Modelling project management performance

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Abstract *This paper presents an argument that it is appropriate to develop a model of project management (PM) performance from models for assessing quality management. The paper presents a model, labelled the project management performance assessment (PMPA) model, based upon the EFQM business excellence model. The model proposes six criteria for assessing PM performance: project management leadership; project management staff; project management policy and strategy; project management partnerships and resources; project life cycle management processes; and project management key performance indicators. Using data from an empirical study of PM practice in UK organisations, the paper uses PMPA as a framework to explore variations in the character of PM performance. It is concluded that there are variations in attitudes and behaviour in each of these areas and that these variations may be used to help measure levels of PM performance.*

Introduction

A useful starting point for considering the need to model project management (PM) performance is making the distinction between project performance and PM performance. The two are interlinked, but different, and it is important not to confuse the two. A project can be viewed as "successful" despite poor PM and vice versa (DeWitt, 1998). For example, PM performance might focus on delivering a project within budget, yet if the overriding success criterion, or key performance indicator (KPI), for the project is delivering future benefit to the organisation, "successful" PM performance will not necessarily lead to the project being viewed as a success in the long term. Conversely, PM performance might include measurement against a "psychosocial" criterion (Pinto and Pinto, 1991), such as the provision of a career development opportunity for a project team member. This criterion might not be met, yet if the project performs as expected it will be viewed as a success.

Prior to the 1980s it was common to focus exclusively on project performance, which was defined narrowly as meeting cost and time objectives and adhering to a product specification. Research during the 1980s and 1990s aimed at investigating the dimensions of project success has led to a rewriting of this simple formula, with common agreement that project success is multi-dimensional and that different people measure project success in different ways at different times (see, for example, Morris and Hough, 1987; Larson and Gobeli, 1989; Deutsch, 1991; Pinto and Pinto, 1991; Neumann *et al.*, 1993). This

new formula, as well as incorporating the multi-dimensional character of project success, saw a broadening of the focus of performance to include PM performance as well as project performance.

At the same time, research was also focusing on establishing which dimensions of project success were most important and work in this area introduced the concept of "quality", in the broadest sense of the word, to the debate on what constitutes effective performance. In reviewing academic studies and anecdotal reports over the preceding twenty years, Nicholas (1989) concluded that the satisfaction of the key project stakeholders, including the customer, was the overriding measure of project success, with stakeholders being satisfied if their quality-related criteria were met. More recent research arrives at the same conclusion (Wateridge, 1995; Atkinson, 1999; Tukel and Rom, 2001). For example, in Wateridge's (1995) study of the impact of success criteria on a number of information technology (IT) projects, he concludes that the customer and other stakeholders, such as users, will define what they mean by quality. This focus on meeting customer and other stakeholder requirements corresponds with definitions of "quality" in the quality management literature (BSI, 1995; Evans and Lindsay, 1996; BSI, 2000; Oakland, 2000) and makes a link between "quality", project performance and PM performance. The customer's (and other stakeholders') definition of what is quality in a project environment will be based upon attributes linked to the quality of the management process (i.e. PM performance) as well as attributes linked to the quality of the end product delivered by the project (i.e. project performance).

Therefore, from the research carried out to date, theoretical justification for developing models of project performance can be provided in two ways. First, models that help organisations provide effective PM performance can lead to beneficial outcomes regardless of the success or otherwise of the project being managed. Second, as elements of PM performance may influence overall satisfaction at the outcome of a project, which is the overriding measure of project success, modelling PM performance may contribute to the successful delivery of desired project outcomes.

Modelling PM performance has been limited by the traditional, simplistic formula used to define project success (for a review of the literature in this area, see Shenhar et al., 1997). With such a narrow definition of project success, models of PM performance would exclusively focus on activities to ensure a project is managed to time/budget/specification. Developments in the PM discipline suggest that new models of PM performance need to reflect the "multi-dimensional/multiple-stakeholder/quality of process as well as product" paradigm for defining success.

There is also a practical necessity for developing models of PM performance. Whereas the literature on project success reflects a paradigm shift, there has been no corresponding development of models of PM performance. This does

not mean there is no need for such models. As well as the effort required to develop new theory, part of the problem might be the practical difficulties of assessing PM performance using measures other than meeting budget/schedule/technical specification targets (Pinto and Slevin, 1988; Shenhar *et al.*, 1997). Developing models of PM performance might help to address these practical difficulties, as well as contributing to the theoretical development of the discipline.

Using quality management concepts to develop models of PM performance

One focus of the potential synergies between the disciplines of PM and quality management (QM) has been on the role of PM in the successful implementation of total quality management (TQM)-type programmes, with reports of empirical studies of organisations in which effective PM led to TQM being successfully introduced on a "project-by-project" basis (Pelligrinelli and Bowman, 1994; Hides *et al.*, 2000).

A second focus, particularly pertinent, is a growing recognition of the contribution QM makes to our understanding of ways to improve PM performance. In addition to the contribution of the QM concept of meeting customer and stakeholder requirements to our understanding of the key dimensions of project success, this contribution has been examined in other areas and, although there has been limited empirical study demonstrating the effectiveness of the link between QM practices and PM performance (Barak and Raz, 2000) the research carried out suggests that establishing the link is potentially useful. For example, Kerzner (1994) reports a case where TQM played a role in creating an environment in which PM concepts were adopted at accelerated rates. Stamatis (1994) suggests that TQM's creation of a culture of continuous improvement could lead to situations in which organisations would constantly look to learn from past project performance and improve future performance; and the importance of creating a TQM-type environment, incorporating an open, no-blame culture, was a finding of a survey of the influence of organizational learning practices amongst project managers (Kotnour, 2000).

Additionally, recognition of the appropriateness of drawing from QM informs some of the epistemological-oriented work in developing PM-related models. Part of that work has been to use modified QM models to develop theories linking project and PM performance with different levels of PM maturity. In this area the literature reports situations in which models charting organisational evolution in terms of QM maturity (see, for example, Crosby, 1979; Humphrey, 1989; Dale *et al.*, 1994), and models self-assessing an organisation's status, such as the Malcolm Baldridge National Quality Award (MBNQA), have been modified to a PM context. The influence of Humphrey's software process maturity levels model is seen in the development of PM

maturity models (Jain, 1998; Ward, 1998) and the MBNQA was used to develop the project quality index (PQI), a model for self-assessing PM performance in environmental, pharmaceutical and engineering industries (Kumar and Wolf, 1992). However, although the PQI is tested in organisational contexts, its focus is on project performance and the models of Jain (1998) and Ward (1998), whilst focusing on PM performance, are presented as theoretical propositions, with their validity and usefulness not tested through empirical study.

The PM performance assessment (PMPA) model

In developing a model of PM performance it is necessary to have a suitable framework. This will provide a complete, cohesive and unifying view of the elements that make up PM performance. A QM model commonly used as a framework for evaluating an organisation's progress is the EFQM business excellence model (Hillman, 1994). Although the word "quality" has been replaced by "business excellence", the original model was developed based upon the fundamentals of TQM and, as recently argued by a number of authors (see, for example, Dale *et al.*, 2000; Adenbanjo, 2001) the link with the principles of TQM are still valid. Given this link, the EFQM model is seen as an appropriate framework. Furthermore, as the EFQM model is helpful in defining TQM in a meaningful way (Van der Wiele *et al.*, 1997), its use will hopefully allow the elements of PM performance to be better understood. The EFQM was revised in 1999 and now has the following structure:

(1) *"Enabling" criteria:*
  - leadership;
  - people;
  - policy and strategy;
  - partnerships and resources;and
  - processes
(2) *"Results" criteria:*
  - key performance results;
  - people results;
  - customer results; and
  - society results.

One option for understanding the characteristics of PM performance could be to take the existing EFQM model and use it, unmodified, to assess performance in project environments. This is certainly a viable option yet it would have some limitations. There are differences between organisations undertaking projects and those managing operations which suggest that a model specifically focused on assessing project environments might be more useful and, importantly, perceived as more appropriate by those involved in PM than

a general-purpose model. A further justification for modifying the EFQM model is the contribution to the development of PM theory. Although there have been theoretical developments originating from within PM, such as scheduling, critical path analysis and, more recently, earned value management, much of the current PM body of knowledge (APM, 2000; PMI, 1996) is concerned with synthesising theories from other disciplines, such as finance, human resource management, marketing and quality management, adapting them and integrating them into a cohesive set of concepts, methods and techniques applicable to managing project environments. These considerations provide the rationale for modifying the EFQM model to form the PMPA model, which is shown in Figure 1.

A comparison of the two models shows the use of nomenclature. Rather than being a simple relabelling of the existing criterion, the changes are designed to indicate the scope and area of applicability of the PMPA model, to provide a system of names that will distinguish its characteristics and use from the general-purpose models and to form the parameters of the content within each criterion heading.

In the PMPA model, the criterion of "leadership" becomes "PM leadership". The EFQM model highlights the role of leaders in raising awareness of QM concepts and in establishing management systems that support a culture of excellence. The PMPA focuses on leaders in PM and proposes the following possible characteristics of excellent leadership in this area. First, relating to the development of a broad role for PM in the organisation. Whereas, traditionally, projects were traditionally perceived as being used to manage the output from unique, capital-intensive activities, in such areas as construction, more recent literature suggests projects be viewed as a vehicle for managing all types of change (Pelligrinelli and Bowman, 1994; Turner, 1993a). PM leadership might involve the promulgation of awareness of this new, broader role for projects. Second, the literature details features of a "projects culture", including: open, two-way partnerships with customers and suppliers and a shared, common project language (see, for example, Dubinskas, 1993; Levasseur, 1993; Boardman, 1994). PM leadership might be expected to ensure the PM system supports the development of such a culture.
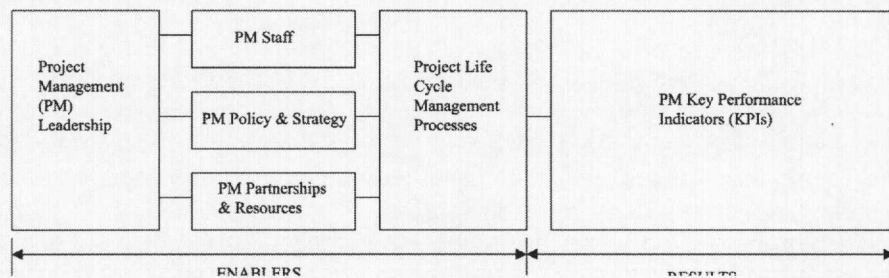

Figure 1.
The PMPA model

The EFQM criterion of "people" puts emphasis on planning and managing human resources and providing reward and recognition. The PMPA focuses specifically on the planning, management, and rewards relating to "PM staff". The planning and managing of PM staff can be viewed from two perspectives. First, from the perspective of the individual, current project, which has a relatively short-term, narrow view. The second perspective focuses on how the organisation plans and manages its PM staff, including using training and career development, to increase its PM capability, not only for the management of a current project but also for the management of future projects. Developing capability, through the use of methods for developing staff is a key to maximising the potential of project-related human resources (Riis and Neergard, 1994). It is this second perspective that is emphasised in the PMPA model. The PM literature also emphasises the need to appraise and reward performance (Stokes, 1995; Firth and Krut, 1991). The PMPA model focuses on the extent to which the management of PM staff incorporates methods for rewarding performance in PM.

The parameters of excellence in the area of "policy and strategy" are set to measure how the organisation "formulates, deploys, reviews and turns policy and strategy into plans and actions" (British Quality Foundation, 1998). The "PM policy and strategy" criterion in the PMPA model focuses on how the development of PM, across an organisation, is introduced in a planned and systematic fashion, with a link existing between the strategic, organisation level and the tactical, project level. Previous case studies of the experiences of organisations (see, for example, McDowall, 1995; Stokes, 1995) suggest three broad, sequential, stages:

(1) the PM strategy, including pertinent concepts, is sold;
(2) an organisation-wide PM system, with centralised control, is set up; and
(3) an organisation-wide PM system, with devolved control, is established.

The revised EFQM model criterion "partnerships and resources" introduced partnering as new content. The concept of stakeholder involvement in projects incorporates stakeholders both internal and external to the organisation, and in the latter case the stakeholders are often managed through partnerships. Van den Honert (1991) identifies early partnerships between contractor and supplier organisations as a project critical success factor; the role of partnering, or "win-win" PM, is highlighted in the successful delivery of large-scale construction projects (Milosevic, 1990 and Moore *et al.*,1992); and the effectiveness of partnering is central to current thinking on project procurement/life cycle management strategy in the construction industry (Latham, 1994; Egan, 1998). The importance of such partnerships informs the "PM partnerships and resources" criterion in the PMPA model.

The "processes" criterion in the EFQM model encompasses process management methods, with an emphasis on customer-focused processes. The

PMPA model criterion focuses on "project life cycle management processes". PM literature testifies to a broadening of the conceptual base of the project life cycle to incorporate processes in the pre-initiation and post-delivery stages (Turner, 1993b). There is an emphasis on "upstream" activities (Barnes and Wearne, 1993), such as attention to defining customer expectations and "downstream" activities, such as reviewing customer perceptions. Central to the development of models of the project life cycle is the need to focus on the customer and other stakeholders. Not only will models incorporate processes for involving the project participants upstream and downstream, they will also provide a clear, concise and comprehensive description of the process for managing the life cycle which can be shared by all involved (Boardman, 1994). The "project life cycle management processes" criterion considers the character of such processes where they exist.

The four results criteria in the EFQM model (customer/people/society/key performance results) encompass activities for managing performance indicators and measuring key performance outcomes. Earlier in this paper the multi-stakeholder perspective and multi-dimensional character of PM success criteria (or KPIs) was discussed in some detail. This discussion provides the rationale for the final element of the PMPA model, the results-oriented criterion "PM KPIs". The focus of this criterion is not only on the results achieved in relation to meeting the disparate requirements of a diverse range of project stakeholders but also on the methods used within the PM system to improve performance against the KPIs.

The research context
By studying PM practice in organisations and by obtaining the attitudes and opinions of subjects involved in projects, against each of the six criteria of the PMPA model discussed in the previous section, the author sought to explore the potential of the PMPA model as a tool for assessing PM performance.

Data collection
A questionnaire was developed and administered, by the author, to subjects working in UK organisations. A condensed version of the questionnaire is provided in Appendix 1. (Questions relating to the demographics of the organisations and subjects interviewed, and the open-ended questions eliciting qualitative data, are excluded.)

Sample
The questionnaire was piloted in two organisations, with some modifications made to the questionnaire based on comments received. The final questionnaire was administered to 63 subjects within 22 organisations. Purposive, heterogeneous sampling was used to ensure data were collected from a diverse range of organisations (see Table I).

Business sector	No. of organisations	No. of subjects
Defence/aerospace	1	4
Chemicals/energy	3	9
Automotive	1	2
Sundry manufacturing	5	9
Information systems	3	10
Banking/financial services	1	6
Education/training/consultancy	2	10
Public adminstration/services	4	11
Private adminstration/services	2	2
Total	22	63
Organisation characteristic	Organisations (n (%))	Subjects (n (%))
Private	16 (72)	38 (60)
Public	6 (28)	25 (40)
Manufacturer	10 (45)	24 (38)
Service provider	12 (55)	39 (62)

Table I.
Demographics of
organisations

Interviewing more than one person in an organisation allowed more complete information about PM practice and opinions within an organisation to be obtained. The sample has representation from traditional project-focused organisations, such as "defence/aerospace" and from organisations that have no strong tradition of managing projects, such as "public administration/services". There is a diversity of organisation, with those engaged mainly in "hard" projects, such as defence, and from those engaged in "softer" projects, such as cultural change. Table II gives details of the organisations sampled.

The organisations are ordered, loosely, from the top down, in decreasing levels of focus on project work. Table III provides demographical information about the subjects.

Findings and discussion
This section provides a discussion of the survey findings against the six criteria of the PMPA model.

PM leadership
Promulgation of awareness of role of projects in managing all types of business change. The survey data shows widespread agreement that a project is perceived as an applicable vehicle for managing all types of business-related change (63 per cent of subjects agreeing with the statement). There was no evidence that awareness of the broader role for projects was promulgated in a particular type of organisation, but there was some evidence that leadership in this area was influenced by a subject's involvement in project work. For

Organisation	Business sector	Nature of business	No. of subjects
1	Defence/aerospace	Supplier of defence products and services	4
2	Chemicals/energy	Reprocessor of fuel products	4
3	Information systems	Manufacturer of telecommunications products	5
4	Sundry manufacturing	Manufacturer of electronic components	4
5	Information systems	Supplier of telecommunications services	1
6	Banking/financial services	Supplier of financial products	6
7	Sundry manufacturing	Manufacturer of detergent products	1
8	Chemicals/energy	Supplier of utilities	1
9	Information systems	Supplier of IT services	4
10	Sundry manufacturing	Manufacturer of pharmaceutical products	1
11	Automotive	Manufacturer of motor vehicles	2
12	Sundry manufacturing	Manufacturer of sportswear	2
13	Education/training/consultancy	Provider of consultancy and training	5
14	Chemicals/energy	Refiner of chemical products	4
15	Sundry manufacturing	Manufacturer of office equipment	1
16	Private administration/services	Insurance claim investigator	1
17	Private administration/services	Insurance company	1
18	Public administration/services	Central government agency	3
19	Public administration/services	Local government departments	6
20	Public administration/services	Local government departments	1
21	Public administration/services	Local government departments	1
22	Education/training/consultancy	University departments	5
Total			63

Table II.
List of organisations

	Subjects (n (%))
Time in organisaton (years)	
> 5	54 (86)
3-4	4 (6)
< 3	5 (8)
Job	
Project management	21 (33)
Service operations	20 (32)
IT	6 (9)
Production	6 (9)
Marketing	1 (2)
Engineering	1 (2)
Logistics	1 (2)
Other	7 (11)
Main project role	
Project manager	27 (43)
Steering committee	8 (13)
Programme manager	5 (8)
Developer of procedures	5 (8)
Project organisation manager	5 (8)
Project team member	4 (6)
End user	3 (5)
Resource manager	3 (5)
Sponsor	2 (3)
Functional support	1 (1)

Table III.
Subject
demographics

example, in situations where there were scarce resources to manage projects, such as experienced project managers, or where there were issues of prioritising resources, managers with responsibility for projects seemed to focus PM effort on the "hard" projects, at the expense of the "soft" projects.

Features of a "projects" culture. The survey data showed widespread agreement that a number of features of a projects culture were widespread across project environments. (See Appendix 2, which has the rankings, based on mean scores, of the eight features of a projects culture in Q3 of the questionnaire.) Only two features have a mean score greater than 3, indicating a lack of agreement that the feature is present. These features are: the displaying of project information and social gatherings and festivities relating to projects. There were situations in which the absence of a particular feature seemed to have a ripple effect on another feature and, ultimately, PM performance. For example, the development of a common project language was often hindered by a failure to establish internal customer/supplier partnerships between different functions and the failure to establish a common project language was cited, by two organisations, as a reason for poor PM performance. There was evidence that the potential impact of the absence of a particular feature varied depending upon the project environment. The

inability to have project teams working in close proximity with each other was having a particularly adverse affect on performance in an organisation where the project teams were geographically dispersed across three continents. In smaller, less geographically dispersed organisations, the potential dispersion of team members was not an issue.

PM staff
Methods for increasing PM capability. The data showed a variety of ways in which organisations increase their PM capability through the development of project team members. Crude methods for changing capability focused on influencing the supply or demand for PM through either changing project staffing levels or changing the amount of project work undertaken. The potential for processes to increase capability, related to the management of project team members, was recognised, but only by a small proportion of the sample. For example, the following processes were identified as contributing to a change in the capability of people involved in projects: staff training and development (8 per cent); staff recruitment (5 per cent); and team selection (5 per cent).

Practical difficulties were also evident in implementing processes linking PM training to career and personal development. Although 21 per cent of subjects identified the existence of a formal process for linking training to career development, only one organisation exhibited signs of consistently adhering to the process in practice. The data showed the influence of organisation culture on the emphasis placed on different training areas. For example, an organisation that attached importance to the management of business processes, using IT, focused, in order of importance, on developing people's technical skills, emotional drive and people skills. Another organisation, from the same business sector, but placing less importance on the use of IT to manage business processes, focused training of project staff on emotional drive, people skills and organisational skills.

Methods for recognising and rewarding PM performance. A total of 73 per cent of subjects worked in an environment in which a process for linking project work to reward and recognition existed. This involved either evaluating performance against broad, high-level objectives linked to project-related activities (62 per cent) or through building an evaluation process into the management of individual projects (11 per cent). As was the case with processes for selecting and training project staff, the survey showed instances in which the processes where not adhered to in practice. For example, a project manager, whose evaluation was built into an individual project, gained high scores against performance criteria pre-defined and agreed at the start of the project, yet the scores were subsequently disregarded during a performance appraisal.

PM policy and strategy
Development of organisation-wide PM. A total of 20 per cent of subjects, exclusively those with little history of using PM, were in organisations where

there was no raising of awareness of PM. However, organisations, with a great deal of PM experience, and in the last, "devolved system" stage, were also engaged in raising awareness through the selling of the benefits of PM. This suggests that, rather than a sequential, staged process, with clearly delineated boundaries between stages, gaining awareness and acceptance of PM entails a more flexible, fluid and complex process. There is ongoing awareness raising and, as PM concepts become more established, a constant reassessment and, where necessary, realignment of the balance between a centralised and decentralised system. The survey results showed that where PM was developed in a formal fashion there was a perception that the results were successful. (Appendix 3 shows that formal projects to introduce PM had the second highest satisfaction level, based on mean scores, for the 13 types of change programme listed in Q4 of the questionnaire (see Appendix 1).)

There was a widespread recognition that the implementation of a PM policy and strategy often involves major organisational change and that the obstacles to such change need to be recognised and overcome. The data showed a variety of obstacles that are not specific to the type of change being introduced. For example, 15 per cent of subjects identified "general change fatigue" as being a major obstacle to the introduction of PM. The salient obstacles, unique to the PM environment, relate to perceptions of PM; and obstacles of this nature were identified by 40 per cent of the subjects surveyed. Specific obstacles included a perception that PM is bureaucratic and that PM imposes a control that stifles creativity and innovation.

PM partnerships and resources
Partnerships with customers and other project stakeholders. The data showed agreement that open two-way partnerships exist with both customers and suppliers (see Appendix 2). The existence of partnerships with customers is reflected in the high proportion of situations in which a customer or customer liaison role is formally defined (see Appendix 4). (Although the failure to establish partnerships with internal customers was highlighted earlier.) The survey found less evidence of partnerships with suppliers leading to the formalisation of their involvement in projects, although situations did exist where organisations formally involved suppliers in projects and recognised this involvement through a formal definition of the supplier's role. The survey found one project-focused organisation with relationships with a number of "business partners", providing complimentary or similar products/services, with whom they worked on a number of projects.

The end product of the process of formalising partnerships was a written document, given various titles, such as "terms of reference", "project quality plan" and "project definition report". However, the survey found that the production of such a document was not universally carried out within organisations. Two broad reasons for this were highlighted. The first reason

was a lack of "process" discipline in the project environment. The second reason was a conscious decision to only carry out such a formalised activity on certain "types" of project. This was the case for 4 subjects working in local authority departments, who stated that the activity only took place on projects that were either IT or construction related. Two further influences on the formal allocation of roles was the discipline imposed by an outside body such as a funding agency (who required the defining of roles on a proforma bid form) and the requirements set by a quality management system (QMS).

Project life cycle management processes
Models, processes and procedures for managing the project life cycle. The data showed identification of critical business processes relating to the management of the project life cycle typically being carried out in organisations with a strong focus on project work and, also, in project-focused functions, such as IT, of organisations with an otherwise weak focus on project work. The identification of PM-related business processes led to the forming of a model of the project life cycle. In terms of using such a model to manage the business process, the survey showed that 33 per cent of subjects always used a model, 47 per cent sometimes used a model, 16 per cent never used one and 4 per cent did not know. A number of broad organisation-wide benefits resulting from using life cycle models were highlighted; which tend to support the proposition that life cycle models contribute to the development of a TQM-type perspective.

The discussion of PM leadership highlighted a "ripple effect" between features of a project culture and the survey results suggest a similar effect between the different elements of the model. For example, there were situations in which life cycle models helped organisations develop a common project language, a culture of open communications with stakeholders and an understanding of the critical project-related business processes. Conversely, the falling into disrepute of a previously established model, due to a seismic event, such as an organisation merged from two companies, was seen to contribute to a failure to maintain a culture equated with a TQM-type perspective.

In the identification of PM-related business processes, the survey showed coverage of both pre and post-implementation stages of the project life cycle. Appendix 5 has rankings, based on frequency of occurrence, of the 16 activities in Q7 of the questionnaire. The rankings show the pre-eminence of pre-implementation activities, such as "planning", "defining", "conception", "initiation" and "start-up", in comparison to post-implementation activities, such as "closing down", "performance review" and "handover". This pre-eminence was further confirmed by PM practices. For example, risk management activities, were often confined to the identification and analysis of project risk in the pre-implementation stage, with risk control activities in the implementation stage often not happening. A common problem, in this and other areas, was a failure to follow through activities into the project implementation and post-implementation stages.

The data showed that the existence of written procedures, established to facilitate uniformity and consistency of performance in carrying out key PM-related business processes, is not widespread (only 53 per cent of subjects worked with such procedures). Where such procedures were in existence, they were regarded as useful and, where a mandatory requirement existed, they were adhered to (see Appendix 6). The data confirmed the desirability of flexibility in the design of procedures, with mandatory elements focusing on addressing why and what (rather than how). The critical design issue was balancing the need to give individual project managers the freedom to manage their projects and the need to have high-level management controls that integrate the management of project with organisation strategies.

The survey showed examples where procedures were updated as a result of imposed requirements, such as adherence to changes in legislation, adherence to the requirements of an external funding agency, or adherence to the requirements of a QMS system. However, the most common situation was to amend procedures as part of ongoing TQM-type programmes (stated by 74 per cent of subjects with PM procedures), although only 21 per cent of those subjects who had documented procedures in their organisations confirmed that benchmarking of PM, as opposed to benchmarking project performance, took place.

PM KPIs
Multi-attribute character and methods for managing project PM KPIs. The survey confirmed the multi-attribute character of PM KPIs, with a diverse range of task and psycho-social outcomes being important. (Appendix 7 shows that 16 of the 17 criteria listed in Q15 of the questionnaire are, based on mean scores, important.) Formal methods focused on managing the two most important KPIs, namely, client/customer perception and meeting specified project objectives.

The largest proportion of subjects(39 (65 per cent)) used methods for managing the meeting of specified project objectives. A consistent theme found in the comments of these subjects was the need to link the development and measurement of project objectives to the management of the benefits, especially post-completion, and the difficulty of adhering to this principle in practice.

A smaller proportion of subjects (22 (36 per cent)), predominantly in project-focused organisations, used formal methods to manage the most important project KPI, client/customer perception. In project-focused organisations that did not utilise such methods there was a desire to introduce such an approach.

A customer questionnaire, measuring perceptions against requirements defined in the post-implementation stage, was the predominant method employed. The questionnaire was administered at the end of the project, although one organisation employed a process that involved measurements in each of four phases of a project. A typical process would involve defining the requirements in a definition workshop.

A distinction existed between those methods that focused on generating a list of attributes to measure perceptions against at the start of the project and those methods that involved the management of a standard, predefined set of attributes. In terms of the latter approach, one organisation employed a "scorecard" to measure success at major milestones. The scorecard contained 13 attributes, for example, "first time quality" and the attributes would be defined in a customer requirements document signed by team and customer representative. In subsequent stages of the project, scores are given based on the results of customer perception surveys. Another organisation measured four attributes:

(1) "clear/concise project definition report";
(2) "response to change in project requirements";
(3) "response to project threats"; and
(4) "help/assistance through project life cycle".

At the end of each project the customer and the sponsor complete a project completion report. This rates PM performance against these four attributes on a scale of A (the best imaginable) to D (did not meet requirements).

The survey found some evidence that organisations putting an emphasis on the use of customer surveys/questionnaires had encountered difficulties that raise doubts about its effectiveness, with the main issue being associated with the accuracy of the measures, i.e. perceptions matching reality, and the inability of the project organisation to demonstrate that expectations had been successfully met. In response to these difficulties some organisations had developed a more proactive approach, with less emphasis on expecting the customer to carry out the measurement activities. The project team, rather than the customer, measured the project's performance and provided the customer with the results. Although customers are asked to confirm the accuracy of the results, the evidence that the project team provides is used to influence the customers' perceptions; so addressing the problems of "accuracy".

There was less evidence of utilisation of methods for managing project KPIs in organisations with little history of managing projects, although the survey found evidence to suggest the use of methods for managing project KPIs was influenced by the type of project work carried out; with pockets of "maturity" existing in organisations with less of a tradition of managing projects. In organisations with no formal methods for evaluating success against a variety of indicators there were perceptions that this was having a major, adverse effect on long-term developments. In particular, the failure to measure success against attributes relating to the project KPI of "increase in organisation capability", such as learning, continuous improvement and not the reinventing of the wheel was mentioned. The ability of one organisation to introduce defined processes and procedures in these areas seems to have been facilitated by the existence of a QMS, with acceptance by staff of the need to carry out post-project reviews facilitated by the "process discipline" that had evolved since the department had been working to the requirements of the QMS.

Conclusions

The survey results show different characteristics of PM performance against each of the six elements of the PMPA model summarised below:

(1) *PM leadership:*
- level of awareness of broad role of projects in managing all types of change;
- degree to which project involvement influences a pm focus on "hard" projects at the expense of "soft" projects;
- level of development of some features of a "projects culture";
- ability to counter ripple effect of the absence of one feature of a projects culture on the existence of another feature; and
- degree to which project environment hinders development of projects culture.

(2) *PM staff:*
- level of recognition of the role of PM-related processes in increasing capability of PM staff; and
- existence and operation of processes for developing and evaluating PM staff.

(3) *PM policy and strategy:*
- level of recognition of need for continuous PM awareness raising and selling;
- degree to which PM is introduced in a planned, formal fashion; and
- ability to recognise and overcome PM-specific barriers to change.

(4) *PM partnerships and resources:*
- degree to which partnerships are formed with project stakeholders, including internal customers and suppliers; and
- existence and operation of processes for formalising the involvement of project stakeholders.

(5) *Project life cycle management processes:*
- character and uses of models of critical business process through the project life cycle;
- ability to recognise role of life cycle models in developing features of a projects culture and to counter ripple effect of absence of particular process on the development of a projects culture;
- design and operation of processes and written procedures covering all stages of the project life cycle, including pre- and post-implementation stages; and
- degree to which processes and procedures are updated and benchmarked.

(6) *PM KPIs:*

- degree to which methods are developed to manage the important PM KPIs;
- ability to link methods for managing project objectives to the delivery of project benefits post-implementation;
- design and operation of methods for measuring stakeholder perceptions; and
- ability to develop methods against a wide range of KPIs, in particular those relating to increases in organisation capability.

The variations in attitudes to PM and PM behaviours confirms the model's potential as a tool for assessing levels of PM performance and suggests that it might be possible to use the model as a framework for identifying the characteristics of high performing and low performing PM performance. However, in order to take this next step, further work will need to consider whether the variations are significant and whether it is valid to use the variations found in this survey as a basis for identifying different levels of PM performance. One focus of the research reported in this paper was the management of PM KPIs. Research will need to examine the relationship between variations in the six categories of the PMPA and different results in the PMPA criterion "PM KPIs" and it will be necessary to investigate the extent to which different characteristics of PM performance in the enabling criteria of "PM leadership", "PM staff", "PM policy and strategy", "PM partnerships and resources", and "project life cycle management processes", and in the management of PM KPIs, correlate with different measurements of PM KPIs.

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Appendix 1. Questionnaire (condensed version)

1. Which statement best fits your own definition of a project? (Tick one box)

    a. A project is used to manage major, one-off capital-intensive work activities in such areas as construction, engineering or the introduction of new systems.

    b. A project is a vehicle for tackling all business-led change within an organisation.

    c. Don't know.

2. Which statements apply to your organisation? (Tick all that apply)

    a. The benefits of project management are not being promoted.

    b. The benefits of project management are being promoted.

    c. A company-wide project management system with centralised control is being set up.

    d. A company-wide project management system with devolved control is being set up.

3. Give your opinion of the following statements (S. agree/Agree/Neutral/Disagree/S. disagree/ Don't know)

    a. Project focused meetings are held in our organisation.

    b. Open two-way partnerships with customers exist.

    c. Project ideas/information is freely shared by all.

    d. Open two-way partnerships with suppliers exist.

    e. A common project language is shared by all.

    f. Project teams are usually brought together to work in close physical proximity to each other.

    g. Project information is clearly evident in the work environment.

    h. Social gatherings and festivities associated with projects are held in the organisation.

4. Indicate your opinion of this statement for the change programmes liste dbelow: "the following programme has had a positive effect on our organisation" (S. agree/Agree/Neutral/Disagree/S. disagree/Don't know/Not applicable)

    a. Redefining of jobs.

    b. Organisation-wide project management methods.

    c. Organisation-wide training in project management.

    d. Quality management system accreditation.

    e. Reduction in management layers.

    f. Total quality management.

g. Policy of recognition for project-related work.

h. Quality circles.

i. Policy of employee involvement in decision making.

j. Policy of recognition for developing skills in project-related work.

k. Employee empowerment policy.

l. Change in company ownership.

m. Business process reengineering.

5. *Do you use a model of the stages of project life cycle when managing projects (e.g. initiation stage, definition stage, implementation stage)? (Always/Sometimes/Never/Don't know*

6. *Does a set of documented project management procedures exist? (Yes/No/Don't know)*

7. *In which of the following areas do procedures relate to? (Tick all that apply)*

A. Conception/initiation of a project idea.

B. Project selection/prioritisation.

C. Project start-up.

D. Defining of benefits, goals, objectives.

E. Planning time, cost, scope of work.

F. Managing risk.

G. Change management.

H. Contract management.

I. Monitoring and controlling a project.

J. Closing down a project.

K. Handover of project deliverables.

L. People selection.

M. Benefit management.

N. Quality improvement.

O. Performance review/monitoring.

P. Configuration management.

Q. Don't know.

R. Other (please specify: ....).

8. How many mandatory procedures are there? (Tick one box: 1-10/11-30/31+/Don't know)

9. Give your opinion of the following statements (S. Agree/Agree/Neutral/Disagree/
S. Disagree/Don't know)

    A. Formal processes/procedures are used, helping us to better manage our projects.

    B. Formal processes/procedures are used, but add little value.

    C. Formal processes/procedures are not used.

    D. Other (please specify: ....).

10. Are the formal project management procedures ever amended? (Yes/No/Don't know)

11. Indicate under which situations amendments take place (tick all that apply)

    A. As a formal project activity based on the experience of past projects.

    B. As part of general ongoing continuous improvement programmes.

    C. During an individual project at the discretion of one of the project parties (e.g. manager,
       sponsor).Please specify who: ....

    D. Other.

12. Is there a formal process for selecting people to work in project teams? (Yes/No/Don't know)
If yes, please provide details: ....

13. Which of the following statements best describes project-management-related training?

    A. The training is provided on an ad hoc basis as the need arises.

    B. There is formal process linking training to career development.

    C. The training is a mixture of both ad hoc and a formal process.

    D. Other (please specify: ....

14. Which of the following statements best describes how your performance on projects is
evaluated?

    A. There is no process for evaluating my performance against project-related objectives.

    B. My performance evaluation is built into the project management process of individual
       projects.

    C. My performance is evaluated by a process linking high-level, organisation objectives to
       project work.

15. *Indicate your opinion of the importance of the PM KPIs listed (V. important/Important/Neutral/Unimportant/V. unimportant/Don't know)*

    a. Client perception.

    b. Meeting specified project objectives.

    c. Smoothness of handover.

    d. Responsiveness to change.

    e. Cost effectiveness of work.

    f. Improvement in organisational capability.

    g. Growth of others.

    h. Own personal growth.

    i. Level of disruption to organisation.

    j. Avoidance of non-benefit through early cancellation.

    k. Enabling of other project work.

    l. Personal non-financial rewards.

    m. Contribution to continuous improvement.

    n. Adherence to defined procedures.

    o. Degree of process innovation.

    p. Personal financial rewards.

16. *Please provide details of methods used to manage the PM KPIs rated as most important*

Appendix 2.

Feature	SA	A	N	D	SD	DK	Mean[a]
Project focused meetings are held in the organisation	20	34	2	2	1	0	1.81
Open two-way partnerships with customers exist	12	29	9	8	1	0	2.27
Project ideas/information is freely shared by all	7	30	10	10	2	0	2.49
Open two-way partnerships with suppliers exist	9	25	10	11	3	1	2.51
A common project "language" is shared by all	5	29	6	17	1	1	2.61
Project teams are usually brought together to work in close physical proximity to each other	5	23	4	20	6	1	2.93
Project information is clearly evident in the work environment (e.g. charts/pictures)	5	17	8	25	4	0	3.10
Social gatherings and festivities associated with projects are held in the organisation	4	18	10	19	8	0	3.15

Notes: $n = 59$ (four subjects did not answer). Measuring instument: strongly agree (SA) = 1; agree (A) = 2; neutral (N) = 3; disagree (D) = 4; strongly disagree (SD) = 5; DK = don't know.
[a] Excluding "don't knows"

Table AI.
Features of a
"projects culture"

Appendix 3.

Change programme	f	SA	A	N	D	SD	DK	Mean[a]
Redefining of jobs	51	3	28	15	5	0	0	2.06
Organisation-wide project management methods	39	5	25	5	2	0	2	2.11
Organisation-wide training in project management	37	7	16	9	4	0	1	2.28
Quality management system accreditation	49	9	24	10	4	2	0	2.31
Reduction in management layers	48	6	28	15	5	0	0	2.40
Total quality management	41	9	15	5	4	5	3	2.50
Policy of recognition for project-related work	46	2	23	14	5	0	2	2.50
Quality circles	49	1	33	8	5	2	0	2.50
Policy of employee involvement in decision making	46	6	22	8	8	2	2	2.52
Policy of recognition for developing skills in project-related work	36	4	14	12	4	1	1	2.54
Employee empowerment policy	42	5	17	9	10	1	2	2.64
Change in company ownership	21	1	7	8	2	1	2	2.74
Business process reengineering	40	5	19	6	7	0	3	2.89

Notes: $n = 62$ (one subject did not answer). Measuring instument: strongly agree (SA) = 1; agree (A) = 2; neutral (N) = 3; disagree (D) = 4; strongly disagree (SD) = 5; DK = don't know.
[a] Excluding "don't knows"

Table AII.
Perceived positive
effect of change
programmes

Appendix 4.

Role	f	%
Project manager	46	76.7
Customer/client	42	70.0
Project sponsor	37	61.7
Customer liaison	26	43.3
Programme director/manager	21	35.0
Internal stakeholder	20	33.3
External stakeholder	17	28.3
User liaison	16	26.7
Other	9	15.3

Note: $n = 52$

Table AIII.
Roles formally
defined during
project life cycle
(subjects may select
more than one)

Appendix 5.

Activity	f	%
a. Planning time, cost, scope of work	26	89.7
b. Defining benefits, goals, objectives	25	86.2
c. Monitoring, controlling a project	24	82.8
d. Conception, initiation of a project idea	23	79.0
e. Project start-up	23	79.0
f. Contract management	23	79.3
g. Managing risk	21	72.4
h. Closing down a project	21	72.4
i. Performance review	21	72.4
j. Handover of project deliverables	20	71.4
k. Change management	18	62.1
l. Project selection, prioritisation	17	58.6
m. Configuration management	13	46.4
n. Quality management	11	37.9
o. Benefit management	9	31.0
p. People selection	7	24.1

Note: $n = 31$

Table AIV.
Project life cycle
activities with
written procedures

Appendix 6.

Statement	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Don't know
Formal processes/procedures are used, helping us to better manage our projects	15	13	1	0	2	0
Formal processes/procedures are used but add little value	2	2	5	13	9	0
Formal processes/procedures are not used	2	4	3	10	12	0

Note: $n = 31$

Appendix 7.

Project KPI	VI	I	N	U	VU	DK	Mean[a]
Client perception	50	9	0	1	0	0	1.18
Meeting specified project objectives	46	13	1	0	0	0	1.27
Smoothness of handover	32	22	2	0	2	2	1.55
Responsiveness to change	26	26	7	0	0	1	1.67
Cost effectiveness of work	19	36	3	1	1	0	1.82
Improvement in organisational capability	14	38	5	3	0	0	1.92
Growth of others	13	36	10	1	0	0	2.04
Own personal growth	13	32	11	4	0	0	2.10
Level of disruption to organisation	16	24	16	3	0	1	2.18
Avoidance of non-benefit through early cancellation	17	28	6	1	5	3	2.20
Enabling of other project work	8	34	15	1	2	0	2.20
Personal non-financial rewards	10	29	15	3	1	2	2.24
Contribution to continuous improvement	7	28	23	2	0	0	2.27
Adherence to defined procedures	7	33	15	4	1	0	2.29
Degree of process innovation	3	28	20	6	3	0	2.63
Personal financial rewards	4	13	21	10	10	2	3.18
Other	4	1					

Notes: $n = 59$ (four subjects did not answer). Measuring instument: very important (VI) = 1; Important (I) = 2; neutral (N) = 3; unimportant (U) = 4; very unimportant (VU) = 5; DK = don't know. [a] Excluding "don't knows"