citi
*for projects and programmes*

Your partners
**in project success**

CITI Limited

# White paper

## KASE profiling: Improving the practices in the selection of Project Managers

apm Accredited Provider

PRINCE2™

Louise Worsley
Design Authority
CITI Limited
Lovat Bank, Silver Street,
Newport Pagnell, Bucks, MK16 0EJ

Author

# KASE profiling: Improving the practices in the selection of Project Managers

Topic

28 May 2008

Published date

CITI.EP.080613

Reference

Contents

Page

## Abstract

With project managers in short supply and increasing pressures to identify potential project staff internally within the organisation, more and more businesses are looking for reliable and predictable assessment processes. The problem is simply too many complex projects and not enough trusted, ‘safe pairs of hands’ available. The cost concerns are still much in evidence, but the penalties associated with non-delivery are getting increasingly severe. The wrong project manager is something that some projects simply cannot afford.

This paper is an initial analysis of the data obtained from profiling the knowledge, attitudes, skills and experience (KASE) of 3,600 project managers. The data was captured on assignments where assessment centres and internet-delivered questionnaires were used to profile practising project managers. It is representative of a wide spread of sectors and ‘levels’ of project manager. During 2008-9 this data will be extensively analysed in further funded research undertaken by Middlesex University, The National Centre for Project Management in the UK.

No attempt has been made at this stage to apply an inferential statistical approach as this will form part of the work to be performed by Middlesex University. The paper does however, draw out the insights and questions that a basic analysis raises, and makes comparisons with other findings in the research literature. Its aim is to highlight those areas of understanding that would benefit the practising community and which therefore, could be beneficially researched further.

## Key words:

Proceedings, Capability, Competence, Skills

# Introduction

## The demand for project managers

With 2012 (the UK based Olympics) only 4 years away, UK salary surveys are already predicting an increase in the average earnings for project managers of between 10-25% and a shortfall in overall capability.

Contrary to popular belief, it is not simply construction project management skills in demand. Indeed these appear to be well catered for through the large construction companies. It is the integration, policy and major stakeholder programmes that are at risk. There simply are not enough project managers with the broad breadth of experience these types of projects demand.

In addition, and maybe related to this, the UK is seeing more sophistication in the employer market-place with respect to the professional qualifications required for project managers. In a survey of recruitment advertising performed in 2007, 73% of adverts referred to the desirability of some form of professional qualification, with 35% of these specifically referring to PRINCE2. Through the auspices of the Association for Project Management (APM), Project Management Institute (PMI) and APM Group (the organisation responsible for maintaining PRINCE2 and Managing Successful Programmes accreditation) there were 28,000 newly qualified project managers in the UK in 2007.

Despite this increase, organisations still report difficulties in the recruitment of project managers with the appropriate knowledge, attitudes, skills and experience necessary for the projects they need to deliver now. It is commonly found that while qualifications may indicate the presence of project management knowledge, they are often poor predictors of overall capability. This is supported by research in Australia, which found little relationship between performance against professional body standards and senior management perceptions of how effective project managers are in the workplace [1].

## KASE profiling

Project management capability has a major impact upon overall project performance. Many senior managers know this instinctively, as one noted: “The key to project success is to pick the right project manager” [2]. It remains an imperative to find ways of identifying appropriately skilled individuals. Assessment techniques for project managers vary from self-report questionnaires (particularly popular with the cost and administrative ease of internet-based questionnaires); through 360 degree feedback, and full-blown assessment centres such as the APM Practitioner qualification (a 2.5 day assessment process).

In the work reported here, the emphasis has been on ‘profiling’, rather than simply assessing the project managers’ knowledge and skills. This approach describes people in terms of their knowledge, attitudes, skills and experience (KASE). It has been used since 1992 in a variety of sectors and businesses to support development planning, the matching of project managers to projects, and to identify strategic capability shortfalls (the gap between project capability needs and project capability availability).

The selection of the content of the tools used is based upon research carried out in the USA on what makes project managers successful [3], the APM Body of Knowledge, and the Slevin and Pinto analysis of those factors critical to project success [4]. The techniques used include: multiple-choice knowledge tests; self-reporting evaluation of experience; PM specific attitudinal questionnaires; structured interviews; stakeholder role-plays; individual case study analysis, and 360 degree feedback. In the interviews, 'situational judgement' techniques are used. This is an area that has received increased attention in psychometrics as analysis suggests high validity, placing it ahead of many other selection tools [5]. Situational tests are designed to assess candidates' perceptions of the best and worst actions in a work situation and therefore these instruments support the understanding of the experiential knowledge of the candidate.

Depending upon the context and purpose of the profiling, some or all of these profiling instruments may be used. In general, the more significant the decision to be made from the profiling, the greater the number of tools used. The use of multiple-input sources increases the validity and perceived fairness of the assessment process. This enables the data to be triangulated so that observations for confirmatory and dis-confirmatory evidence can be sought. "Unless the exercises provide an opportunity to observe enough behaviours, and do so under (assessor) favourable conditions, it is difficult to infer traits or dispositions" [6]

## Analysis of profiling data

### The data sample

Since 1992, data has been collected from over 10,000 project managers. Every 4 years, this data is anonymised, consolidated and re-baselined to form the basis for comparator data. In 2000, the data was used as the basis of MSc research at the University of Limerick [7]. The most recent baseline is being used as the basis for further research at Middlesex University in 2008/09.

This paper reports on data collected in the last three years. Only data from candidates who were involved in questionnaire and face-to-face assessments is used because of the higher validity associated with profiling using multiple-input sources. All the candidates analysed are those that organisations presented as individuals who are involved in running projects within the business. It is important to note that the question "Who are your project managers?" and "Who runs projects in your organisation?" will typically result in very different groups. The candidates here may not therefore have the job title of project manager, but will be involved in running projects.

All data has been anonymised at the individual and organisational level. Data from eight sectors is available for analysis, however, as three of these yield relatively small sample sizes, they have been omitted, and the results are based on 3,600 candidates from five different industry sectors.

### The analysis approach

The purpose of the analysis in this paper is to stimulate discussion in the practitioner community and to provide input into the direction of further research in the area of project manager success criteria. Further statistical analysis and directed research focusing on specific areas would yield many additional insights.

The analysis of experience, knowledge and overall capability is rated against 3 or 5 point scales. Experience is rated from 1 (least experienced) to 5 (most experienced). Level 1 represents a manager who has worked on few projects probably in a team leader role and / or those projects have had a relatively low level of complexity. Level 5 managers have managed a large number of projects (at least 6). Most recent projects will be in the high complexity range, and will have involved more than one source of complexity (e.g. technical and stakeholder). They will have taken responsibility for these high complexity projects through all stages of the lifecycle. These project managers would typically have been working in a project manager role for 9+ years.

Knowledge ratings are based upon the score achieved. ***Low knowledge*** indicates < 60% correctly answered, ***Average*** is 60-70% and ***High*** is >70%.

Overall capability is derived from the assessment centre findings and is an integrated scoring process which takes into account experience and skills demonstrated. Knowledge and attitudinal ratings are used as secondary indicators and highlight areas of skills and experience to assess further in the assessment centre exercises. Ratings are from 1 (novice) to 5 (high performing) project manager and identify the level of complexity of projects in which the project manager is likely to perform 'safely'. The results achieved through this process have been tested and validated in follow-up surveys with the line managers of profiled project managers. The results obtained are compared with subjective evaluations of the level of competence of the project managers in post. Agreement figures are in the range of 85-90%; i.e. in 85-90% of the cases there is agreement that the rating of the project manager's overall capability rating given in the profiling is appropriate.

## Insight 1: Sectors differ in terms of the KASE in the PM community

The five sectors represented are:

- Government – central government
- Engineering – includes, rail, aerospace and general engineering practices
- Finance & Insurance – banking, insurance and associated services
- Professional services – IT and general consultancy practices
- Telecommunications – telecoms and associated discipline areas

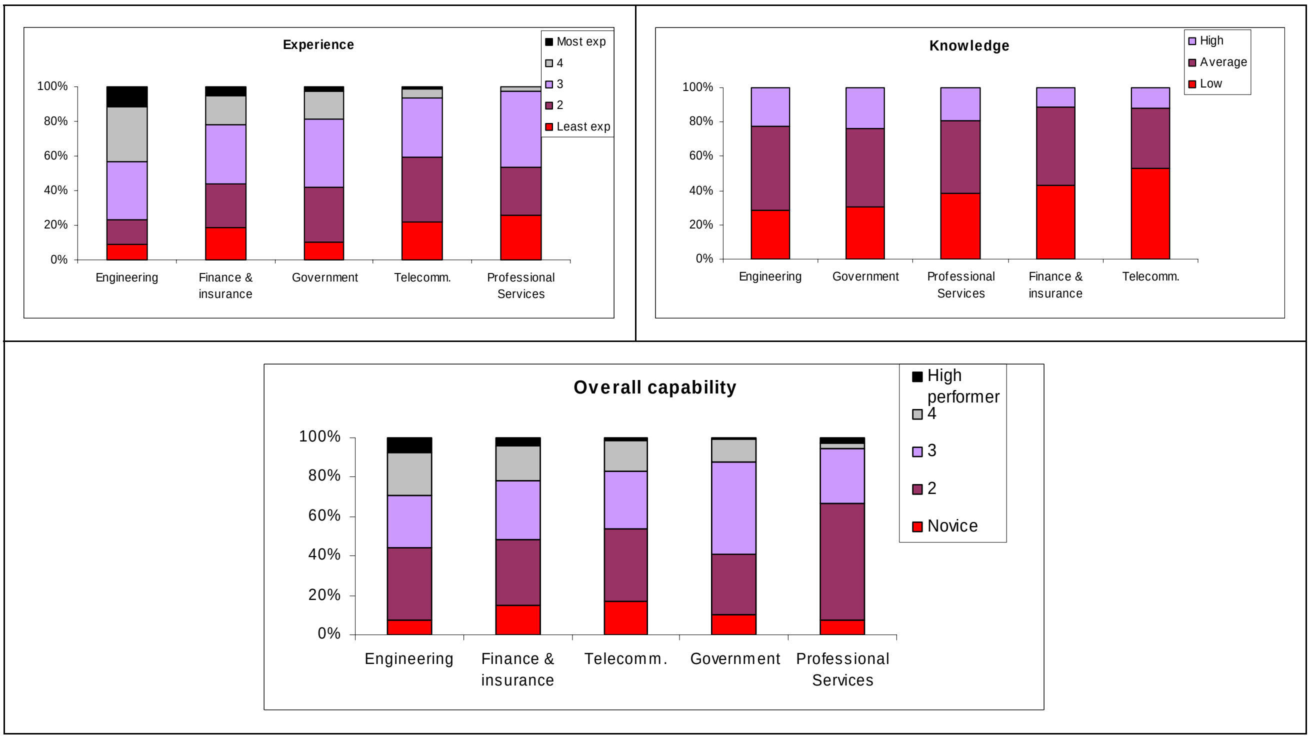

*Figure 1: Sector analysis*

The results suggest that there may be sector differences in the knowledge, experience and overall capability of the project managers profiled. The engineering sector PMs consistently rate higher in all three of these with the biggest difference being in the area of experience. 43% of the engineering project managers are in the higher-end experience categories (levels 4 and 5). This compares with only 3% in professional services.

The data does not support the thesis that one group of project managers is ‘better’ than another. It is important to note that there are a variety of contributing and inter-related causal factors. The experience rating takes into account; the duration of experience in project management; the breadth of project types the PM has been involved with; the complexity of the projects the PM has been involved with; and the PM involvement across the stages of the project life cycle. Possible causes for the apparent ranking differences, therefore, include:

- Differences in the complexity levels of projects in different industry sectors
- Differences in the range of project exposure by sector may lead to ultra-specialisation with professional services’ project managers tending to have experience on only one type of project, e.g. IT implementation
- Differences in the promotion and career paths, e.g. in UK government. Until relatively recently there were no career paths for senior project managers and they therefore tended to leave the profession to progress their careers
- Sampling effects, e.g. if the engineering companies tended to put forward their best PMs to take part in profiling when other sectors present a broader range of the community. There is some evidence to suggest that in engineering, smaller projects are run by engineering domain specialists who are not themselves considered to be part of the project management community.

Each of these factors would contribute to modifying the relative ranking of the measured overall project capability of an organisation.

It is also interesting to note that the Government sector performs well in terms of knowledge. UK government has invested heavily in skills development, with a particular emphasis on training in the PRINCE2 project method. The impact of this is seen in the low-to-medium capability project managers. There is a large body of evidence that training on its own does not create high performing project managers.

The notable omission from the sectors included in the sample is building and construction. Further research into sector differences and what they tell us about creating high-performing project cultures, should include this sector.

### Insight 2: There are varied job roles taking on the management of projects

As noted at the beginning of this paper, it is clear that not all those running projects have project manager as their job title. Indeed, there were more than 400 distinctly different job tiles used in the population sampled. These were rationalised into the following categories:

- Project manager (60%)
- General manager (10%)
- Programme manager (10%)
- Consultant (6%)
- Project leader (5%)

- PO staff (5%)
- Analyst (3%)
- Technical specialists (1%).

It is reassuring to see that in terms of overall capability (see Figure 2) those who have the official job title of project manager appear to rate highest with the higher proportion of high-performing project managers. Analysts and technical specialists would appear to 'ceiling-out' with very few high-performing project managers. This would be expected, as presumably they would either specialise or move to the project profession. However, these specialists were measured as having relatively low project manager capability, suggesting that it is a high-risk strategy to allocate such personnel on projects that either are, or which mutate into, anything other than low-level complexity projects.

The proportion of general managers running projects was higher than expected. This group includes marketing, HR, Finance, IT and operational managers. It would be interesting to identify when and how general managers are allocated to projects in preference to the use of project managers. In follow-up interviews with one director a comment was made, "We use our senior managers on critical projects". This reflects a sometimes held view at board level that project management is 'junior management'. Given the level of project management competence required to run complex projects, this may not be a wise dictum.

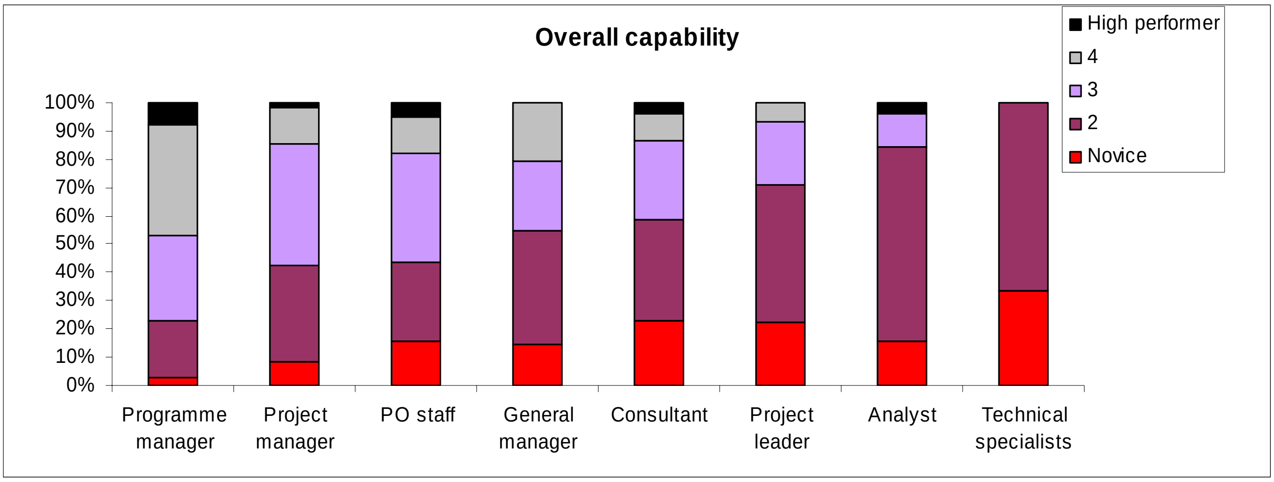

*Figure 2: Analysis by job*

Further research should look at who is running which type of projects in our organisations, and how well placed they are to run the kind of projects they are allocated to.

## Insight 3: Knowledge may have some predictive validity for overall capability

The knowledge tests used in the profiling process are drawn from typical multiple-choice tests used for the APM and PMI first level accreditations. A decision was made not to test all knowledge areas. Instead, ten areas were selected based on research literature [4] indicating the critical areas for project success. These are listed below:

- Project management general
- Planning
- Estimating
- Monitoring & control
- Quality management
- Risk management
- Team management
- Stakeholder management

- Change control
- Strategy & business case

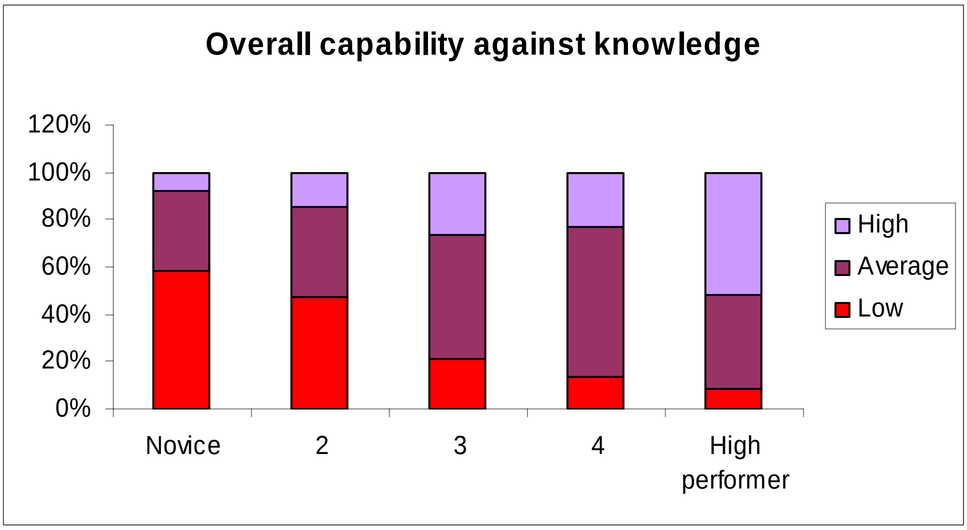

*Figure 3: Overall capability and knowledge achievement*

Figure 3 shows an analysis of overall capability against how well the candidates achieved in the knowledge test. ***Low knowledge*** indicates < 60% correctly answered, ***Average*** is 60-70% and ***High*** is >70%. In general, it can be inferred that the more capable project managers do perform well on the knowledge test. However, doing well on the knowledge test does not indicate high levels of capability; and perhaps most interestingly, doing poorly on it does mean that the project manager is less likely to be a high performer – just 9% of the high performers 'failed' the knowledge test.

This result may appear surprising, as the prevalent view is that performance on knowledge-based tests correlates poorly with project delivery results, [1]. However, a reasonable interpretation is that using a high knowledge score to predict performance or as the basis for promotion is unsafe; it is safe to assume that a high-performing project manager will be knowledgeable and a sensible choice as a coach or mentor to more junior, less experienced project managers. This outcome may not be so helpful when recruiting project managers, but invaluable when creating development frameworks. (The issues associated with using KASE as the overall assessment of capability - which includes the knowledge score – to support this analysis has been partially addressed in the Wentworth research report [3]. There the knowledge results were only used to support findings from the skills and experience factors, and it strongly supports the two-way correlation.)

Future research would need to explore further the validity and reliability of this result, and examine factors such as whether the choice of the topic areas covered affects the correlation between knowledge and capability.

## Insight 4: What PMs spend their time on differs with capability

The attitudinal questionnaire is based upon an analysis of traits identified during research into a known high-performing group of project managers (Wentworth, [3]). This looks at the candidates' views and attitudes using four surveys:

**Survey 1:** What they see as their responsibilities as a project manager

**Survey 2:** What they feel are the key competences for project managers

**Survey 3:** Where they believe they spend their time

**Survey 4:** What attitudes they see as important to their own project management performance

The output of this questionnaire is used, primarily to support development feedback. It allows the comparison of views with the known high-performing group and prompts discussions around what should be attended to more (or less) by the candidate project manager. If we compare the results in each of the surveys with the overall capability rating, then survey 3 appears to show significantly different results between the low-capability project managers and the higher-capability project managers. Thus, for example, lower-capability project managers are more likely to believe they spend a large part of their time on planning – the higher-performing group are more likely to suggest they spend a large amount of their time on monitoring and control, with planning featuring lower down the list.

A more sophisticated statistical analysis is needed to confirm these results, but should these differences prove to be significant, then project manager-specific psychometric tools could benefit from this understanding.

There are many possible reasons for these results. It should be noted that the measure is not where project managers *actually* spend their time but where they *perceive* they spend their time. We may therefore be capturing a surrogate measure for experience, i.e. those project managers with more experience have a different view of what they spend their time on across complex projects. The weaker project managers with lower experience may be less reflective and will tend to answer the question on the basis of what they *believe* project managers should do, rather than based on their own experience.

Considerable research has been done on where managers actually spend their time [8]. More work on where projects managers perceive they spend their time would benefit both the selection and development processes for project managers.

## Insight 5: Self-report assessments have limited predictive validity

Self-assessment questionnaires are some of the easiest and least expensive evaluation tools to develop. A common approach is to take something like the Association for Project Management (APM) Body of Knowledge and ask candidates to rate their skills on each competence against a 5 or 7 point Likert-style scale.

In analysing the profiling data, we looked at the experience rating - generated through the experience questionnaire - and compared this with the experience rating obtained following the structured interview. On average, 25% of the self-assessed ratings were significantly out-of-line with the independent assessment. This rises to as much as 60% when the profiling is known to be for recruitment rather than development purposes.

These findings are backed up by research in a number of different domain areas. The results are always the same – self-assessment invariably results in an over-estimation of abilities. For example, the purpose of an interview can have a substantial impact on interviewer-applicant interactions [9,10]. Indeed findings suggest that the lower the ability of the candidate the more likely they are to over-estimate their ability [11].

In 2001, a profiling approach was used with a large and prestigious engineering client to investigate the validity of knowledge and self-assessment-based profiling. The client had launched a self-assessed skills tool, using a modified version of the APM Body of Knowledge, and was concerned about the results they were getting. A formal knowledge test, similar in style and content to the APMP qualification, was administered to the same group of project managers. The knowledge areas tested were in the skills evaluated in the self-assessment. The results were perhaps predictable, but nevertheless startling. There was no positive correlation between the skills self-assessment and the knowledge test results. Indeed, those who scored themselves highest in the skills assessment tended to score lower in the knowledge test.

There are various interpretations possible. Perhaps the self-assessed skills were being exaggerated by the less-capable project managers. Perhaps knowledge of an area and the skills demonstrated in that area are not related? Perhaps a multi-choice test is simply not sophisticated enough as a differentiator? Line managers were asked their views on the results. Generally, the feeling was that the skills assessment would be a better predictor than a knowledge test. However, when asked specifically to take a subjective view on which the most competent project managers were, the results suggested that the knowledge results were at least as predictive of overall capability as the self-assessment.

The drive to decrease costs, and efforts associated to improve selection and recruitment has led to an increase in the use of internet-based self-report style questionnaires. While interesting insights can be obtained to support development discussions, self-assessment-based profiling on its own is simply not a reliable enough discriminator for recruitment or selection purposes. Further research should perhaps look at the approaches being used across organisations, their validity, and what we can learn about applying project management-specific profiling and assessment techniques.

## Conclusion

This paper has picked out just a few of the insights obtained from the capture of data about the KASE of those involved in project management. It raises a number of questions about our understanding of what makes project managers successful. At the APM Conference in London (2007) the initial findings were presented and project practitioners were asked to provide their input on which insights they would find it helpful to have followed through. These were the areas at the top of their agenda:

- Sector differences in project manager competences
- Programme and project managers compared
- Behavioural competence and management styles for project managers
- Best practices in profiling project management capability for selection and development
- Changes in capability over time

Considerable research has been done on project manager competence (for example, [1,12,13]) and this has been translated into a growing number of performance competence standards [14,15,16,17], but to date this has had very little real impact on project manager selection and development processes in organisations.

Given the rising imperative to increase predictable project performance, and the rapid rise in demand for more capacity as well as greater capability, the challenge is to find ways to match people to project-specific competences, match project managers to project-complexity levels, and to do this in a time frame that meets the urgent needs of industry, commerce and the society.

## References

[1] Crawford, L. (2005) “Senior perceptions of project management competence”, *International Journal of Project Management*, 23 7-16.

[2] Toney, F. (1997) “What the fortune 500 know about PM best practices”, PM Network:11(2):191-202.

[3] Wentworth (1998) “Project management”, Wentworth Research.

[4] Pinto, J K and Slevin, D P (1987) “Critical factors in successful project implementation”, IEEE Trans.

Eng. Manage. Vol EM-34 No 1 pp 22-27.

[5] McDaniel, M.A., Morgeson, F.P., Finnegan, E.B, Campion, M.A. and Braverman, E.P. (2001) “Use of situational judgment tests to predict job performance: A clarification of the literature”, Journal of Applied Psychology, vol.86, no.4, pp.730-40.

[6] Lievens, F. and Klimoski, R.J. (2001) “Understanding the assessment centre process: where we are now.” In Cooper, C.L. and Robertson, I.T. (eds) *International Review of Industrial and Organisational Psychology, vol.16, Chichester,* Wiley, ch.8.

[7] Leonard, D, Willis, L. (2000) “Is project manager capability domain specific?”, *Congress2000 Proceedings*, IPMA, London.

[8] Kotter, J.P. (1999) “What Effective General Managers Really Do”, *Harvard Business Review,* March edition.

[9] Palmer, D.K., Campion, M.A. and Green, P.C. (1999) ‘Interviewing training for both applicant and interviewer. In Eder, R.W. and Harris, M.M (eds) The Employment Interview Handbook, Sage, (p337-353).

[10] Posthuma, R.A., Morgeson, F.P. and Campion, M.A. (2002) ‘Beyond employment interview validity: A comprehensive narrative review of recent research and trends over time’, *Personnel Psychology*, 24, 4-89.

[11] Blach, W. (1992) “Effects of class standing on students’ predictions of their final exam scores”, *Teaching of Psychology*, vol.19, pp.136-41.

[12] El-Sabaa, S. (1999), The skills and Career path of an effective project manager”, *International Journal of Project Management*, 19 1-17.

[13] Pettersen N. (1991) “Selecting project managers: an integrated list of predictors”. *Proj Management Journal* 22(2):21-5.

[14] PMCD Framework, Project Management Institute, 2002 – A comprehensive analysis of units of competence with performance measures clearly defined. Similar in structure and style to UK NVQs. These can be purchased via the PMI website: www.pmi.org

[15] GAPP standards – GAPPS is an independent competency standard (not aligned with any specific Body of Knowledge or Methodology). It is based upon an analysis performed in Australia, Europe and Africa – these standards have been adopted in Australia and South Africa. Middlesex University, National Centre for Project Management was a founding member of this group. For further information: www.globalpmstandards.org/ and www.pmforum.org\library\reports

[16] IPMA competence baseline - International Project Management Association's competence baseline. This is a global standard, focused on skills assessment, which is designed to be customisable by the national certification associations. It has 4 levels, from certified Project Manager Associate to Certified Programme Director. Version 3 of the standard can be downloaded: www.ipma.ch/certification/standards

[17] APM Competence Framework - The APM Competence Framework provides a clear and simple guide to the full range of individual competences in project management. It represents an essential part of the toolkit for all professional project managers, allowing them to access and develop their competences and those of their teams. www.apm.org.uk/APMCompetenceFramework.asp

## Further information about the Author

**Louise Worsley, Design Authority CITI**

Louise has a particular interest in the profiling of project managers – having been involved with this since joining CITI in 1994. She has profiled, job-shadowed and coached more than 500 project managers and gained real insights into what makes good project managers great.

She is the CITI sponsor for the Middlesex University research project and is a visiting lecturer at Reading University, Middlesex University and University of Cape Town. She is currently working in South Africa, looking at how the identification of potential can be used to support the development of future generations of project managers.

## Further information about CITI Limited

CITI focuses on the application of 'best practice' project and programme management tools and techniques. For nearly 20 years we have researched, practised and taught project and programme management to many of the leading organisations in the UK.

Based in Newport Pagnell - Buckinghamshire, our project and programme consultants are dedicated and passionate about developing project and programme management excellence.

In addition to our permanent consultants has a large pool of associates who are profiled, developed and accredited to the exacting standards of CITI professional project managers. These individuals manage complex projects and programmes for organisations that seek a level of professionalism and predictability that comes with professionally trained project managers. Acting as role models, they lead by example, showing how the professional project manager behaves and leaves a lasting legacy in terms of attitude and outcome.