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RESEARCH ARTICLE

Further insights by project managers into the problems in project management

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Abstract

A Delphi study using twenty-three project practitioners over six rounds is aimed to identify significant problems in project management, arising from the nature of projects other than those readily identifiable in a literature review. The study goes on to identify project managers' behaviours which are recognised as having successful impacts on the delivery of projects. A Relative Importance Index for the problems and behaviours resulting from the issues identified in the study is calculated. This study continues by reporting the views of practitioners involved in the management of large projects on the everyday problems they experience in managing projects, problems that are not adequately addressed in current project management texts concerning the nature of projects. Five additional problems, not generally discussed in the literature, were identified together with seven interpersonal skills and behaviours that are major contributors to increasing the likelihood of a successful project delivery.

Keywords:

Project management, Delphi study, project managers, mega projects.

Introduction

The Delphi technique uses as its basis the assumption that a group opinion is superior to an individual opinion. The Delphi technique is described by (Linstone and Turoff, 1979). Its use as a research tool is discussed by (Skulmoski, Hartman And Krahn, 2007), its accuracy by (Parente et al., 1984) and construction of the survey by (Fink, 2009). A comprehensive review of its history, alternative approaches, strengths, and weaknesses is provided by (Keeney, McKenna and Hasson, 2010). Criticisms include how an expert is selected for the study, the value of consensus, the impact of the pressure of conformity, the difficulty in maintaining anonymity and the lack of universal guidelines. These criticisms and suggested mitigation measures are discussed in detail by (Donohoe and Needham, 2009).

A previous study (Livesey, 2016a) reported on the results of a Delphi study into the relative importance of problems in project management identified by a literature review. The subject of the literature review was problems in project management resulting from the nature of projects. The 23 panel members used in this six-round Delphi study are practitioners, 90% of whom had been involved in the management of projects with a value in excess of \$500 million. During the study, panel members were given the opportunity to identify problems in project management other than those presented to them as identified by the literature review. To provide a context for the discussion, the problems identified in the respondent's comments were then used as feedback to the other panel members to establish whether a consensus (more than 67% agreeing or strongly agreeing) was obtained. Finally, the panel went on to discuss behavioural factors they believed important for the successful delivery of a projects and again the comments of panel members were fed back to the panel at large to establish if consensus was obtained. Results from these two discussions are presented in this paper.

The remainder of the paper is organised as follows. The conduct of the Delphi study is discussed under research method, followed by findings. Then, the findings are critically compared with existing literature in the discussion section. Finally, conclusions are drawn.

Research method

Following a pilot Delphi, a six round E-Delphi study was conducted during which it was impossible for the participants to identify the originator of any of the comments that they were asked to review. Selection of the panel for the study was based on the following criteria:

- must have over 20 years of experience in the management of construction projects.
- must have experience in managing a project greater in size than \$500 million.
- There was no requirement for formal education as it was thought that any potential participant meeting the above criteria certainly qualified as an expert in the management of large construction projects.

Participants who had either worked for contractors or acted for the client were sought. In addition, the type of contract the potential panel participant had managed was not used as a selection criterion.

In all 23 practitioners took part in the study.

The panel members' demographics are summarised in Table 1 (note 15% of panel members chose not to respond to the demographic questions). Allowing for some overlap the minimum total number of projects managed by panel members was 50.

Table 1 Delphi panel members' demographics

Aspect	Percentage
Project involvement working for contractors	34%
Project involvement working for clients	37%
Project involvement working for consultants	29%
Degree qualified	91%
Certified in project management (all certified members were also degree qualified).	19%
Over 60 year of age	50%
50-59 years of age	40%
40-39 years of age	10%
Male	95%

The panel members were asked to express their opinion on the questions using a five-point Likert-type scale (Likert, 1932). The scales used in the various questions and associated scales are summarised in Table 2. Based on the results the Relative Importance Index, as reviewed by (Holt, 2013) and also used in construction projects by other researchers (Kometa, Olomolaiye and Harris, 1994; Sambasivan and Soon, 2007; Gündüz, Nielsen and Özdemir, 2012), was used.

Table 2 Likert scale options for the questions put to panel members and associated score.

Questions concerning the importance of skills in project management and reflection	Questions concerning the impact of problems in project management	When attempting to gain consensus on issues	Score allocated for analysis
Very important	Very significant	Strongly Agree	5
Important	Significant	Agree	4
Neutral	Neutral	Neither agree nor disagree	3
Little Importance	Little significance	Disagree	2
Very little importance	Very little significance	Strongly disagree	1

Results and analysis

PROBLEMS IN PROJECT MANAGEMENT

During the course of the Delphi study, individual panel members were given the opportunity to identify problems that occur in project management other than those presented to them as identified in the literature from a consideration of the nature of projects. The problems identified in the respondents' comments were then used as feedback

to the panel to establish whether a consensus (i.e., more than 67% agreeing or strongly agreeing) could be achieved concerning these problems. The problems on which a consensus was reached were:

1. Problems resulting from lack of suitably experienced personnel being available when a contract is awarded unexpectedly.
2. Problems resulting from externally imposed salary caps that make the recruitment of suitably qualified project personnel difficult.
3. Problems resulting from a change in ownership, particularly a change in government.
4. Problems created via a feedback loop that is created when a project is in trouble resulting in the loss of staff that in turn exacerbates the problems.
5. Original project proponents' optimism bias.

Figure 1 summarises the consensus view of the panel on these items and Table 3 summarises the relative importance index together with the mode panel answers for these problems.

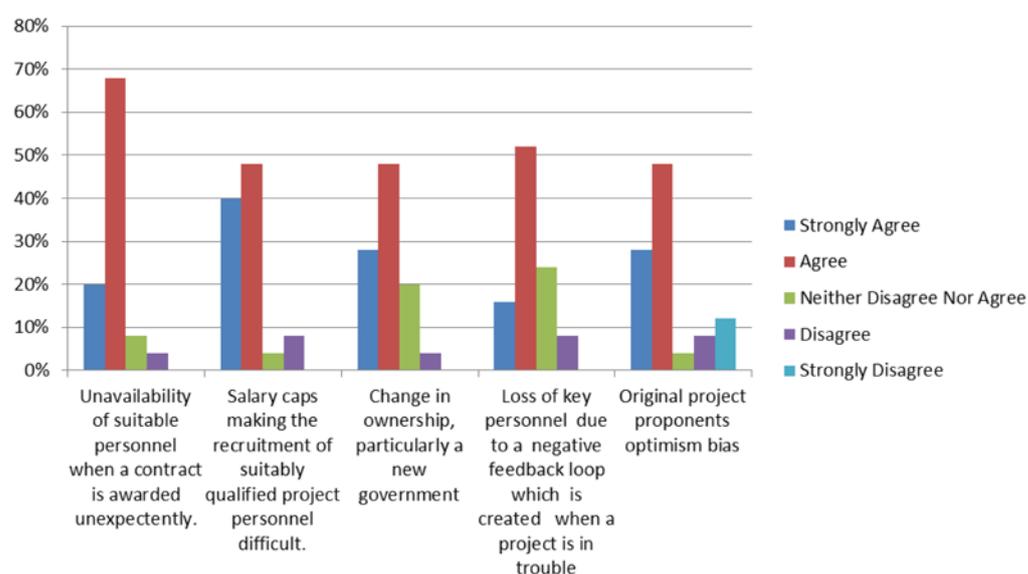


Figure 1 Panel members' views of the additional problems identified in project management

Table 3 Additional project problems identified by panel members

Problem Identified	Relative Importance Index	Mode of Agreement Regarding the Problem
Externally imposed salary caps that make the recruitment of suitably qualified project personnel difficult.	0.84	Agree
Unavailability of suitable personnel when a contract is awarded unexpectedly.	0.81	Agree
Change in ownership, particularly a new government.	0.80	Agree

Table 3 continued

Problem Identified	Relative Importance Index	Mode of Agreement Regarding the Problem
Loss of key personnel due to a negative feedback loop which is created when a project is in trouble.	0.75	Agree
Original project proponents' optimism bias.	0.74	Agree

FACTORS IDENTIFIED BY PANEL MEMBERS AS IMPORTANT TO DELIVERING A PROJECT SUCCESSFULLY

During the commentary received from the panel members, a consensus was reached regarding the importance of the following factors which were identified as being important in ensuring a project's success:

1. Communication, by the project director, of a consistent vision of the project's goals at all meetings, telephone calls and e-mails.
2. Keeping the project moving at all times and the resultant need to accept that making some decision (right or wrong) is better than no decision.
3. Maintaining a no-blame culture.
4. Maintaining an environment of personal responsibility.
5. Recognising the importance of emotions as opposed to logic in dealing with disputes i.e. those disagreements that arise prior to a formal dispute.
6. Recognising the emotional drivers of team members and not just their technical expertise in problem solving.
7. Understanding your team members' strengths and weaknesses and the constraints they work under.

The consensus view of the panel on these success factors is depicted in Figure 2 and the resultant relative importance index and the associated mode answer are presented in Table 4.

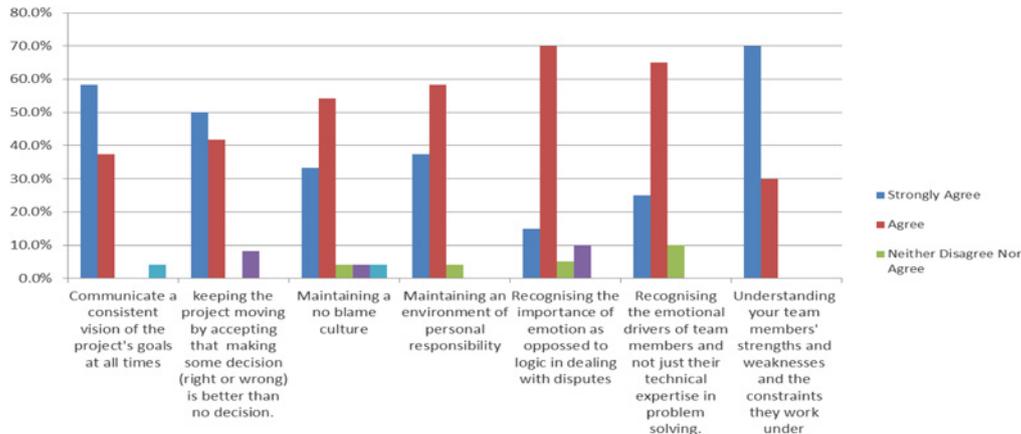


Figure 2 The position of panel members on commentary regarding success factors associated with team management

Table 4 The consensus position of panel members on commentary regarding success factors associated with team management

Success Factor	Relative Importance Index	Mode of Agreement Regarding the Success Factor
Understanding your team members' strengths and weaknesses and the constraints they work under.	0.94	Strongly agree
Communicating a consistent vision of the project's goal at all times.	0.90	Strongly agree
Keeping the project moving by accepting that making some decision (right or wrong) is better than no decision.	0.87	Strongly agree
Maintaining an environment of personal responsibility.	0.87	Agree
Recognising the emotions and drivers of team members and not just their technical expertise in problem solving.	0.83	Agree
Maintaining a no-blame culture.	0.83	Agree
Recognising the importance of emotions as opposed to logic in dealing with disputes.	0.78	Agree

THE RELEVANCE OF REFLECTION IN CAREER DEVELOPMENT AND IN DEALING WITH A PROJECT'S PROBLEMS

In round 6, the panel members were asked to rate the significance of reflection on both their career development and their ability to solve project problems as they developed. Figure 3 summarises the results.



Figure 3 The significance of reflection on career development and the management of project problems

Discussion

ADDITIONAL PROBLEMS IN PROJECT MANAGEMENT IDENTIFIED BY THE DELPHI PANEL

Externally imposed salary caps

As indicated in the panel's comments, this problem relates to the project manager not being able to attract suitably qualified team members due to salary caps being established on a basis other than a consideration of the potential contribution of the team member to the project's success. This can result in less experienced team members being selected for the project with a resultant detrimental impact on project performance.

In terms of the relative importance index, externally imposed salary caps placed first, achieving a score of 0.84, with 88% of the panel either agreeing or strongly agreeing with the inclusion of this as a problem in project management.

The comments by the panel members provided emphasise that the impact of recruiting project team members who lack suitable experience has a detrimental effect on project delivery. The importance of management competency in project success is also identified in other research (Duy Nguyen, Ogunlana and Thi Xuan Lan, 2004; Jha and Iyer, 2007; Alzahrani and Emsley, 2013).

The need for adequate financial compensation was identified as a hygiene factor by Herzberg and Longuet-Higgins (1963). A hygiene factor is a working condition that, whilst not leading to greater job satisfaction, results in dissatisfaction if it is absent. The effect of salary caps on project management recruitment has not been specifically discussed in the project management literature. Research by Parker and Skitmore (2005) did, however, find that salary benefits were a factor in minimising project staff turnover. Further research involving Turkish construction workers found 67% of those questioned rated money as the most motivating factor (Parkin, Tutesigensi and Büyükalp, 2009). Recent work by Rose and Manley (2011) involving four large-scale construction projects found that financial incentives were a motivator. However, their impact was less than that of relationship initiatives.

Thus, whilst the literature does not specifically confirm the panel's view of salary caps and the resultant difficulty in recruiting suitable staff, it does confirm that both construction workers and project staff do regard salary as a motivating factor. It also confirms the need for adequate management competency to ensure the successful delivery of a project. Based on these results, it would appear reasonable to assume that a construction worker will not join a project if he does not feel he will be adequately financially compensated.

Lack of availability of suitably experienced personnel

In a competitive bid environment, a contractor often submits bids for many different types of work (Drew, Skitmore and Lo, 2001). Contractors do not expect to win all the work they bid for, and project personnel are often designated for multiple projects on this basis. The problem highlighted by the panel results from the awarding of more contracts than were expected and the subsequent exhaustion of the contractor's personnel leading to the need to source new personnel prior to the project's commencement.

In terms of the relative importance index, this problem was placed second, achieving a score of 0.81, with 88% of the panel either agreeing or strongly agreeing with the inclusion of this as a problem in project management.

The impact of an unexpected award of a contract on the project team's viability is not discussed in the literature. The need for staffing a project with suitably qualified personnel has been identified by several authors such as Pinto and Slevin (1987; 1988) and (Westerveld, 2003).

The most common form of procurement process in construction involves an open bid procedure, with the second most common involving a prequalified shortlist (Eriksson, 2008). However, neither of these methods give the contractor any certainty of award; therefore, they add to the problems outlined by the Delphi panel. It is difficult to see how this problem can be minimised without clients being prepared to adopt a different procurement model. An example could be alliancing or partnering that would in turn provide the contractor with a greater certainty of the contract being awarded. Greater certainty of award would encourage a contractor to dedicate a team to the contract at an early date.

Changes in ownership

This problem relates to the potential loss of support for a project, should ownership change after the project commences but prior to its completion. In terms of the relative importance index, this problem was placed third, achieving score of 0.80, with 76% of the panel either agreeing or strongly agreeing with the inclusion of this as a problem in project management.

This change can result in a loss of top management support for the project. The need for top management support as a success factor has been noted by several researchers (Pinto and Slevin, 1987; Pinto and Prescott, 1988; Westerveld, 2003; Thamhain, 2004b; Thamhain, 2004a; Jha and Iyer, 2007).

Having been personally involved in the management of large government contracts, I would like to add that it is not just a change of government that is a problem. A caretaker period before a potential change of government is also a major problem. During this caretaker period, major expenditures have to be agreed upon by both parties. This is a very difficult process, making the award of a new contract or modifications to an existing contract extremely challenging.

A significant percentage of the panel (20%) neither agreed nor disagreed with change of ownership as a problem, and only 4% either disagreed or strongly disagreed. It is suggested that the relatively high number of panel members not expressing an opinion on this issue is due to them not having experiences with a change of ownership on a project with which they were involved. Unfortunately, it was not possible to fully resolve this issue with the panel in the time available, and it is suggested that this matter may provide a topic for further research.

Project Problems Resulting in the Loss of Key Personnel (Feedback Loop)

This problem relates to the impact of a failing project on a team's morale, resulting in team members leaving the project. The loss of these team members makes the problem harder to manage and further lowers the team's morale, and a damaging feedback loop is created.

In terms of the relative importance index, this problem was placed fourth, achieving a score of 0.75 with 76% of the panel either agreeing or strongly agreeing with the inclusion of this as a problem in project management.

The importance of minimising staff turnover as a factor in project success was a finding of Dainty et al. (2003). In addition, the view that poor performance on a project can result in the loss of personnel was confirmed by Parker and Skitmore (2005). They surveyed a group of

project managers and found that 40.3% of those surveyed gave a project's poor performance as the reason, which caused them to consider leaving the project.

Similar to the change in ownership, this problem had a high percentage (24%) of panel members neither agreeing nor disagreeing with its inclusion as a problem. As in the case of the previous problem, it is suggested that this result is due to panel members not having experienced this problem.

Original project proponents' optimism bias

Optimism bias is defined as "the difference between a person's expectation and the outcome that follows. If expectations are better than reality, the bias is optimistic" (Sharot, 2011, p. 941).

The panel members noted that the original proponents' optimism bias could create problems in delivering the project on time and to budget. It achieved a relative importance index of 0.74, only slightly lower than the previous problem score of 0.75. The percentage of panel members agreeing that this was a problem was also similar at 76%. It did, however, have the highest percentage of panel members (20%) either disagreeing or strongly disagreeing with its inclusion as a problem. The panel members were, therefore, reasonably polarised on this issue. However, those panel members who regarded the original project proponents' optimism bias as a significant problem are supported by a number of papers (Kahneman and Lovallo, 1993; Atkinson, Crawford and Ward, 2006; Flyvbjerg, 2008; Bain, 2009; Love, Edwards and Irani, 2012; Flyvbjerg, 2013; Flyvbjerg, Garbuio and Lovallo, 2013; Flyvbjerg, 2014).

The relatively high percentage of panel members not agreeing with this as a problem may be due to experienced managers anticipating the original proponent's optimism bias and developing successful countermeasures during the development of the risk and opportunities phase. For an example of this situation in practice, see (Livesey, 2016b) event 33.

Confirmation of this hypothesis was beyond this study and could be an area for further work.

FACTORS IDENTIFIED BY THE PANEL AS IMPORTANT TO DELIVERING A PROJECT SUCCESSFULLY

This section presents the results concerning factors panel members associated with team management. These results are discussed with reference to the academic literature and a relevant autoethnography (Livesey, 2016b) in this section.

Understanding a team member's strengths and weaknesses

Understanding a team member's strengths and weaknesses is placed first in the relative importance index for this category, with a result of 0.94 and with 100% of the panel either agreeing or strongly agreeing with its importance. Further indication of the strength of support is given by the panel members' mode answer that was "strongly agree."

Appreciating team members' strengths and weaknesses has been found to be one of nine success factors in project management (Dainty, Cheng and Moore, 2003; Flyvbjerg, Garbuio and Lovallo, 2013). Project management skills leading to an increase in a team's knowledge of its own strengths and weaknesses has been found to lead to an increase in team effectiveness in software development (Hoegl and Parboteeah, 2006). The understanding of the characteristics of team members was found to be important in developing successful multifunctional teams (Chen and Lin, 2004).

Understanding team members' weakness as a factor in project delivery is also regarded as a component of the key competence of developing others (Druskat and Druskat, 2012), which is contained in the Goleman-Boyatzis model (Goleman, Boyatzis and McKee, 2013).

The importance of this factor is therefore endorsed by four sources: the Delphi panel, the literature, and (Livesey, 2016b) (events 8 and 18) the Goleman-Boyatzis model of EI.

Communicating a consistent vision of the project's goals

Communicating a consistent vision of the project's goals was placed second in the relative importance index for this category, with a result of 0.90 and with 96% of the panel either agreeing or strongly agreeing with the statement "An important role of the project director is to communicate a consistent vision of the project's goal and to keep that vision in mind in all meetings, telephone calls and emails."

Further indication of the strength of support is given by the panel members' mode answer that was "strongly agree."

The dissenting opinion had more to do with sounding a warning than an outright disagreement as the following comment illustrates.

I think a PD that talks about the project goals & vision in EVERY phone call may be missing the point and overdoing it! Team members need to identify with a clear set of objectives and goals that are regularly reinforced and communicated. Reverting to these, even when inappropriate, could discredit the message and so undermine belief in the project director and the goals/vision. (Response 32)

Based on the above comment, it would appear that the respondent is not objecting to keeping the goals in mind but was rather warning that it may not be appropriate to verbalise them at all times.

This view is confirmed with respect to the general project management situation in several works (Pinto and Slevin, 1987; Pinto and Pinto, 1990; Heagney, 2011) and also in the case of diverse geographically located teams (Cramton and Webber, 2005; Hertel, Geister and Konradt, 2005; MacGregor, 2005; Lee-Kelley and Sankey, 2008; Montoya et al., 2009; Verburg, Bosch-Sijtsema and Vartiainen, 2013).

The importance of keeping the project moving at all times and the resultant need to accept that making some decision (right or wrong) is better than no decision

The importance of keeping the project moving at all times and the resultant need to accept that making some decision (right or wrong) was better than no decision was placed joint third in the relative importance index for this category, with a result of 0.87 and with 92% of the panel either agreeing or strongly agreeing with the concept. The strength of the support is again emphasised by the mode answer from the panel being "strongly agree."

The impact of delaying decisions even when incomplete information is available has been discussed in several works. This view is summarised by Heldman: "Insufficient information does cause a risk to your project. But so does indecision. After you have examined everything you know about the situation it's better to make a decision and get on with it than cause delays to the project." (Heldman, 2010)

For further discussion on this issue, see (Snowden and Boone, 2007; Hwang and Ng, 2013; Kerzner, 2013).

Additionally, Gündüz et al. (2012) found slowness in the decision-making process to be one of the most significant factors that caused delays to project delivery.

The need to keep a project moving even when incomplete information is available is also discussed in (Livesey, 2016b) (event 31).

Maintaining an environment of personal responsibility and maintaining a no-blame culture

As the panel indicated, these two factors strongly interact; hence, they are jointly discussed.

Maintaining an environment of personal responsibility placed joint third on the relative importance index ranking for this category, with a score of 0.87 and with 76% of the panel agreeing or strongly agreeing with its importance. The mode of the panel answer to this issue was “agree.” Maintaining a no-blame culture was placed joint sixth on the relative importance index for this category, with a result of 0.83 and with 79% of the panel either agreeing or strongly agreeing with its importance in project success. Again, the mode of the panel answer to this issue was “agree.”

The panel was asked to comment on the problem of maintaining an environment of personal responsibility whilst simultaneously establishing a no-blame culture. Several interesting responses were obtained, the general theme of which appeared to be, making a mistake is acceptable (and falls into the no-blame environment), but making repeated mistakes on the same issue is not acceptable as this indicates a lack of commitment.

The need to establish responsibility has been discussed by (Munns and Bjeirmi, 1996; Goleman, 2000; McHugh, Conboy and Lang, 2012; Kerzner, 2013).

The importance of maintaining a no-blame culture is confirmed in several publications, particularly for involving alliances and or partnering structures (Pitsis et al., 2003; Van Marrewijk et al., 2008; Baiden and Price, 2011; Meng, 2012; Ibrahim, Costello and Wilkinson, 2013; Kerzner, 2013; Lloyd-walker, Mills and Walker, 2014).

The need to maintain a no-blame culture whilst simultaneously establishing an environment of personal responsibility does not appear to have been the subject of any research. The interaction of these two factors has, however, been discussed in Livesey (2016b) (event 4).

Recognising the importance of the emotions and drivers of team members and not just their technical expertise in problem solving

This factor placed joint fifth on the relative importance index ranking for this category, with a score of 0.83 and with 90% of the panel agreeing or strongly agreeing with its importance. Its drop in position resulted from it having a relatively smaller percentage of the panel answering, “strongly agree,” at only 25%. No panel members disagreed with its importance.

This view is supported by Thomas and Mengel who wrote, “The myth of reason and emotion being separate. Only if people succeed to emotionally identify with common objectives, are they willing to understand individual behaviour, goals, and motifs and to share values” (2008, p311). The impact of emotion and perception on performance has also been discussed (Randolph and Posner, 1988; Barsade, 1998; Cicmil et al., 2006; Amabile and Kramer, 2007), as has the need to meet team members professional needs (Thamhain, 2004a).

In addition to the literature, Livesey (2016b) has confirmed the need to recognise the importance of emotions and drivers in problem solving (event 15).

Recognising the importance of emotions as opposed to logic in dealing with disputes

This factor placed joint seventh and therefore last on the on the list of consensus issues with a relative importance score of 0.78. However, 85% of the panel either agreed or strongly agreed with the importance of this factor. The ranking was lowered by it having 10% of the panel members disagree that it was important.

The emotional, as opposed to strictly rational, behaviour of humans in analysing the risk was discussed in prospect theory. This postulated that people are risk averse with respect to potential gains and risk seeking with respect to potential losses (Kahneman and Tversky, 1979).

The emotional need for fairness in a settlement situation has been identified (Fiss, 1983; Güth and Tietz, 1990; Behfar et al., 2008), as have the issues of the cause and the impact of disputes in teams (Pelled, Eisenhardt and Xin, 1999; Jones, 2000; Bodtker and Jameson, 2001; Garcia-Prieto, Bellard and Schneider, 2003; Long and Brecke, 2003; Behfar et al., 2008).

Livesey(2016b) also provided a discussion of an event in which the driving force behind a dispute was emotional rather than rational (event 24).

THE RELEVANCE OF REFLECTION IN CAREER DEVELOPMENT AND IN DEALING WITH PROJECTS PROBLEMS

The result of the panel members' views on the importance of reflection in their career development and their ability to solve project problems. Ninety percent of panel members rated reflection as either significant or very significant in both these areas. The importance of reflection is further underlined by the comments received from the panel regarding this topic are discussed in detail in Livesey(2016b).

The panel members' view of the importance of reflection is further confirmed in comments received from the project management community (Cicmil et al., 2006; Winter et al., 2006; Walker et al., 2008; Remington, 2011).

Conclusion

External factors, other than the nature of the project, have serious impacts on project management.

The aim of this research project was to establish and show the relative importance of problems in the management of large projects that were not dependent on characteristics of the project but depended on external factors and personal relationship skills. The research method was a Delphi study involving 23 project managers with experience in managing large projects (in 80% of the cases Mega projects). They discussed a series of problems over six rounds and reached agreement on five major externally imposed problems viz.: 1) Externally imposed salary caps 2) Lack of availability of suitably experienced personnel 3) Changes in ownership 4) Project problems resulting in the loss of key personnel (feedback loop) and 5) Original project proponents' optimism bias.

The participants similarly identified seven aspects of interpersonal skill that were crucial to the progress of the project. They were: 1) Understanding team members' strengths and weaknesses 2) Communicating a consistent vision of the project's goals 3) The importance of keeping the project moving at all times accepting that making some decision (right or wrong) is better than no decision 4) Maintaining an environment of personal responsibility and the associated 5) Maintaining a no-blame culture 6) Recognising the importance of the emotions

and drivers of team members and not just their technical expertise and similarly 7) the importance of emotions as opposed to logic in dealing with disputes.

Any of these twelve issues can significantly impair productivity and may cause a project to fail. This brings up the overall importance of reflection in career development and in dealing with project problems; reflection for identifying the cause of the problems and for finding solutions.

Whilst there is considerable literature discussing the nature of projects and the resultant problems, the literature reviewing the problems discussed here is more limited. Since these problems are thought to be important by a group of highly experienced practitioners, it would seem reasonable that academics involved in the investigation of project failures would be interested in further research into the problems highlighted in this study.

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