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# PROJECT MANAGER COMPETENCIES AND PERFORMANCE OUTCOMES IN IT PROJECTS

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# PROJECT MANAGER COMPETENCIES AND PERFORMANCE OUTCOMES IN IT PROJECTS

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## Abstract

*Meeting performance targets for IT projects is difficult, and skilled project managers have been identified as a key factor in maximizing the possibilities of success. Our goal in this study was to identify critical behavioural competencies for IT project managers, including competencies necessary for entry-level positions and competencies that distinguish superior performance in IT project management.*

*Two categories of competence, team leadership and concern for order, were associated with higher levels of IT project performance outcomes. The behaviours within these two categories provide a useful focus for organisations seeking to improve their project management performance. Some of these behaviours – for example, detailed planning and managing meetings – are entry-level behaviours that should be the target of basic training for novice project managers. Other behaviours – for example, accurate estimation and problem solving strategies – were observed in fewer respondents and could be the focus of more advanced training for incumbent project managers. Additionally, two valuable but infrequently observed behaviours – creating a compelling vision and ensuring alignment with business strategic goals – were correlated with performance related to supporting longer term business benefits from IT projects, suggesting that developing project manager competence in these behaviours would be particularly beneficial for achieving long-term success from IT projects.*

*Keywords: IT project management skills, IT project management knowledge, performance management, behavioural competencies.*

# 1 Introduction

The successful management of Information Technology (IT) projects continues to be a major challenge: organisations increasingly seek to achieve key business objectives with their projects, but still struggle to meet performance targets. While an experienced project manager, with the right project tools and methodology, can increase the likelihood of a successful IT project (Cooke-Davies, 2002; Sauer, Gemino, & Reich, 2007), little research has addressed issues related to the development and management of the performance of IT project managers. Our previous exploratory research has demonstrated that IT project managers regard certain behavioural competencies as critical for successful management of their projects (Taylor & Woelfer, 2010), which provides a foundation for further elaboration in terms of identifying which specific competencies are associated with above average project management performance. Identifying the competencies that distinguish above-average IT project management performance can be a useful selection tool for new project managers, aid in the identification of existing project staff who have the potential to succeed as IT project managers, and be used to identify training needs by highlighting any gaps in a current project manager's knowledge and skill-sets.

## 1.1 Competency-based Performance Models

A job competency is an underlying characteristic of a person that is demonstrated through the person's behaviour, and can lead to more effective job performance (Boyatzis, 1982). These behavioural competencies can be changed through training, although some are more difficult to change than others. A competency performance model is a set of behavioural competencies for a particular job that have been shown to demonstrate distinctions between job outcomes for superior and average performers. Competencies associated with high performance can then be the target of selection and training programs.

There is a considerable body of work on behavioural competencies for management positions (Boyatzis, 1982; Spencer & Spencer, 1993), resulting in a generic management competency performance model that can provide a foundation for personnel selection and performance management aimed at developing successful functional managers. There is, however, little empirical research investigating the specific behavioural competencies required by *project* managers in order to do their jobs (Morris, 2001). In the project management arena, the Project Management Institute (2002) has developed a detailed framework of 19 project management competencies adapted, on an expert judgment basis, from the general managerial competencies listed in Spencer and Spencer's (1993) competency dictionary. However, the framework has not been empirically tested to confirm that the specified competencies are complete, are all equally important, and are all necessary to distinguish superior project management performance.

In a rare empirical example, the applicability of generic management competencies to construction project managers has been examined by Dainty, Cheng, and Moore (2003, 2004, 2005b) in a program of research which led to the development of a competency model, reporting a group of 12 core behavioural competencies regarded as critical for effective construction project management performance. While it is tempting to assume that this set of core behavioural competencies for construction project management could also be applied to IT project managers, it is likely that some competencies are industry and role-specific (Dainty, Cheng, & Moore, 2005a; Morris, 2001), and our preliminary study investigating critical skills for IT project managers also suggests key differences in competencies required for IT project managers (Taylor & Woelfer, 2010). In addition, the nature of construction projects is quite different from IT projects. Construction projects are relatively well-defined, with a high degree of repeatability, and with project teams that are likely to remain the same from project to project. In contrast, IT project managers typically face new, diverse, and ill-defined requirements for each project and often work with different teams for each project. Given these differences in the nature of IT projects, the types of problematic situations faced by IT project managers may be quite different from those that arise in construction

projects, thus requiring different competencies to resolve. Thus further investigation of the competency requirements in the IT project management field is warranted.

The current study builds on our earlier exploratory research, and was guided by the following questions:

1. What types of complex or problematic situations do IT project managers commonly face?
2. What categories of competence do IT project managers use as they address these situations?
3. What specific behaviours within the competency categories are being used?
4. What competency categories (if any) are under-utilized?
5. Which specific project manager behaviours are associated with IT project performance outcomes?

For question 5, in the absence of clear guidance from the literature, we drew on our earlier exploratory study to hypothesise that behaviours in the *team leadership*; *concern for order*; *relationship building*; *impact & influence*; and *organisational & business awareness* competency categories would be related to performance on IT project outcomes. The earlier study also identified the importance of informal learning channels for the development of IT project management competencies, and so we hypothesised that behaviours in the *acquisition of expertise* category would be related to performance.

A further question arose from the behavioural event interview technique that we applied in this study:

6. Does what managers *say* is important for their job (their espoused behaviours) differ from what they actually do in the critical situations they face (their demonstrated behaviours)?

We believe the answers to these questions will aid in the identification of existing project staff who have the potential to succeed as IT project managers, and can be used to identify training needs by highlighting any gaps in a current IT project manager's knowledge and skill-sets.

## 2 Method

The typical competency study design, as outlined in Spencer and Spencer (1993), is a two-stage field study, with the first stage involving in-depth behavioural event interviews with incumbents of the target job, and the second stage requiring an objective assessment of the incumbents' job performance, either from recorded data on performance (for example, recorded sales data for sales jobs) or from supervisor assessment of performance when recorded data is not available (which is the more typical situation for management-related studies). Thus our study protocol required 1) the identification of a sample group of IT project managers and their supervisors; 2) conduct of in-depth semi-structured behavioural event interviews with the project managers; 3) the development of a set of criteria to measure project performance effectiveness; 4) the conduct of structured interviews based on these performance criteria with the project managers' supervisors; and 5) coding and analysis of the interviews to identify competencies distinguishing higher performing project managers.

### 2.1 Sample

We sought a range of IT project managers, both in terms of their years of experience and the types of IT projects they had managed. Thus, participants in this research were forty IT project managers and their supervisors from three organisations, with a range of project management experience from two to over twenty years. Twenty of the project managers worked for Company A, a multi-national organisation specializing in medical products and healthcare. Eleven project managers worked for the IT security division of Company B, a global software development firm, and nine respondents worked for Company C, a US national airline. The three organizations represented three different types of IT project work, with Company A projects typically focused on implementing customized package applications such as enterprise resource planning systems, Company B projects involving software and policy aspects of IT security projects, and Company C projects involving in-house development of specialized software for the organisation's operations.

## 2.2 Behavioural Event Interviews

In order to capture a rich set of data about project managers' behaviours during the course of their projects, we conducted semi-structured behavioural event interviews (McClelland, 1998) with participants. Behavioural event interviews are a modification of the critical incident technique (Flanagan, 1954) designed to identify the behavioural competencies, and the degree of competency, needed to do the job well. In particular, by focusing on actual events or critical incidents, behavioural event interviews have been shown to be effective in surfacing demonstrated, rather than espoused, behaviours used in these situations. Interviews were conducted either face-to-face at the respondent's work-place (19 interviews), or by phone (21 interviews). All interviews were tape-recorded and transcribed verbatim, and transcripts were returned to the interviewees for respondent validation. All interviewees confirmed their transcripts with, at most, minor corrections.

We asked respondents to describe critical occasions in which they had faced a complex or problematic situation or event in the course of their IT project management work. They discussed details of the situation that they were facing, what they did, and what the outcome was. In total, the respondents discussed 119 situations in depth, an average of three in-depth situations per project manager. In the final part of the interview, respondents described specific skills that they deemed important for IT project managers. This part of the interview resulted in a further 119 brief situations illustrating specific competencies that the respondents valued for IT project management, which were analysed separately.

## 2.3 Structured Performance Effectiveness Interviews

In the structured interviews with project managers' supervisors, we sought an independent assessment of the managers' performance effectiveness on several project success criteria. We drew on recent literature reviews of IT project success criteria (Bannerman, 2008; Cooke-Davies, 2002; Thomas & Fernandez, 2008) to define a set of project performance effectiveness criteria, based on outcome measures that could be objectively assessed by the supervisors. These criteria included the typical time, budget, and scope (requirements and quality) criteria, as well as assessment of client and team satisfaction, achievement of business benefits, and enhancement of the IT unit's reputation. All supervisor interviews were conducted by phone, and the supervisors were asked to provide a percentile rank for each criterion, indicating the level of the project manager's performance in relation to other project managers they had managed.

## 2.4 Coding and Analysis

We began with the set of 19 competency categories identified for project management by the PMI (2002) and added the *acquisition of expertise* category from Spencer and Spencer (1993) based on the findings of our earlier exploratory study (Taylor & Woelfer, 2010). We developed a codebook for behaviours within these competency categories, drawing on Spencer and Spencer's (1993) competency dictionary, and adding some project-specific descriptors where appropriate (for example, adding concern for accurate estimation to the descriptors for behaviours in the *concern for order* category). Atlas.ti version 6.2 software was used to manage the coding process. Our coding goal was to identify specific behaviours demonstrated in respondents' critical situation descriptions, and reported in the skills they deemed important. Both authors coded one transcript independently and then met to discuss and resolve coding differences. We repeated this for a second transcript and then both coded all remaining transcripts independently. We achieved an average 93% agreement on behaviours identified across all transcripts.

After coding was complete, we reviewed all coded transcripts and found that there was considerable overlap between the teamwork and team leadership categories: it was difficult to decide when behaviour was purely teamwork and when it was part of a leadership action, and we had typically coded these behaviours to both categories. Thus we merged the behaviours in these two categories into a single set of team leadership behaviours.

We also examined each critical situation described by respondents and derived a categorization of the types of situation, allowing this categorization to emerge naturally from the data. Once coding was completed, we exported coding summaries for further statistical analysis in Excel.

Our analysis focused on four areas. First, addressing research question one, we summarized the various types of situations faced by these managers. Second, we identified the most and least commonly observed categories of behavioural competency in the critical situation descriptions, and the specific demonstrated behaviours within each competency category (research questions two, three, and four). In order to examine our hypotheses for research question five, we calculated point biserial correlations between the occurrence of behaviours and the project performance ratings to determine whether any demonstrated behaviours were associated with higher performance on different project success criteria. Finally, we compared the espoused behaviours that project managers deemed important for their work with the demonstrated behaviours that we observed in the critical situation descriptions.

### 3 Results

Participants spoke candidly about their experiences and the analysis of the behavioural competencies observed in their in-depth descriptions of challenging situations enabled us to build a picture of the skills these managers rely on in their IT project work. Further, by examining linkages between the occurrence of specific demonstrated behaviours and performance on various project outcomes, we were able to identify certain behaviours that are associated with different project success criteria.

#### 3.1 Types of Critical Situations Faced by IT Project Managers

We were able to distil seven major types that accounted for 85% of the situations and were described by at least a quarter of the project managers, as shown in Figure 1. Seen in the context of the competencies we discuss later, these situations reinforce the importance of *leadership* skills - to address user, stakeholder, and team management issues – and *concern for order* skills to address project scoping and control issues. Situations described by seven or fewer respondents included challenges with vendor or third party deliverables control, client or user acceptance problems, personal issues, challenges in managing expectations of the project, issues related to escalation to senior management, and situations revealing lack of organisational understanding.

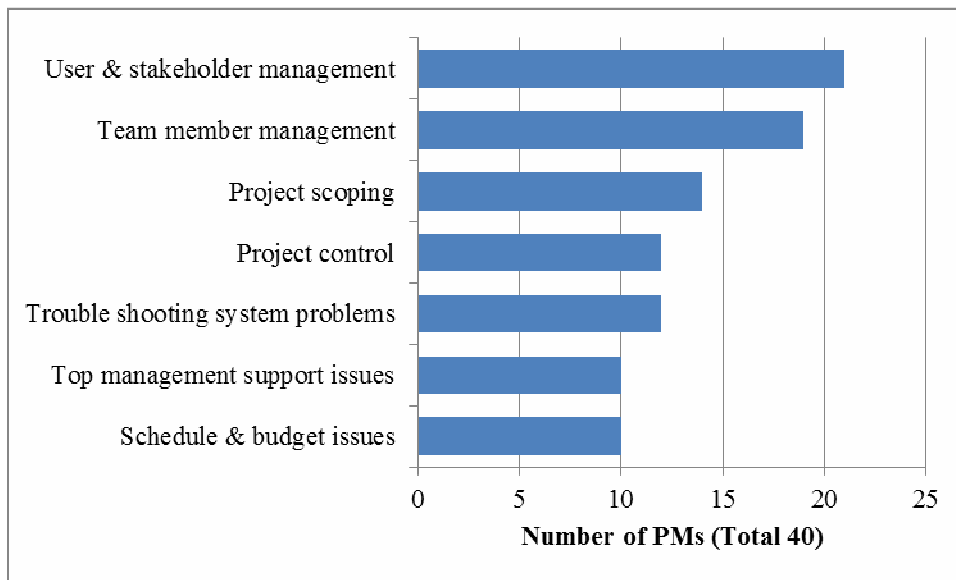


Figure 1. Top seven types of critical situation faced by at least one quarter (10) of respondents.

One particularly interesting finding was that over half of the situations described involved some kind of distributed team. Project managers from all three companies reported experiences working with teams whose members were distributed both across the US and across the world. Our respondents worked with team members located in a range of countries including Argentina, Australia, Austria, Costa Rica, France, Germany, Great Britain, Greece, India, Italy, Japan, the Netherlands, Poland, Russia, Singapore, Sweden, Switzerland, Taiwan and various locations across the US. The main methods of communication with these distant team members were email and phone, with video conferencing also being mentioned. In contrast to recommendations in the literature (Gibson & Cohen, 2003; Hertel, Geister, & Konradt, 2005), bringing the whole team together for a face-to-face meeting was rarely mentioned, even at the launch of the project, although project managers did describe a few instances where they personally travelled to various locations to meet face-to-face with their distant team members. The prevalence of geographically distributed teams in the experiences of these project managers suggests that the ability to work with a diverse group of team members, distributed across a wide range of locations is becoming increasingly important, and organisations need to give careful consideration to how these teams are supported.

### 3.2 Most Common Competency Categories

While we observed behaviours in each of the 19 competency category, only 10 categories contained behaviours demonstrated by at least half (20) of the respondents, as shown in Figure 2. As with the earlier exploratory study, *team leadership*, *concern for order*, *impact & influence*, and *relationship building* were in the top five competency categories, along with *initiative*. *Information seeking*, *analytical thinking*, *acquisition of expertise*, *directiveness*, and *achievement orientation* categories are all also observed in more than half the respondents. While the earlier study’s findings included *organisational awareness* in its top five, this category slipped to 16th in the rankings for the current study, with only 13 project managers demonstrating behaviours in this category.

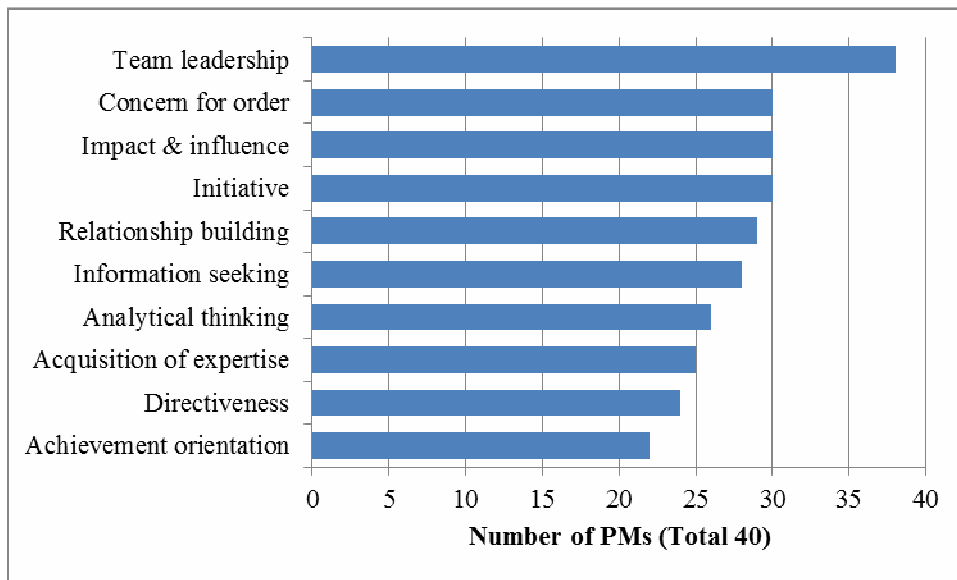


Figure 1. Top ten competency categories demonstrated by at least half (20) of respondents

### 3.3 Most Common Positive Behaviours within Competency Categories

Our coding framework described 158 positive (productive) behaviours across the 19 competency categories. Eighty-four of the positive behaviours were demonstrated by three or more project managers. Table 1 shows the positive behaviours that were demonstrated most frequently, occurring in situations described by at least one quarter (10) of the respondents.

| Competency Category   | Behaviour   | No. of PMs (Total 40) | Competency Category      | Behaviour   | No. of PMs (Total 40) |
|-----------------------|---|-----------------------|--------------------------|---|-----------------------|
| Team leadership       | Manages meetings  | 22                    | Impact & influence       | Takes action to persuade and calculates the impact of the actions | 14                    |
|                       | Escalates problem to senior managers                              | 20                    |                          | Uses complex influence strategies                                 | 13                    |
|                       | Positions self as the leader                                      | 16                    | Initiative               | Is decisive in a crisis   | 14                    |
|                       | Solicits input from the team                                      | 16                    | Relationship building    | Uses boundary spanning liaison behaviours                         | 23                    |
|                       | Keeps people informed about decisions                             | 15                    |                          | Seeks informal mentors  | 14                    |
|                       | Solves problems with the team                                     | 14                    | Information seeking      | Digs deeper with probing questions                                | 18                    |
|                       | Promotes team effectiveness with team building and training       | 10                    |                          | Gets others involved in seeking out information                   | 10                    |
| Concern for order     | Monitors project's progress                                       | 24                    | Analytical thinking      | Sees multiple relationships in a problem or situation             | 19                    |
|                       | Shows a concern for order and clarity                             | 19                    |                          | Sees basic relationships in a problem or situation                | 14                    |
|                       | Strives to obtain & set accurate estimates                        | 14                    | Acquisition of expertise | Demonstrates on-going learning through reflection                 | 17                    |
| Impact & influence    | Takes action to persuade and calculates the impact of the actions | 14                    |                          | Learns from own mistakes  | 12                    |
|                       | Uses complex influence strategies                                 | 13                    | Directiveness            | Speaks assertively  | 22                    |
| Initiative            | Is decisive in a crisis   | 14                    | Achievement orientation  | Wants to do the job well  | 11                    |
| Relationship building | Uses boundary spanning liaison behaviours                         | 23                    |                          | Sets challenging goals  | 10                    |
|                       | Seeks informal mentors  | 14                    |                          |   |                       |

Table 1. Positive behaviours in the top ten categories demonstrated by at least one quarter (10) of the respondents

### 3.4 Most Common Negative Behaviours within Competency Categories

Our coding framework described 35 negative (non-productive or non-effective) behaviours across the 19 competency categories. We observed 23 of these negative behaviours, but most of these (15) were demonstrated by only one to three project managers. As shown in Table 2, eight negative behaviours were observed in four to eight respondents, and one behaviour – *rationalizes or blames others for failure* – was demonstrated in critical incidents described by 20 project managers.

### 3.5 Infrequently Observed Categories

The most infrequently observed competency categories were *organisational commitment* and *flexibility*, demonstrated by four and six project managers respectively. Two further categories, *self-confidence* and *developing others*, were each demonstrated by eight respondents. The infrequency of three of these categories – *organisational commitment*, *self-confidence*, and *developing others* – is consistent with our earlier study, while the fourth, *flexibility*, appeared in over a third of respondents in that study.



| Competency Category         | Behaviour   | All PMs (Total 40) |
|-----------------------------|---|--------------------|
| Acquisition of expertise    | Rationalizes or blames others for failure (instead of learning)   | 20                 |
| Interpersonal understanding | Misunderstands or is surprised by others' feelings or actions     | 8                  |
| Initiative                  | Fails to act on clear opportunities                               | 7                  |
| Team leadership             | Refuses or fails to lead  | 6                  |
| Self-control                | Loses control   | 6                  |
| Information seeking         | Fails to seek additional information or shows lack of preparation | 5                  |
| Self confidence             | Asserts a lack of confidence and expresses powerlessness          | 4                  |
| Impact & influence          | Ineffective influence strategies or lack of forethought           | 4                  |

Table 2. *Negative behaviours demonstrated in critical situations by four or more of the respondents.*

Care must be taken in drawing conclusions about the possible under-utilization of these categories, since their infrequency could be an artefact of our research design and interview protocol. However, while some of these categories could be less important for the IT project manager job, others – for example, the *developing others* category – are considered to be important general management skills and could represent areas of opportunity for project manager development and training.

### 3.6 Performance Outcomes and their Relationship to Specific Behaviours

The results discussed so far provide a picture of the typical behaviours in the IT project manager's toolkit, and while this picture provides an interesting indicator of the types of behaviours used by PMs in project situations, it does not tell us which behaviours are effective in terms of achieving better project outcomes. In this section we first describe the project performance outcome measures that we used, and then discuss the relationships found between specific behaviours and performance outcomes.

#### 3.6.1 Project Performance Outcome Measures

The performance outcome measures addressed several different aspects of project performance. The first set of ratings addressed traditional project management measures of performance against schedule, budget, requirements (i.e. scope), and quality of the delivered requirements. The second set of ratings examined the performance from the client or user perspective, with ratings on client satisfaction with project outcomes (i.e. client satisfaction with *what* was delivered) and on project process (i.e. client satisfaction with *how* projects were managed). Third, insight into the team members' perspective was sought by a rating on team satisfaction with project process. Fourth, a longer-term view of the outcomes of projects managed by each respondent was provided by ratings on the extent to which business benefits were achieved from projects, and the extent to which the IT department or unit's reputation was enhanced by projects. Finally, we asked for an overall rating of each project manager's performance. Descriptive statistics for the performance outcome ratings are shown in Table 3.

#### 3.6.2 Relationships between Specific Behaviours and Performance Outcomes

As shown in Table 4, for positive, or productive, behaviours, we found statistically significant (at the  $p = 0.05$  level) positive correlations between several performance outcome measures and the demonstration by project managers of six *team leadership* and two *concern for order* behaviours. One *organisational awareness* behaviour was also correlated with three performance outcomes. Additionally, three negative behaviours, one each in the *concern for order*, *expertise*, and *impact & influence* categories, were negatively correlated with performance outcomes. No other hypothesized correlations reached statistical significance.

| Performance outcome            | Minimum | Maximum | Mean | Standard Deviation |
|--------------------------------|---------|---------|------|--------------------|
| Schedule performance           | 35      | 100     | 77.3 | 15.0               |
| Budget performance             | 40      | 100     | 78.8 | 14.5               |
| Requirements performance       | 25      | 95      | 78.5 | 13.7               |
| Quality performance            | 25      | 100     | 74.3 | 15.1               |
| Client outcome satisfaction    | 20      | 100     | 77.3 | 15.9               |
| Client process satisfaction    | 35      | 95      | 70.6 | 15.2               |
| Team process satisfaction      | 30      | 100     | 71.8 | 15.3               |
| Business benefits performance  | 40      | 100     | 75.4 | 13.5               |
| IT unit reputation performance | 20      | 100     | 75.8 | 20.6               |
| Overall performance            | 25      | 100     | 74.3 | 16.1               |

Table 3. Descriptive statistics for supervisors' ratings of project manager performance outcomes (N=40; scale of 1 (low) – 100 (high)).

The correlations between the *team leadership* and *concern for order* behaviours and performance outcomes provide support for our contention that these behavioural competency categories are of key importance for IT project managers. *Team leadership* skills are given little attention in project management guides like the PMI's Project Management Body of Knowledge (PMBOK®) (Project Management Institute, 2008) and as we found in our earlier study, are more typically acquired through on-the-job experiences. The findings in this current study highlight the need for team leadership skills to become a focus of organisational training and career development activities for IT project managers. Similarly, while basic levels of the *concern for order* category are addressed in great detail in PMBOK®, more advanced skills, such as IT-related estimation, receive less attention. The relation between the *estimation* skill and long term business benefit outcomes from projects, together with the lower numbers (about a third) of project managers demonstrating this skill, suggests that advanced training in IT project estimation could be beneficial for organisations seeking to improve their IT project performance.

Two behaviours that were infrequently observed – communicating a compelling vision and aligning the project with business strategic goals – were both correlated with performance in supporting longer term business benefits from IT projects. Since these behaviours were uncommon, they could be indicators of high-performing project managers: developing competence in these behaviours among all project managers in the organisation could be beneficial for achieving long-term success from IT projects.

The high number of respondents demonstrating the negative *dealing with failure* behaviour of *rationalizing or blaming others*, together with the negative correlation of this behaviour with two performance outcomes - long term business benefits and IT unit reputation - highlights an area where organisations could benefit from personnel education and training. The other two negative behaviours with significant correlations to performance outcomes – *lack of concern for order* and *ineffective influence* strategies – were observed in three and four project managers respectively. These two areas could also be the target of training initiatives, but since they occurred in so few respondents they might also indicate criteria for selection decisions when recruiting personnel for project management positions.

### 3.7 Most Commonly Espoused Behaviours within Competency Categories

The behaviours discussed so far are the behaviours that respondents *demonstrated* in in-depth descriptions of critical situations in their projects. We also asked respondents to describe the skills that they deemed important for their project management work, which we term *espoused* behaviours, in order to explore possible differences between what managers *say* is important and what they actually do. Of the 158 possible positive behaviours in the coding framework, 39 were described as espoused behaviours by three or more project managers. As shown in Table 5, and consistent with the demonstrated behaviours in Table 1, *concern for order* and *team leadership* behaviours were the most frequently mentioned espoused behaviours deemed important for project management.

| Competency Category      |  | No. of PMs | Schedule | Budget | Requirements | Quality | Client outcomes | Client process | Team process | Business benefits | IT unit reputation | Overall |
|--------------------------|--|------------|----------|--------|--------------|---------|-----------------|----------------|--------------|-------------------|--------------------|---------|
|                          | <b>Positive behaviours</b>   |            |          |        |              |         |                 |                |              |                   |                    |         |
| Team leadership          | Manages meetings   | 22         |          |        |              | 0.42    |                 | 0.44           |              |                   | 0.39               | 0.40    |
|                          | Positions self as the leader   | 16         |          |        |              |         |                 | 0.37           |              |                   |                    |         |
|                          | Keeps people informed  | 15         |          |        |              |         |                 | 0.31           |              |                   |                    | 0.33    |
|                          | Solves problems with the team  | 14         | 0.38     |        |              |         |                 |                |              |                   |                    |         |
|                          | Empowers others and gives public credit for good performance               | 9          |          |        |              |         |                 |                | 0.31         |                   |                    |         |
|                          | Communicates a compelling vision   | 3          |          | 0.35   |              |         |                 |                | 0.31         | 0.35              |                    |         |
| Concern for order        | Shows a concern for order and clarity                                      | 19         |          |        | 0.31         |         |                 |                |              |                   |                    |         |
|                          | Strives to obtain & set accurate estimates                                 | 14         |          |        |              |         |                 |                |              | 0.36              |                    |         |
| Organisational awareness | Seeks to ensure that IT projects are aligned with business strategic goals | 4          | 0.31     |        |              |         |                 |                |              | 0.40              |                    | 0.33    |
|                          |  |            |          |        |              |         |                 |                |              |                   |                    |         |
|                          | <b>Negative behaviours</b>   |            |          |        |              |         |                 |                |              |                   |                    |         |
| Concern for order        | Shows lack of concern with order, despite problems caused by disorder      | 3          |          |        |              |         |                 |                | -0.53        |                   | -0.36              | -0.32   |
| Expertise                | Rationalizes or blames others for failure                                  | 20         |          |        |              |         |                 |                |              | -0.36             | -0.32              |         |
| Impact & influence       | Ineffective influence strategies or lack of forethought                    | 4          | -0.33    | -0.38  |              |         |                 | -0.32          |              |                   |                    |         |

Table 4. Demonstrated behaviours correlated with performance outcomes. (N=40; correlations significant at the  $p = 0.05$  level; negative correlations indicate that use of behaviour is associated with lower levels of performance).

The specific *concern for order* behaviours deemed important by project managers (shown in Table 5) are the same as those that were demonstrated most frequently in their critical situation descriptions (see Table 1). For *team leadership*, only one of the four demonstrated behaviours in that category in Table 1 - *keeps people informed about decisions* – appears as an espoused behaviour in Table 5.

| Competency Category         | Behaviour   | All PMs (Total 38) |
|-----------------------------|---|--------------------|
| Concern for order           | Shows a concern for order and clarity                       | 20                 |
|                             | Monitors project's progress                                 | 12                 |
|                             | Strives to obtain & set accurate estimates                  | 10                 |
| Team leadership             | Keeps people informed about decisions                       | 12                 |
|                             | Promotes team effectiveness with team building and training | 11                 |
| Interpersonal understanding | Understands underlying issues and problems                  | 9                  |
| Conceptual thinking         | Pulls together ideas & observations to simplify complexity  | 9                  |

Table 5. Behaviours espoused by at least one quarter (9) of respondents as important for project management. (Two respondents did not complete this part of the interview.)

Only one of these espoused behaviours – *estimation* – showed statistically significant correlations (at the  $p = 0.05$  level) between the occurrence of the behaviour and some performance outcomes, correlating 0.38 with schedule performance, 0.46 with quality performance, 0.39 with client process satisfaction, and 0.38 with IT unit reputation. This result suggests that behaviours related to *obtaining and setting accurate estimates* are a useful criterion for selection decisions, both in terms of IT project manager applicants' demonstrated behaviours (through critical situation examples and reports from referees) and also in terms of their discussion of what skills they think are important (i.e. their espoused behaviours). However, the lack of correlation with performance outcomes for all other espoused behaviours highlights the importance of paying attention to demonstrated behaviours (through on-the-job observation, critical situation examples, and referee reports) rather than espoused behaviours when assessing skills in prospective and current IT project managers. In general, actions are a more reliable indicator of performance than words.

## 4 Conclusions

The findings from this research indicate areas where organisations and their IT project managers could derive benefits from training and career development. Key findings of particular significance are the importance of *team leadership* and *concern for order* competency categories. These two competency categories occur most frequently in behaviours demonstrated by project managers in complex project situations and they are also the categories deemed most important by the respondents for the IT project manager job. In addition to being observed frequently, which suggests that these behaviours are important entry-level requirements for the IT project manager job, specific behaviours within these two categories were found to have statistically significant correlations with IT project performance outcomes, suggesting that these behaviours are also indicators of higher IT project manager performance.

In addition to identifying key entry-level skills that can be used as criteria for job selection decisions, we found that three behaviours observed less frequently – striving to obtain accurate estimates, communicating a compelling vision and aligning the project with business strategic goals – had statistically significant correlations with performance in supporting longer term business benefits from IT projects, suggesting that these may be important skills to address in IT project manager career development. These three behaviours are less likely to be found in entry-level IT project managers, and organisations could see improvements in longer-term business benefits from IT projects by providing their project managers with in-house training focusing on these particular behavioural competencies.

This study represents a substantive advance on our earlier exploratory work, by providing evidence that key behavioural competencies are associated with higher IT project performance outcomes. However, it still has a number of limitations. The performance measures were obtained from supervisory assessments of their subordinates on a number of criteria, but we were unable to fully control for individual variation in these assessments, and a stronger approach would be to obtain recorded data about project outcomes, such as performance against budget and schedule. However, such data are difficult to obtain. Additionally, we had insufficient numbers of respondents from two of the three companies, so were unable to examine any inter-company differences. Finally, the study findings could be strengthened by validating the model with a validation sample of a new range of IT project managers, to determine whether the model is predictive of performance in the second sample.

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