practices*, represented by performance based competency standards such as the Australian National Competency Standards for Project Manage-

ment [29] and those developed within the United Kingdom's National Vocational Qualification (NVQ) framework [30–32].

### 3. Methodology

Of the limited research undertaken to date in the area of project management competence and competency standards, the majority has been qualitative. Studies have been based on practitioner opinions, usually with single country samples, often with relatively small sample sizes. To fulfil the purpose of this study, a quantitative approach was adopted and the scope of the research encompassed project management practitioners in three countries (Australia, United Kingdom and USA) and four application systems (engineering and construction; information systems/information technology and telecommunications; industrial process and business services).

#### 3.1. Performance against standards

Based on the model of project management competence presented in Fig. 2, two widely accepted project management standards:

- the Guide to the Project Management Body of Knowledge [33] and
- the Australian National Competency Standards for Project Management [29]

were selected as a basis for testing of hypotheses concerning the relationship between performance against project management standards, and perceived effectiveness of performance in the workplace. In selecting these two standards, one for knowledge and the other for performance based competency or use of project management practices in the workplace, an extensive review of available standards was undertaken [34].

At the time of commencement of the study the PMBOK® Guide in its 1996 version, was the most widely distributed of the available knowledge guides, and was the basis for the most widely adopted project management certification program. As illustration of this, in 1999, 250,000 copies of the PMBOK® Guide [33] had been distributed worldwide and 17,000 people had been certified as part of the Project Management Institute's Project Management Professional program [35]. By comparison, at the same time (1999), approximately 670 people had received the IPMA's "four-level validated" certification [36]. Also on 21st September 1999 the PMBOK® Guide [33] was approved as an American National Standard (ANSI/PMI 99-001-1999) [37] and was subsequently adopted as an IEEE Standard [37].

The Australian National Competency Standards for Project Management, were the first performance based competency standards for generic project management to be endorsed by a national government (July, 1996). Generic [30] and industry specific [31] performance based competency standards for project management were endorsed by the UK government in the following year (1997). The Australian National Competency Standards for Project Management were particularly suited to use in this research for two reasons. First, their structure mirrors that of the PMBOK® Guide, comprising nine functional units, namely integration, scope, time, cost, quality, human resources, communication, risk and procurement and the PMBOK® Guide was initially recognised as the knowledge base for the Australian standards. Second, the Australian National Competency Standards for Project Management were adopted by a project management professional association, the Australian Institute of Project Management, as the basis for their professional registration program for project managers.

Data on performance against standards were collected using a multiple choice knowledge test based on the PMBOK® Guide and a self-assessment against the Australian National Competency Standards for Project Management. Questionnaires were used to collect data on the qualifications and experience of study respondents,

the nature of projects undertaken and the context within which they are managed. Supervisor ratings were used as a measure of perceived effectiveness of workplace performance.

Analysis was conducted at the level of overall performance against the standards, or total scores for project management knowledge against the PMBOK® Guide and for use of PM practices against the Australian National Competency Standards for Project Management. Analysis was also conducted at the knowledge area or unit level, namely scores for performance against the selected standards for knowledge and use of practices in areas of integration, scope, time, cost, quality, human resources, communication, risk and procurement.

### 3.2. Supervisor perceptions of workplace effectiveness

Supervisors/senior management were asked to rate project personnel on four dimensions, namely:

- their value to clients,
- their value to their organisation,
- the effectiveness of their relationship to peers in achieving project goals, and
- their ability to inspire and encourage the performance of others.

From these data it was necessary, as a basis for analysis, to derive scales that distinguish those perceived to be most effective in the workplace from those perceived as less effective. This can be approached in a number of ways. For instance, in a study of rating outcomes in project teams, Miller and Cardy [38] included only those individuals in the highest and lowest scoring quartiles on a self-monitoring scale. Dulewicz and Herbert [39], in a seven-year follow-up study concerning prediction of advancement to senior management, identified 'high fliers' as those in the top one-third and 'low fliers' as those in the bottom one-third on an advancement factor. Another approach is to use the median as the point of separation, with those scoring above the median as high performers and those scoring below the median as lower performers. The median split was used by Sujan et al. [40] in a study of differences between more effective and less effective salespeople, but without removing those with scores on the median.

The approach selected for this study was to use the median split, identifying those with total rating scores above the median as top performers and those with scores below the median as lower performers. It is important to note that due to the method of selecting the sample, all participants in this study should be considered to be relatively effective performers. All participants were at the time of the study employed in project roles by organisations that recognised the value

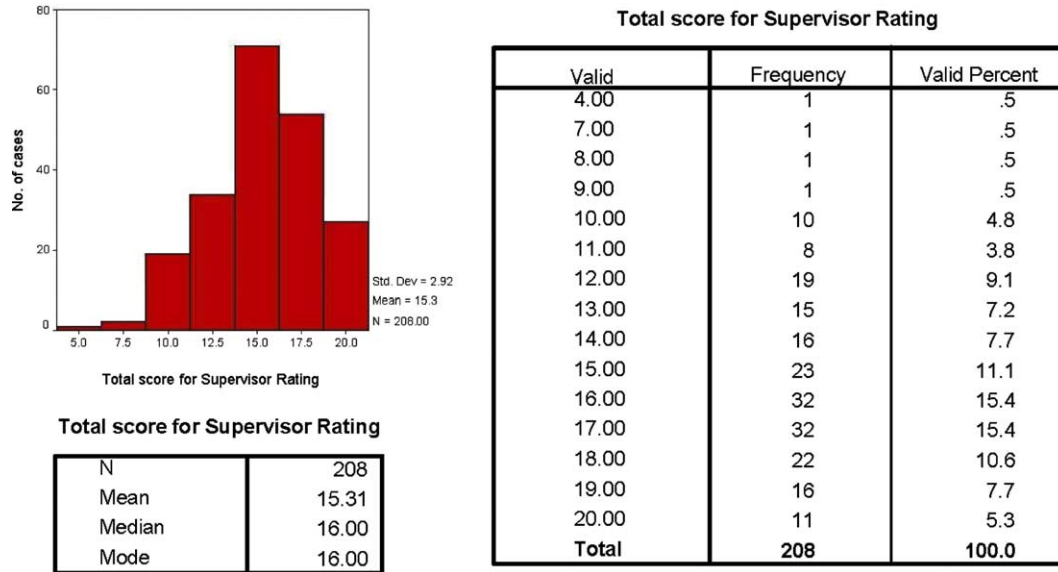


Fig. 3. Supervisor rating summary scores.

of project management sufficiently to support the study, and valued the participants sufficiently to support the time that they spent in the data collection workshops. Therefore, any differentiation in terms of performance must recognise that such differentiation is relative only. Those who are identified as ‘lower’ performers are still gainfully employed in project roles.

The median split, using only those cases scoring above and below the median (median = 16) (Fig. 3), ensures a clear split between the higher and lower groups with least reduction in the size of the useable sample. As indicated in Tables 1 and 2, exclusion of the cases with median scores for both supervisor and self-ratings provides a relatively even split of top and lower performers with slightly more lower performers (54%) than

top performers (46%) as rated by supervisors. Only 32 cases are excluded. This classification has therefore been used as a basis for subsequent analysis requiring discrimination between top and lower performers.

### 3.3. Nature and context of projects

Another important issue in considering project management competence is the nature of projects and the context within which they are conducted. Einsiedel [41] contends that project management effectiveness “depends on a wide variety of factors, some of which have little or nothing to do with the managers’ personal ability or motivation” and Thamhain and Wilemon [9] maintain that the environmental context of the project has to be examined before any conclusions can be drawn about project management effectiveness.

Further, critique of performance based competency standards questions the feasibility of generic standards, and their applicability across organisations and regions [42]. The impact of organisational competence and culture is also raised as a potential factor in inhibiting or fostering competence and in understanding and defining what constitutes competence [43–45].

Review of project management literature identified a number of contextual variables that may be expected to affect project management competence and perceptions of performance. Characteristics of projects, such as size, duration, geographical location, technology, complexity, uncertainty, level of risk, urgency, nature of workforce, degree of definition and product of the project are all aspects which are considered by various authors as influencing the management of projects [9,46–51].

Another aspect which is consistently referred to is the organisational context in which the project, the project

Table 1  
Identifying top, median and lower performers

	Supervisor rating	
	Count	%
Lower performers	95	45.7
Median performers	32	15.4
Top performers	81	38.9
<b>Total</b>	<b>208</b>	<b>100.0</b>

Table 2  
Identifying top and lower performers (median performers removed)

	Supervisor rating	
	Count	%
Lower performers	95	54.0%
Top performers	81	46.0%
<b>Total</b>	<b>176</b>	<b>100.0%</b>

manager and team are required to operate [9,49,52,53]. This will include such factors as organisational climate (e.g., communications, continuity of work, career growth), degree of top management support, level of authority of project manager, availability of resources, stability of project scope and goals, nature of project ownership, roles and structures. Factors listed thus far tend to be internal to the project and the organisation or organisations involved. External factors, such as politics, economics and technological developments will also affect the project.

Industry sector is regularly discussed in relation to projects, but as Youker [50] points out, projects producing similar types of products are more likely to have characteristics in common than projects in a particular industry sector. For instance, a construction company (engineering and construction sector) may have a project to introduce a new information system (information systems sector) or a software development company (information systems sector) may need a new building. To address this issue, the term ‘application area’ has come into use in relation to projects as a way of classifying projects according to the product to which project management is being applied rather than the industry sector of the organisation that is the owner of the project or recipient of the product.

The main contextual variables considered in this study were:

- country,
- industry sector of organisation,
- application area of project,
- project role, and
- organisational project management competence or maturity.

Variables used to present a picture of the degree of complexity inherent in the nature of projects managed included:

- Similarity of projects to one another vs. difference from one another.
- Degree of definition of the project at the start.
- Degree of definition of goals at the start of the project.
- Degree of definition of methods for the project at the start.

The use of goals and methods as indicators of project type was drawn from the work of Turner and Cochrane [48].

### 3.4. Data collection and analysis

Instruments were completed by project personnel and ‘supervisors’ from three countries, Australia ( $N = 90$ ),

the United Kingdom ( $N = 64$ ) and USA ( $N = 54$ ). Univariate and bivariate analysis, and analysis of variance (ANOVA) techniques were used to test the a priori assumption that there is a positive relationship between performance against selected project management standards and ‘supervisor’/senior management perceptions of effectiveness of project management performance in the workplace. Logistic regression and tree analysis techniques were used to explore the nature of relationships between variables and to identify patterns of positive and negative influence of aspects of knowledge and use of specific project management practices on odds of being seen, by senior management, as a top performer.

## 4. Research results

### 4.1. Confirmatory analysis: knowledge and use of practices

Results of analysis of variance indicate that there is no statistically significant relationship between project management knowledge as demonstrated by total scores on the knowledge test based on the PMBOK® Guide and the measure of perceived effectiveness of workplace performance, namely supervisor ratings ( $P = 0.66$ ). At the level of the nine knowledge domains, analysis of variance, using the independent samples *t*-test, for integration, scope, time, cost, quality, human resources, communication, risk and procurement, reveals that there are no relationships, significant at  $P < 0.05$  level, between performance on the knowledge test and supervisor ratings. The lowest  $P$  value is 0.132 for cost and all other units have  $P$  values greater than 0.445.

Analysis of variance at the level of overall use of project management practices indicates that there is no statistically significant relationship between overall use of project management practices and supervisor ratings ( $P = 0.875$ ). At the unit level, analysis of variance, using the independent samples *t*-test, for use of integration, scope, time, cost, quality, human resources, communication, risk and procurement practices reveals that there are no relationships, significant at  $P < 0.05$  level, between use of project management practices and supervisor ratings. The lowest  $P$  value of 0.194 is for use of Human Resource Management practices and all other units have  $P$  values greater than 0.637.

These results clearly indicate that there is no direct relationship between how well project managers perform against standards for knowledge and use of practices, and how well they are perceived to perform by their supervisors. This suggests that the knowledge and practices valued by project management practitioners, and embodied in their professional standards, are not the same as the knowledge and practices valued by sen-

ior managers. In drawing such conclusions, however, it is important to note that both competence and perceptions of workplace performance are complex constructs which will be influenced by factors including the personality and behavioural characteristics of both the project personnel and their supervisors, the nature of the context in which they operate and the types of project being managed.

#### 4.2. Exploratory analysis

Exploratory analysis was conducted to enhance understanding of the relationship between performance against standards, nature and context of projects and perceived effectiveness of workplace performance and to assist in identifying factors most likely to positively or negatively influence supervisor perceptions of workplace performance. Using logistic regression models, contextual factors, specifically country, project management role, and level of organisational project management maturity, were found to be more important in terms of predicting supervisor perceptions of workplace performance than the majority of variables relating to performance against the standards.

Tree analysis demonstrated clearly the effect of country and role. It is not surprising that those in higher project management roles (project/programme director) are more likely to be rated highly by supervisors than project managers, and team members. In this sample, 31% of team members, 43% of project managers and 75% of project/programme directors are rated as top performers. The effect of country is that those project personnel in the sample based in the United States are more likely to be highly rated than those in Australia or the United Kingdom. In this sample, 32% of those based in the UK, 42% of those based in Australia and 70% of those based in the USA are rated by supervisors as top performers, despite the fact that the UK sample, on average, performed better against the standards in terms of knowledge and use of practices than either the USA or Australian samples. These results suggest that variations due to country may have more to do with factors relating to the supervisors and with cultural values in terms of assessment than they do with actual performance, perceived or otherwise.

A very interesting finding, from logistic regression analysis, is a negative relationship between level of organisational project management maturity and the odds of being perceived by supervisors as a top performer (Table 3). The higher the reported level of organisational project management maturity the lower the likelihood of being perceived as a top performer. This finding may be considered counter-intuitive, and suggests a fruitful area for further research.

Although level of organisational project management maturity appeared more frequently than application

Table 3  
Frequency of appearance of variables in reduced models as decreasing odds of being perceived as a top performer

Ref	Variable	Freq.	%
1	Level of organisational project management maturity	84	40.19
2	Assess communications management outcomes	71	33.97
3	Monitoring and controlling – specialist (scope)	14	6.70
4	Use of communications management practices	8	3.83
5	Assess risk management outcomes	7	3.35
6	Communication activities	7	3.35
7	Organisation structure activities	6	2.87
8	Use of project integration activities	3	1.44
9	Conduct procurement process activities	3	1.44
10	Planning – specialist (cost)	2	0.96
11	Stakeholder management (parent organisation) activities	2	0.96
12	Project definition activities	1	0.48
13	Stakeholder management (client) activities	1	0.48

Table 4  
Percentage of top performers identified in CHAID analysis by application area of project

Application area	N	% of Top performers
IS/IT and telecommunications	31	61
Engineering and construction	22	27
Business services	45	47
Industrial processes	58	36
Missing	20	14
Total	176	

area of project or industry sector of organisation in the better reduced models in logistic regression analysis, application area of project has a stronger effect in tree analysis. Classification of a significantly higher percentage (61%) of top performers working on IS/IT and telecommunications projects compared with 27% for engineering and construction projects, 47% for business services and 36% for industrial process projects is particularly interesting as it is not consistent with widely held perceptions of poor IS/IT project performance [54,55] and appears unrelated to levels of project management knowledge or use of practices (Table 4).

Although a wide range of contextual, qualifications and experience factors were screened in logistic regression analysis, only the level of organisational project management maturity, country, role, application area of project and industry sector of organisation appeared in the best reduced models. Examination of other contextual variables in tree analysis revealed indications that those project personnel working on projects that are quite different from one another and where either

Table 5  
Frequency of appearance of variables in reduced models as increasing odds of being perceived as a top performer

Ref	Variable	Freq.	%
1	Manage contract finalisation procedures	75	29.07
2	Cost knowledge	66	25.58
3	Total score on knowledge test	23	8.91
4	Planning – specialist (time)	22	8.53
5	Assess time management outcomes	18	6.98
6	Time knowledge	13	5.04
7	Procurement knowledge	8	3.10
8	Use of time management practices	7	2.71
9	Monitoring and controlling – integrative	5	1.94
10	Human resources knowledge	4	1.55
11	Procurement activities	4	1.55
12	Establish agreed procurement processes	3	1.16
13	Monitoring and controlling – specialist (cost)	3	1.16
14	Monitoring and controlling – specialist (time)	3	1.16
15	Closing – integrative	2	0.78
16	Use of human resource management practices	1	0.39

the goals or the methods or both are not well defined at the start of a project, are more likely to be perceived by supervisors as top performers.

While confirmatory analysis indicated that there is no statistically significant relationship between overall scores on the knowledge test and supervisor perceptions of performance, further analysis through logistic regression identified total scores on the knowledge test as positively associated with increasing odds of being perceived by supervisors as a top performer (Table 5). At the Unit level also, higher levels of project management knowledge appear to have a positive effect on perceptions of workplace performance. Only one of the nine knowledge domains, Quality, was found to have any negative association with supervisor perceptions, while cost, time, procurement and human resources knowledge are specifically identified as positive factors in perceptions of workplace performance (Table 5).

In use of practices, patterns of positive and negative influence on perceptions of workplace performance have emerged. Procurement is particularly interesting as some aspects of procurement appear to increase the likelihood of being considered a good performer (establishing procurement processes, conducting contract finalisation activities, integrative closing) while others (establishing procurement requirements, implementing contract) are associated with decreasing likelihood (Tables 3 and 5). Given the very high importance placed upon integrative activities in the literature, it is somewhat surprising that use of integration practices, overall, is identified with decreasing likelihood of being perceived as a top performer.

There is evidence from exploratory analysis that time planning and management practices, an area strongly and traditionally associated with project management, are generally associated with positive perceptions of workplace performance.

Although integrative planning is not identified as a positive factor in perceptions of workplace performance, integrative monitoring and controlling along with monitoring and controlling of time and cost are associated with increased odds of being perceived as a top performer in the better logistic regression models (Table 5). It is particularly interesting that monitoring and controlling of scope is identified with decreasing odds of being perceived as a top performer. Allied to this is the identification of communication, stakeholder management and project definition activities in association with decreasing odds of being perceived as a top performer (Table 3). When considered in light of some results from tree analysis there appears to be a suggestion that supervisors prefer project managers to limit themselves to traditional project management responsibilities of time, cost and procurement and not to trespass into what might be considered general management areas of concern with organisation structure, project and scope definition and control, integration and communication. There are two notable exceptions to this trend. One exception is identification of Human Resource Management knowledge and practice, which might be considered by Supervisors as the domain of general management, in logistic regression models as positively associated with supervisor perceptions of performance. Another exception, identified in tree analysis, is that programme/project directors that use higher levels of integration and scope practices are more likely to be identified as top performers than project managers or team members.

The findings of this study are supported by research commissioned by the Association for Project Management (UK) and a number of leading UK companies and conducted by the Centre for Research in the Management of Projects, UMIST, as a basis for review and revision of the APM Body of Knowledge [56]. Those areas of knowledge on which there was least agreement amongst respondents concerning importance for project managers closely mirrored the knowledge and practices found to be negatively associated with senior management perceptions of performance identified in the study reported in this paper.

These results, drawn from two different studies, but painting a similar picture, provide support for a proposition that there is senior management resistance to project manager involvement in practices that relate to strategy, project definition, project integration and communication. The overall impression given by these results is that to be rated by senior management as top performers, project personnel should avoid too much involvement in activities that might be interpreted as encroaching upon the territory of general management. While the Morris et al. [56] study indicates that there is less than 50% agreement on the importance of knowledge for project personnel in areas of strategy, require-



ments management, integrative management, performance measurement and information management, the study reported here indicates that use of practices in these areas, and in stakeholder management, are likely to translate into lower perceptions of project management performance by senior managers. Significantly, these two studies indicate a difference in the knowledge and practices that are considered important to the success of projects by project management practitioners as embodied in standards and the project management knowledge and practices that are valued by senior management.

Further support for the differences in what is valued by project managers and senior managers is provided by research conducted by Thomas et al. [57] on selling project management to senior executives. According to this study, “in all the interviews conducted, only those at one projectized firm consistently described project management as providing strategic benefits” while all others described it as a “corporate tactic” [57, p. 317]. Senior management expectation that project managers will concentrate on monitoring and control of cost and time and delivery of results is supported by the statement that “executives do not view project management as useful for more than a control mechanism.” [57, p. 319] and a quote from an executive reported to have said “Don’t tell me how it’s done, just show me the results” [57, p. 319].

## 5. Conclusions

Project management standards are being used extensively throughout the world in training and development, professional certification programmes and corporate project management methodologies, based on the assumption that there is a positive relationship between standards and effective workplace performance. However, there has been no empirical research reported that supports or indeed questions this assumption which is inherent in the way the standards have been developed by expert practitioners. Research was undertaken to explore the relationship between performance against standards and effectiveness of project management performance in the workplace as perceived by senior managers.

Results of this research suggest that there is no statistically significant relationship between performance against the standards selected for study, in their entirety, and perceived effectiveness of workplace performance. Patterns of both positive and negative relationships between performance against parts of the standards and perceptions of workplace performance are evident. A difference in perceptions and expectations of project management competence between project managers and their supervisors, senior management, is suggested.

In summary, it seems that to increase the likelihood of being perceived as a top performer by senior management, project personnel should:

- be located in the USA,
- be a project/programme director,
- work in organisations that have a project management system and plans based on previous experience (equivalent to level 2 of the SEI capability maturity model [58]),
- work on IS/IT and telecommunications projects that have high ambiguity (ill defined goals, methods or both) and are each quite different from one another,
- have high levels of project management knowledge especially in areas of cost, time, human resources and procurement, and
- concentrate on using time, human resources and procurement practices, with particular attention to monitoring and controlling of cost and time, establishing and negotiating contracts and managing project finalisation.

Additionally, although this represents a contradiction of parts of the standards and certainly the findings from research based literature [59], with the exception of those in programme/project director roles, those project personnel who wish to be perceived by senior management as top performers should be very careful in involving themselves in activities that might be interpreted as encroaching upon the territory of general management.

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