The Role of Emotional Intelligence in the Management of Large Construction Projects

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Submitted in fulfilment of the requirements for the degree of Doctor of Philosophy [2016]
Statement of Original Authorship

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

P. V. Livesey

P. V. Livesey

27th February 2016
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Abstract

The research examines the relevance of the Goleman-Boyatzis model of emotional intelligence in dealing with the problems in large, complex construction projects in the mining and construction industries. The study accomplishes this by examining the relative importance of hard and soft skills in project management as project size increases.

It investigates this topic using the lived experience of project managers, via an autoethnography and a Delphi study, where all participants had managed large and complex projects.

The Delphi study confirmed the problems identified in the literature review and the autoethnography and suggested additional problems and key success factors based on the experience of project managers.

By confirming the importance of emotional intelligence and the relevance of the Goleman-Boyatzis model and also identifying additional problems and key success factors this research adds to the understanding of necessary skills needed by a project manager in the management of large projects.

As the findings of the autoethnography are confirmed by the Delphi study the work also lends credibility to the use of autoethnography as a research method in construction management.
Chapter 1: Introduction

1.1. Background

This research examines the relevance of emotional intelligence (EI) in dealing with the problems in project management resulting from the particular nature of projects. EI is one of the project management skills generally called soft skills, that is, those skills of an interpersonal nature as opposed to those skills identified in *A Guide to the Project Management Body of Knowledge* (PMBOK), which are generally of a more technical nature and are often referred to as hard skills (Atkinson et al. 2006; Bourne et al. 2004; Du et al. 2004; Gonzalez 2012; Pant et al. 2008; Thomas et al. 2012). The research also investigates whether the importance of hard and soft skills varies with project size.

My interest in EI developed as the value of the projects I was given to manage increased. The first project I was allowed to run was only $1 million in value.\(^1\) As the value of the projects I was entrusted to run increased (say, above $50 million) and, in particular, once the projects exceeded $500 million in value, so did their size and complexity. I soon came to realise that the skills required for project management certification, while essential to the practice of project management, were not sufficient. I can still remember the feeling of dread that came over me the first time I realised I would have to rely on a project team rather than my own hard work to successfully complete a project. This lack of sufficiency I experienced is expressed by Morris:

\(^1\) The author has been involved in the management of three projects over $0.5 billion in value, two of which were megaprojects exceeding $1 billion.
Despite its long development, the concepts and techniques of project management now available to the general practitioner, however advanced and specific they may be, are often inadequate to the overall task of managing projects successfully. (Morris 1997, p. 2)

The process I followed for certification was based on PMBoK. This is the traditional path used for certification in the management of construction projects in Australia.

PMBoK defines a project as “a temporary endeavour undertaken to create a unique product, service or result” (PMI 2013, Ch1, Sect 1.2). According to PMBoK, managing a project typically includes identifying requirements; identifying and addressing the needs of the various stakeholders; maintaining and carrying out communications among stakeholders; and balancing the project constraints of scope, quality, schedule, budget, resources and risk. This definition and set of requirements has the effect of reducing project management to a set of technical skills.

Noticeable in the management requirements set out by PMBoK is the lack of reference to the details of the skills needed to manage the project team and other stakeholders, a stakeholder being defined as “an individual, group, or organisation who may be affected by, or perceives itself to be affected by, a decision activity or outcome of a project” (PMI 2013. Ch2, Sect2.2).

The weakness noted in the definition of a project, i.e., its lack of reference to the project team, is perhaps overcome by the definition offered by Cicmil et al “gathering, analysing and disseminating knowledge about people working technologies and each other and the means through which these relations are coordinated and controlled” (2006, p. 676).

The requirements resulting from this definition clearly identify the need for some aspect of team management and emphasise the need to consider the human side
of project management, thereby expanding the skills needed by a project manager from the technical to the social domain.

Other standards exist that are used for certification in the management of projects which include PRINCE2 (AXELOS 2012), *A Guidebook of Project & Program Management for Enterprise Innovation* (P2M) (2005) and *APM Body of Knowledge* (BOK) (Association for Project Management 2012). PMBoK, P2M and BoK have been reviewed by Wirth and Tryloff. (1995), Morris et al. (2006) and Crawford (2007). Crawford noted that PMBoK was the most widely distributed of these texts.

PRINCE2 is widely used in the UK and Europe but is not as comprehensive as PMBoK (Siegelaub 2011) A comparison between PMBoK and PRINCE2 is provided by Matos et al. (2013).

Similar to PMBoK, these other standards are used as the basis for certification in the practice of project management. They emphasise the technical skills required to manage a project but provide little discussion of the skills needed to manage the project team.

To investigate the team management aspect of project management, the lived experience of project managers in the form of an autoethnography and a Delphi study were used. Both the Delphi study members and I have all been involved in the management of infrastructure and mining projects in excess of $0.5 billion in size, and 90% have been involved in projects in excess of $1 billion. Infrastructure and mining projects of over $1 billion in size are often referred to as megaprojects (Flyvbjerg 2014). Project managers who have been entrusted with managing megaprojects are generally regarded as successful. This relative experience of a megaproject manager is
discussed by Flyvberg. He says, “A colleague of mine likes to say that if managers of conventional projects need the equivalent of a driver’s license to do what they do, then managers of megaprojects need the equivalent of a pilot’s jumbo jet license” (2014, p6.). The colleague in the quote was Dr Patrick O’Connell, Practitioner Director of Major Programme Management at Oxford University’s Saïd Business School.

Similar to my background, megaproject managers do not start with large projects. They too have relatively humble beginnings. They reach that level based on their experience and their success with smaller projects. I therefore felt that managers of their experience, whilst being able to comment on projects in excess of $0.5 billion, could also reflect on their career development and provide useful insights into how their management technique and skill sets had developed from the smaller projects with which they were initially entrusted.

My use of an autoethnography builds on previous work (Nugapitiya 2007) and, together with the Delphi study, responds to suggestions from academics that a significant contribution to theory could be made by investigating the practice of project management (Alderman et al. 2005; Blomquist et al. 2010; Cicmil 2006; Soderlund 2004; Winter et al. 2006).

1.2. Research Aim

The aim of this study is to test the Goleman-Boyatzis model (Goleman 1995, 1998; Goleman et al. 2013) for dealing with the problems that arise in project management. This involves the exploration of the relative importance of hard and soft skills as project size increases; it is postulated that in large projects, the need for soft skills—of which EI is one—increases. In addition to its theoretical importance, this research also has practical implications by advancing the understanding of the practice of project management. In this process, the study will also test the use of
autoethnography as a research approach. In the case of the projects studied (infrastructure and mining), project value was used as an indicator of project size and complexity.

As mentioned earlier, an autoethnography and a Delphi study were used to assist in achieving this research aim.

The autoethnography was used to establish whether the competencies in the Goleman-Boyatzis model of EI (Goleman et al. 2013) were appropriate for dealing with the problems I had experienced in project management.

The Delphi study was used to:

- confirm or otherwise the problems identified in project management resulting from a literature review of the nature of projects;
- establish whether the need for PMBoK and soft skills becomes more pronounced as the project size increases;
- confirm or otherwise the relevance of the competencies contained in the Goleman-Boyatzis model of EI (Goleman et al. 2013) in dealing with the problems in project management resulting from the nature of projects;
- verify or otherwise the findings of the autoethnography;
- identify any additional problems in project management, other than those revealed in the literature review, that were apparent from the panel’s lived experience.

1.3. Significance of the Research

This research is significant in that it deals with broadening the understanding of the skills required in the management of large construction projects. The results of the
Delphi study confirmed that the importance of soft skills increased as project size increases and that the problems identified in the literature were valid.

The autoethnography also confirmed the relevance of the competencies in the Goleman-Boyatzis model of EI (Goleman et al. 2013) in dealing with those problems in project management. The Delphi study confirmed the results of the autoethnography regarding the relevance of EI, and in doing so, it added credibility to the use of autoethnography as a research method.

The results from the autoethnography and Delphi study with respect to the importance of EI moves the need for EI, in the case of large projects, from that of a nice-to-have to that of a must-have competency required of a project manager.

Finally, as a result of the comments received during the Delphi study, five problems in project management and seven key success factors in a project’s delivery were identified from the lived experience of the panel members. These findings advance the understanding of the problems faced by managers of large projects and the factors that need to be considered in improving the likelihood of a project’s successful delivery.

1.4. Methodology of this Thesis

My epistemological position was essentially pragmatic in nature in that it focused on the consequence of actions, it was problem centred, and it was real-world practice oriented. It had the goal of establishing the significance of EI in the management of large projects and thereby improving the understanding of the practice of project management by using the knowledge I and others have gained as practitioners.
The approach I initially favoured was to use my own experience to develop an autoethnography. In order to provide verification of the results of my autoethnography, I also decided to use a Delphi study. The additional advantage of using a Delphi study is that it can be used to generate commentary on the issues addressed during each round, which can be fed back to the panel to establish if a consensus concerning them can be achieved. This interactive process provided a rich mechanism for exploring any additional matters raised by panel members during their commentary on the topic under investigation. It was from this process that the additional problems in project management and the key success factors were identified.

This research is thus practice based in that it uses the lived experience of project managers and is an example of a mixed method approach. The qualitative portion of the mixed method is the autoethnography and the comments sections of the Delphi study. The quantitative portion is provided by the statistical analysis of the answers to the questions put to the panel in the Delphi study.

1.5. Outline of this Thesis

This thesis is organised as follows:

Chapter 2 reviews the current literature regarding the development of the understanding of the practice of project management. It establishes the management problems that can be expected from a consideration of the nature of projects. It moves on to discuss the various methods that have been used to investigate the techniques and skills used by project managers in managing these problems, with particular reference to EI.
Chapter 3 discusses the methodologies used in the research. The background to reflection is discussed. The various types of autoethnography, the challenges to this methodology, and the means of overcoming those challenges are also discussed. Finally, the Delphi study design and statistical methodology used in analysing the quantitative portion of the study are described in detail.

Chapter 4 reports the results from my autoethnography concerning the relevance of the Goleman-Boyatzis (Goleman et al. 2013) model of EI to managing the project problems I had experienced.

Chapter 5 reports the results of the Delphi study into the impact of project size on the need for PMBoK and team management skills, the impact and frequency of the project problems identified from the nature of projects, the relevance of the Goleman-Boyatzis model of EI (Goleman et al. 2013) in dealing with those problems and the importance of reflection in the career of a project manager. This chapter also presents the additional problems in projects and the key success factors in project delivery resulting from the experiences of panel members.

Chapter 6 discusses the results of my autoethnography and the Delphi study, cross-referencing them with each other and the relevant literature.

Chapter 7 contains the conclusions reached as a consequence of the research. It highlights the limitations of the research and makes recommendations for further work.

1.6. Definitions

Definitions, except for the terms indicated below, will generally be provided as the thesis progresses.
**Project charter** is a statement of the scope, objectives and participants in a project. Its goal is to ensure that everyone involved in the project is aware of its purpose and objectives.

**Change control** is a systematic approach to managing the changes made to the scope of a project.

**Work breakdown structure (WBS)** is a chart in which the activities of a project are illustrated to portray their relationships to each other and to the project as a whole.

**Quality control** entails the testing of project deliverables so as to ensure the intent of the original specification has been met.

**Quality assurance** is the planned activities used to ensure the requirements of the original specification are met.

1.7. Delimitations of Scope and Key Assumptions

The major assumption of this thesis is that project management is a professional practice with a unique body of knowledge. It further assumes that the investigation of the lived experiences of project managers can make a significant contribution to this body of knowledge.

In considering the need for hard and soft skills, this research considers both small (less than $50 million) and large (greater than $500 million) projects. In the case of the need for emotional intelligence, only large projects are considered.

The thesis does not attempt to investigate the impact of gender or culture on the relationships discussed, notwithstanding that the author and several members of the Delphi panel have managed projects in different cultural environments.
1.8. Summary

This chapter notes the gap in the requirement between the certification process for project management, which necessitates the mastering of certain technical skills, and the practice of project management, which demands additional skills associated with people management. It then outlines the research objectives which were to test the relevance of the Goleman-Boyatzis model of EI to the problems in project management identified from a literature review and to see whether the need for hard and soft skills increased with project size. The significance of the study and methodology used in the research were also discussed. The next chapter provides a literature review of the development of the concepts underlying the practice of project management and moves on to discuss, in more detail, the literature associated with this research.
Chapter 2: Literature Review

2.1 Introduction

Chapter 2 reviews the literature in the areas of project management and emotional intelligence (EI).

The review first considers the preliminary developments in the understanding of project management which centred on the identification of critical success factors (CSF), project success criteria (PSC) and the development of PMBoK and the other books of knowledge, discussed in Chapter 1, which eventuated from this work.

It then discusses further work which highlighted the impact of the specific attributes of projects, including their temporary nature, the effect of geographic dispersion on project team performance and the issues that impact the decision-making process in projects.

The significance of leadership in a project’s success, the importance of stakeholder management, and contributions from other fields including Contingency Theory, Actor Network Theory, Action Research, and Complexity Theory are also reviewed.

Lastly, recent attempts to understand project management practice by studying the skills used by project managers are presented together with a detailed discussion of EI.
2.2 Initial Developments in Project Management Theory

2.2.1 Development of Critical Success Factors (CSF) and Project Success Criteria (PSC)

CSF

Contributions in this area were made by a number of authors, including Sayles and Chandler (1971), Baker et al. (1974a; 1988), Martin (1976), Locke (1984), Morris and Hough (1986), Pinto and Slevin (1987; 1988), Munns and Bjeirmi (1996), Cooke-Davies (2002), Thamhain (2004a) and Toor and Ogunlana (2008). Table 1 summarises the results of these works into four sections: factors influenced by project specific problems, factors influenced by the parent organisation, factors influenced by the project manager’s technical skills and factors influenced by the project manager’s team management skills. Table 1 also indicates the milestones in the expansion of CFS from the technical skills to wider considerations which included team and stakeholder management.

Noteworthy in this list was the lack of team management factors which made up slightly more than 25% of the total factors identified, nearly a third of this number being contained in Thamhain’s paper (2004a).

Cook-Davis (2002) did note the omission of human factors in her research and attributed it to the fact that her research focused on what the projects needed to achieve rather than how the requirements are met.

The general lack of inclusion of the findings regarding human factors is in marked contrast to El-Sabaa who concluded: “Human skills of project managers have the greatest influence on project management practice” (El-Sabaa 2001, p. 6).
Table 1 Critical Success Factors

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<tbody>
<tr>
<td>Factors Influenced by Project Specific Problems</td>
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<tr>
<td>Minimum start-up difficulties.</td>
<td>Project duration under three years.</td>
<td>Technical uncertainty. Impact of external factors (e.g., inflation and government regulations).</td>
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<td>Factors Influenced by the Organisation</td>
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<td>Factors Influenced by the Project Manager’s Technical Skills</td>
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<tr>
<td>Factors Influenced by the Project Manager’s Team Management Skills</td>
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The role of emotional intelligence in the management of large construction projects
In summary, whilst the literature reviewed to this point has identified several factors critical to a project’s success, the majority of the factors relate to technical rather than team management skills. Even in the case where team management factors are highlighted, no help is provided as to how these factors are to be achieved. For instance, whilst the importance of communication as a success factor is identified, the skills necessary to achieve good communication, such as the need to understand the personality type to whom you wish to deliver the message, are not identified or discussed.

PSC

Initially, the concept of project success centred around the delivery of a project on time, to the allocated budget and the required specification. Taken together, these three are called the Iron Triangle (Avots 1969; Gaddis 1959).

In their contribution to the meaning of project success, Baker et al. (1988) widened the definition from the Iron Triangle to include such issues as client satisfaction, project team satisfaction and parent company satisfaction. Pinto and Prescott (1988) also widened the definition of project success from the Iron Triangle to include client satisfaction. They introduced the concept of project life cycle as an influence on success criteria.

De Wit (1988) made a further contribution by discussing the need to separately measure project success from a company perspective (strategic factors) and from the perspective of the project’s management (e.g., time, cost and quality). In his paper, De Wit (1988) also added meeting the needs of stakeholders as a necessary criteria for success. The importance of stakeholder management and the need for a benefit delivery program in ensuring a project success and the means that success may be achieved was the subject of several further papers. These papers introduced the

Turner and Cochrane (1993) highlighted the role of project goals and the methods used in achieving them as success factors in project management. They developed a matrix with elements of the degree to which the project goals were defined and the extent to which the methods of achieving those goals were established. They suggested that a project was influenced by these factors, as was the resultant project organisation and means of control used to contend with them.

In their contribution to the meaning of project success, Shenhar et al. (2001) identified four areas of project success. These areas include project efficiency and the traditional success areas of performance against time and budget. Also identified was the project’s impact on customers, on the company’s business success and on the company’s strategic objectives. In this model, both the success measurements and timescale for their measurement were variable and dependent on the level of technology targeted. Considered technology levels included repeating an existing technology on a new project, incrementally improving a technology during a project, extending an existing technology for a project and committing to a project involving a new technology that had to be developed as part of that project. The unique contribution of this model was the introduction of the consideration of the level of technology and timescale as a modifier to success.

A weakness in the approach by Shenhar et al. (2001) is its failure to clearly differentiate between project success from a company perspective and project success from a project delivery perspective. In his review of project success, Ika (2009) also notes the need to distinguish between project management success and project success.
and that several articles on the subject appear not to truly differentiate between factors the project team can realistically control and those they cannot control.

The above review establishes that although initial contributions regarding PSC concentrated on the Iron Triangle and on entirely technical issues, the literature soon moved on to consider parent company satisfaction with the project result. Finally, by introducing the concept of external stakeholder and project team satisfaction, the emotional side of project success was finally recognised.

2.2.2 Development of the PMBoK

The skills and techniques in these papers have been incorporated into the PMBoK (first published 1996) together with those additional skills thought necessary by the project management community. An overview of the resultant project management knowledge areas and processes are presented in Figure 1. As can be seen by reference to this figure, communications and team and stakeholder management are indicated as a knowledge area that needs addressing. However, little detail is provided as to how these areas should be addressed. For example, no one would argue with the statement “Project managers should create an environment that facilitates teamwork” (PMI 2013, Ch9, Sect 9.3). There is, however, little discussion of the details of how this goal can be achieved.

Reviews of the usage of skills contained in PMBoK and their effectiveness have been conducted by several authors, including Crawford (2000), Gowan and Mathieu (2005), Crawford and Pollack (2007), and Papke-Shields et al. (2010). These works are discussed in more detail in section 2.7.1 where the traditional skills approach to the study of the understanding of project management is discussed.
Figure 1 Project management knowledge areas and process evolved from Turner (2007) using PMBoK (PMI 2013)

<table>
<thead>
<tr>
<th>Project Integration Management</th>
<th>Project Scope Management</th>
<th>Project Time Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop project charter.</td>
<td>Plan scope management.</td>
<td>Plan schedule management.</td>
</tr>
<tr>
<td>Develop project management</td>
<td>Collect requirements.</td>
<td>Define activities.</td>
</tr>
<tr>
<td>plan.</td>
<td>Define scope.</td>
<td>Sequence activities.</td>
</tr>
<tr>
<td>Direct and manage project.</td>
<td>Create WBS.</td>
<td>Estimate activity resources.</td>
</tr>
<tr>
<td>Monitor and control project.</td>
<td>Validate scope.</td>
<td>Estimate activity durations.</td>
</tr>
<tr>
<td>Perform integrated change</td>
<td></td>
<td>Develop schedule.</td>
</tr>
<tr>
<td>control.</td>
<td></td>
<td>Control schedule</td>
</tr>
<tr>
<td>Close project.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Cost Management</th>
<th>Project Quality Management</th>
<th>Project Human Resources Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimate costs.</td>
<td>Perform quality assurance.</td>
<td>Acquire project team.</td>
</tr>
<tr>
<td>Determine budget.</td>
<td>Quality control.</td>
<td>Develop project team.</td>
</tr>
<tr>
<td>Control costs.</td>
<td></td>
<td>Manage project team.</td>
</tr>
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<table>
<thead>
<tr>
<th>Project Risk Management</th>
<th>Project Communication Management</th>
<th>Project Procurement Management</th>
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</thead>
<tbody>
<tr>
<td>Plan risk management.</td>
<td>Plan communications management.</td>
<td>Plan procurement management.</td>
</tr>
<tr>
<td>Identify risks.</td>
<td>Manage communications.</td>
<td>Conduct procurement.</td>
</tr>
<tr>
<td>Perform qualitative risk analysis.</td>
<td>Control communications.</td>
<td>Control procurement.</td>
</tr>
<tr>
<td>Perform quantitative risk analysis.</td>
<td></td>
<td>Close procurement.</td>
</tr>
<tr>
<td>Plan risk responses.</td>
<td></td>
<td></td>
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<tr>
<td>Control risks.</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Stakeholder Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify stakeholders.</td>
</tr>
<tr>
<td>Plan stakeholder management.</td>
</tr>
<tr>
<td>Manage stakeholder engagement.</td>
</tr>
<tr>
<td>Control stakeholder engagement.</td>
</tr>
</tbody>
</table>

The role of emotional intelligence in the management of large construction projects 17
2.3 Issues Associated with Nature of Projects

2.3.1 The Impact of Time

As previously discussed, a common definition of a project is “a temporary
endeavour undertaken to create a unique product, service, or result” (PMI 2013, Ch1,
Sect 1.2). Using this definition, a project is clearly a temporary organisation (TO). An
alternative definition of a TO is “a set of diversely skilled people working together on
a complex task over a limited time period” (Goodman et al. 1976, p. 494). This later
definition has the advantage of emphasising that a team of individuals is involved in
the joint endeavour, a point not made in the PMBoK definition.

The Impact of Time on an Organisation

Accepting that a project is by definition temporary in nature and involves the
interaction of individuals, this section reviews the specific problems that arise in
organisations as a result of the impact of time.

Zaheer et al. (1999) pointed out that an organisational theory that may be valid
for one time interval may not be valid for another. Thus, the concept of timescale or
time interval was of fundamental importance. Two issues were identified as being of
significance in understanding timescales.

Firstly, the choice of the timescale over which an event is measured may affect
the result obtained. For example, the feelings remembered concerning an event might
not be the same as those experienced during an event. Secondly, factors influencing
events in the short term may be different from factors affecting events in the long
term. For example, factors affecting initial trust (Meyerson et al. 1996) may be
considerably different from those affecting the development of trust over the longer
term. (McKnight et al. 1998; Ring 1996).
George and Jones (2000) pointed out that time has an impact on the development of any theory of organisational behaviour. As a result, six dimensions of time need to be considered as summarised in Table 2. Failure to take these aspects into account could have considerable impact on the validity of the model.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Past, future and present and subjective experience of time.</td>
<td>How is the past, future and present represented or understood?</td>
<td>What is the impact of experience and expectations on current behaviour?</td>
</tr>
<tr>
<td>Time aggregations.</td>
<td>How, in time, is the event meaningfully aggregated or bracketed?</td>
<td>When making a decision, does a person choose to remember particular experiences (good or bad) and associate them with their current decision?</td>
</tr>
<tr>
<td>Duration of steady states and rates of change.</td>
<td>What is the duration of the observed event and what is its rate of change?</td>
<td>How long does a person remain motivated? What is the rate of the change of their motivation?</td>
</tr>
<tr>
<td>Incremental and discontinuous change.</td>
<td>Does the observed event change in an incremental or discontinuous manner?</td>
<td>Is there a sudden or gradual increase in trust or motivation?</td>
</tr>
<tr>
<td>Frequency, rhythm and cycles.</td>
<td>Does the observed event change in a rhythmic or in a cyclical fashion over time?</td>
<td>Does motivation vary as project duration varies?</td>
</tr>
<tr>
<td>Spirals and intensity.</td>
<td>Does the observed event vary in intensity, or does it spiral over time?</td>
<td>Does motivation reach a peak and then spiral down?</td>
</tr>
</tbody>
</table>

Shamir (2011) pointed out that time as a variable is not considered in the vast majority of leadership studies that tend to concentrate on the relationship between a leader’s characteristics and the performance outcomes of the led unit. This approach has several weaknesses.

Different leadership styles may require different time periods to impact fully on the work group outcomes.

The same leadership style may require different durations to lead to different outcomes.
The impact of certain leadership inputs may be influenced by the team dynamics existing at the time of input. The time impact of exposure to a leadership style is not considered. A short burst, such as a charismatic speech, may have a different duration of impact on group outcomes than that of setting a good personal example.

There is a honeymoon period during which positive attitudes towards the leader exists. As time progresses, these positive attitudes may be reduced; thus, the potential beneficial impact of leadership inputs is also reduced. A simple example would be a motivational speech that works well in the honeymoon period but has less impact at a later date.

The above papers emphasise that in organisational theory, researchers ignore the effect of time on the phenomena they are studying at their peril. Also apparent from this research is the impact of time intervals on the perception of a leader and the resultant problems he faces. Thus, the importance of situational leadership skills are highlighted, but the competencies required to adequately deal with these challenges are not.

The contributions are, however, of a general nature; the specific impact on project management needs to be considered.

The Impact of Time on Projects

Initial contributions to addressing this issue were made by Packendorff and Linderman (1995) and Söderholm (1995), who produced papers advancing the understanding of project management practice by highlighting the temporary nature of projects.

Turner and Muller (2003) considered that the impact of time and the temporary nature of projects resulted in them being unique, having a high degree of uncertainty
and requiring the project team to have considerable flexibility to deal with problems as they arose. They also emphasised the inevitable conflict that arises between the various stakeholders and the need to resolve those conflicts in a reasonable time frame if the project is to progress.

Druskat and Druskat (2012) argue that projects are temporary, unique and progressively elaborated and that they involve team members who have backgrounds from different organisations, disciplines and cultures at the start of the project and who must remain together for relatively short time durations. The authors contend that these characteristics result in the need for the rapid development of trust. It is the authors’ argument that this need for the building of trust is further increased when the background of the various stakeholder groups’ impact on the project is considered. The importance of trust in contracting, particularly where contextual trust is prevalent, was also discussed by Winch (2010, p. 96). The author also suggested that the time element results in projects having a high degree of ambiguity, change, misunderstandings and miscommunications. The impact of the temporary and uncertain nature of projects resulting in the need to rapidly build trust was also a significant finding in a study by Vierimaa (2013).

Pryke and Smyth (2012) emphasised that the temporary nature of projects results in work being performed by team members who may have or have not worked together before and have different cultures, goals, beliefs and professional backgrounds.

Tyssen et al. (2013) identified the characteristics of temporary organisations presented in Table 3. A review of the topic by Hanisch and Wald (2014) compared temporary and permanent organisations and arrived at conclusions similar to Tyssen et al. (2013). They also inferred an additional characteristic concerning the difference in
command structures, where a member of a temporary organisation frequently has to
report to both a discipline and a project leader. Hanisch and Wald (2014) then
considered the impact of complexity on temporary organisations by simplifying a
model by Gerald et al. (2011) from five dimensions down to three. This model is
summarised in Table 4.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Potential Consequences/Challenges</th>
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<tr>
<td>Temporariness.</td>
<td>Hampers development of positive relations (i.e., trust) and shared values/norms.</td>
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<td>Little or no experience of working with team members.</td>
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<tr>
<td>Missing/ambiguous hierarchies.</td>
<td>Participants mainly responsible to line function managers, potential “authority gap” of project leader.</td>
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<tr>
<td></td>
<td>Interdivisional and hierarchical collaboration hampers the team building processes.</td>
</tr>
<tr>
<td></td>
<td>The team has to develop its own culture.</td>
</tr>
<tr>
<td>Changing work teams.</td>
<td>Frequent changes allow for less time for beneficial group processes.</td>
</tr>
<tr>
<td></td>
<td>Difficulties in developing group cohesiveness and commitment.</td>
</tr>
<tr>
<td></td>
<td>Loss of trust previously developed between team members.</td>
</tr>
<tr>
<td>Heterogeneity of members.</td>
<td>Coordination and communication across disciplinary boundaries may be difficult. Individual knowledge not sufficient.</td>
</tr>
<tr>
<td></td>
<td>Limited recourse on experiences and routines.</td>
</tr>
<tr>
<td></td>
<td>Different professional backgrounds and cultures.</td>
</tr>
<tr>
<td></td>
<td>Competition for team members’ time from other projects.</td>
</tr>
<tr>
<td>Unique project outcome.</td>
<td>Higher uncertainty and risk involved. Creativity and autonomous decision making required.</td>
</tr>
<tr>
<td></td>
<td>Unable to fall back on experience; novel approaches often required.</td>
</tr>
<tr>
<td></td>
<td>Coordination of professionals with different backgrounds.</td>
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Some authors have suggested that as projects are unique events (Thiry et al. 2007), there is little reliance on relationship management; the focus of project teams is on task management (Saunders et al. 2006). Other authors have pointed out that although a project is unique, it is often viewed as one of a continuous stream of projects (Grabher 2004), and therefore, relationship management is important (Engwall 2003; Modig 2007). As expressed by Cattani et al. “In sum, project networks, which are the result of past collaborations and the medium through which future collaborations develop, act as a repository of learned experience, knowledge and behavioural norms” ((Cattani et al. 2011, pXXiii.).

Additionally, in a study of the impact of organisational citizenship behaviour (OCB) (Bateman et al. 1983; Podsakoff et al. 2000), Braun et al. (2013) found that project performance can be increased by selecting staff who have worked together on previous projects. The increased performance coming from an increase in positive examples of OCB resulting from the relationship developed between personnel on previous projects.

It would therefore appear that regarding projects as unique events in which the impact of social interaction is not significant is not supported by several researchers.
Additionally, it is my experience that project teams tend to move from project to project where possible. An example of what OCB classifies as individual initiative, resulting from team members having worked together on previous projects, is provided in event 19 of Chapter 4, Autoethnography Results.

2.3.2 The Impact of Geographic Location on the Nature of Projects

In addition to the effects of time on project teams, the different geographical location of the teams involved in design, management, procurement and construction can be a factor. This issue was addressed by Vergburg et al. (2013) who concluded that for the successful completion of geographically dispersed projects, the following human factors were important: clarity of communication, project management style and competence, obtaining organisational support and the ability to build trust. Similar findings have been presented in papers on this topic by (Cramton et al. 2005; Hertel et al. 2005; Lee-Kelley et al. 2008; MacGregor 2005; Montoya et al. 2009). Again, key issues of these findings relate to human interaction rather than technical issues.

2.3.3 Problems in Project Decision-Making

In addition to the impact of time and geographic dispersion, the impact of ambiguity and change on project decision-making have been discussed.

Yeo (1993) emphasised that a major problem in project decision-making was caused by the degree of ambiguity and uncertainty due to a lack of knowledge and experience associated with the particular project problems that can be exacerbated by the competencies—or lack thereof—of the project team and organisational politics. In a follow-up paper (Tyssen et al. 2014) to their original paper on the nature of projects (Tyssen et al. 2013), the authors included higher uncertainty and risk as a characteristic of temporary organisations. Although not discussed by the authors, this
characteristic would obviously have its impact on the decision-making process. For an example of this impact, see event 31 of Chapter 4, Autoethnography Results.

A major topic of discussion in the UK initiative entitled “Rethinking Project Management” reported by Atkinson et al. (2006) was the fundamental uncertainties that exist in project scope, all of which have an impact on project decision-making. This uncertainty was attributed to several issues including:

- lack of initial clarity in the project definition;
- lack of experience with the activities required for the particular project;
- occurrence of unplanned events;
- stakeholders’ expectations;
- availability and experience of project resources;
- development and implementation of a control system;
- development and implementation of a project plan;
- leadership and communication issues.

Anantatmula emphasised that projects are continually subject to change. He summarised this view as follows: “It is reasonable to assume that in project management, it is not ‘if the plans will change.’ It is when and what will change and by how much” (Anantatmula 2010, p19). This view is echoed by Sankaran and Agarwal (2013, p. 6) who made the point, “No two projects are identical. This implies that there is variability as well as variety in projects.”
2.3.4 Summary

If the works concerning the nature of projects discussed in this section are combined, the following resultant project characteristics can be identified:

1. There is limited time duration for building a team, developing rapport with stakeholders, obtaining organisational support and building a working control system.

2. The temporary nature of the project team formed within time constraints results in the need to blend team members from different professional and social backgrounds and understand and develop a relationship with stakeholders who are also from different backgrounds. This problem can be further exacerbated by the project team and associated stakeholders being distributed across different geographic locations.

3. The unique nature of the project requires a solution in a condensed time frame, putting pressure on the team to understand this particular project’s requirements.

4. The frequent lack of definition, often due to time constraints, results in considerable ambiguity and changes to scope often coupled with changes to team membership and the external environment.

5. Changes in team structure and to the stakeholder organisation as the project progresses due to a variety of forces includes pressure from competing projects, identification of additional or redundant skill sets and natural attrition.

6. There are several conflicts that result from communication problems and scope and personnel changes.
All of these problems result in team management problems which need interpersonal skills, i.e., soft skills, rather than hard skills to be successfully managed.

### 2.4 Overview of the Role of Leadership in Project Success

A detailed review of leadership theories is provided by Turner and Müller (2005). They found that the project management literature had largely ignored the impact of the project manager’s leadership style and competencies as a contributor to project success. This was in marked contrast to general management literature that had noted the importance of leadership styles on organisational success.

Work in the area of leadership style and competencies, as they relate to project management, was then undertaken by several authors whose contributions are summarised below:

Dulewicz and Higgs (2004; 2005) developed a model using a device called the leadership dimension questionnaire (LDQ). This model used 15 competencies, which were grouped under the headings of intelligence quotient (IQ), emotional quotient (EQ) and managerial quotient (MQ). They then went on to show the relationship between these competencies and leadership style. They argued that particular styles were appropriate for different contextual requirements. The three leadership styles they identified were goal oriented, engaging and involving, with goal oriented thought to be the most suitable style for project management. This work thus emphasised the contextual influence of an appropriate leadership style and could be regarded as building on the initial work of Shenhar (2001). This was significant in that it established the skills and competencies of a project manager as a key factor in project success.
Further work was done in this area by Müller and Turner (2006, 2010) who considered the competencies required on projects of different types and complexity. They were able to show that the competencies requirement changed as the type and complexity of projects changed.

In a later paper, Müller and Turner (2012) used the Williams model of complexity (2002) to investigate the moderating effect of project complexity on the relationship between IQ, EQ and MQ and project success. They found that the type of complexity experienced did moderate the influence of EQ and IQ on project success.

This work is of particular interest as it involved establishing a limited group of Emotional Competencies (EC) and demonstrating how the requirement for those EC vary, not only with the type of leadership required, but also on the difficulty of the project being managed.

Further contributions in this area have been provided by the following:

Dainty et al. (2005) identified 11 common competencies for project managers operating in the construction industry and working either for the client or the contractor. These competencies were customer service orientation, initiative, conceptual thinking, information seeking, achievement orientation, teamwork and cooperation, team leadership, analytical thinking, impact and influence, flexibility and self-control.

Geoghegan and Dulewicz (2008) found support for the impact on project success of the competencies identified by Dulwich and Higgs (2005), with MQ being the most significant.

Müller and Turner (2007) investigated whether different success criteria are relevant for different types of projects or for projects in various industries and whether
different kinds of projects were perceived to perform differently against the various success criteria. They also investigated whether or not project managers focused on different success criteria depending on his or her traits. Their study found that the success criteria selected did vary by project type and industry sector and that the relative importance attached to the success criteria varied by the project manager’s age and nationality. Reported perceived success against the selected criteria did not vary across project type or industry but did vary across nationality. It was also worth noting that for perceived high-performance projects, certified project managers performed better than their noncertified counterparts did.

Particularly relevant additional findings from this study were that project managers with greater experience placed more emphasis on team building as a success criteria and that project managers working in their own culture tend to perform more successfully than expatriates. Both of these findings point to the importance of noncore PMBoK skills.

The recognition of impact of leadership was a significant step forward in the understanding of factors contributing to a project’s success in that it took the emphasis of the technical skills of a project manager and focused on the skills and competencies required to successfully lead a project team.

2.5 Significant Contributions to Project Management Theory from Other Areas

2.5.1 Contribution from Contingency Theory

Contingency theory is a behaviour theory that postulates that there is no single best method to lead an organisation and that the best way of leading an organisation is situationally dependent.
Shenhar (2001) introduced contingency theory from organisational theory to projects management theory. He used four dimensions of complexity and three dimensions of uncertainty to show that these dimensions could be used to classify projects and that they had implications on project team design. This was an interesting contribution to theory in the way that it focused attention on the project team’s construction as an input to CSF.

2.5.2 Actor Network Theory (ANT)

ANT has been reviewed by several authors (Law 2009; Pollack et al. 2013; Whittle et al. 2008). ANT potentially offers a new means of understanding the behaviour of projects. Users of ANT view projects as the interaction of a network of actors influencing each other and acting towards mutually agreed objectives. This leads to a radical change in the understanding of what constitutes a project from the traditional definition contained in PMBoK (2013, chap. 1, sec. 1.2) saying that “a project is a temporary endeavour undertaken to create a unique product, service, or result.” to that used by Cicmil et al. in their research:

The actuality of projects, therefore, consists of gathering, analysing and disseminating knowledge about people working in concert with things, technologies and each other and the means through which these relations are coordinated and controlled . . . encompasses the understanding of the lived experience of organisational members with work and life in their local project environments. Their actions, decisions and behaviours are understood as being embedded in and continuously reshaped by local patterns of power relations and communicative inter-subjective interaction in real time. (2006, p. 676)

The view offered by ANT is a valuable description of the reality of large projects, as every team has its own set of goals, and it falls to the project manager to coordinate theses independent networks towards the project’s goal. Speaking from experience, it is not unusual for the construction team to operate with its own set of objectives that are in conflict with the quality control team. Additionally, the accounting team can be busily enforcing its own rules even if they bankrupt a
subcontractor whose contribution is essential to the timely completion of the project and without any regard for the transaction cost of their action.

2.5.3 Action Research (AR)

AR originated by Lewin (1946) has been reviewed by several authors (Er et al. 2013; Reason et al. 2001; Stringer 2013). It is a process that allows action and understanding to be achieved at the same time. It provides a means by which individuals or teams may interact with each other to solve problems. In AR, reflection-in-action is regarded as an example of first-person research (Bradbury et al. 2008). The concept of reflection is discussed further is sections 2.6.5 and 3.3.1.

AR is more frequently used as a tool for organisational change rather than as a project management tool. It would appear, however, to have applications to the practice of project management as a means of collaboratively solving problems and its emphasis on collaboration may enhance team building.

2.5.4 Complexity Theory

The issue of complex and or complicated projects has also been investigated. Alternative models providing insight into the behaviour and management of complex projects have been suggested (Bosch-Rekveldt et al. 2011; Cooke-Davies 2011; Remington 2011; Remington et al. 2007; Williams 2002). These models attempt to identify the causes of complexity and suggest a strategy for coping with them.

The model of Remington and Pollack (2007) that was informed by Williams (2002) uses four dimensions to explain the behaviour of projects. These dimensions are summarised in Table 5.
Table 5 Remington and Pollack’s model of project complexity

<table>
<thead>
<tr>
<th>Description</th>
<th>Structural</th>
<th>Technical</th>
<th>Directional</th>
<th>Temporal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition</td>
<td>Large number of interconnected tasks.</td>
<td>New product or technology.</td>
<td>Lack of agreement between stakeholders and or project team.</td>
<td>Significant environmental or company strategic change.</td>
</tr>
<tr>
<td>Problem identified</td>
<td>Uncertainty created as to time, cost and resources.</td>
<td>Uncertainty regarding design outcomes.</td>
<td>Uncertainty regarding goals.</td>
<td>Project goals, teams and stakeholders may change.</td>
</tr>
<tr>
<td>Suggested management technique</td>
<td>Managed by splitting projects into a large number of small projects.</td>
<td>Very flat hierarchy. Autonomous professional working in independent functional groups.</td>
<td>Focused on reaching agreed positions and identifying with and working towards them.</td>
<td>Significant emphasis on communication techniques and consideration of multiple options.</td>
</tr>
</tbody>
</table>

It is interesting to note that this model emphasises, in 3 out of our 4 cases, the importance of human aspects—and therefore team management aspects—of dealing with project complexity.

Remington (2011) characterises complex projects as having uncertainty, ambiguity and decreasing levels of trust and discusses their management in this context. The view expressed in this manuscript introduces the impact of these issues on the human side of project management and the need to manage the team accordingly.

In Bosch et al. (2011), the 12 elements identified were recognised as significant in leading to project complexity. Of these, only three are related to the human side of project management, two of which were concerned with the stakeholders and only one with team management issues.
On a more theoretical level, papers using aspects of complexity theory as a lens for interpreting the behaviour of complex projects have been produced (Cicmil et al. 2009; Cooke-Davies et al. 2007). Concepts put forward by these papers of use in the practice of project management include the butterfly effect, the edge of chaos and the complex responsive processes of relating (CRPR).

The butterfly effect refers to how even very small changes in conditions as an event evolves can have major impacts on the eventual outcome of the event (Lorenz 1963). Edge of chaos involves the theoretical point between order and chaos (Kauffman 1993; 1995). CRPR is an aspect of complexity theory that was introduced as a framework for developing strategies for the management of projects that are themselves complex (Stacey 2001). It places a large emphasis on how people interact within organisations and the impact of how power relationships can bring about change.

A frequent shortcoming of project managers, I have noticed in myself and colleagues, is that on being given a new project to manage is that we tend to compare it to a similar project they have experienced. They then expect to be able to manage the new project in an identical manner to the previous project. Consideration of the butterfly effect would result in the project manager being immediately mindful that even the slightest changes in the project start conditions can lead to vast changes as time progresses. Furthermore, he or she would be on their guard as, in projects, the surrounding environment is continually changing, which according to the butterfly effect would result in significant modifications to projects as they develop over time.

Edge of chaos involves the theoretical point between order and chaos. It is the practice of most project managers to strive for order at all costs. This may, in some circumstances, be counterproductive as it is only when greater uncertainty in the
project outcomes is tolerated that truly creative solutions to a problem can be developed.

CRPR’s contribution is that it provides a method of viewing organisational performance and change based on the interaction of people within the organisation.

### 2.6 Recent Approaches to Identifying the Skills Used by Project Managers in the Practice of Project Management

A review of the literature in the project management field reveals five basic investigative techniques used in researching the practice of project management, namely:

- the traditional skills approach;
- the cooperative approach;
- the autographic approach;
- the EI approach;
- the reflective approach.

These above techniques are discussed in this section.

#### 2.6.1 The Traditional Skills Approach

Crawford (2000) reviewed the literature and found strong support for the hypothesis that project success factors were associated with the competency of the project manager and that there was little direct relationship between perceived workplace performance and performance against either project management standards or previous research findings.

Papke-Shields (2010) found that using formal PM practices, the skills recommended in PMBoK, did increase project success. Formal PM practices are indeed being applied in practice but not equally or consistently across all the
knowledge areas. The study also found, in agreement with Crawford and Pollack (2007), that the use of these practices did not vary across industry sectors. Additionally, and similar to Gowan and Mathieu’s result (2005), they found that larger and costlier projects have increased usage of practices involving control systems that favourably affected the likelihood of successful completion.

This paper appears to be partially contradicted by other work regarding the use of PMBoK methods such as Gantt charts (Whitty 2010). This research suggests that Gantt charts are used mainly to meet the reporting requirements of senior managers rather than as a project control tool. This conclusion may be applicable in certain situations; such as small projects or project closeout where a Gantt chart maybe used to summarise a series of activities that have to be completed.

It is difficult to see, however, how this position could be sustained for large or megaprojects when the number of activities are in the order of thousands or tens of thousands. Such projects are controlled by network diagrams which are used to generate Gantt charts of manageable portions of the work. These Gantt charts are then used to monitor project progress of the particular portion of the project they represent.

In addition, as indicated in the comments presented in section 5.3, the panel commentary was supportive of the use of Gantt charts as planning tools and critical of project managers who used them otherwise.

The above research has established that the traditional skills outlined in PMBoK are indeed used by project managers and that their use increases the likelihood of project success. The approach does not, however, establish what skills outside those recommended by PMBoK contribute to project success and the research has not specifically targeted large (more than $500 million) projects.
2.6.2 The Cooperative Approach

The cooperative approach is based on gaining an understanding of the behaviour of practitioners as they manage projects. Cicmil et al. (2006) used an approach in that the researcher and the researched (in this case, the PM practitioner) engage in the co-production of knowledge.

They developed a scale of project management expertise ranging from the novice through the competent performer to the expert level. Cicmil (2006) later used a similar technique to interview several experienced practitioners and found that they relied on several non-traditional skills.

The UK’s Engineering and Physical Sciences Research Council (EPSRC) study “Rethinking Project Management” was reported by Winter et al. (2006). The study suggested five major directions for future research, all of which involved a move away from reliance on PMBoK-type skills towards the skills described in the works referenced previously.

A recent work, using literature reviews and face-to-face interviews, investigated the skills that practitioners consider necessary if a project manager is to be an effective people manager (Fisher 2011).

The study found five non-traditional skills regarded as highly important, those being managing emotions, building trust, influencing others, having cultural awareness and leading others. All of these fall into the area of mixed models of EI that are discussed in more detail later in section 2.9.2.

Remington (2011), summarising the results from interviews with project managers, found several areas of importance including communication, development
of effective teams, the ability of the project manager to reflect, understanding of culture and politics, mentors and personal coaches and leadership skills.

The advantage of this approach is that it identified the skills, in addition to those recommended by PMBoK, that are used by project managers and thus moved from the purely technical skill area, which was the focus of the previous approach, into a consideration of the softer (team management) skills area. It does not, however, deal in any great detail with how these skills are developed.

2.6.3 The Autoethnographic Approach

Autoethnography has been used as a qualitative method that combines the techniques of autobiography and ethnography. It has been engaged in sociology and anthropology by a number of writers (Denzin 1998; Ellis 2007; Pratt 2008; Reed-Danahay 1997; Sparkes 2000). More recently, the method has been applied to discuss experiences in project management (Nugapitiya 2007) and hypermedia design (Duncan 2004).

It has been described as “one of the approaches that acknowledges and accommodates subjectivity, emotionality and the researcher’s influence on research, rather than hiding from these matters or assuming they don’t exist” (Ellis et al. 2011, p. 274). It is, however, recognised that researchers engaging with autoethnography tend to vary their approach by placing different emphases on auto- (self), -ethno- (the cultural link) and -graphy (the application of a research process) and that different examples of autoethnography fall at different places along the continuum of each of these three (Reed-Danahay 1997).
The advantage of this approach is that it allows practitioners to use their life experience to identify and describe the skills they have found useful in their practice of project management.

Similar to the cooperative approach, this approach has the advantage of identifying skills beyond those contained in PMBoK. It allows the writer to discuss interpersonal issues. This method does, however, involve personal experiences and involvement in the research. As such, it suffers from the verification problems discussed in more detail in section 3.3.2.

2.6.4 The Emotional Intelligence Approach

Initial Developments

The underlying concepts of EI were published by Mayer and Salovey (1989, 1993, 1995). In their original paper on emotional intelligence, EI was defined as “the subset of social intelligence that involves the ability to monitor one’s own and others’ feelings and emotions, to discriminate among them and to use this information to guide one’s thinking and actions” (Mayer et al. 1989, p. 189). As part of their model, the authors suggested that the following should be included:

- the ability to appraise and express your own emotions accurately and appropriately;
- empathy, or the ability to comprehend another person’s feelings and experience them as if they were your own;
- the ability to recognise and manage the emotion in others;
- the ability to adaptively solve problems.

Mayer and Salovey’s work was later popularised by Goleman (Goleman 1995, 1996) and further developed into a model by Boyatzis et al. (2000). In this model, the
Mayer and Salovey model was modified to recognise four key areas. These can then be further developed into a set of competencies, the main dimensions of this model being self-awareness, social awareness, self-management and relationship management.

Significant EI models have been developed by other researchers (Bar-On 1997; Newman et al. 2010; Petrides et al. 2001; Petrides et al. 2007). These models are discussed in detail in section 2.9.

**EI as It Relates to Project Management**

The application of EI to project management, with particular reference to a construction environment, has been the subject of several works (Boot-Handford et al. 2013; Chang et al. 2015; Clarke 2010a, 2010b; Druskat et al. 2012; Hobbs et al. 2012; Kerzner 2013; Koman et al. 2008; Lindebaum et al. 2010; Lindebaum et al. 2012; Mazur et al. 2013; Mount 2006; Muller et al. 2012; Obradovic et al. 2013; Sunindijo et al. 2007; Sunindijo et al. 2013; Turner 2007; Vierimaa 2013; Zhang et al. 2013). The results of these studies are summarised in Table 6.

In one of the first studies regarding EI, Mount (2006, pp. 97-124) interviewed 74 worldwide project managers and found that the skills that predicted project management superior performance were 69% emotional competencies and 31% business expertise, thus indicating that emotional competence was twice as important as business skill. In the same paper, when discussing superior performance and the relationship between EI, IQ and experience, Mount comments: “The Emotion Quotient (EI) competence created a circumstance wherein the individual achieved the desired outcome through the application of their IQ and experience competences” (Mount 2006, p 121). Thus, the need for a good IQ and experience is recognised as
part and parcel of superior performance and the need for EI, particularly if these strengths are to be used in a team environment, is put in context.

This position on EI, as one of the necessary competencies for superior performance, is further discussed by Boyatzis (2009) who argues these competencies are cognitive competencies, emotional intelligence and social intelligence.

Table 6 summarises the recent research that establishes that EI skills are of benefit in project management. The EI approach is particularly interesting as it purely concentrates on the people and self-management skills required to successfully manage a project.

2.6.5 The Reflective Approach

The concept of “knowing-in-action” and “reflection-in-action” was described by Schön (1983, 1987). In his model, Schön describes knowing-in-action as a knowledge or skill that is publically observable, such as riding a bike. This knowledge in action is built on experience and is a knowledge base available to practitioners in their field. Occasionally, when this knowledge-in-action skill is used, the practitioner gets an unexpected and/or undesired result. He or she can then choose to ignore the event as a form of confirmation bias (Wason 1960, 1968) or reflect on what has happened and, as a result of those reflections, challenge the underlying assumptions used and modify his or her behaviour. Such a technique is referred to in Schön as reflection-in-action.
Table 6 Summary of papers discussing the role of EI in project management

<table>
<thead>
<tr>
<th>Paper</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Dainty et al. 2005)</td>
<td>This study identified 12 core competencies for successful projects management. Whilst this study did not discuss EI, it is interesting to note that 10 of the 12 competencies are contained in the Goleman-Boyatzis model of EI.</td>
</tr>
<tr>
<td>(Mount 2006)</td>
<td>This study of an international business found that EI was a contributor to superior performance in the company’s project managers.</td>
</tr>
<tr>
<td>(Butler et al. 2006)</td>
<td>This study used EIQ-i that is based on the Bar-On EI model to review the EI attributes of construction executives. It concluded the top three attributes were stress tolerance, independence and optimism; the bottom three were empathy, interpersonal skills and social responsibility.</td>
</tr>
<tr>
<td>(Turner 2007)</td>
<td>This researched demonstrated that EI competency training has a positive effect on project team members’ job satisfaction and performance.</td>
</tr>
<tr>
<td>(Sunindijo et al. 2007)</td>
<td>A review of project engineers (PE) in Thailand concluded that PEs with higher EI scores tended to be more proactive, and they use more open communication and delegate more.</td>
</tr>
<tr>
<td>(Koman et al. 2008)</td>
<td>This study found that team performance was related to the EI of the team leader via the leader creating emotionally competent group norms.</td>
</tr>
<tr>
<td>(Clarke 2010a)</td>
<td>After controlling for cognitive ability, EI was found to be positively associated with the project manager’s ability to develop teamwork and manage conflict.</td>
</tr>
<tr>
<td>(Lindebaum et al. 2010)</td>
<td>The study found no relationship between transformational leadership (TFL) and EI. The paper suggests that one explanation for this may be the different requirement for managerial behaviour in the context of the construction industry.</td>
</tr>
<tr>
<td>(Anantatmula 2010)</td>
<td>In his literature review, the author identified the following people-related factors as having been shown to be important to project success: clear communications, defined roles and responsibilities, clearly communicated expectations, establishment of trust, employee support and processes that reduce ambiguity.</td>
</tr>
<tr>
<td>(Clarke 2010b)</td>
<td>This study reviewed the project managers’ awareness of their team members’ emotional state and the impact that awareness had on their decisions.</td>
</tr>
<tr>
<td>(Fisher 2011)</td>
<td>Although not identified as such, EI issues scored highly in this paper that reviewed the skills practitioners found important in being an effective manager.</td>
</tr>
<tr>
<td>(Hobbs et al. 2012)</td>
<td>This paper used the Goleman-Boyatzis model to examine the working relationship on a large construction project and found that EI, as depicted by this model, assisted the project’s collaborative working strategy.</td>
</tr>
<tr>
<td>(Lindebaum et al. 2012)</td>
<td>This study found that EI was only one of the necessary competencies required of a project manager in the construction industry. In addition, cognitive competencies are also important.</td>
</tr>
<tr>
<td>(Muller et al. 2012)</td>
<td>This study found that relationship between EI and project success was moderated by projects involving creating something unique, solving new problems, or dealing with high uncertainty.</td>
</tr>
<tr>
<td>(Druskat et al. 2012)</td>
<td>The authors provide a discussion of the unique nature of projects and the effect this nature has on the project manager’s EI skills.</td>
</tr>
<tr>
<td>(Boot-Handford et al. 2013)</td>
<td>This study examines the impact of EI factors on the development of trust in the rail construction industry in the U.K. and found that EI had a positive impact.</td>
</tr>
<tr>
<td>(Obradovic et al. 2013)</td>
<td>This study of 75 project managers in Siberia found a high correlation between EI and professional success.</td>
</tr>
<tr>
<td>(Mazur et al. 2013)</td>
<td>This study reviewed megaproject (&gt; $1 billion in value) project managers and found a relationship between EI, cognitive flexibility and project success.</td>
</tr>
<tr>
<td>(Kerzner 2013)</td>
<td>Although not dealing specifically with EI, the author notes that projects fail to meet cost and time target due to motivational issues, poor morale, a lack of commitment and poor human relations.</td>
</tr>
<tr>
<td>(Sunindijo et al. 2013)</td>
<td>This study involving 273 responses to a questionnaire distributed to construction personnel found support for the hypothesis that EI had a positive influence on the implementation of safety management tasks.</td>
</tr>
<tr>
<td>(Vierimaa 2013)</td>
<td>Research reported in this thesis conducted interviews with project managers and found that the majority of those interviewed believed emotions played an important part in leadership.</td>
</tr>
<tr>
<td>(Zhanget al. 2013)</td>
<td>This study tested 11 of the competencies in Goleman-Boyatzis model and found support for the hypothesis that their possession by the project manager increased the likelihood of project success.</td>
</tr>
<tr>
<td>(Changet al. 2015)</td>
<td>The research surveyed 370 respondents from 40 complex projects and found that team leadership EI is significantly positively correlated with project team members’ rating of project success and that leadership teams’ maximum EI is the best indicator.</td>
</tr>
</tbody>
</table>
In their literature review of “Reflection,” Atkins and Murphy (1993) identified the following skills as needed for successful reflection:

1. Motivation.

2. Open-mindedness.

3. The self-awareness to analyse the thoughts and feelings related to the situation.

4. The ability to accurately recall events.

5. The ability to critically analyse the situation.

6. The ability to see how the new knowledge relates to what is already known.

7. The ability to evaluate the new learning and decide if it is of value.

Goodman (1984) and Boud et al. (1985) also emphasised the importance of motivation and open-mindedness, attributes that were regarded by the authors as necessary for the process of reflection.

Keevers and Treleaven (2011) go on to suggest that in reality, there are three stages of reflection, and what is being described by Schön (1983, 1987), Walker et al. (2008) and Atkins and Murphy (1993) constitutes the third stage. According to Keevers and Treleaven, the first stage consists of a form of mild surprise in that a practitioner merely changes to a new course of action that allows him to deal with the situation that has evolved. Such a change does not involve any real analysis or long-term change in behaviour. If this fails, the practitioner still keeps to his established knowledge but calls upon a greater range of experiences to deal with the problem, this being the second stage. It is not until this second stage fails that true reflection occurs,
and a detached analysis of the situation occurs that may result in a long-term change in behaviour.

In his review of Schön’s work, Eraut (1995) makes the point that intuitive responses (which is a form of knowledge in action) are based on an ability to retrieve similar cases from memory and to use that prior experience for making decisions in the present. This can be compared to the Cicmil et al.’s (2006, p. 680) description of the expert project manager, who is characterised by “effortless performance at the level of virtuosity. No thinking/doing, decision/action, or plan/implement divide. Action based on logic replaced by experientially based action, intuitive and rational at the same time.” It could be argued that what Cicmil et al. were observing was highly developed knowledge-in-action resulting from reflection-in-action. This position is further confirmed by interviews they carried out with the goal of determining how project managers use their skills and knowledge in managing projects (Cicmil 2006, p. 33). In these interviews, three quotations point to the use of reflective techniques by the project management practitioners:

The most obvious skills that I developed over the years of my project management experience are confidence and ability to manage high levels of complexity, fast-moving situations, ability to listen to other people, to manage people, to reflect. (Respondent PM6)

If you were a great analyst, you could try and sit down and manage the tensions, but you really need to experience people’s responses and reactions and behaviour... you absorb them, learn how difficult they are to deal with, and then you start to become more sensitive to their needs, and you improve your techniques for dealing with them. At the same time, you become better at planning and managing and controlling the project because you somehow, intuitively, make allowance for all these hiccups that you hadn’t done before. (Respondent PM2)

I reflect in the margins of work. Project management is a political issue and you must understand the wider picture. And it takes both training and experience to help you understand that. (Respondent PM3)

The requirement for reflection was also highlighted when Winter et al. (2006) summarised the results of a UK study into the directions of future research in project
management. One of the several directions that were recommended as worthy of further development was identified as that of developing project managers from practitioners as trained technicians to practitioners as reflective practitioners.

The importance of reflection-in-action in the career development of practitioners has also been recognised by Walker et al. (2008) who discussed a model of academic practitioner collaboration in this field and how reflection may be encouraged within an organisation. In Remington’s (2011) monograph concerning the management of complex projects, results from interviews with project managers working on large projects and smaller projects—which were highly cultural or politically sensitive or on which company’s reputation was at stake—are discussed. In these interviews, one of those characteristics she noted in the successful project managers her team interviewed was their ability to reflect and the capacity to learn, key indications of reflection-in-action taking place.

These later examples do not appear to be reflection-in-action as described by Schön but do, however, fall into the category discussed by Van Manen (1991) of reflection-on-action (reflection after the event has occurred) and anticipatory reflection (reflection before an event occurs).

The advantage of this method is that practitioners can use it to identify problems they have faced during their careers and how their management technique has evolved to deal with those problems. For those interested in studying project management practise further, reflection-on-action provides a useful building block in developing an autoethnography.

As with the cooperative and autoethnographic approaches, reflection has the advantage of identifying skills beyond those contained in PMBoK. It also shares
similar problems to that of autoethnography and as a result also has verification problems.

2.6.6 Summary of Various Approaches

A brief summary of the contributions and weaknesses of the various approaches is presented in Table 7.

2.7 Major Developments in the Understanding of Project Management Practice

The major milestones in the development of the understanding of project management practice can be summarised as follows:

1. The development of CSF and PSC criteria leading to creation of PMBoK.
2. The recognition of the impact of factors resulting from the characteristics of a project including their temporary nature, the impact of geographic dispersion and problems in decision making.
3. The inclusion of the leadership competencies of the project manager as a critical success factor.
4. The recognition of the importance of stakeholder management.
5. The incorporation of concepts from other areas including Contingency Theory, Actor Network Theory, Action Research and Complexity Theory.
6. The recognition that how a project manager achieves the critical success factors are in themselves important. This lead to the practice review approach consisting of: the traditional skills approach, the cooperative approach, the EI approach, the autographical approach and the reflective approach.
The initial approach involving project success factors and project success criteria whilst identifying what was needed to make a project successful did little to indicate how a project team should be managed to achieve those factors.

Recognising the temporary nature of projects highlighted the difference between the requirements of project management and general management and also highlighted how this affects the required management competencies.

The project management style and team management were also identified as important factors in dealing with geographic dispersion and issues associated with project decision-making.

The next significant milestone involving studies that focused on the leadership skills required of a project manager was an important step insofar as it introduced the concept of competencies and skills required by a project manager as factors in the success of projects.

Contributions to the recognition of people management skills were also important from other areas such as Actor Network Theory (ANT) and Action Research (AR). ANT was important as it emphasised projects as a social endeavour and not merely as a technical endeavour that had been largely the case initially. AR contributed to the understanding of how members of project teams interact to solve problems and to the use of reflection where it is considered an example of first person research (Bradbury et al. 2008).
Table 7 Techniques used in researching the practice of project management

<table>
<thead>
<tr>
<th>Description</th>
<th>Traditional Skill Approach</th>
<th>Cooperative Approach</th>
<th>Emotional Intelligence (EI) Approach</th>
<th>Autoethnographical Approach</th>
<th>Reflective Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Researches whether the skills as set out in PMBoK are actually used by project managers and whether using those skills produces measurably better results.</td>
<td>1. Uses interviews with practitioners to develop a deeper understanding of the field.</td>
<td>1. Considers the importance of skills commonly identified as EI. 2. Seeks to understand how these skills may be relevant to the practice of project management.</td>
<td>1. Similar to the cooperative approach. However, in this case, the presenter of the research is a practitioner using their lived experience.</td>
<td>1. Uses work by Schön, who discussed the use of knowledge in action and how that may be modified by reflection (reflection-in action) to produce a more successful practitioner. 2. Seen in commentary from practitioners.</td>
</tr>
<tr>
<td>Results</td>
<td>1. Finds that the skills are used and, when used, produce measurably better results.</td>
<td>1. Identifies skills beyond those in the traditional (PMBoK) skill set.</td>
<td>1. Identifies EI skills applicable to project management and indicates where their use could be of benefit.</td>
<td>1. Identifies skills beyond those in the traditional (PMBoK) skill set.</td>
<td>1. Discusses how skills are developed from an original professional knowledge base into the advanced skills used by practitioners. 2. May explain the development of intuition.</td>
</tr>
<tr>
<td>Comments</td>
<td>1. Does not deal with other skills a project manager may use outside those in PMBoK or the details of how these skills are developed. 2. Further research is needed in the application of these skills to large projects.</td>
<td>1 Identifies additional skills. However, there is no detailed review of how these skills are developed. 2 Often uses the concepts in ANT.</td>
<td>1. More work is needed on both the application of EI to project management and how EI may be developed.</td>
<td>1. May provide an insight into how these additional skills are identified and developed. 2. Method has verification problems.</td>
<td>1. Acts as a building block in autoethnography. 2. May provide insight into a method whereby the practitioner develops the additional skills that lead to success in project management.</td>
</tr>
</tbody>
</table>
The models of complex projects discussed provided insights into the issues that arise in larger and more diverse projects, emphasising the importance of team management. Complexity theory has provided some insights into how concepts from this field may be adopted to solve the problems that arise in project management.

Lastly, investigation of the practice of project management identified the day-to-day use of skills outside the technical skills contained in PMBoK that are used by project managers to ensure that their team successfully delivers a project.

The above milestones and their contributions are summarised in Table 8.

This discussion outlines how studies of project management practice were initially concerned with what makes a project successful as opposed to how to make a project successful. As a result, project managers were initially considered as technicians who must master certain leadership skills.

This development lead to two major questions: How does the unique nature of projects differentiate the leadership requirements from general management situations? What are the resultant skills and competencies required of a project manager? This first question has been discussed in section 2.3.1, and this later question has been taken up by scholars who use the practice review approach. One area of significance that this approach identifies is that of EI. The literature was thus investigated in more detail to establish what offerings were available concerning EI.
Table 8 Summary of the milestones in development of project management theory

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Critical Success Factors</th>
<th>Identification of the temporary nature of projects</th>
<th>Leadership</th>
<th>Project Management As Practice</th>
<th>Incorporation of Concept from Other Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key Contribution</td>
<td>Identified critical success factors.</td>
<td>Emphasised problems resulting from problems associated with the nature of projects.</td>
<td>Introduced the project team and the project manager’s competencies as a success factor.</td>
<td>Stressed the importance of dealing with emotions as a management competency.</td>
<td>Established that PMBoK skills were used in practice and that their use increased the likelihood of a project’s success.</td>
</tr>
<tr>
<td>Comment</td>
<td>Developed as part of mainstream project management.</td>
<td>An important modifier of general management skill and competency factors.</td>
<td>Initial style and competencies not considered as part of CSF for projects. Developed from general management.</td>
<td>Initial work tended to minimise the importance of IQ and other management competencies (MQ).</td>
<td>Confirmed the need for basic technical skills in the management of projects.</td>
</tr>
<tr>
<td>Shortfall</td>
<td>No contribution as to how teams should be managed to achieve those factors.</td>
<td>No detailed development of the impact of project management competencies.</td>
<td>LDQ model very mixed (includes IQ and MQ) and appears to exclude some competencies resulting from the temporary nature of projects.</td>
<td>Needs to differentiate between various models of EI in studies.</td>
<td>Does not deal in any detail with soft skills.</td>
</tr>
</tbody>
</table>

Actor Network Theory | Action Research | Complexity Theory |

- **Emotional Intelligence**
- **Traditional Skills**
- **Cooperative approach incorporating reflection autoethnography**
- **Actor Network Theory**
- **Action Research**
- **Complexity Theory**
2.8 The Development of EI Theory

The underlying concepts of EI were published by Mayer and Salovey (1989, 1993, 1995; Mayer et al. 1997). In their original paper on emotional intelligence, EI was defined as “the subset of social intelligence that involves the ability to monitor one’s own and others’ feelings and emotions, to discriminate among them and to use this information to guide one’s thinking and actions” (Mayer et al. 1989, p. 189). In a later paper, they modified this definition to: “Emotional intelligence concerns the ability to carry out accurate reasoning about emotions and the ability to use emotions and emotional knowledge to enhance thought” (Mayer and Roberts (2008, p. 510).

Mayer and Salovey’s work was later popularised by Goleman (1995, 1996). Since that time, other models of EI have been developed. The most significant being by Bar-On (1988, 2000; 2006), Goleman et al. (2013), Dulwich and Higgs (2004), Petrides and Furnham (2001) and Newman et al. (2010).

As previously indicated, the Mayer and Salovey model treats EI as an ability. The other models treat EI as a trait or a competency or a mixture of both traits and competencies, these later constructs being referred to as mixed models. Some authors (Cherniss 2010; Joseph et al. 2010; Newman et al. 2010) have suggested using the term EI to refer to ability-based models and emotional and social competence (ESC) to refer to mixed models as a means of differentiating the two constructs.

2.8.1 Mayer and Salovey Model

Mayer and Salovey have attempted to position EI as ability based as opposed to trait or competency based. This position has been criticised, and it has been suggested that EI as described by Mayer and Salovey is not a true ability. This is particularly the
case if a self-reported measurement is used. See, for example, (Brody 2004; Côté 2010; Freudenthaler et al. 2007; Keele et al. 2008; Locke 2005; Petrides 2010, 2011).

Others, however, argue that the Mayer and Salovey model is indeed ability based (Cherniss 2010; Cote et al. 2006; Daus et al. 2005; Joseph et al. 2010; Kong 2014; Mayer et al. 1999; Mayer et al. 2004; Mayer, Salovey, et al. 2008; Mayer et al. 2001; Newman et al. 2010).

The Mayer and Salovey model (1989, 1993, 1995; Mayer et al. 1997), being an ability-based model, has four dimensions that relate abilities to:

- the regulation of emotion
- the emotional facilitation of thinking
- perceiving and appraising emotions
- understanding and analysis emotions

Table 9 provides a summary of this model.

### 2.8.2 Competency and Mixed Models

Mayer et al. (2008) argue, and are supported by other academics (Antonakis et al. 2009; Ashkanasy et al. 2005; Austin 2010; Boyatzis 2009; Cherniss 2010; Petrides 2010, 2011; Webb et al. 2013), that the models produced by other scholars, presented in this section, are not a true measure of EI as an ability but are competency or mixed models (sometimes called ESC) insofar as they incorporate measures of EI and other attributes generally included in the definitions of traits or competencies.
Goleman and Boyatzis Model

Goleman’s original model of EI (1995, 1998) contained 27 competencies. Based on research involving 596 individuals intended to integrate the work of Goleman (1995, 1998) and Boyatzis (1982), the original 27 competencies were later reduced to 19 competencies. The following definition of EI was offered:

Emotional intelligence is observed when a person demonstrates the competencies that constitute self-awareness, self-management, social awareness and social skills at appropriate times and ways in sufficient frequency to be effective in the situation” (Boyatzis et al. 2000, p. 3).
Table 10 Summary of the Goleman-Boyatzis model

<table>
<thead>
<tr>
<th></th>
<th>Self</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness</td>
<td>Self-awareness: reading your own emotions together and recognising their impact.</td>
<td>Social awareness: attuned to how others feel.</td>
</tr>
<tr>
<td></td>
<td><strong>Emotional self-awareness:</strong> recognising our emotions and their effects on personal performance including recognition of a tendency to avoid issues or situations that cause us discomfort.</td>
<td><strong>Empathy:</strong> understanding others’ feelings and perspectives and taking an active interest in their concerns.</td>
</tr>
<tr>
<td></td>
<td><strong>Accurate self-assessment:</strong> knowing our strengths and limits.</td>
<td><strong>Organisational awareness:</strong> understanding the organisation’s issues, dynamics and politics.</td>
</tr>
<tr>
<td></td>
<td><strong>Self-confidence:</strong> a strong sense of one’s self-worth and capabilities.</td>
<td><strong>Services orientation:</strong> recognising and meeting customer needs.</td>
</tr>
<tr>
<td>Management</td>
<td>Self-management: focused control towards the achievement of goals.</td>
<td>Relationship management: the ability to guide the emotional tone of the group.</td>
</tr>
<tr>
<td></td>
<td><strong>Emotional self-control:</strong> keeping disruptive emotions and impulses under control.</td>
<td><strong>Developing others:</strong> sensing others’ development needs and bolstering their abilities.</td>
</tr>
<tr>
<td></td>
<td><strong>Transparency:</strong> maintaining integrity and acting congruently with one’s values.</td>
<td><strong>Inspirational leadership:</strong> inspiring and guiding others either as a group or an individual.</td>
</tr>
<tr>
<td></td>
<td><strong>Optimism:</strong> persistence in pursuing goals despite obstacles and setbacks.</td>
<td><strong>Influence:</strong> the ability to persuade others.</td>
</tr>
<tr>
<td></td>
<td><strong>Adaptability:</strong> the ability to adapt to change and work effectively as circumstances change.</td>
<td><strong>Change catalyst:</strong> initiating or managing change.</td>
</tr>
<tr>
<td></td>
<td><strong>Achievement orientation:</strong> the drive to meet an internal standard of excellence.</td>
<td><strong>Conflict management:</strong> resolving disagreements when they occur or preventing a disagreement from happening or growing.</td>
</tr>
<tr>
<td></td>
<td><strong>Initiative:</strong> the readiness to act in order to seize an opportunity.</td>
<td><strong>Teamwork and collaboration:</strong> working with others towards shared goals and guiding the group to achieve a collective goal.</td>
</tr>
</tbody>
</table>

In a later work, the model was modified from 19 to 18 competencies (Goleman et al. 2002). This structure is retained in the latest publication (Goleman et al. 2013), and it is the version summarised in Table 10.

In his discussion of this model, Boyatzis (2008, 2009) defines a competency as a capability or ability that is a set of related but different behaviours organised around an underlying construct called the intent (Boyatzis 2008, 2009). This concept is used to differentiate different types of behaviour; for example, that of asking questions and
listening to the answers. This may be performed with the intent of understanding another individual and thereby demonstrating empathy or that of merely appearing interested as a means of ingratiating.

Their model identifies the competencies associated with awareness of the self and others and the management of one’s self and others. It is summarised in Table 10 which is adapted from Goleman et al. (2013).

**Bar-On Model**

This model has been described in a number of papers by Bar-On (1988, 2000; 2006). Bar-On describes his model as one of emotional social intelligence that he defines as “a cross-section of interrelated emotional and social competencies, skills and facilitators that determine how effectively we understand and express ourselves, understand others and relate with them and cope with daily demands” (Bar-On 2006, p.214).

The five main dimensions of this model are intrapersonal skills, interpersonal skills, adaptability, stress management and the general mood.

More details of the model are defined in the attributes measured in the associated test EQ-I, details of which are presented in Table 11 adapted from Palmer et al. (2008). As can be seen by reference to the table, this model is different in construction to that of Goleman and Boyatzis (Goleman et al. 2013) in that it incorporates both competencies and traits.

**Dulewicz and Higgs Model**

Dulewicz and Higgs (2004) developed a leadership model that incorporated management competencies or quotient (MQ), intellectual quotient (IQ) and EI quotient (EQ). Their model recognised three management styles, the importance of
which depends on the management environment. Goal orientation is considered the most appropriate style for project management. This work thus emphasised the contextual influence of an appropriate leadership style and can be regarded as building on the initial work of Shenhar (2001). The model is summarised in Table 12.

**Table 11 Summary of the Bar-On model**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrapersonal skills (self-awareness and self-expression)</td>
<td>Self-regard</td>
<td>To accurately perceive, understand and accept oneself.</td>
</tr>
<tr>
<td></td>
<td>Emotional self-awareness</td>
<td>To be aware of and to understand one’s emotions.</td>
</tr>
<tr>
<td></td>
<td>Assertiveness</td>
<td>To effectively and constructively express one’s emotions and oneself.</td>
</tr>
<tr>
<td></td>
<td>Independence</td>
<td>To be self-reliant and to be free of emotional dependency on others.</td>
</tr>
<tr>
<td></td>
<td>Self-actualisation</td>
<td>To strive to achieve personal goals and actualise one’s potential.</td>
</tr>
<tr>
<td>Social awareness and interpersonal relationships (to be aware of and understand how others feel)</td>
<td>Empathy</td>
<td>To be aware of and to understand how others feel.</td>
</tr>
<tr>
<td></td>
<td>Social responsibility</td>
<td>To identify with one’s social group and cooperate with others.</td>
</tr>
<tr>
<td></td>
<td>Interpersonal relationships</td>
<td>To establish mutually satisfying relationships and to relate well with others.</td>
</tr>
<tr>
<td>Adaptability (change management)</td>
<td>Reality testing</td>
<td>To objectively validate one’s feelings and thinking with external reality.</td>
</tr>
<tr>
<td></td>
<td>Flexibility</td>
<td>To adapt and adjust one’s feelings and thinking to new situations.</td>
</tr>
<tr>
<td></td>
<td>Problem solving</td>
<td>To effectively solve problems of a personal and interpersonal nature.</td>
</tr>
<tr>
<td>Stress management (emotional management and regulation)</td>
<td>Stress tolerance</td>
<td>To effectively and constructively manage emotions.</td>
</tr>
<tr>
<td></td>
<td>Impulse control</td>
<td>To effectively and constructively control emotions.</td>
</tr>
<tr>
<td>General mood (self-motivation)</td>
<td>Happiness</td>
<td>To be positive and to look at the brighter side of life.</td>
</tr>
<tr>
<td></td>
<td>Optimism</td>
<td>To feel content with oneself, others and life in general.</td>
</tr>
</tbody>
</table>
Table 12 Summary of the Dulewicz and Higgs model

<table>
<thead>
<tr>
<th>Model Dimension</th>
<th>Leadership Style</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intellectual (IQ)</td>
<td>Goal oriented</td>
</tr>
<tr>
<td>Critical analysis and judgement</td>
<td>High</td>
</tr>
<tr>
<td>Vision and imagination</td>
<td>High</td>
</tr>
<tr>
<td>Strategic perspective</td>
<td>High</td>
</tr>
<tr>
<td>Managerial (MQ)</td>
<td></td>
</tr>
<tr>
<td>Engaging communication</td>
<td>Medium</td>
</tr>
<tr>
<td>Managing resources</td>
<td>High</td>
</tr>
<tr>
<td>Empowering</td>
<td>Low</td>
</tr>
<tr>
<td>Developing</td>
<td>Medium</td>
</tr>
<tr>
<td>Achieving</td>
<td>High</td>
</tr>
<tr>
<td>Emotional (EQ)</td>
<td></td>
</tr>
<tr>
<td>Self-awareness</td>
<td>Medium</td>
</tr>
<tr>
<td>Emotional resilience</td>
<td>High</td>
</tr>
<tr>
<td>Motivation</td>
<td>High</td>
</tr>
<tr>
<td>Interpersonal sensitivity</td>
<td>Medium</td>
</tr>
<tr>
<td>Influencing</td>
<td>Medium</td>
</tr>
<tr>
<td>Intuitiveness</td>
<td>Medium</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>High</td>
</tr>
</tbody>
</table>

Further work was done in this area by Müller and Turner (2010), who considered the competencies required on projects of different types and complexity. They were able to show that the competencies requirement changed as the nature and complexity of projects changed. Additionally, Müller and Turner (2012) used the Williams (2002) model of complexity to investigate the moderating effect of project...
complexity on the relationship between IQ, EQ and MQ and project success. They found that the type of complexity experienced did moderate the influence of EQ and IQ on project success.

These works are of particular interest; in this model’s case, they show that the base EI competencies and their relative importance, as compared to MQ and IQ, were dependent on project type.

2.8.3 Petrides and Furnham Model

Petrides and Furnham argue that EI should not be considered as an ability or competency but rather as a trait (Petrides 2010, 2011; Petrides et al. 2001). A trait is defined as “a constellation of emotional self-perceptions located at the lower levels of personality” (Petrides 2010, p. 137), and trait EI is defined as “emotion-related dispositions and self-perceptions” (Petrides et al. 2007, p. 273).

In the Petrides and Fordham model trait, EI is composed of personality traits. Traits being a development of the Big Five personality dimension which consist of openness to experience, conscientiousness, extraversion, agreeableness and neuroticism (McCrae et al. 1985). In their research, Petrides and Fordham found that their Trait EI model produced results indicating that as a construct, it was oblique (i.e., has some statistical dependence as it is neither parallel nor at right angles) as opposed to being orthogonal (i.e., having no statistical dependence) when compared to results from the Big Five personality dimensions.

Confirmation that Trait EI had both convergent and discriminant validity with respect to the Big Five has also been found in research by Pérez-González and Sanchez-Ruiz (Pérez-González et al. (2014).

This model’s dimensions are summarised in Table 13
Table 13 Summary of the Petrides and Furnham model

<table>
<thead>
<tr>
<th>Model Dimension</th>
<th>Description (high scorers see themselves as)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adaptability</td>
<td>Flexible and willing to adapt to new conditions.</td>
</tr>
<tr>
<td>Assertiveness</td>
<td>Forthright, frank and willing to stand up for their rights.</td>
</tr>
<tr>
<td>Emotion expression</td>
<td>Capable of communicating their feelings to others.</td>
</tr>
<tr>
<td>Emotion management</td>
<td>Capable of influencing other people.</td>
</tr>
<tr>
<td>(others)</td>
<td></td>
</tr>
<tr>
<td>Emotional Perception</td>
<td>Feeling clearly about their own and other people's feelings.</td>
</tr>
<tr>
<td>(self and others)</td>
<td></td>
</tr>
<tr>
<td>Emotion regulation</td>
<td>Capable of controlling their emotions.</td>
</tr>
<tr>
<td>Impulsiveness (low)</td>
<td>Reflective and are therefore less likely to give in to their urges.</td>
</tr>
<tr>
<td>Relationship skills</td>
<td>Capable of maintaining fulfilling personal relationships.</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>Successful and self-confident.</td>
</tr>
<tr>
<td>Self-motivation</td>
<td>Driven and unlikely to give up in the face of adversity.</td>
</tr>
<tr>
<td>Social competence</td>
<td>Accomplished networkers with superior social skills.</td>
</tr>
<tr>
<td>Stress management</td>
<td>Capable of withstanding pressure and regulating stress.</td>
</tr>
<tr>
<td>Trait empathy</td>
<td>Capable of taking someone else's perspective.</td>
</tr>
<tr>
<td>Trait happiness</td>
<td>Cheerful and well satisfied with their lives.</td>
</tr>
<tr>
<td>Trait optimism</td>
<td>Confident and likely to “look on the bright side” of life.</td>
</tr>
</tbody>
</table>

2.8.4 Joseph and Newman Model

The authors state that their model “specifies the role of EI vis-à-vis relevant personality traits of conscientiousness, emotional stability and cognitive intelligence” (Joseph et al. 2010, p55). This model is particularly interesting as it attempts to integrate the Mayer and Salovey model of EI with personality traits, cognitive ability and the requirements of job performance, making the additional distinction of concentrating on the impact of these factors on emotional labour, that is, “jobs that require positive emotional displays” (Joseph et al. 2010, p72).

The Joseph and Newman model is summarised in Figure 2.
Note: The dotted line indicates the link is not empirically supported.

**2.8.5 Discussion of Model Types**

As a method of dealing with the addition of traits to EI, it has been suggested that research into EI should be differentiated between research into EI as an ability and EI as a trait (Austin 2010; Lindebaum et al. 2010; Petrides et al. 2001; Petrides et al. 2007). Cherniss (2010) suggested that where traits and or competencies are included in the model, the term emotional and social competence (ESC) should be used.

The criticism of models other than that of Mayer and Salovey, as mixed rather than ability based, appears to have been accepted by the model’s authors themselves and the general academic community.

The models discussed in this section are compared, and a summary of the model types and their associated tests are presented in Table 14.
Table 14 Summary of model types and tests developed from McEnrue et al. (2010)

<table>
<thead>
<tr>
<th>Test</th>
<th>Mayer-Salovey- Caruso Emotional Intelligence Test (MSCEIT).</th>
<th>SREI</th>
<th>Emotional Competence Inventory, Version 2 (ECI-2).</th>
<th>Emotional Quotient Inventory (EQ-i).</th>
<th>Emotional Intelligence Questionnaire (EIQ).</th>
<th>Trait Emotional Intelligence Questionnaire (TEIQue)</th>
<th>Cascading EI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Based On</td>
<td>Mayer and Salovey</td>
<td>Mayer and Salovey</td>
<td>Goleman and Boyatzis</td>
<td>Bar-On</td>
<td>Dulewicz and Higgs</td>
<td>Petrides and Furnham</td>
<td>Joseph and Newman</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Copper and Petrides (2010)</td>
</tr>
<tr>
<td>Model Dimensions</td>
<td>Capacity to perceive emotions.</td>
<td>Self-awareness, self-management, social awareness and social skills.</td>
<td>Intrapersonal skills, interpersonal skills, adaptation, stress management and general mood.</td>
<td>Self-awareness, emotional resilience, motivation, interpersonal sensitivity, influence, intuitiveness and conscientiousness.</td>
<td>Adaptability, assertiveness, emotional understanding and management, relationships and social competence, self-management and empathy.</td>
<td>Emotion perception, emotional understanding, emotion regulation, conscientiousness, cognitive ability and neuroticism.</td>
<td>Cascading EI</td>
</tr>
<tr>
<td>Comments</td>
<td>Model is widely endorsed by theorists and researchers in the field.</td>
<td>Some discussion of the relative value of self-reported results continues. Although based on Mayer and Salovey, it has some aspects of traits that are not strictly EI as defined by Mayer and Salovey.</td>
<td>Several EI clusters and competencies tap products of EI or traits related to, but distinct from ability EI.</td>
<td>Several EI scales tap traits related to, but distinct from ability EI.</td>
<td>Several EI scales tap traits related to, but distinct from ability-based EI. Includes factors associated with management competencies and IQ.</td>
<td>Uses emotional self-perceptions and traits not ability-based EI.</td>
<td>Model attempts to integrate ability EI with the Big Five personality dimensions.</td>
</tr>
</tbody>
</table>
2.8.6 Measurement of EI

It has been suggested that measurement of EI should be considered as originating from three distinct streams (Ashkanasy et al. 2005).

The results for stream 1 are generally obtained using the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT). The test involves scoring against results determined by a panel of experts. Regarding such a test as objective has issues that have been noted by several authors including (O'Sullivan et al. 2004; Ortony et al. 2007; Roberts et al. 2001). The results may be affected by conformity to social norms (Matthews et al. 2006), theoretical knowledge about emotions (Austin 2010), or stereotypical judgements (O'Sullivan 2007).

Stream 2 results are obtained using the Self-reporting of Emotional Intelligence (SREI) that is based on the Meyer-Salovey model. The relationship between self-reported EI and results from MSCEIT have not been found to be strongly correlated (Brackett, Rivers, et al. 2006). A more recent study found that significant variance in results using SREI could be accounted for by personality and emotional well-being measures, while those from MSCEIT were largely related to IQ and only to a much lesser extent (14%) to personality and emotional well-being measures (Webb et al. 2013).

Stream 3 contains results from self-reporting tests that are based on models using competencies or traits or a combination of both. The most significant of these test are the following:

- SREI (Schutte’s self-reporting emotional intelligence test) used to measure ability EI.
- EQ-i used to measure ESC as defined in the Bar-On model.

- ECI-2 (Emotional competency inventory, version 2) used to measure EI competencies in the Goleman-Boyatzis model.

- TEIQue (Trait emotional intelligence questionnaire) used in conjunction with the Petrides and Furnham model.

- EIQ (Emotional quotient inventory) used in conjunction with the Dulwich and Higgs model.

The additional problems caused by the use of self-reporting tests for EI, as compared with a more objective test, has also been the subject of several papers (Boyatzis et al. 2004; Bratton et al. 2011; Dunning et al. 2004; Freudenthaler et al. 2007; Grubb III et al. 2007; Harms et al. 2010a, 2010b; Hoegl et al. 2004; Jacobs et al. 2012; Kong 2014; Siegling et al. 2014; Tett et al. 2012). The problems identified in these papers includes the following:

- Results obtained when EI was compared to leadership ability using a single-source method were different from results comparing leadership and EI using two separate self-reporting sources.

- Other peoples’ views of an individual’s performance are more reliable than their self-reports. Problems with self-reporting include a large percentage of people rating themselves as above average, overestimating the chance of them behaving in desirable ways and providing optimistic estimates of when projects will be completed.

- Respondents with a higher IQ can anticipate the desired responses of a particular position and adjust their responses accordingly.
- Understanding of how to behave emotionally (contained in self-reported tests) is not matched by actual emotional performance.
- Females tend to overestimate their EI scores more than males.
- The accuracy of self-reporting is influenced by personality factors.
- Ability EI is moderated by age and sex.
- Actual performance is higher for managers who underestimate their EI than for those who overestimate their EI.

2.8.7 Model Validity

Despite the issues identified in section 2.8.6, all of the models have achieved a measure of validity. Their results are compared in Table 15. This summary does not include the Joseph and Newton model due to the lack of data arising from its recent development.

2.8.8 Other Issues

Other issues that must be addressed are: Can EI be differentiated from IQ and the Big Five personality dimensions? Can EI be developed?

EI comparison with the Big Five personality dimensions (personality factors)

Law et al. (2004) found EI does indeed measure emotion-related abilities that are distinct from personality traits, and EI is related to but distinct from the Big Five personality dimensions. Grubb III and McDaniel (2007) found, with particular reference to the Bar-On model, that EI did not have predictive validity when compared to the Big Five personality dimensions.
Trait EI did, however, have incremental predictive validity when compared with the Big Five personality dimensions, as well as when compared with the Eysenckian Giant Three dimensions (Petrides et al. 2007; Siegling et al. 2015). This work was confirmed in a meta-analysis (O'Boyle et al. 2011) that found that all the major measurements of EI had incremental predictive validity when compared to the Big Five (per Table 15).

An alternative view is offered in a paper by Webb et al. (2013) that concluded that the Big Five dimensions could account for 62% of results from the EQ-I test but only 14% of results from the MSCEIT.

Can EI be developed?

The result of training to improve EI was reviewed by McEnrue et al. (2010) who found previous research did not provide conclusive evidence that EI could be learned due to such issues as lack of a control group, limited training duration and measurement of trait EI as opposed to measurement of ability EI.

Goleman et al. (2012) and Boyatzis and Sala (2004) make the assertion that EI is thought to increase with age. In doing this, the authors are referring to the Goleman and Boyatzis model.

For other examples of EI increasing with training, see (Boyatzis et al. 2008; Clarke 2010c; Kotsou et al. 2011; Martins et al. 2010; Nelis et al. 2011; Nelis et al. 2009; Reuben et al. 2009; Sala 2005) and Schutte et al. (2013), who provide a comprehensive review of the effect of training on EI and ESC.
Table 15 EI model and test results, developed from work by McEnrue et al. (2010), McEnrue and Groves (2006) and O'Boyle et al. (2011)

<table>
<thead>
<tr>
<th>Stream Type</th>
<th>One</th>
<th>Two</th>
<th>Three</th>
<th>Three</th>
<th>Three</th>
<th>Three</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model Basis</strong></td>
<td>Mayer and Salovey</td>
<td>Mayer and Salovey</td>
<td>Goleman and Boyatzis</td>
<td>Bar-On</td>
<td>Dulewicz and Higgs</td>
<td>Petrides and Furnham</td>
</tr>
<tr>
<td><strong>Test</strong></td>
<td>Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT)</td>
<td>SREI</td>
<td>Emotional Competence Inventory, Version 2 (ECI-2)</td>
<td>Emotional Quotient Inventory (EQ-i)</td>
<td>Emotional Intelligence Questionnaire (EIQ)</td>
<td>Trait Emotional Intelligence Questionnaire (TEIQue)</td>
</tr>
<tr>
<td><strong>Content Validity</strong></td>
<td>Moderate</td>
<td>Evidence not provided</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Good</td>
</tr>
<tr>
<td><strong>Construct Validity</strong></td>
<td>High</td>
<td>Evidence not provided</td>
<td>Low</td>
<td>Low</td>
<td>Moderate</td>
<td>Good</td>
</tr>
<tr>
<td><strong>Face Validity</strong></td>
<td>Low</td>
<td>Evidence not provided</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Good</td>
</tr>
<tr>
<td><strong>Predictive Validity</strong></td>
<td>Moderate; predicts job performance equally well.</td>
<td>Evidence not provided</td>
<td>Moderate; predicts job performance equally well.</td>
<td>Moderate; predicts job performance equally well.</td>
<td>Moderate; predicts job performance equally well.</td>
<td>Good</td>
</tr>
<tr>
<td><strong>External Validity</strong></td>
<td>Moderate</td>
<td>Evidence not provided</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Low</td>
<td>Good</td>
</tr>
<tr>
<td><strong>Convergent Validity</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Good</td>
</tr>
<tr>
<td><strong>Incremental Validity</strong></td>
<td>Has predictive validity above and beyond the FFM and IQ.</td>
<td>Has predictive validity above and beyond the FFM and IQ.</td>
<td>Has predictive validity above and beyond the FFM and IQ.</td>
<td>Has predictive validity above and beyond the FFM and IQ.</td>
<td>Has predictive validity when compared with the Giant Three and Big Five personality dimensions.</td>
<td></td>
</tr>
<tr>
<td>Measures are more closely related to cognitive intelligence and lowest correlations with the Big Five personality factors.</td>
<td>Measures are significantly different from stream 3 measures for two personality traits.</td>
<td>Better than other questionnaires (see Freudenthaler et al. (2008) and Gardner and Qualter (2010).</td>
<td>Several independent studies have demonstrated the ability of the TEIQue to predict criteria (outcomes) significantly.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Differs from the stream 3 measures for cognitive intelligence and all five personality measures, thus convincingly demonstrating that these are different measures.</td>
<td>Measures have a lower correlation with cognitive ability than stream 1 and lower correlations with the FFM than stream 3.</td>
<td></td>
<td>Dulewicz and Higgs (2004; 2005).</td>
<td>Main reference papers: (Cooper et al. 2010; Freudenthaler et al. 2008; Gardner et al. 2010; Petrides 2010; Petrides et al. 2007), and (Sieglng et al. 2015)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 16 Validity measures adapted from Nunnally (2010), Nunnally and Bernstein (1994 and Antonakis et al. (2009)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face validity</td>
<td>Refers to whether or not a test and the items that comprise it are valid from the perspective of those who take it.</td>
</tr>
<tr>
<td>Construct validity</td>
<td>Refers to whether or not the concept of interest is empirically related to other concepts theoretically similar to it and is empirically independent from those different from it.</td>
</tr>
<tr>
<td>Predictive validity</td>
<td>Refers to the extent to which one can predict some outcomes (typical behaviour) on the basis of test scores.</td>
</tr>
<tr>
<td>External validity</td>
<td>Refers to the extent to which it is possible to generalise beyond the characteristics of a single study or set of studies to the population at large.</td>
</tr>
<tr>
<td>Incremental validity</td>
<td>Answers whether the variable predicts practically useful outcomes after controlling for other variables in the case of EI, IQ and the Big Five personality factors (openness to experience, conscientiousness, extraversion, agreeableness and neuroticism).</td>
</tr>
</tbody>
</table>

2.8.9 Summary

Model Types

In summary, it can be said that EI models come in two main types: ability based and mixed, that is, those combining ability, competencies and/or personality traits. A third group is created as a subgroup of the mixed model that relates EI not only to competencies and traits but also to the Big Five personality dimensions. This variation in model types in itself creates a major problem in model comparison that is further exacerbated by the use of two different EI measuring techniques: objective (which as discussed in section 2.8.6 has challenges) and self-reporting.
This having been said, if EI is taken to be purely ability, then the academic community favours the use of the Mayer and Salovey model. Project management is, however, a practically based discipline; thus, the debate now appears to centre on the various measures of validity and, in particular, the predictive validity and incremental validity of the different models. As can be seen by reference to Table 15, all the models have some measure of predictive validity.

Relatively short training courses have been shown to increase EI. If EI were a true intelligence, it would be difficult to understand how this would occur. Traits also are considered somewhat difficult to change as they are regarded as being fundamental parts of a personality. If, however, EI were conceptualised as competencies, then this effect would be easier to explain.

The Relevance of EI Models to Project Management

As previously discussed, EI models conceptualise EI as an ability or a mixture of ability, traits and/or competencies. A recent meta-analysis concluded that mixed models of EI show substantial incremental validity in predicting job performance over cognitive ability and the Big Five personality traits (Joseph et al. 2010). Ability models, however, showed only a modicum of incremental validity in predicting job performance over cognitive ability and the Big Five personality traits.

This position, with respect to mixed models predicting job performance over cognitive ability and the Big Five personality traits, was confirmed by the meta-analysis of O’Boyle et al. (2011). The study concluded that stream 2 (self-reported tests based on an ability model) and stream 3 (self-reported tests based on mixed models) had a higher predicted validity than stream 1 (objective tests based on an ability model). The view expressed by this study should be considered in light of work
by Webb et al. (2013) that found that results from SREIT (self-report test based on the ability model) were strongly associated with personality and well-being measures.

Based on the above, it was decided to concentrate on the mixed models of EI as predictors of job performance rather than the ability-based model.

The trait IQ model developed by Petrides and Furnham (2001) has been shown to have incremental validity in a number of situations (Cooper et al. 2010; Freudenthaler et al. 2008; Petrides et al. 2001). However, it has been argued, with respect to trait EI, that there is no unique EI profile that will be advantageous for all walks of life:

Trait emotional intelligence theory maintains that certain emotional profiles will be advantageous in some contexts but not in others. For example, being reserved and non-supportive is not an example of emotional dimness but is a personality trait that happens to be more adaptable than sociability and emotional expression in, say, a research context . . . . It follows that there will be no magic profile of the “emotionally intelligent” individual who will be successful in all walks of life. (Petrides 2011, pp. 660-661)

Given the difficulty in modifying existing traits, it would appear that there are some individuals who would have considerable difficulty in the project management field. Unfortunately, there is not a sufficient volume of work using this model in the area of project management to gain a full understanding of the relative importance of the specific traits needed in project management. It was, therefore, decided not to consider this model any further in the review of the special EI needs of projects.

The Bar-On model has been widely used in the project management field, but it incorporates both traits and competencies. The problems with trait models have already been identified in the discussion of the Petrides and Furnham model. As a result, this model was not evaluated further.

A popular model used in the field of project management is that of Dulwich and Higgs. See, for example, (Dulewicz et al. 2005; Geoghegan et al. 2008; Muller et al.
2012; Müller and Turner. 2010). This model is not, however, just a mixed EI model; it also contains other elements thought to be of importance in management that are grouped into areas of management competencies and cognitive competencies, thus making the results hard to analyse from a pure EI perspective.

The Goleman-Boyatzis model has also been used to study EI in the project management field. See, for example, (Boot-Handford et al. 2013; Hobbs et al. 2012; Mount 2006; Sunindijo et al. 2007; Turner et al. 2008; Turner 2007; Zhang et al. 2013).

When comparing the use of trait models and competency models, with particular reference to the Goleman-Boyatzis model, Boot-Handford and Smyth concluded: “The EI trait model is also restricted to individual assessments. Thus, for operational and team working, ability and competency are more appropriate than trait conceptions” ((Boot-Handford et al. 2013, p. 315). Additionally, in this model, competencies in all areas of the model are not needed for outstanding performance. The competencies required are situationally dependent. “It is not necessary to be competent in all 18 competencies. Research indicates the demands for emotional competencies are context specific” (Druskat et al. 2012, p. 92). A major advantage of this model is therefore that it is possible to identify the context-specific competencies applicable to project management and thereby establish the relevance of the model in a project management context.
2.9 Conclusion

As the understanding of CSF and PSC developed to include the impact of project managers as leaders, the view of project managers as mere technicians was expanded to recognise the requirement of particular leadership skills and competencies. These skills and competencies were modified from those required by a leader in general management by the particular nature of projects. Whilst those team management skills may have been identified (e.g., the ability to motivate and communicate), the specific competencies required are not well understood. The review shows that a better understanding of EI as it applies to project management may help identify those competencies required of a project manager.

When the various models of EI were compared with respect to project management, the Goleman-Boyatzis model (Goleman et al. 2013) was found to have advantages in that the competencies contained within this model could be tested individually to establish their relevance in dealing with the problems in project management. Its importance in this area had already been established through a number of papers (Boot-Handford et al. 2013; Hobbs et al. 2012; Mount 2006; Sunindijo et al. 2007; Turner et al. 2008; Turner 2007; Zhang et al. 2013).

This model was therefore selected for use in this study.

The review of the unique nature of projects in section 2.3 established the following characteristics of a project:

1. There is limited time duration for building a team, developing rapport with stakeholders, obtaining organisational support and building a working control system.
2. The temporary nature of the project team formed within time constraints results in the need to blend team members from different professional and social backgrounds and understand and develop a relationship with stakeholders who are also from different backgrounds. This problem can be further exacerbated by the project team and associated stakeholders being distributed across different geographic locations.

3. The unique nature of the project requires a solution in a condensed time frame, putting pressure on the team to understand this particular project’s requirements.

4. The frequent lack of definition, often due to time constraints, results in considerable ambiguity and changes to scope often coupled with changes to team membership and the external environment.

5. Changes in team structure and to the stakeholder organisation as the project progresses due to a variety of forces includes pressure from competing projects, identification of additional or redundant skill sets and natural attrition.

6. There are conflicts that result from communication problems, scope and personnel changes.

It was against these problems that it was decided to test the relevance of the competencies contained in the Goleman-Boyatzis model (Goleman et al. 2013).
Chapter 3: Methodology and Research Design

3.1 Introduction

The previous chapter discussed the development of project management theory in general and identified the initial focus of theory development on the technical or hard skills, often called PMBoK-type skills, required of a project manager. The review then discusses how the underlying concepts behind project management have been expanded to include the requirement for team management skills and investigates the impact in this area of the nature of projects and the problems this nature produced. Contributions from the field of EI, with particular emphasis on the competencies highlighted in the Goleman-Boyatzis model, were reviewed, and it was decided to evaluate the relevance of this model in dealing with the team management issues resulting from the nature of projects.

Relying on my own experiences in managing projects from $1 million to $2 billion in value, the first stage in the research involved using reflection as a technique to develop an autoethnography. This autoethnography covered significant events in the development of my team management skills and my understanding of the practice of project management. The autoethnography was then analysed to establish the learning experience from the event, the resultant skill need identified and the EI competency associated with the skill need.

In order to expand the study past the lived experience of a single project manager, it was decided to use a Delphi study using project managers who were experienced in managing projects over $0.5 billion to establish:
if the project management community agree with my experience that team management skills are important and that they increase as project size increases;

if the problems in projects identified from the literature review concerning the nature of projects had actually been experienced by the project management community and if so, how the community ranked the problems’ impact and frequency.

If the panel answered these questions in the affirmative, it would appear legitimate to test the relevance of the Goleman-Boyatzis model (Goleman et al. 2013) against the problems identified in the literature. The results of the Delphi panel could then be used to confirm or otherwise the findings of my autoethnography regarding the relevance of the Goleman-Boyatzis model to team management issues.

Additionally, as part of the Delphi study, it was decided to use feedback mechanism available to investigate whether a consensus of the panel members could be reached regarding further problems in project management the panel had experienced in practice and key factors they found to be important in the successful delivery of a project.

A final question put to the panel concerned their opinion of the importance of reflection in their career development and in dealing with problems as they arose in the course of a project.

3.2 Justification of the Approach

3.2.1 Use of Autoethnography

The importance and relevance of EI to project management, with particular reference to the construction industry, has been established by means of a literature
review. The object of this research is to investigate the position of EI as an important contributor to success in project management.

In deciding on research methodology, I was heavily influenced by my major research goal, that being to improve the understanding of the practice of project management by using the knowledge I have gained as a practitioner and by canvassing the opinion of other practitioners. The approach I initially favoured for reviewing my own experience was the development of an autoethnography using reflection as outlined by Schön (1983, 1987) in his discussion of “knowing-in-action” and “reflection-in-action.”

Having decided to use reflection-in-action, further points I considered, as suggested by Creswell (1994), in determining my research methodology are summarised in Table 17.

<table>
<thead>
<tr>
<th>Basic Research Assumption</th>
<th>Quantitative Requirement</th>
<th>Qualitative Requirement</th>
<th>This Research. (Autoethnography)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature of reality (ontological assumption).</td>
<td>Objective and apart from researcher.</td>
<td>Subjective to the view of the participants in the study.</td>
<td>Subjective view used.</td>
</tr>
<tr>
<td>Relationship of researcher to the researched (epistemological assumption).</td>
<td>Researcher is independent of that being researched.</td>
<td>Researcher interacts with that being researched.</td>
<td>Researcher and researched are one entity.</td>
</tr>
<tr>
<td>The role of values (axiological assumption).</td>
<td>Value free and unbiased.</td>
<td>Research admits to the role of value based of the nature of the study and admits to using his own values and bias.</td>
<td>Based on researcher’s views that are obviously influenced by his values and beliefs.</td>
</tr>
<tr>
<td>Research process (methodological assumption).</td>
<td>Deductive.</td>
<td>Inductive.</td>
<td>Inductive.</td>
</tr>
</tbody>
</table>
Applying these suggestions to my research goal, it became clear that my methodology was of a qualitative nature. Creswell (2007) suggests five common qualitative techniques:

- ethnography, a method that involves studying a cultural group from an observer’s standpoint;
- narrative research, a method that usually involves an account of the lived experiences and the experiences of individuals;
- grounded theory: a method involving theory development by the collection of data from multiple sources;
- case study, a method of collecting data from a single event to draw general conclusions concerning similar events in the future;
- phenomenology, a method in which detailed descriptions of the people under investigation are used to examine human experiences.

In choosing between the approaches, the guidelines summarised in Table 18 have been suggested by Creswell (2007).

<table>
<thead>
<tr>
<th>Type of Research</th>
<th>Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Narrative</td>
<td>Stories told by the individual.</td>
</tr>
<tr>
<td>Ethnography</td>
<td>The individual stories are set within the particular context of their culture.</td>
</tr>
<tr>
<td>Case Study</td>
<td>Illustration of an issue using one or multiple examples.</td>
</tr>
<tr>
<td>Grounded Theory</td>
<td>Development of theory based on data obtained by fieldwork.</td>
</tr>
<tr>
<td>Phenomenological</td>
<td>Describing the essence of the experience.</td>
</tr>
</tbody>
</table>

Bearing in mind my desire to use a reflective process, I concluded that the appropriate methodology for me to employ was autoethnography, a subset of
ethnography in that the researcher is a member of the culture or group being researched.

This approach would enable me to:

- introduce my lived experiences as a project manager;
- reveal reflections on those experiences and how they have affected my management style;
- review and validate these experiences against current offerings in the relevant area;
- develop the experiences and the current published literature into a framework that others may find useful in their project management career;
- highlight areas where future work may be directed so as to improve the understanding of the practice of project management.

3.2.2 Use of a Delphi Study

Having selected autoethnography as an approach, I also wished to deal with the challenge raised to autoethnography, that of lack of verification. In meeting this challenge, I relied on Yin in his discussion of criteria for validity of qualitative work. He suggested triangulation as one of the methods of ensuring the validity. In research, triangulation generally refers to “collecting evidence from different sources” (Yin 2010, p79).

In this research, two methods of data collection would, therefore, be the published literature and my autoethnography. Given my interest in using the practical experience of project managers, I decided to use a Delphi study as my third method of triangulation.
The use of a Delphi study was further confirmed when I considered that the basis of my knowledge claim was essentially pragmatic in nature. As autoethnography is qualitative in nature and a Delphi study is quantitative, for those using this approach, Creswell (2013) recommended a mixed method approach. The use of a Delphi study (quantitative method) in addition to autoethnography (qualitative method) fulfilled the requirement based on my knowledge claim as suggested by Creswell and provided a means of meeting the challenge of verification that may have resulted had I relied on just my autoethnography.

In section 3.4.2, covering the research design, I describe how a Delphi study was used so that other practitioners could, from their own experience, confirm or otherwise the problems resulting from the nature of projects identified in the literature and respond to the findings of my autoethnography concerning the need for EI competencies in project management.

3.3 Justification of the Methodology

3.3.1 Reflection

Reflection has been defined as: “An important human activity in that people recapture their experience, think about it, mull over it and evaluate it” (Boud et al. 1985, p. 19). The development of the reflective approach and its importance to the study of project management has been discussed in Chapter 2.

This approach was used in developing my management techniques, the results of which are discussed in further detail in Chapter 4, where the results of the autoethnography are presented.
In using reflection to develop my autoethnography, I was also guided by Moon (2004, pp. 188-189) who suggested suitable areas for reflection include, amongst others:

- experience gained at work;
- the desire to behave differently in some contexts;
- the impact of non-work activities;
- the quality of relationships;
- the processes used in solving difficult problems;
- the need to go beyond mere descriptive writing and focus on the goal of the reflection.

The use of a journal to enhance the reflective experience has been recommended (Boud 2001; Loo 2002), Loo’s work having particular relevance to problems relating to project management. In this method, the reflection takes place either prior to or post the event and gives the author the opportunity to have a detailed record of their thoughts and feelings and resultant actions in the situation from which they were trying to learn.

This reflective process enabled me to:

- introduce my lived experiences as a project manager;
  reveal reflections on those experiences and how they have affected my management style;
- use those experiences to test the validity of the competencies described in the Goleman-Boyatzis model;
• develop the experiences and the current published literature into a framework that others may find useful in the study of project management, and
• highlight areas where future work may be directed so as to improve understanding of the practice of project management.

3.3.2 Autoethnography

Autoethnography has been used as a qualitative method that combines the techniques of autobiography and ethnography. It has been engaged in sociology and anthropology by a number of writers (Denzin 1998; Ellis 2007; Pratt 2008; Reed-Danahay 1997; Sparkes 2000). More recently, the method has been applied to discuss experiences in project management (Nugapitiya 2007) and hypermedia design (Duncan 2004).

Researchers engaging with autoethnography tend to vary their approach by placing different emphases on auto- (self), ethno- (the cultural link) and -graphy (the application of a research process) and that different examples of autoethnography fall at different places along the continuum of each of these three (Reed-Danahay 1997).

This method allows a practitioner to use their experience to reflect on the skills they have found necessary and those events that brought the need for these skills to their attention.

Ellis et al. (2011) have suggested differences in autoethnography may be judged by the emphasis the authors place on the researcher and interaction with others, the context in which the research takes place, the emphasis on the power of a position in a relationship and finally by the degree to which traditional methods of analysis are employed. They identify eight styles:
• reflective, in which the researchers, in addition to simply reporting stories resulting from their research, place a heavy emphasis on their own reflections including the interaction of their values, beliefs and experiences whilst doing the research (Ellis (2004);

• indigenous works, in which the researchers concentrate on power differences and their effects (Denzin 2008);

• layered accounts, in which the researchers place a considerable emphasis on the data collection and literature review as well as their experiences (Doloriert et al. 2011);

• narrative accounts, in which the researchers incorporate their experience into the research concerning the group being studied (Tedlock 1991);

• interactive works, in which the researchers deal with highly emotional issues which are probed by in-depth interviews as exemplified by Adams (Adams 2006);

• community autoethnographers, in which the researchers involve themselves as part of a community and discuss how that community deals with the social and cultural issues associated with that community Toyosaki et al. (2009);

• co-constructed writing, in which there is a shared work between the parties involved in the relationship or a particular situation as in Berg and Trujillo (2008);

• personal narrative style autoethnography, which is used when the author considers some aspect of himself to be worthy of research as in Berry’s work (2007).
Doloriert and Sambrook (2011) have suggested that autoethnography can be considered as having developed into three epistemological alternatives:

- evocative interpretivism that uses an emotive style typified by Ellis and Bochner (2000);
- an analytical style typified by Anderson (2006);
- a style dealing with power conflicts typified by Jones (2008).

Writers using the evocative style tend to use an emotional style and aim to fully engage the reader in their narrative. A definition of this form of autoethnography is provided by Denzin who says that users of this style “bypass the representational problem by invoking an epistemology of emotion, moving the reader to feel the feelings of the other” (1996).

Anderson (2006) discusses the analytical styles of autoethnography and offers the following definition:

Analytical autoethnography refers to ethnographic work in which the researcher is (1) a full member in the research group or setting; (2) visible as such a member in the researcher’s published texts; and (3) committed to an analytic research agenda focused on improving theoretical understandings of broader social phenomena” (2006, p. 375).

In his discussion of analytical autoethnography, Anderson notes the following key requirements:

1. The researcher is a complete member of the social event under study.
2. There is awareness of the researcher’s connection to the situation under investigation and their impact on it (analytic reflexivity).
3. There is visibility of the researcher’s own experiences.
4. There is dialogue with informants beyond the self.

5. There is commitment to theoretical analysis requiring not simply the
documentation experience of the event but also to provide some broader
understanding of the situation under investigation.

The approach I have taken in the development of my autoethnography is
analytical rather than evocative in style; in this, I have been guided by the suggestions
of Anderson. I was also aware of the work by Duncan (2004), who noted: “The
challenge of participant observation in an autoethnography lies in mastering the art of
self-reflection” (2004, p. 32.)

In the vignettes I have presented, the reflective process was not reflection-in-
action as described by Schön (1983, 1987) but did, however, fall into the category
discussed by Van Manen (1991) of reflection-on-action (reflection after the event has
occurred) or anticipatory reflection (reflection before an event occurs). These
vignettes were not just taken from my lived experience as a project manager but were
also, as suggested by Moon (2004), taken to introduce any key experiences I have had
that although not in a work context, did in themselves provide important insights that
have been used during my career as a project manager.

In the analysis presented in Chapter 4, the first stage involved identifying the
learning experience provided by the example and the second stage identified the skill
needs that are brought to light. The final stage involved identifying the EI competency
associated with the skill needs. This was done by reviewing the event and associated
skill needs in light of the competencies contained in the Goleman Boyatzis model
(Goleman et al. 2013) as outlined in section 2.8.2.
Criticisms of Autoethnography

Autoethnography as an approach has attracted some criticism from more conservative researchers, see for example Delamont (2007). Such criticism challenges autoethnography on the grounds that:

1. It is unethical.
2. Its focus on the self is self-indulgent and it uses an overly emotional style.
3. There is a risk of false memories.
4. It lacks objectivity.
5. It lacks an analytical approach.
6. It lacks verification.

I respond to each of these challenges below.

It is unethical

Autoethnographers are forced to involve others who were involved in the experiences discussed and who may not wish to be identified. They may also have a different memory of the events but are not afforded the opportunity to put forward their point of view. This problem has been highlighted and discussed by a number of authors (Adams 2008; Ellis 2007; Etherington 2009; Trahar 2009).

In dealing with this problem, I found it difficult to accept the position put forward by Trahar (2009) that the author has a right to make a judgement call by choosing to identify those who the research has identified and have indicated a desire not to be identified.

Whilst it is very difficult, if not impossible, to ensure anonymity in my research, I have taken the following steps to reduce the degree to which an individual could be identified:
1. Relied on a significant time interval having occurred to reduce the likelihood of others identifying the event.

2. If the event occurred in the last ten years, the place and time where the event occurred was not identified.

3. In the event that 1 and 2 are not sufficient, I engaged in creative non-fiction to make changes to the narrative surrounding the event that, while not affecting the substance of the experience, will render identification of the individual I was interacting with more difficult.

Finally, by dealing with the impact of the event on my thoughts and behaviour and without involving the feelings and thoughts of others, I have reduced the potential to impact on their character.

Its focus on the self is self-indulgent and it uses an overly emotional style.

Autoethnography has been criticised as self-indulgence (Holt 2003) and romantic in construction (Atkinson 1997) and lacking in scholarship (Parks 1998).

The emotional writing style that is intended to produce an overly emotional response (Ellis et al. 2000; Holt 2003; Reed-Danahay 1997) has also been criticised.

These criticisms can be avoided if the definition provided by Anderson ((2006, p. 387) is applied,

The final characteristic of analytic autoethnography is its commitment to an analytic agenda. The purpose of analytic ethnography is not simply to document personal experience, to provide an “insider’s perspective,” or to evoke emotional resonance with the reader. Rather, the defining characteristic of analytic social science is to use empirical data to gain insight into some broader set of social phenomena than those provided by the data themselves.

In this research, I have strived to meet this guidance by providing insight into the challenges of project management and some guidance as to how those challenges may be overcome through the use of EI.
There is a risk of false memories.

It is not uncommon for people who have experienced the same event to have different accounts of what they observed (Owen et al. 2009).

In this research, I dealt with what I had learned from an event and how that learning affected my behaviour. To a large extent, the details of the event I recalled were therefore insignificant in comparison to the learning and ongoing behavioural changes they brought about.

It lacks objectivity.

As the autoethnographer is personally involved in the research, the method has been challenged as lacking objectivity. In response to this, I prefer the response by Ellis et al. in which he describes autoethnography as “one of the approaches that acknowledges and accommodates subjectivity, emotionality and the researcher’s influence on research, rather than hiding from these matters or assuming they don’t exist” (2011, p. 274).

It lacks an analytical approach.

Another frequent criticism is that autoethnography tends to be experiential and lacking in analytical outcomes (Delamont 2007).

Mitch Allen (publisher of Left Coast Press) said in a personal interview in a May 2006 report:

An autoethnography must look at experience analytically. Otherwise [you’re] telling [your] story—and that’s nice—but people do that on Oprah [a U.S.-based television program] every day. Why is your story more valid than anyone else’s? What makes your story more valid is that you are a researcher? You have a set of theoretical and methodological tools and research literature to use. That’s your advantage. If you can’t frame it around these tools and literature and just frame it as “my story,” then why or how should I privilege your story over anyone else’s I see 25 times a day on TV? (Ellis et al. (2011, p. 276)
This may be compared with Anderson’s statement: “The definitive feature of analytic autoethnography is this value-added quality of not only truthfully rendering the social world under investigation but also transcending that world through broader generalization” ((2006, p. 388).

It suggests that a way of overcoming this objection, which I have used, is for the researcher to use their experience to develop a framework, to compare that experience and framework with existing research (Duncan 2004; Ronai 1995) and to remember the guidelines provided by Anderson (2006) as to what constitutes analytical autoethnography.

It lacks verification.

As discussed in section 3.2, I intend to overcome this challenge by using a Delphi study to confirm the value of EI competencies in project management.

Autoethnography Method Employed in This Research

In developing the autoethnographic approach, I particularly wished to establish a firm foundation for the research and to ensure that it is not viewed as a series of short stories. To assist in this goal, I will rely on a set of criteria suggested by (Eisner 1991) for use in qualitative research. These criteria consist of:

- instrumental utility;
- coherence;
- consensus.

To this suggested list I will add production of a scholarly account.
**Instrumental Utility**

It was this identified by (Eisner 1991) as the most important test for qualitative work. It requires that the research must have an identifiable usefulness. To meet this requirement Eisner suggests that a study should achieve one or more of the following:

- assist its reader to understand a confusing situation,
- provide some guide as to the behaviour to be expected in similar situations,
- bring to light factors that had not been previously noticed.

To ensure the utility of purpose test is met I have endeavoured to ensure the following:

1. The research highlights factors involved in project management that are not normally considered part of the project management body of knowledge.
2. While not providing a firm predictive model, it will provide a framework that, if followed, gives a greater possibility of success.
3. By achieving the first two points, the research will bring a further level of understanding to the problems involved in managing projects.

**Coherence**

It is suggested by Eisner (1991) that coherence in research can be identified by cohesion of the arguments presented, that is, they are internally consistent and supported by evidence.

In this research, a literature review of the key areas identified for review are presented and a Delphi study used to either confirm or rebut the results of the autoethnography.
Consensus

To achieve consensus, it is not necessary to ensure that others find that the conclusions of the work agree with their own lived experience. It is only necessary that they agree that the conclusions reached are consistent with the evidence presented in the research. (There is an analogy here to legal argument presented in court proceedings.)

To achieve this requirement, the discussion of the findings is firmly grounded in the results of the lived experience of the researcher, of a Delphi Study and where appropriate, of a cross-reference to the literature review.

Production of a Scholarly Account

So as to ensure the production of a scholarly account, I have endeavoured to follow the guidelines of Anderson (2006) and to ensure that the results of my reflections provide insight into phenomena associated with project management and provide guidance to others as to where future research may be carried out.

In addition, I reviewed my research against the criteria for validity suggested by (Creswell et al. 2007), who proposed that the following be considered in validating qualitative research:

- external validity;
- internal validity;
- reliability.

External Validity

External validity requires that the research can be used in a generalised situation similar to the existing study parameters. As Boud et al. (1993, pp. 11) stated: “What learners bring to an event—their expectation, knowledge, attitude and emotion—will
influence their interpretation of it and their own construction of what they experienced.” Bearing this in mind—and as this portion of the research is based on my personal experiences—in the context of the particular set of projects that I have been involved in, there will be little likelihood of duplicating the particular circumstances of my study parameters.

What it is anticipated will be provided, however, is a series of criteria that when followed should increase the chances of producing a successful project. In this way, the research will be externally verifiable and contribute to the existing body of knowledge in the project management field.

Internal Validity

Internal validation is used to ensure that all reasonable rival explanations have been considered. In this research, it would not be possible to eliminate all rival explanations; the reasons for success or failure of a particular project are many and varied. This research does not offer a definitive dependence (if X then Y) but provides more of a guideline or framework supporting the notion that if you do X then the chances of achieving Y are increased or, conversely, the risks of not achieving Y are reduced. Thus, if we regard success as a function of several variables a, b, c, d, etc., then, if these variables are correctly considered and used appropriately, the chances of success will be improved.

Reliability

The object of this test is to ensure that if other investigators follow the same procedures as described in the research, then they will reach the same findings. As previously discussed, there is little likelihood of another investigator being able to precisely replicate the results of my autoethnography; however, the Delphi study
should be replicable. In the case of the autoethnography, the objective was to demonstrate the reliability of process, such that it is possible for a subsequent researcher to use the technique of reflection-in-action to arrive at a set of conclusions from their own experiences and to compare those conclusions with those presented in this research.

3.3.3 Delphi Study

The original promoters of the Delphi technique for use by experts defined the method as “a method used to obtain the most reliable consensus of opinion of a group of experts by a series of intensive questionnaires interspaced with controlled feedback” (Dalkey et al. 1963, p. 458). The technique thus uses as its basis the assumption that a group opinion is more valid than an individual opinion. The accuracy of group as opposed to individual accuracy was the subject of a paper by Parente et al. (1984).

The application of the Delphi technique is described in detail by Linstone and Turoff (1979), and its further use as a research tool is discussed by Skulmoski et al. (2007). The construction of the survey was reviewed by Fink (2009).

The characteristics of a typical Delphi study have been described by a number of authors (Gordon 1994; Jung-Erceg et al. 2007; Keeney et al. 2011; Rowe et al. 1999). These characteristics include the following:

1. The researcher controls the information flow; hence, the process is structured.
2. The experts involved do not communicate with each other and do not know each other’s identity. It is, therefore, an anonymous process.
3. Feedback from previous rounds are consolidated by the researcher and fed back to the panel members to establish whether a consensus can be obtained. The process is, therefore, iterative and repetitive.

In a classic Delphi, the process consists of several rounds in which a questionnaire is sent to a preselected expert panel to obtain their opinions on an issue. After each round, the responses are analysed by the researcher, and the results of the analysis are consolidated and sent back to the experts. The experts then rank the statements sent back to them according to their opinion on the subject matter. The rounds continue until a reasonable consensus is obtained on some, or all, of the issues. An important criterion is that the views are expressed anonymously, thus preventing one member of the panel being unduly influenced by the opinion of another member of the panel. A contemporary Delphi allows the use of a web-based research instrument (e.g., SurveyMonkey) that enables the responses to be completed quickly and efficiently from the “expert” respondents’ office computer or smartphone.

It should be remembered that the achievement of consensus using this technique does not mean that the correct answers have been found and should not be regarded as a replacement for a rigorous review of published literature or for original research.

Since its conception, several different forms of the Delphi study have been developed, the most relevant being:

- modified Delphi, in which the face-to-face interviews or a focus group takes the place of the first postal round,
- real-time Delphi, in which a conference is used to reach a consensus,
- e-Delphi, which is similar to a classic Delphi, except that the questionnaires are sent by e-mail or input via a Web site,
online Delphi, which is similar to the classic Delphi, except that questionnaires are completed online.

A comprehensive review of the technique’s history, alternative approaches, strengths and weaknesses is provided in the recent work by Keeney et al. (2010).

Major criticisms of the Delphi technique 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 et al. 2009).

Selection of an Expert

Kenney et al. suggests that an expert is “somebody who has knowledge about a specific subject” (2001, p. 196). Donohoe and Needham propose the guideline that the expert should have experience that is suggested by the problem (2009, p.426).

In this study, it is intended to use an expert requirement criterion of the minimum size of project managed. I accepted both client- and contractor-side experience as relevant. In view of the requirement to have managed a minimum project size of $0.5 billion, I also did not require either degree level qualifications or professional certification.

The Value of Consensus and the Impact of the Pressure of Conformity

An important issue to be remembered in considering the value of consensus is that consensus itself does not guarantee a correct answer. To mitigate this problem, it is necessary to:
• ensure a thorough literature review has been performed so as to ensure that the general views of the academic and professional community have been canvassed;

• ensure that pressure to conform to the majority view is minimised and that reaching conformity does not become a goal within itself and accepting only limited consensus may be achieved.

The exact level of consensus required has been the subject of much debate. Several values have been suggested, from 51% (Loughlin et al. 1979; McKenna 1994), through 66% (Boyce et al. 1993) and 70% (Green 1982) to 75% (Keeney et al. 2006). It is generally accepted that the level of consensus required is subjective and dependent on the study’s goals.

An example given by Keeney et al. (2006) is the difference between obtaining consensus regarding the appropriate time to switch off a respirator in intensive care and obtaining consensus for an appropriate design for a nurse’s uniform. In the former case, 100% consensus would probably be a realistic goal whereas in the latter, 51% consensus may be acceptable. As the results of this study—whilst important—were not critical, it was thought that a lower range of the options suggested for consensus was acceptable; two-thirds (i.e., 67%) of the panel members in agreement was selected as the appropriate target.

The Difficulty of Maintaining Anonymity

Anonymity is often considered a key advantage of a Delphi as it allows all panel members to express their opinion freely and ensures that a panel member is not influenced by their opinion of a fellow panel member’s expertise. To help ensure anonymity in this study, techniques with no face-to-face contacts were used. Thus, the
panel members were not aware of the other panel member’s identities or their response to the various issues they were asked to address.

Lack of Universal Guidelines

The Delphi technique lacks universally agreed upon guidelines regarding such issues as the number of rounds, the size of the expert panel and the method of providing feedback to the panel. However, guidelines in the area can be found in Skulmoski et al. (2007). These guidelines were used in developing panel size, number of rounds and method of information transfer.

3.4 Research Design

3.4.1 Autoethnography

As outlined in section 3.3.1, the autoethnography is based on my reflections as a project manager. It covers a 35-year period and provides 33 vignettes that contain details of the experiences I had during that time frame and the lessons I learned as a result of those experiences. The analysis then identifies the skill needs that the experience highlighted and continues by discussing the EI competencies that were needed or displayed in the event discussed. The autoethnography was then reviewed to provide a ranking of the competencies based on the number of times they are identified in the autoethnography.

3.4.2 The Delphi Study

A pilot study was implemented, the structure of which was based on the management problems identified in the literature review and the competencies contained in the Goleman-Boyatzis model.
Results from this pilot study were used to develop an E-Delphi (SurveyMonkey) consisting of six rounds in which each round was sent to the study participants for their input.

Selection of the panel 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 the panel member to be degree qualified, 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.

Round 1 canvassed the study members’ views of the importance of PMBoK and soft skills as the project size increased and their views concerning the problems identified in the literature concerning the unique nature of projects. Additionally, panel members were asked to indicate the frequency with which they had encountered the project problems under discussion. In this round, the panel members were also invited to identify any further problems they had encountered in practice and any factors they had found important in the successful delivery of a project.

In rounds 2 to 5, study members were asked to rank the usefulness of the specific EI competencies identified in the Goleman-Boyatzis model (2013) in dealing with the project problems presented in round 1.
Round 6 dealt with the panel’s perceived importance of reflection in career development and management of project problems.

Additionally, during rounds 2 to 6, comments received regarding issues relating to EI and further project problems or key success factors were consolidated and fed back to the panel members so as establish whether a consensus (greater than 67% agreeing or strongly agreeing) could be achieved regarding these issues.

In obtaining the opinions of panel members concerning the usefulness of PMBoK-type skills, the significance of problems in project management identified in the literature were used. When canvassing their opinions of comments received in previous rounds, a five-point Likert-type scale was used (Likert 1932). The scales used in the various questions and associated scales are summarised in Table 19.

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

The details of each round of questions are presented in Appendix A.

In ranking the panel members’ responses based on the Likert scale, the relative importance index as reviewed by (Holt 2013) and also used in construction projects by other researchers (Gündüz et al. 2012; Kometa et al. 1994; Sambasivan et al. 2007) was used. The relative importance index being based on the following formula:

\[
\text{relative importance index} = \frac{\text{sum of the score given to the problem by respondents}}{\text{maximum score that a problem could have received}}.
\]
It is noted that the results obtained were based on a Likert-type scale (Likert 1932) and were, therefore, ordinate in nature. It has, however, been argued that parametric methods may be used in this situation; thus, the calculation of the relative importance index was thought to be acceptable. For a discussion of the argument concerning the use of parametric and nonparametric methods in this situation, see for example (Carifio et al. 2008; Gardner 1996; Knapp 1990; Norman 2010).

The panel members were asked to indicate their view of the frequency of the occurrence of the problems on projects they had managed. The mean frequency of the occurrence of each problem was calculated by assuming the data in each frequency interval was uniformly distributed across the frequency interval. Thus, the midpoint of the frequency intervals could be used in estimating the mean. The frequency intervals given to the panel and resultant interval midpoints used are presented in Table 20.

<table>
<thead>
<tr>
<th>Frequency Interval</th>
<th>Interval Midpoint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very frequent occurrence (&gt; 90%)</td>
<td>95.0%</td>
</tr>
<tr>
<td>Frequent occurrence (&lt; 90% but &gt; 75%)</td>
<td>82.5%</td>
</tr>
<tr>
<td>Average occurrence (&lt; 75% but &gt; 25%)</td>
<td>50.0%</td>
</tr>
<tr>
<td>Infrequent occurrence (&lt; 25% but &gt; 10%)</td>
<td>17.5%</td>
</tr>
<tr>
<td>Seldom occurrence (&lt; 10%)</td>
<td>5.0%</td>
</tr>
</tbody>
</table>

The mean frequency (MF) was then calculated using the following formula:

\[
MF = \frac{\text{sum of results in each frequency interval} \times \text{the interval midpoint}}{\text{the number of data points}}
\]

In analysing the statistical significance of the difference in EI rankings obtained in rounds 2 to 5, the Friedman test was employed; where appropriate, based on the Friedman test results, a post hoc test was performed using the Wilcoxon signed-rank test. Both of these tests are deemed appropriate for ordinate and continuous data. For a discussion of these tests, see (Sheldon et al. 1996; Zimmerman et al. 1993).

The major assumptions required for use of the Friedman test are the following:
1. There is a minimum of three measurements per group.

2. The group is a random sample from the population.

3. The dependent variable (in this case EI) is measured at the ordinal or continuous level.

4. The sample does not need to be normally distributed.

The results from the Delphi study regarding EI rankings met these assumptions.

For use of the Wilcoxon post hoc analysis, the following assumptions are made:

1. The dependent variable (in this case EI) is measured at the ordinal or continuous level.

2. The independent variable should consist of two categorical “related groups” or “matched pairs,” i.e., the same subjects (in this case panel respondents) are present in both groups being compared.

3. The distribution of the differences between the two related groups needs to be symmetrical in shape.

Again, the results from the Delphi study regarding EI rankings met these assumptions.

In both tests, the hypotheses used were the null hypothesis (H0), that there is no difference in the distributions; and the alternative hypothesis (Ha), that there is a difference in the distributions. To test these hypotheses, a $p$ value of 0.05 was used. In performing the analysis as described above, SPSS (IBM 2013) was used.
Chapter 4: Autoethnography Results

4.1 Introduction

This autoethnography section not only outlines my lived experience as a project manager but also introduces key experiences that, although not in a project management context, do in themselves provide important insights that I have used during my career as a project manager and which had a significant impact and influence on my management style.

In developing this autoethnography, I relied on a reflective methodology using the insights provided by several authors (Boud 2001; Loo 2002; Moon 2004; Schön 1988, 1991).

The autoethnography provides a description of the events and my reflections on these events. It then goes on to discuss what lessons I have learned from the events and finally provides a summary of those EI competencies, based on the Goleman-Boyatzis model (Goleman et al. 2013) as outlined in Table 10 in section 2.8.2, that I believe would have assisted me in dealing with the events or were displayed by the events.

4.2 Autoethnography Results

The results of the autoethnography are presented in this section and compared with the relevant EI competencies contained in the Goleman Boyatzis model (Goleman et al. 2013) in Table 38.
### Event No. 1 Description

During my youth, I was a member of a table tennis team that won the league’s new entrants knockout. I and another player (John) went on to play for first-division teams with varied success. I returned to my hometown to attend John’s wedding. He politely enquired as to how another team member had done at university, and I replied, “Very well. He graduated with an honours degree.” My friend stunned me with his response, this being, “Yes, maybe. But he’s still an idiot. I bet he still can’t loop drive.” Loop drive being an especially difficult shot at table tennis that he had mastered.

<table>
<thead>
<tr>
<th>Learned Experience</th>
<th>People will judge you based on their skill set and not on yours.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resultant Skill Need Identified</td>
<td>Be careful not to assess team members against your strengths. Look at their strengths and see how you can use them.</td>
</tr>
<tr>
<td>EI Competency Needs Identified</td>
<td></td>
</tr>
<tr>
<td><strong>Developing others:</strong> sensing others’ development needs and bolstering their abilities**</td>
<td>This experience provides a good example of the need for this competency. If a project manager judges others by his or her own skill set, he or she would not see the potential contribution of team members who, whilst lacking his or her skill level in particular areas, may have skills in others that are—in fact—highly valuable. This competency enables the project manager to deal with a team member’s skill shortage by providing support using other team members’ skills or eliminating the skill shortage through further training.</td>
</tr>
</tbody>
</table>
In my first professional position in an operational situation, I was able to ask the plant superintendent, who was widely regarded as an exceptional leader, “How do you manage to make everyone, including the clerks, feel important?” His gave me a puzzled look and replied, “Because they are important.”

<table>
<thead>
<tr>
<th>Event No. 2 Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>In my first professional position in an operational situation, I was able to ask the plant superintendent, who was widely regarded as an exceptional leader, “How do you manage to make everyone, including the clerks, feel important?” His gave me a puzzled look and replied, “Because they are important.”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Learned Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>On reflection, I realised the truth of his statement. All team members are important, as without their contribution, the job/project would not be completed. Prior to this conversation, I had an intellectual understanding of the importance of team members. This was the first time I had an emotional realisation of their significance.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Resultant Skill Need Identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to appreciate the contribution of each member and letting them know their input is of value.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EI Competency Needs Identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teamwork and collaboration: working with others toward shared goals and guiding the group to achieve a collective goal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Commentary</th>
</tr>
</thead>
<tbody>
<tr>
<td>This was a good display of the teamwork and collaboration competency. By valuing each team member’s contribution, the plant superintendent was able to build a strong, committed team that worked well towards achieving its goals.</td>
</tr>
</tbody>
</table>
I was an assistant plants superintendent, and my career with the company was going well. I found it extremely hard to get on with another influential staff member whom, while not in my department, I had to come into contact with on a daily basis. Eventually, rather than try to work through the problems, I let my feelings of dislike get the better of me, and I resigned, giving up a promising future with the company.

Two weeks after I had left the company, the person with whom I had the conflict left. The thought occurred to me that I had thrown away a good opportunity in the heat of the moment, and a little patience would have made all the difference.

<table>
<thead>
<tr>
<th>Learned Experience</th>
<th>Try to resolve the situation, as acting on impulse seldom leads to the desired outcome. It is better to try to resolve conflicts than to avoid them and let them escalate.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resultant Skill Need Identified</td>
<td>Controlling emotions so as not to act in a temper or on impulse and the ability to resolve conflicts.</td>
</tr>
<tr>
<td>EI Competency Needs Identified</td>
<td>Comment</td>
</tr>
<tr>
<td><strong>Emotional self-control:</strong> keeping disruptive emotions and impulses under control</td>
<td>This experience would have been avoided if I had possessed the EI competency of emotional self-control and had been able to resist the urge to give in to my negative feelings. If I had been able to control my feelings, I might have stayed in an excellent position and perhaps been able to resolve my conflict.</td>
</tr>
<tr>
<td><strong>Conflict management:</strong> resolving disagreements when they occur or preventing a disagreement from happening or growing</td>
<td>If I had possessed this competency, I would have been able to resolve the dispute and avoid the loss of control I exhibited.</td>
</tr>
<tr>
<td><strong>Emotional self-awareness:</strong> recognising our emotions and their effects on personal performance including recognition of a tendency to avoid issues or situations</td>
<td>This competency involves understanding your emotions and the effect on your performance. As a result of this example, I came to realise I disliked conflict and, therefore, tried to avoid it. While I had made some effort to resolve the dispute because of my dislike of conflict, I do not believe any conflict management skills I had were fully engaged.</td>
</tr>
</tbody>
</table>
I had just obtained my first project engineering position and presented my report to my superior. After listening politely, he asked what I had done about long lead items. Seeing the blank look on my face, he added, “That would be items that would take a long time to get here.” I still looked blank, and he added, “You should find out what items are going to take a long time to get here and let me know what you are going to do about them.” Fortunately for me, I did what he asked.

<table>
<thead>
<tr>
<th>Learned Experience</th>
<th>Obtaining a mentor and doing what they advise is important.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resultant Skill Need Identified</td>
<td>Do not get upset when a project member does not have the skills they need for the job. It is your job to teach them. Only judge after you have given training.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EI Competency Needs Identified</th>
<th>Commentary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developing others: sensing others’ development needs and bolstering their abilities</td>
<td>Fortunately for me, my superior had this competency and saw my development need that he could meet with training.</td>
</tr>
<tr>
<td>Emotional self-control: keeping disruptive emotions and impulses under control</td>
<td>I also believe this is an example of emotional self-control, insofar as my superior was a lasting example of how to deal with this situation. He controlled any negative emotions he may have had in relation to my inferior job performance and allowed me to develop as a team member.</td>
</tr>
</tbody>
</table>
**Event No. 5 Description**

I was working as area plant manager in a moderately remote area of Angola. I received a letter from my wife letting me know that whilst pregnant with our second child, she had caught German measles and wanted to talk to me about the situation. No telephone contact was available from Cafunfo to areas outside Angola, so I contacted my superior, told him of the problem and asked him to arrange a flight for me, first to his location (Dundo) and then to Luanda, the capital, from where I could telephone my wife. He agreed, and I duly caught the plane to the local capital where he met me and gave me a return ticket to the UK, saying the issue was far too important to be settled by telephone, and I should take as long as I needed in the UK to sort out our problem. This was despite the company having significant production problems at the time. The impact of this gesture on me was tremendous, and no amount of money could have bought the loyalty I felt towards him and the company.

<table>
<thead>
<tr>
<th>Learned Experience</th>
<th>I had been on several management courses that taught you that your people are the most important asset you have and you should take the time to help them with their personal problems. This was the first time I had understood that teaching at an emotional level.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resultant Skill Need Identified</td>
<td>Put your team members first. When they come to you with a problem, do not consider the project, or your needs. Rather, put them first and help them with their problems.</td>
</tr>
<tr>
<td>EI Competency Needs Identified</td>
<td>Commentary</td>
</tr>
<tr>
<td>Empathy: understanding others’ feelings and perspectives and taking an active interest in their concerns</td>
<td>In this event, my superior clearly demonstrated empathy for my situation. On reflection, I realised this action had bought him far more loyalty and resultant commitment than any financial consideration could have done.</td>
</tr>
</tbody>
</table>
During my time studying for an MBA, I remember a lecturer in organisational behaviour asking the class who hated politics and who did not want to get involved in corporate politics. Over 50% of the room raised their hands. He commented, “You guys are wasting your time doing this MBA. Politics are inevitable in an organisation. You need to grow to understand them and how to use them.” I suddenly realised he was right, and politics was not bad. In fact, they were neutral, and from that moment on, I decided to try to understand each organisation’s politics and how I could use them to the good.

<table>
<thead>
<tr>
<th>Learned Experience</th>
<th>Do not regard politics as a negative force but as an inevitable outcome of people working together in organisations.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resultant Skill Need Identified</td>
<td>Need to understand and learn how to use organisational politics.</td>
</tr>
<tr>
<td>EI Competency Needs Identified</td>
<td>Commentary</td>
</tr>
<tr>
<td>Organisational awareness: understanding the organisation’s issues, dynamics and politics</td>
<td>This experience brought home to me that if I wished to succeed in project management, I would need to develop the competency of organisational awareness if I were to obtain the necessary internal and external support that running a project requires.</td>
</tr>
</tbody>
</table>
In my position as a departmental head for a small engineering company, I was responsible for the input into bids for future projects. At the time, I prided myself on the “clever” wording I put into proposals that, whilst not strictly dishonest, would take a significant effort by the client to decipher the true intent of the company’s offer. This enabled the company to bid a lower price for the project and thereby win the projects. The fact that the scope of work offered may have differed substantially from that which the client clearly wanted did not disturb me. Obviously, this approach had a tendency to result in disputes that were in themselves costly.

In discussions about one of the disputes and the probable causes of the conflict with my wife, she asked the question: “Have you ever considered that the economic cost of what you are doing may outweigh the economic advantage? and, by the way, until you told me this, I actually thought you were a person of integrity.”

I decided that my wife might have a point, as the cost of disputes and the resultant loss of any repeat business was obviously considerable. When I analysed and more deeply thought this through, it occurred to me that I was applying a different standard of ethics to my personal life than I was to my business life. This is not acceptable.

The need to act with integrity both in my business and private life.

This conversation focused my attention on the need to act with integrity in both my business and private life and hence the need for the EI competency of transparency.

My actions in this example clearly demonstrated a lack of this competency, as I had no regard for other people’s feelings or concerns. My concentration was centred only on winning the job at all costs.
I was involved in a number of bids, and I believed one of the estimators was too conservative. Despite being asked not to include any contingency in his estimates, it was apparent to me that he did include contingency. As I used to review the bid with the engineering manager, and we would add an allowance for risk (i.e., contingency) based on the accuracy of the estimate in a particular area, this would make the price unfavourable. I expressed my concern to the engineering manager. He asked me why this bothered me. I duly told him, and he replied:

“There is no real problem as he always does that, and I know to allow for it as it is always the same amount. It is not the people who make the same mistake over and over again that you need to worry about. It’s people who make random errors.”

<table>
<thead>
<tr>
<th>Event No. 8 Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>I realised that this was an extension of my loop drive experience. There was no need to demand that a person be perfect in a particular area. The requirement sought after was someone who was adequate and consistent. From this, I learned that good team performance is able to be achieved with imperfect but consistent team members. You just need to support them.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>I realised that this was an extension of my loop drive experience. There was no need to demand that a person be perfect in a particular area. The requirement sought after was someone who was adequate and consistent. From this, I learned that good team performance is able to be achieved with imperfect but consistent team members. You just need to support them.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Resultant Skill Need Identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to work with and support team members so as to develop their skill or ensure that other team members supported their lack of skill.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EI Competency Needs Identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commentary</td>
</tr>
<tr>
<td>Developing others: sensing others’ development needs and bolstering their abilities</td>
</tr>
<tr>
<td>The learning experience and skill need clearly shows the requirement for this competency.</td>
</tr>
</tbody>
</table>

| Emotional self-control: keeping disruptive emotions and impulses under control |
| On further reflection, it would appear that the competency of emotional self-control is also highlighted in this event. If this competency is not developed, there will be a tendency to give way to an expression of frustration when a team member’s failure is brought to light. This may not be the best course of action, as a more considered response; that being, recognising the team member’s strengths rather than focusing on their weaknesses would seem to be more appropriate. This takes emotional self-control. |
My wife was discussing a section of a self-development book she had been reading. The story concerned a struggling baseball pitcher who met with the new team coach. The coach saw him practising and said, “What is your best pitch?” The pitcher replied, “My fastball then my slider then my curveball.” The coach then asked what the pitcher’s practice schedule was, and the pitcher said, “I spend 80% of my time on my curveball as it’s the worst, 15% on my slider, and 5% on my fastball.” The coach said, “Change your schedule to spending 80% of your time on your fastball.” The following year the pitcher became one of the league’s top pitchers.

<table>
<thead>
<tr>
<th><strong>Event No. 9 Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>My wife was discussing a section of a self-development book she had been reading. The story concerned a struggling baseball pitcher who met with the new team coach. The coach saw him practising and said, “What is your best pitch?” The pitcher replied, “My fastball then my slider then my curveball.” The coach then asked what the pitcher’s practice schedule was, and the pitcher said, “I spend 80% of my time on my curveball as it’s the worst, 15% on my slider, and 5% on my fastball.” The coach said, “Change your schedule to spending 80% of your time on your fastball.” The following year the pitcher became one of the league’s top pitchers.</td>
</tr>
</tbody>
</table>

| **Learned Experience** | The importance of using my strengths and not to being afraid of my weaknesses. |
| **Resultant Skill Need Identified** | The ability to identify and use my strengths, coupled with the need to identify and develop a support mechanism for my weaknesses. |

| **EI Competency Needs Identified** | **Commentary** |
| **Accurate self-assessment:** Knowing our strengths and limits. | This conversation brought home to me the importance and need for this competency so that I could accurately identify my strengths and weaknesses. |
| **Self-confidence:** a strong sense of one’s self-worth and capabilities | I also consider that this event highlighted the need to have a belief in my capabilities, and whilst accepting my weaknesses was important, provided they were properly managed, I had no reason to believe that they would detract from my ability to succeed. |
| **Developing others:** sensing others’ development needs and bolstering their abilities | This competence was also relevant to this experience, as it would enable me to look past a team member’s weak “curveball” to see his “fastball” and thereby assess where to place him in the team. |
Event No. 10 Description
I was working for a listed company as a project manager and was on extremely good terms with the MD. The MD entirely disagreed with the manner in which the chairman was behaving with regard to the major project the company was currently engaged in. Through discussions with the MD, I realised the likelihood was that during the next board meeting, he was going to highlight his disagreement in relation to these issues with the chairman. I thought he was correct but cautioned him that his actions were doomed to failure as the chairman had personally chosen the board members, and it was clear that they regarded him as a friend and benefactor. Needless to say, the MD ignored my advice, made his disagreement known and had his employment terminated.

<table>
<thead>
<tr>
<th>Learned Experience</th>
<th>It is essential to be aware of the politics of the situation before taking any action. Being right is not in itself sufficient. It is also essential not to give way to your feelings of frustration.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resultant Skill Need Identified</td>
<td>The need to be politically aware and have the control to avoid unwinnable fights. The ability to resolve conflicts.</td>
</tr>
<tr>
<td>EI Competency Needs Identified</td>
<td>Commentary</td>
</tr>
<tr>
<td>Organisational awareness: understanding the organisation’s issues, dynamics and politics</td>
<td>Possession of this competency would almost certainly have guided the MD into taking a different path to resolving his problems with the chairman, as he could not succeed without the support of the other board members.</td>
</tr>
<tr>
<td>Emotional self-control: keeping disruptive emotions and impulses under control.</td>
<td>This competency would have assisted the MD in controlling his actions, resulting from his feelings of frustration at what he considered to be the illogical behaviour of the chairman.</td>
</tr>
<tr>
<td>Conflict management: resolving disagreements when they occur or preventing a disagreement from happening or growing</td>
<td>If the MD had possessed this competency, he may have been able to resolve his dispute with the chairman.</td>
</tr>
</tbody>
</table>
Event No. 11 Description

I was appointed project manager for a construction company that had just signed a fixed price design and construction contract with a major client. The MD of the construction company had just had a very satisfactory experience in a much smaller contract that had been run on a partnering basis. The MD suggested to the relevant senior managers in the client’s organisation that we should attempt to run this new contract on the same basis. As part of the alignment process, I was required to review the literature on the objectives of a partnership and the manner in which they worked. At various meetings between myself and my senior management and other meetings with the senior client representatives, it became apparent to me that there was a lack of commitment to the partnering process that, in this case, eventually failed. The literature did, however, have an impact on me, as I suddenly appreciated that whilst it was necessary to deliver the scope required by the terms of the contract, genuine problems could arise in their delivery. These problems could often be best solved, to the benefit of both parties, by working together to resolve them rather than taking the adversarial approach that I was used to. Other problems worth mentioning were that the company’s inability to accept mistakes and the client’s eventual adversarial approach to all problems resulted in a significant legal dispute.

Learned Experience

I realised that rather than regarding the client (or the subcontractor) as my adversary, all would be better served if I accepted that we were working towards a joint goal and that behaving cooperatively would probably produce better results than my previous adversarial approach. This coupled with event 7 led me to the conclusion that irrespective of moral considerations, an honest approach resulted in the best economic outcome.

On further reflection, I had to accept that if I had been able to see things more from the client’s point of view and been able to resolve conflict, a better result might have been achieved.

To do this, I would also have had to control my negative emotions towards the client’s project manager who I found very difficult to deal with.

Resultant Skill Need Identified
Ability to be ethical, to resolve disputes, to work towards joint goals and to control negative emotions.

EI Competency Needs Identified

<table>
<thead>
<tr>
<th>Service orientation: recognising and meeting customer needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>This competency would have enabled me to understand the client’s needs and behave in a more cooperative manner.</td>
</tr>
<tr>
<td>Commentary</td>
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</tbody>
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</thead>
<tbody>
<tr>
<td>This competency would have enabled me to understand the client’s needs and behave in a more cooperative manner.</td>
</tr>
<tr>
<td>Commentary</td>
</tr>
<tr>
<td>Event No. 11 Continued</td>
</tr>
<tr>
<td>------------------------</td>
</tr>
<tr>
<td><strong>Emotional self-control:</strong> keeping disruptive emotions and impulses under control</td>
</tr>
<tr>
<td><strong>Conflict management:</strong> resolving disagreements when they occur or preventing a disagreement from happening or growing</td>
</tr>
<tr>
<td><strong>Transparency:</strong> maintaining integrity, acting congruently with one’s values.</td>
</tr>
<tr>
<td><strong>Teamwork and collaboration:</strong> working with others toward shared goals and guiding the group to achieve a collective goal.</td>
</tr>
</tbody>
</table>
Event No. 12 Description

I was the study manager for a mine development. During the course of the study, I was asked to organise the design of a small upgrade for the mine. The upgrade was difficult as it was on an operating mine, and we were requested to minimise any downtime. The upgrade had problems, part of which was due to us attempting to route a new conveyor through an existing beam. This beam had somehow managed to be misplaced on our survey, no drawings having been available. I was contacted and informed of the problem, and my response was to apologise and say we would fix the problem by working through the weekend and send the drawings by Monday. When asked about the cost (the job was on a cost-plus basis), I responded we would, of course, not charge for the redesign. However, the cost of the replacement beam was not ours, as the beam always had to be replaced.

I later visited the site as part of the study and was invited out to dinner by the mine manager. During the dinner, the mine manager informed me that as far as he was concerned, I had misadvised him on the job and made serious mistakes. As a result of this, he had seriously considered getting rid of the company for which I worked. However, we had done everything we could to address the problem rather than try to argue it was not our fault. This was different from the experience he had with other consultants and subcontractors. He decided that despite the problems I had caused him, he wanted to continue to do business with a company that behaved in this manner.

<table>
<thead>
<tr>
<th>Learned Experience</th>
<th>This was probably the first time I had experienced the economic benefits of honesty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resultant Skill Need Identified</td>
<td>The ability to take responsibility for mistakes.</td>
</tr>
<tr>
<td>EI Competency Needs Identified</td>
<td>Commentary</td>
</tr>
<tr>
<td><strong>Transparency:</strong> maintaining integrity, acting congruently with one’s values.</td>
<td>This competency was needed for me to be able to accept and admit my mistake.</td>
</tr>
</tbody>
</table>
**Event No. 13 Description**

On advising my client on claims, I have found that there is a tendency for the project manager not to warn the client’s representative of problems as they arose and at the end of the job present a significant claim. If the client’s representative has not been made aware of the possibility of such a claim, they in turn have not warned their superiors of any problems with the job they were responsible for supervising. Therefore, when the project manager presents the significant claim, it is often denied, as the client’s representative feels he is in an untenable position with his senior management or that they had been misinformed and were not given the opportunity to minimise any loss. In any event, subsequent negotiations prove difficult.

I should add that when I have acted as a client’s representative, I have made it clear that I would be prepared to review all claims on their merits. If, however, a claim was submitted after an unreasonable length of time, or I had not been given the opportunity to mitigate the loss, I would ruthlessly apply the time bar available to me.

<table>
<thead>
<tr>
<th>Learned Experience</th>
<th>For a claim to have a reasonable chance of success, the client should be advised as soon as possible of the potential claim and be given the opportunity to be involved in considering alternatives that may reduce the cost of the claim. While this approach often leads to conflict in the short term, a more prolonged dispute can be avoided.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resultant Skill Need Identified</td>
<td>The ability to continually communicate with the client and warn them of any costs that will result from their actions or lack of actions.</td>
</tr>
<tr>
<td><strong>EI Competency Needs Identified</strong></td>
<td><strong>Commentary</strong></td>
</tr>
<tr>
<td><strong>Transparency:</strong> maintaining integrity, acting congruently with one’s values</td>
<td>This competency is needed for the project manager to develop an approach to claims that are both transparent and credible. It assists in mitigating the temptation to make unrealistic claims.</td>
</tr>
<tr>
<td><strong>Service orientation:</strong> recognising and meeting customer needs</td>
<td>This competency helps in identifying the client’s need to be kept adequately informed, a need not met in this example.</td>
</tr>
<tr>
<td><strong>Organisational awareness:</strong> understanding the organisation’s issues, dynamics and politics</td>
<td>In addition to appearing to lack the competency of service orientation, the personnel in this example showed a lack of organisational awareness with respect to the politics in the client’s organisation.</td>
</tr>
<tr>
<td><strong>Conflict management:</strong> resolving disagreements when they occur or preventing a disagreement from happening or growing</td>
<td>This competency is required to cope with the conflict that frequently results when claims are presented.</td>
</tr>
</tbody>
</table>
**Event No. 14 Description**
The estimators had correctly priced the cost of an underground tunnel to carry a conveyor. However, two tunnels were required and the estimators had failed to multiply their price by two. This error resulted in a bottom line hit of almost 5% of the project value. Senior management felt it was incumbent on them to be involved, and as a consequence, all decisions had to involve external consultants and the highest level of management. As a result, the award of any contract involved several steps. In turn, progress was reduced and team morale suffered badly.

<table>
<thead>
<tr>
<th>Learned Experience</th>
<th>Losses will occasionally occur through no fault of the project team. Introducing a detailed micromanagement system to try to improve the situation does not have a beneficial effect, as it reduces the ability of the team to be part of the solution.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resultant Skill Need Identified</td>
<td>The ability to involve the project team in developing solutions to the problem.</td>
</tr>
<tr>
<td>EI Competency Needs Identified</td>
<td>Commentary</td>
</tr>
<tr>
<td><strong>Teamwork and collaboration:</strong> working with others toward shared goals and guiding the group to achieve a collective goal.</td>
<td>This competency is needed if the team is to be led in a manner that results in successful problem solving.</td>
</tr>
</tbody>
</table>
Event No. 15 Description

The project I was running was not progressing as well as expected, and I decided to run a team building exercise. A psychologist was brought in to facilitate a team building exercise. One of his exercises involved asking everyone to discuss their goals for the project. Answers included:

“To build a plant I will be proud to show my children.”
“To be involved in a job that I can use for a reference.”
“To do a job that impresses the client.”

When asked, I responded somewhat sheepishly that my goal was to make a profit.

The whole experience was a major revelation to me, as I had always assumed that we all had the same goals.

<table>
<thead>
<tr>
<th>Learned Experience</th>
<th>Team members have their own unique goals, and these goals influence their behaviour on the project.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resultant Skill Need Identified</td>
<td>The ability to understand and take an interest in the goals of team members and the ability to influence them and work towards a common goal.</td>
</tr>
<tr>
<td>EI Competency Needs Identified</td>
<td>Commentary</td>
</tr>
<tr>
<td><strong>Empathy:</strong> understanding others’ feelings and perspectives and taking an active interest in their concerns</td>
<td>This competency is needed if other people’s interests are to be understood and taken into account.</td>
</tr>
<tr>
<td><strong>Teamwork and collaboration:</strong> working with others toward shared goals and guiding the group to achieve a collective goal.</td>
<td>In this example, I showed a complete lack of this competency, as I had not realised that the team members were working towards individual rather than group goals.</td>
</tr>
<tr>
<td><strong>Influence:</strong> The ability to persuade others</td>
<td>This competency would have assisted in enabling me to persuade the team members to work for a shared goal.</td>
</tr>
</tbody>
</table>
Event No. 16 Description

A group of stakeholders had a strong concern about the impact of the project on their local environment. It eventually became apparent that their concern for their environment far outweighed any value they may have placed on the benefit of the project. I was slow in realising this, and the project faced the prospect of a delay due to a protected legal dispute. In the end, it was possible to meet the stakeholders’ demands, although additional costs had to be borne by the project.

**Learned Experience**

It is necessary to communicate with stakeholder groups as early as possible, understand their objections and take them seriously. The ability to identify the underlying causes of a dispute and resolve those issues before the dispute escalates.

**Resultant Skill Need Identified**

The ability to communicate with and to understand others. The ability to resolve conflicts.

**EI Competency Needs Identified**

**Commentary**

**Service orientation: recognising and meeting customer needs**

Although a stakeholder is not traditionally regarded as a customer, I would argue that understanding their needs is important and, therefore, that this competency is relevant in this context.

**Empathy: understanding others’ feelings and perspectives and taking an active interest in their concerns**

In this example, I failed to understand the true concerns of the stakeholders. I might have avoided this situation if I had mastered this competency.

**Conflict management: resolving disagreements when they occur or preventing a disagreement from happening or growing.**

This competency, if properly applied, may have enabled me to resolve this dispute earlier.
Event No. 17 Description

The project was approaching completion, and the equipment necessary was being commissioned. This was to be achieved by a particular date several months ahead. The project team was unanimous in their opinion that this date could not be met. I realised that it was the size of the task that was daunting the team, and there was also a definite lack of confidence. To overcome this problem, I encouraged the team to develop a series of weekly goals and, in the last few weeks, daily goals. As more and more of these smaller goals were met, the confidence of the team increased dramatically, and commissioning was completed only one day late rather than the several weeks that had been predicted at the start of the commissioning period.
I should add that I had very little technical expertise in the manufacturing area, and the success of the project was entirely due to a joint effort by the engineering, manufacturing, and commissioning teams.

<table>
<thead>
<tr>
<th>Learned Experience</th>
<th>Do not be daunted by the size of the problem. Break the problem down into manageable steps and focus on each step individually.</th>
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</thead>
<tbody>
<tr>
<td>Resultant Skill Need Identified</td>
<td>The ability to build team morale by getting its members to focus on small achievable goals.</td>
</tr>
<tr>
<td>EI Competency Needs Identified</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Teamwork and collaboration: working with others toward shared goals and guiding the group to achieve a collective goal.</th>
<th>This competency is required to assist the team in achieving a major goal.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspirational leadership: inspiring and guiding others.</td>
<td>The situation required the motivation of a demotivated team lacking belief in itself. This competency is needed to achieve this requirement.</td>
</tr>
<tr>
<td>Optimism: persistence in pursuing goals despite obstacles and setbacks</td>
<td>This event provided a good example of the need for this competency, as without it, it would have been easy to regard the completion of the goal as unattainable.</td>
</tr>
</tbody>
</table>
### Event No. 18 Description

I had taken over as the project manager of a project that was failing to make significant progress. As I got to know the team members better, it became apparent to me that certain key team members who held managerial roles, whilst possessing a great deal of technical expertise, did not have the skill set to be in a managerial position. It was clear to me that they had been promoted into their present positions without any training and, in at least two cases, without any real desire to fulfil a management function. Fortunately, I was able to keep the key members and retain their technical expertise by reorganising the project team in such a manner that they were removed from the day-to-day requirements of design management. 

It was then necessary to identify engineers who were interested in a management position and who could be provided with the appropriate training to fulfil their management ambitions.

<table>
<thead>
<tr>
<th>Learned Experience</th>
<th>Do not appoint an individual to a management role simply because he is highly competent in his field of expertise. Management ability is a learned skill, and training courses should be provided to assist potential managers prior to their appointment.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resultant Skill Need Identified</td>
<td>The ability to assess the full skill set of team members and ensure they are working in roles appropriate to their skill set and interest. The ability to identify weaknesses and provide training where appropriate.</td>
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</table>

<table>
<thead>
<tr>
<th>EI Competency Needs Identified</th>
<th>Commentary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developing others: sensing others’ development needs and bolstering their abilities</td>
<td>This competency was required to assess successfully that the engineers lacked the skills required for their position and to be able to assess that they were not interested in developing the skills needed to be a successful manager. The competency was also required in identifying other team members who were interested in developing management skills and providing the training they needed to be successful in their new positions.</td>
</tr>
<tr>
<td>Self-confidence: a strong sense of one’s self-worth and capabilities</td>
<td>This competency was needed to maintain a belief that my decisions with respect to the team structure were correct.</td>
</tr>
<tr>
<td>Change catalyst: initiating or managing change</td>
<td>This competency is needed when major changes are to be introduced into the project team as was required in this situation.</td>
</tr>
</tbody>
</table>
It was whilst running a project of around $500 million in value that I was first introduced to the humbling fact that in projects of this size, my personal impact was reduced, and I had to rely on the project team members working together successfully. I did all I could to ensure everyone knew their roles and what was expected of them, but I continued to worry that the team was not clicking. I finally realised the team was working well when I had a visit from a team member who was responsible for ensuring a certain event happened on a daily basis. If this event did not happen, the project would suffer a delay, and a committed cost would be wasted. He informed me that due to the pressure of other work, he had forgotten to fill out some necessary paperwork, and the event could not happen (with about two hours of warning). While I was trying to decide what to do next, a fellow team member with whom he had worked previously piped up, “Don’t worry. I saw you had forgotten the form, and I did it for you.” At that point, I knew I had a good team.

Learned Experience
For a large project to succeed, a team that works well together is essential. No matter how hard you try, you will never encapsulate in a job description all the requirements of an individual if the team is to work together at a high level.

Resultant Skill
The ability to team build.

EI Competency Needs Identified

| Teamwork and collaboration: working with others toward shared goals and guiding the group to achieve a collective goal | This example emphasises the need for this competency. The problem with large projects is that there are so many small events occurring that without a team working together, items will be missed that have a snowballing impact on the project costs and duration. |
| Self-confidence: a strong sense of one’s self-worth and capabilities | I came to realise that working at developing a strong team required a great degree of self-confidence as there was always the worry that you were making yourself redundant or would miss something of importance. |
The project I was looking after ran into several program problems mostly concerned with the late delivery of materials, affecting the planned construction methodology. After each piece of bad news, we would hold a workshop and reschedule the construction methodology to try to deal with the late arrival of a particular component. Thus, we moved from plan to A to perhaps plan F or G. During this process, I found myself wanting to give up and obviously had to deal with similar feelings from the team members. The team did, however, cope with the large number of program changes, and the final impact on timing was negligible.

<table>
<thead>
<tr>
<th>Event No. 20 Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>The project I was looking after ran into several program problems mostly concerned with the late delivery of materials, affecting the planned construction methodology. After each piece of bad news, we would hold a workshop and reschedule the construction methodology to try to deal with the late arrival of a particular component. Thus, we moved from plan to A to perhaps plan F or G. During this process, I found myself wanting to give up and obviously had to deal with similar feelings from the team members. The team did, however, cope with the large number of program changes, and the final impact on timing was negligible.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Learned Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not readily accept program delays, as there is often more flexibility than you would initially have thought. It is essential, however, to communicate with the team, as many of the best changes come from their ideas. Once a solution is embarked upon, it is necessary to explain changes and each member’s role in the revised plan to the whole team, thereby obtaining their commitment to the solution.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Resultant Skill Need Identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>The ability to stay optimistic despite setbacks and to ensure the team’s commitment to its goals is maintained. The ability to fully involve the team in developing solutions to problems concerning the project.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EI Competency Needs Identified</th>
<th>Commentary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Influence: the ability to persuade others</strong></td>
<td>The influencing competency was required as it was not sufficient to be adaptable and optimistic myself. The other team members had to be sold on believing they could deal with the changes, as without their involvement, several of the solutions would not have been found.</td>
</tr>
<tr>
<td><strong>Adaptability: the ability to adapt to change and work effectively as circumstances change</strong></td>
<td>In this situation of continual change, this competency is required. I found the competency of adaptability necessary to be successful.</td>
</tr>
<tr>
<td><strong>Inspirational leadership: inspiring and guiding others</strong></td>
<td>In this situation, this competency was required to help build the team’s belief in itself to solve the many problems that were experienced.</td>
</tr>
<tr>
<td><strong>Teamwork and collaboration: working with others toward shared goals</strong></td>
<td>This competency was required to ensure we worked as a team towards resolving the problems as they arose and kept focussed on the project’s completion goal.</td>
</tr>
<tr>
<td><strong>Optimism: persistence in pursuing goals despite obstacles and setbacks</strong></td>
<td>The need for optimism is highlighted in this example. I needed to remain optimistic that the goals could be achieved, or I would not have been able to pass this belief on to the rest of the team.</td>
</tr>
</tbody>
</table>
I was involved in running a large project, and it became my habit to have dinner with two other senior team members. I was surprised at how much information I gained and how many problems were solved during those dinners. On later projects, I would go out for drinks with various team members (mainly just enjoying their company). As they got to know me and each other better, team members started to talk more freely and underlying problems that would not see the light of day in a formal meeting were brought to light before they became huge issues.

<table>
<thead>
<tr>
<th><strong>Event No. 21 Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>I was involved in running a large project, and it became my habit to have dinner with two other senior team members. I was surprised at how much information I gained and how many problems were solved during those dinners. On later projects, I would go out for drinks with various team members (mainly just enjoying their company). As they got to know me and each other better, team members started to talk more freely and underlying problems that would not see the light of day in a formal meeting were brought to light before they became huge issues.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Learned Experience</strong></th>
<th>Do not underestimate the value of social events for information exchange and the ability to problem-solve. However, remember they are just social events.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Resultant Skill</strong></td>
<td>The need to become more involved with social activities with team members and to not only rely on the formal information exchange system of project meetings.</td>
</tr>
<tr>
<td><strong>Need Identified</strong></td>
<td></td>
</tr>
<tr>
<td><strong>EI Competency Needs</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Identified</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Teamwork and collaboration:** working with others toward shared goals

Understanding the importance of informal events was part of the development of the competency of teamwork and collaboration. This would enable me to use the information I gained in the informal meetings to identify the team’s true problems and help them achieve the project’s goals.

<table>
<thead>
<tr>
<th><strong>Empathy:</strong> understanding others’ feelings and perspectives and taking an active interest in their concerns.</th>
</tr>
</thead>
<tbody>
<tr>
<td>This competency would help in understanding and relating to other team members.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Emotional self-awareness:</strong> recognising our emotions and their effects on personal performance including recognition of a tendency to avoid issues or situations that cause us discomfort</th>
</tr>
</thead>
<tbody>
<tr>
<td>According to my profile, I am an introvert as opposed to extrovert. This means I have a preference for dealing with small groups of people. This competency would enable me to recognise this tendency and help ensure that I did not avoid social events where it was more appropriate that I attend.</td>
</tr>
</tbody>
</table>
Event No. 22 Description

I noticed that one of the team members appeared to be despondent, so I invited him into my office for a chat. He told me that he was having significant marital problems and was obviously looking for advice. As I felt this was not my area of expertise, I suggested that he and his wife may want to see a counsellor but worked out with him how I could reduce his workload. I fully intended to warn his supervisor of my conversation and that I told him to take it easy and to let me know if he wanted any time off in order to give him the space to solve his problems. Unfortunately, I did not act straight away, and I became distracted by other issues. The next thing I knew, his supervisor was coming to see me, asking me what was going on as there had been an unfortunate exchange between him and the team member in question. My lack of action could have poisoned the relationship between the two men and could easily have led to the loss of a much-valued team member.

<table>
<thead>
<tr>
<th>Learned Experience</th>
<th>When an important personal issue is identified, give it the highest priority and discuss the situation with the appropriate staff members. Do not wait until later. The importance of timely communication.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resultant Skill Need Identified</td>
<td>The ability to ensure that I placed people first and did not become distracted by less important tasks until I had dealt with the human issues.</td>
</tr>
<tr>
<td>EI Competency Needs Identified</td>
<td>Commentary</td>
</tr>
<tr>
<td><strong>Conflict management:</strong> resolving disagreements when they occur or preventing a disagreement from happening or growing</td>
<td>This competency includes the ability to see disputes coming and to head them off at the pass. This example demonstrates that lack of this competency can result in significant problems on a project.</td>
</tr>
<tr>
<td><strong>Empathy:</strong> understanding others’ feelings and perspectives and taking an active interest in their concerns.</td>
<td>In this example, I clearly showed this competency, as I was genuinely concerned for the team member’s problem. It was insensitive of me to allow myself to become distracted and not follow through as required by the competency of conflict management.</td>
</tr>
</tbody>
</table>
### Event No. 23 Description

I was brought in on a consultancy basis to help sort out the problems of a particular project. The problems resulted from the project being time critical. In order to meet deadlines, the work was being let using letters of intent, with the objective of catching up with contracts at some time in the future. The work that had been let using the letters of intent then required ongoing management and, as human resources were scarce, the same team members were organising tenders, conducting bid reviews and awarding work via the letters of intent and were also trying to manage the work that was ongoing. They were dealing with all the urgent problems (e.g. sending out tenders, awarding work and managing work) but did not have time to deal with the important items such as keeping correspondence logs and claims logs or conforming the contracts. Matters deteriorated when as they will, claims were made. Then, as no contracts had been issued, disputes arose over the contractual basis of the claim. The lack of logs made tracking the correspondence associated with each claim difficult and added an extra level of complexity to claim evaluation.

### Learned Experience

| Even the most hardworking teams, when under-resourced, will fail to perform vital tasks. As a result of this failure, significant cost and time blowouts can be experienced. |

### Resultant Skill Need Identified

| The ability to ensure the project is properly resourced and that unreasonable demands are not made on team members. The ability to talk to team members and understand the depth and breadth of their problems. |

### EI Competency Needs Identified

<table>
<thead>
<tr>
<th>Commentary</th>
</tr>
</thead>
<tbody>
<tr>
<td>This competency would have allowed my predecessor to realise that the team members were being worked beyond their capacity.</td>
</tr>
<tr>
<td>A manager with this competency would have set short-term goals, would have been aware when these were not being achieved by the team and would then have investigated why. The team’s problems could easily have been identified if short-term targets had been set and monitored.</td>
</tr>
</tbody>
</table>
Event No. 24 Description

An area manager (AM) and his contract administrator (CA) came into my office. The CA said they had received a claim that the AM did not want to pay. They had come to discuss the issue with me. I asked the AM why he did not think we should pay the claim, and he immediately went into a description of what a bad performer the claimant had been and how he had lied and attempted to mislead him. At no point did the AM mention the validity of the grounds for the claim. At this stage, I realised why I had been less than successful in settling some claims. I had been using a rational economic model based on expected value. I should have been using a more behaviourally based model, taking into consideration the requirement to effect retribution and perhaps achieve justice and fairness.

<table>
<thead>
<tr>
<th>Learned Experience</th>
<th>Using a rational expected value model can fail when dealing with claims. It is important to take into account a person’s emotional state in that they may be driven by a desire for justice and, in some cases, be motivated by revenge.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resultant Skill Need Identified</td>
<td>The ability to identify the underlying reasons for the dispute and deal with those issues.</td>
</tr>
<tr>
<td>El Competency Needs Identified</td>
<td>Commentary</td>
</tr>
<tr>
<td>Conflict Management: resolving disagreements when they occur or preventing a disagreement from happening or growing</td>
<td>This competency includes the ability to understand the emotional side of conflicts, a realisation I should have been more cognisant of at this point in my career.</td>
</tr>
<tr>
<td>Emotional self-awareness: recognising our emotions and their effects on personal performance including recognition of a tendency to avoid issues or situations that cause us discomfort</td>
<td>This competency would have enabled me to recognise that I have difficulty in dealing with emotionally charged situations. This tendency resulted in my trying to reduce all problems to a rational basis and thereby ignoring the emotional aspects of the situation.</td>
</tr>
</tbody>
</table>
I was working on a site, and it soon became apparent to me that a particular individual strongly disliked me. I could think of no reason why this individual felt this animosity toward me, as to my mind, I had not given him any reason to feel like this.

One night at the pub, I asked him why he felt this quite palpable animosity toward me. His response was that I had displayed all the characteristics of an upper-class privileged individual. In fact, a single working mother, who made great sacrifices so that I could go to university, had brought me up. The very idea was so ridiculous to me that perhaps unwisely I laughed at him. It was the intervention of our mutual associates that prevented the situation from further deteriorating. I then told him about my background and asked why he thought I was a person of privilege. He told me that during our first exchange, when I had arrived on site at 6:30 (I am acutely aware I am not at my most convivial in the early morning hours), I said, “Have you got a ladder?” He replied no, and I said, “OK,” then proceeded to walk away. I had not bothered to introduce myself and shake his hand, and he had taken this as a sign that I did not think he was worth my time.

I apologised and by way of explanation explained that I was never at my most charming at that hour of the morning. We subsequently became good friends. Similar situations in which I have inadvertently offended people have occurred many times in my career, and I have never ceased to be amazed by the ways it is possible to offend people. On the brighter side, I have also found that with a little effort, it is possible to recover the situation.

<table>
<thead>
<tr>
<th>Learned Experience</th>
<th>Event No. 25 Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Even the most innocent actions can offend people. If you speak with the person that has been offended, the situation can often be reversed. Do not let allow yourself to become overly concerned about what may have caused the problem, as it could be a minor issue. Be prepared to talk to them. No one likes confrontation, but sometimes it is necessary and can clear the air.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Resultant Skill Need Identified</th>
<th>The ability to talk to an individual about issues he/she may have with you.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EI Competency Needs Identified</strong></td>
<td><strong>Commentary</strong></td>
</tr>
<tr>
<td><strong>Conflict management:</strong> resolving disagreements when they occur or preventing a disagreement from happening or growing</td>
<td>This competency was needed in order to address the disagreement between the particular individual in question and myself.</td>
</tr>
<tr>
<td>Event No. 25 Continued</td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Emotional self-awareness:</strong> recognising our emotions and their effects on personal performance including recognition of a tendency to avoid issues or situations that cause us discomfort</td>
<td>I was aware of my dislike of conflict. Avoiding a conflict may in some circumstances be a good idea. However, in the long term, it would appear that the wiser approach is to recognise this and where possible, confront it. This competency would have enabled me to recognise this tendency and to overcome it when appropriate.</td>
</tr>
<tr>
<td><strong>Empathy:</strong> understanding others’ feelings and perspectives and taking an active interest in their concerns.</td>
<td>This competency would have enabled me to have a greater regard for people’s feelings and perhaps avoid the conflict.</td>
</tr>
</tbody>
</table>
While acting in a commercial position involving organising the request for expressions of interest and the subsequent evaluation of the submission for a major public sector project, I observed a significant tendency for the evaluation experts to favour companies with whom they were familiar. This tendency appeared to manifest itself in the form of accepting the views of methodologies put forward by familiar companies whilst strongly questioning and casting doubt on the views of less familiar companies. A considerable amount of effort had to be put into “levelling the playing field” to ensure this tendency could be overcome. This phenomenon is the result of a combination of status quo bias, loss aversion and omission bias.

**Event No. 26 Description**

<table>
<thead>
<tr>
<th>Learned Experience</th>
<th>Care must be taken to ensure that understandable biases are managed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resultant Skill Need Identified</td>
<td>The ability to influence and lead a team so as to assist in overcoming bias.</td>
</tr>
<tr>
<td>EI Competency Needs Identified</td>
<td>Commentary</td>
</tr>
<tr>
<td>Influence: the ability to persuade others</td>
<td>This competency enabled me to assist the team members to overcome their unrealised biases.</td>
</tr>
<tr>
<td>Teamwork and collaboration: working with others toward shared goals and guiding the group to achieve a collective goal</td>
<td>This competency assisted in dealing with biases and the guidance of the team towards the goal of selecting the tender that provided the best value for money.</td>
</tr>
<tr>
<td>Self-confidence: a strong sense of one’s self-worth and capabilities</td>
<td>This competency was required, as I had to believe I was correct in my analysis that the advice being given was not a true representation of the facts but was the result of certain biases.</td>
</tr>
<tr>
<td>Empathy: understanding others’ feelings and perspectives and taking an active interest in their concerns</td>
<td>This competency enabled me to understand the other engineers’ points of view and thereby work with them more effectively.</td>
</tr>
</tbody>
</table>
I was managing a large public project. It was made clear to me by a senior official in the organisation that if I delivered the project on time and to budget but in the process offended or unduly disturbed the local population, this would be regarded as having failed in the execution of my responsibilities. It was clear that the project must be delivered on time and to budget. However, my strategy had to take into account this extra requirement. As a result of this, I came to realise that there are often additional dimensions to running a project than simply delivering on time and to budget.

**Learned Experience**

Be sure you understand what is truly required of your project, as it may not simply be an on time and on budget delivery. Often the requirements of a project, particularly as expressed by different stakeholders, are in conflict.

**Resultant Skill Need Identified**

The ability to identify all the requirements of the project and deal with any resultant conflicts.

**Organisational awareness: understanding the organisation’s issues, dynamics and politics**

This competency assists in understanding the needs of the organisation whose project you are undertaking. For example, the issues and internal dynamics of private enterprise are very different from those of a public authority.

**Service orientation: recognising and meeting customer needs**

Although it could be argued that a stakeholder is not a customer, they are an organisation whose needs you must understand and where possible accommodate. This competency assists in this endeavour.

**Conflict management: resolving disagreements when they occur or preventing a disagreement from happening or growing.**

This competency is needed to resolve the requirements of the various stakeholders.
As the projects I was undertaking grew larger in scope, I realised that my day-to-day influence on events began to wane. Initially, this realisation was of great concern and gave rise to much self-evaluation. I did, however, develop and learn that I could have a reasonable influence on the overall project strategy. As recommended in the book *Seven Habits of Successful People* (Covey 1989), I realised I had to “begin with the end in sight.” The sooner I got a firm view of everything the project was trying to achieve, the better I could set up and communicate project strategies.

<table>
<thead>
<tr>
<th>Learned Experience</th>
<th>The need to achieve a result through a team rather than by individual effort. The need to develop a vision for a project and communicate that vision to the team.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resultant Skill Need Identified</td>
<td>The ability to provide a team with a vision of how the project team should behave and what we were trying to achieve. The ability to develop and lead a team.</td>
</tr>
<tr>
<td>EI Competency Needs Identified</td>
<td>Commentary</td>
</tr>
<tr>
<td><strong>Teamwork and collaboration:</strong> working with others toward shared goals and guiding the group to achieve a collective goal</td>
<td>This competency is necessary to successfully communicate a strategy involving the overall goals of the project and focussing the team on achieving those goals.</td>
</tr>
<tr>
<td><strong>Influence:</strong> The ability to persuade others</td>
<td>This competency is needed to persuade the project team to work towards goals you have identified rather than having individuals focus on their own goals.</td>
</tr>
</tbody>
</table>
**Event No. 29 Description**

During project team-building exercises, the question of what culture we want to engender for the project is a popular theme. One of the responses often heard is “We want a no-blame culture.” I have always sympathised with the request, but it has been my experience that the project suffers when I agree to this. I understand that employees do not want to be constantly concerned about the termination of their employment due to issues beyond their control that inevitably will occur. The problem arises when team members abdicate the responsibility for trying to overcome the numerous problems that arise in the course of a project. In recent years, I have changed my response to these situations to that of acknowledging I accept things go wrong, but nonetheless, I require personal responsibility. The example I use is that if a particular item of work is guaranteed by day X, on day X when delivery is expected, any excuse on that day as to why delivery cannot be achieved is not acceptable. What is acceptable is to have given advanced warning that problems have been encountered with delivery, the solutions proposed on how to overcome them, and the new delivery date is now Y.

<table>
<thead>
<tr>
<th>Learned Experience</th>
<th>There is a need to create a balance between requiring members of the project team to take responsibility for their work and not creating an unduly stressful environment in which it is hard to solve problems.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resultant Skill Need Identified</td>
<td>The ability to create a balanced environment that permits problem solving and encourages personal initiative</td>
</tr>
<tr>
<td>EI Competency Needs Identified</td>
<td>Teamwork and collaboration: working with others toward shared goals and guiding the group to achieve a collective goal</td>
</tr>
<tr>
<td>Commentary</td>
<td>An environment where individuals take responsibility for their actions and feel that they can discuss their problems is an important step in team building and therefore part of this competency.</td>
</tr>
</tbody>
</table>
I was responsible for letting a contract for an important portion of the works on a
time critical project. After discussions with the design department, I organised
that the contract would be let on a fixed-price basis.
Two days after the contract was let, some 30% of the drawings were reissued
with alterations.
The subcontractor felt that he had been misled, and certain members of the
project team felt they had the advantage over the subcontractor, as he had
indicated he was prepared to accept changes to the design. The disagreement was
over the magnitude of the changes he agreed to accept. The situation had all the
makings of a protracted dispute. I decided it was appropriate to admit my error
and admit that the form of contract was inappropriate. After further discussion,
the fixed-price contract was changed to a rates contract. Delivery was achieved
on time and with very little change to the budget.

| Learned Experience | Once a mistake has been made, the best option is to
admit it and then try and adopt the best available
solution. |
|-------------------|--------------------------------------------------|
| Resultant Skill    | The ability to admit a mistake and then deal with the
Need Identified     | consequences.                                    |
| EI Competency Needs| Commentary                                       |
| Identified         |                                                  |
| Conflict management: | An essential part of this competency is preventing
resolving disagreements when they occur | a disagreement from arising. If I had tried to enforce an
preventing a disagreement from happening or | unreasonable and, some would argue, unconscionable
| growing             | contract, disagreements would obviously have     |
| Transparency:      | resulted. These disagreements would have been costly |
| maintaining integrity, | and would have even potentially delayed the project. |
| acting congruently | An essential part of this competency is taking    |
| with one's values   | responsibility for your actions as was required in  |
|                    | this example.                                    |
### Event No. 31 Description
A manager who reported to me was not making satisfactory progress on a project. In fact, it had virtually stalled. I had several conversations with the project manager; I came to the conclusion that the reason the project was not progressing was that he was always trying to get more information to enable him to make a better decision rather than making the best decision he could with the information he had available. The high level of uncertainty and resultant risk was in effect paralysing his decision-making process.
Eventually I had to move him out of his project management role into a procurement role where the environment was better suited to his personality.

### Learned Experience
Intelligence alone is not sufficient to run a project. It takes a particular personality type to make decisions on limited information and be able to do that even knowing the decision might later be proven inferior to another alternative.

### Resultant Skill
The ability to make decisions in an environment of uncertainty.

### Need Identified
The ability to adapt to change and work effectively as circumstances change

### EI Competency Needs Identified
#### Self-confidence: a strong sense of one’s self-worth and capabilities
This example illustrates the importance of this competency, as it would have enabled the project manager to make decisions in the uncertain environment that exists whilst a project is progressing.

#### Adaptability: the ability to adapt to change and work effectively as circumstances change
This competency is required in conjunction with that of self-confidence, as without it, the project manager may become too locked into decisions he has made.

#### Developing others: sensing others’ development needs and bolstering their abilities
This competency assisted me in determining the project manager was not suitable for this particular role and in identifying one to which he was more suited.
I was the commercial manager for a large project. One of the stages of the project involved requesting expressions of interest (EoI) from companies interested in bidding for the work. Contained within the EoI were the rules on which the interested parties would be evaluated. Initially, I signed off on the EoI simply because it was similar to other EoI’s that had been issued for that type of project. The global financial crisis (GFC) necessitated us to withdraw the EoI and review it. The client’s representative strongly challenged the basis of the EoI, and as a result of his input, it was changed in a manner that modified the evaluation rules. These changes resulted in new players entering the market, and as a result, the team was credited with saving several hundred million dollars in project costs.

<table>
<thead>
<tr>
<th>Learned Experience</th>
<th>Do not do something simply because it has been done that way before. It is essential to evaluate whether or not the previous contributions were truly optimal.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resultant Skill Need Identified</td>
<td>The ability to seize an opportunity to produce the best outcome. The drive to always seek performance improvement. The self-confidence to believe in your evaluation and that the existing ways of doing things may be inferior.</td>
</tr>
<tr>
<td>EI Competency Needs Identified</td>
<td>The client’s representative clearly showed this competency in his unwillingness to accept the status quo and his drive to achieve a better result.</td>
</tr>
<tr>
<td>Achievement orientation: the drive to seek performance improvement, continuing looking to improve new standards</td>
<td>The client’s representative showed this competency by his actions in taking the opportunity presented by the delay caused by the GFC to review the EoI to obtain a better result.</td>
</tr>
<tr>
<td>Initiative: the readiness to act in order to seize an opportunity</td>
<td>The client’s representative showed this competency in his belief in his assessment that the EoI could be improved. This was despite several experienced engineers arguing that “if it’s not broken, don’t fix it.”</td>
</tr>
</tbody>
</table>
### Event No. 33 Description

I was involved in the bid preparation of a project. I had a discussion with the staff member who had been responsible for developing the project’s business case. He commented that on reflection, he was worried about some of the assumptions he made in the business model. He said that organisational pressure had required him to take optimistic though realistic positions regarding such issues as inflation, foreign exchange and the construction timetable. His concern was not about any one assumption in particular but that taken together, they amounted to an overly optimistic position. His advice was that I should take this into account when reviewing the project’s risk profile. I did as he advised, and as a result, the project was completed on time and to budget.

<table>
<thead>
<tr>
<th>Learned Experience</th>
<th>It is important to talk to colleagues and to understand the drivers behind positions they have taken.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resultant Skill Need Identified</td>
<td>The need to understand organisation pressures and their resultant impacts.</td>
</tr>
<tr>
<td>EI Competency Needs Identified</td>
<td>Organisational awareness: understanding the organisation’s issues, dynamics and politics</td>
</tr>
<tr>
<td>Commentary</td>
<td>This competency was needed to recognise that decisions are not made in a vacuum but are influenced by organisational politics.</td>
</tr>
</tbody>
</table>
4.3 Summary

The autoethnography discusses 33 events in which an EI competency would have been of assistance. The total number of times individual EI competencies would have been of assistance or were displayed in those 33 events is 80. Whilst the top two competencies appear more than 10 times, it is apparent that all the EI competencies occur at least once, thereby establishing the relevance of the competencies contained in the Goleman-Boyatzis model (Goleman et al. 2013) in dealing with the problems that arise during the management of construction projects.

The Delphi study results, presented and discussed in chapter 5, will be used to verify the result of the autoethnography regarding the relevance of the Goleman-Boyatzis model (Goleman et al. 2013) in dealing with problems in project management.

A discussion of the results of the section are presented in chapter 6, section 6.2.
Chapter 5: Delphi Study Results

5.1 Introduction

As discussed in Chapter 3, the objectives of this Delphi study were firstly, to verify or otherwise the problems associated with projects identified in the academic literature; secondly, to establish whether in the view of panel members, the relative importance of team management skills and PMBoK-type skills varied with project size; thirdly, to verify or otherwise the relevance of the competencies in the Goleman-Boyatzis model of EI (Goleman et al. 2013) in dealing with the inherent problems in projects identified in the academic literature, thereby verifying or otherwise the results of my autoethnography; fourthly, to establish whether there were any additional project management problems and key success factors in the delivery of projects on which a consensus of panel members could be reached; and finally, to establish the panel’s view of the importance of reflection in their career development and by doing so confirm the validity of the methodology I used in developing my autoethnography.

Prior to commencement guidelines for the study were accepted by the University ethics committee (Ref No 2014000264).

The objectives of the individual Delphi rounds were the following:

Round 1: Confirm or otherwise the problems in managing projects identified as resulting from their nature and comment on the relative importance of hard and soft project management skills as project size increases. Obtain comments from the panel regarding additional problems in project management and key success factors for the successful delivery of projects.

Round 2: Using the Goleman-Boyatzis model, rank the importance of the EI competencies grouped under self-awareness in dealing with the problems presented in
round 1. Additionally, reflect back to the panel any comments obtained in round 1 regarding issues in project management and key success factors so as to establish whether a consensus on these issues could be achieved. In analysing the comments received from the panel in each round, two techniques were used. The first involved coding the comments to ascertain whether a theme could be identified. The second was based on my experience, and it involved the identification of a comment that provided an original insight into the practice of project management which I believed was worth bringing to the Delphi team’s attention to determine if the insight had been experienced by the Delphi team. Questions established by means of these two techniques were then fed back to the Delphi panel in the next round to establish whether a consensus could be reached regarding the issue raised.

Round 3: Using the Goleman-Boyatzis model, rank the importance of the EI competencies grouped under self-management in dealing with the problems presented in round 1. Additionally, establish whether a consensus view on the issues raised in round 2 could be achieved.

Round 4: Using the Goleman-Boyatzis model, rank the importance of the EI competencies grouped under social awareness in dealing with the problems presented in round 1. Additionally, establish if a consensus view on the issues raised in round 3 could be achieved.

Round 5: Using the Goleman-Boyatzis model, rank the importance of the EI competencies grouped under relationship management in dealing with the problems presented in round 1. Additionally, establish whether a consensus view on the issues raised in round 4 could be achieved.
Round 6: Canvass the opinion of panel members regarding the importance of reflection on their career development and the management of project problems as they arose. Additionally, establish whether a consensus view on the issues raised in round 5 could be achieved.

The average number of respondent per round was 23. Round 1 had 23 respondents; round 2 had 25 respondents; round 3 had 20 respondents; rounds 4 and 5 had 23 respondents; and round 6 had 22 respondents.

A summary of comments received from each round is also presented and full details of the round designs are contained in Appendix A.

5.2 Delphi Panel Selection and Demographics

The Delphi panel were obtained using a method commonly referred to as snowballing. In this technique, potential participants are approached using the researcher’s own credibility or that of a third person and invited to join the study.

The panel members’ demographics are summarised in Table 21. Twenty-one out of 23 respondents in this round answered the demographic questions, with the exception of the question relating to age were only 20 out of 23 answered.

Allowing for some overlap, the minimum total number of projects over $0.5 billion managed by panel members was 50.

<table>
<thead>
<tr>
<th>Table 21 Delphi panel members’ demographics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project involvement working for contractors</td>
</tr>
<tr>
<td>Project involvement working for clients</td>
</tr>
<tr>
<td>Project involvement working for consultants</td>
</tr>
<tr>
<td>Degree qualified</td>
</tr>
<tr>
<td>Certified in project management (all certified members were also degree qualified)</td>
</tr>
<tr>
<td>Over 60 years of age</td>
</tr>
<tr>
<td>50–60 years of age</td>
</tr>
<tr>
<td>40–50 years of age</td>
</tr>
<tr>
<td>Male</td>
</tr>
</tbody>
</table>
5.3 The Relative Importance of PMBoK and Team Management Skills.

The panel were asked to rate the relative importance of the traditional project management skills (generally called PMBoK-type skills) and team management skills for various sizes of projects. The results are summarised in Figure 3, and they clearly indicate that the importance given to both team management and PMBoK-type skills increases as project size increases from below $50 million to above $500 million, the increase being more marked in the case of team management skills than PMBoK skills.

![Figure 3 Panel members’ views of the relative importance of team management skills and PMBoK-type skills as project size increases.](image)

The change in skill set needed is well summarised in one of the respondents comments.

With the different projects, the problems or specific skills are different. There is a need to learn. As an engineer, the approach is to technically understand and solve.
In a project leadership role, it is not possible to lead by doing, and so, using the skills, know-how and energies within the team is key (Response 1).

In a later round, the panel members were asked to give their views concerning the use of a specific PMBoK skill, namely Gantt charts. In order to establish the panel members’ position, they were asked to indicate their agreement or otherwise with the proposition that Gantt charts and similar tools are used to keep senior managers happy rather than for their value in controlling a project. The results are presented in Figure 4.

Figure 4 Panel members’ views of the importance of Gantt charts

As can be seen, 79% of the panel strongly disagreed or disagreed with this proposition, and only 4% strongly agreed. The remaining group had a neutral stance on the issue. The view of the majority of the panel is summarised in the following comments:

Gantt and other charts are an essential planning tool. Each project needs direction and a means to communicate both the direction and progress. Without a logically developed plan, I can only see failure. However, some less competent persons may use the charts primarily as a means to persuade others that everything is OK.
Such usage would be a display of gross incompetence. Optimism is not a cause of project overrun but rather a lack of recognition of the actual status of a project. Optimism is an obstacle in assessing the real position of a project and thus missing the opportunity to implement corrective action at the earliest possible time in the project delivery life cycle (Response 2).

Making sure there is a sound time control through a well-developed Gantt chart or similar and monitoring of performance against the plan is a core fundamental of successful project management. Not treating this seriously would inevitably lead to project failures. Not sure why anyone would think otherwise (Response 3).

5.4 Panel Members’ View of the Problems Resulting from the Unique Nature of Projects Identified in the Literature.

The panel members were asked to indicate their view of the severity of the problem and the frequency of the occurrence of the following factors with respect to the management of large projects.

1. The limited time frame (i.e., having a set time period to achieve a set of defined objectives) of a project causes problems resulting from a need to quickly achieve the following:

   a. Build a cohesive team.
   b. Build trust within the team.
   c. Develop rapport with stakeholders.
   d. Develop a working control system.
   e. Obtain organisational support.

(Note: These questions were developed from item 1 of section 2.3.)

2. The team members’ diverse backgrounds (ethnic and experiential) and locations (e.g., concept design in Australia, detailed design in India, manufacturing in China, procurement run from Brisbane and a construction
site in remote Australia) causes problems for team member management as a result of differences in:

a. team members’ personal goals and resultant personal agendas;

b. team members’ cultural backgrounds;

c. team members’ professional backgrounds;

d. team members’ communication needs;

e. team members’ different geographic locations;

f. team members’ native language differences.

(Note: These questions were developed from item 2 of section 2.3.)

3. The stakeholders’ diverse backgrounds and locations caused problems for stakeholder management as a result of differences in:

a. stakeholders’ personal goals and resultant personal agendas;

b. stakeholders’ cultural backgrounds;

c. stakeholders’ professional backgrounds;

d. stakeholders’ communication needs;

e. stakeholders’ different geographic locations;

f. stakeholder’s native language differences.

(Note: These questions were developed from item 2 of section 2.3.)

4. The unique nature of each project (e.g. moving from a rail car project to a desalination plant and then to a tunnel project. Alternatively, the different problems encountered on technically similar projects such as different
special interest groups creating their own unique problems) results in the following problems:

a. Understanding the issues involved in the particular project.

b. Managing internal stakeholder expectations.

c. Managing external stakeholder expectations.

d. Belief that you and the project team can solve the project’s problems.

(Note: These questions were developed from item 3 of section 2.3.)

5. Ambiguity and change arising from

a. lack of a clearly defined project scope;

b. scope changes as the project progresses;

c. lack of information to make a fully informed decision;

d. team member changes;

e. unexpected and unforeseen events (e.g., subcontractor becomes bankrupt);

f. changes in the external environment (legislative and economic).

(Note: These questions were developed from item 4 of section 2.3.)

6. Changes in project team and stakeholder personnel resulting in:

a. loss of a cohesive team;

b. loss of trust between team members;

c. loss of relationship with key stakeholders.

(Note: These questions were developed from item 5 of section 2.3.)
7. The conflicts (the disagreements that arise prior to a formal dispute) that arise during a project and their impact, such as

a. those arising internal to the team;

b. those arising external to the team but internal to the parent organisation;

c. those arising with subcontractors;

d. those arising with other stakeholders.

(Note: These questions were developed from item 6 of section 2.3.).

The results obtained from the panel in response to the significance and frequency of these problems is present in Figures 5 to 11.

Figure 5 depicts the significance and frequency results for the problems relating to limited time frame. Building a cohesive team scored highest in terms of the relative importance index with a score of 0.92. Two problems—building a cohesive team and developing rapport with stakeholders—had equally high mean frequencies, with a score of 71%.
Figure 5 Problems associated with project-limited time frame

- Building a cohesive team
- Building trust within the team
- Develop rapport with stakeholders
- Develop a working control system
- Obtain organizational support

Legend:
- Very significant
- Significant
- Neutral
- Little significance
- Very little significance

- Very Frequent occurrence (>90%)
- Frequent occurrence (>75% but <90%)
- Average occurrence (<75% but >25%)
- Infrequent occurrence (<25% but >10%)
- Seldom occurrence (<10%)
Figure 6 depicts the significance and frequency results for the problems relating to team members’ diverse backgrounds. Team members’ communication needs scored highest in terms of the relative importance index with a score of 0.90 and also had the highest mean frequency with a score of 79%.

Figure 6 Problems associated with the team members’ diverse backgrounds

Figure 7 depicts the significance and frequency results for the problems relating to stakeholders’ diverse backgrounds. Stakeholders’ goals and agendas scored highest in terms of the relative importance index and mean frequency with results of 0.87 and 78% respectively.
Figure 7 Problems associated with the stakeholders’ diverse backgrounds
Figure 8 depicts the significance and frequency results for the problems relating to the unique nature of projects. Understanding the unique issues in a project scored highest in terms of the relative importance index and mean frequency with results of 0.88 and 74%, respectively.
Figure 9 depicts the significance and frequency results for the problems relating to ambiguity and change. Lack of clearly defined project scope scored highest in terms of the relative importance index with a score of 0.93, but scope changes as the project progresses was a close second with a score of 0.92. Scope changes as the project progresses had the highest mean frequency with a score of 73%. Lack of clearly defined project scope scored slightly less at 68%. These two results were split by problems resulting from team member changes with a mean frequency of 71%.

Figure 9 Problems associated with ambiguity and change
Figure 10 depicts the significance and frequency results for the problems relating to changes in the project team and stakeholder personnel. All members of this group obtained similar relative importance index results. Loss of a cohesive team scored 0.85, loss of trust between team members scored 0.88 and loss of relationships with key stakeholders scored 0.90. Loss of a cohesive team had the highest mean frequency with a score of 46%.

**Figure 10 Problems associated with changes in the project team and stakeholder personnel**

![Graph showing the significance and frequency of problems related to changes in the project team and stakeholder personnel.](image-url)
Figure 11 depicts the significance and frequency results for the problems relating to conflicts. Those arising with other stakeholders scored highest in terms of the relative importance index with a score of 0.81, and those arising with subcontractors had the highest mean frequency with a score of 69%.

**Figure 11 Problems associated with conflicts (the disagreements that arise prior to a formal dispute) that arise during a project**

![Bar chart showing the frequency of conflicts](chart1.png)

- **Very significant**
- **Significant**
- **Neutral**
- **Little significance**
- **Very little significance**

![Bar chart showing the significance of conflicts](chart2.png)

- **Very Frequent occurrence (<90%)**
- **Frequent occurrence (>90% but <90%)**
- **Average occurrence (<75% but >25%)**
- **Infrequent occurrence (<25% but >10%)**
- **Seldom occurrence (<10%)**
The relative importance index for all the problems was calculated using the method outlined in 3.4.2. The results for the various categories are presented in Table 22 and for the individual problems within the categories in Table 23.

### Table 22 Relative importance index for problem categories

<table>
<thead>
<tr>
<th>Category of Problem</th>
<th>Relative Importance Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problems resulting from ambiguity and change.</td>
<td>0.85</td>
</tr>
<tr>
<td>Problems resulting from a project’s limited time frame.</td>
<td>0.83</td>
</tr>
<tr>
<td>Problems resulting from team member changes.</td>
<td>0.79</td>
</tr>
<tr>
<td>Problems resulting as a result of conflicts.</td>
<td>0.77</td>
</tr>
<tr>
<td>Problems resulting from the unique nature of projects.</td>
<td>0.75</td>
</tr>
<tr>
<td>Problems resulting from diverse team members’ backgrounds.</td>
<td>0.74</td>
</tr>
<tr>
<td>Problems resulting from diverse stakeholders’ backgrounds.</td>
<td>0.72</td>
</tr>
</tbody>
</table>
### Table 23: Relative importance index for individual problems

<table>
<thead>
<tr>
<th>Problem Area</th>
<th>Relative Importance Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of a clearly defined project scope.</td>
<td>0.93</td>
</tr>
<tr>
<td>Scope changes as the project progresses.</td>
<td>0.92</td>
</tr>
<tr>
<td>Building a cohesive team.</td>
<td>0.92</td>
</tr>
<tr>
<td>Loss of relationship with key stakeholders.</td>
<td>0.90</td>
</tr>
<tr>
<td>Team members’ communication needs.</td>
<td>0.90</td>
</tr>
<tr>
<td>Understanding the issues involved in the particular project.</td>
<td>0.88</td>
</tr>
<tr>
<td>Loss of trust between team members.</td>
<td>0.88</td>
</tr>
<tr>
<td>The stakeholders’ goals and resultant agendas.</td>
<td>0.87</td>
</tr>
<tr>
<td>Building trust within the team.</td>
<td>0.85</td>
</tr>
<tr>
<td>Loss of a cohesive team.</td>
<td>0.85</td>
</tr>
<tr>
<td>Developing rapport with stakeholders.</td>
<td>0.85</td>
</tr>
<tr>
<td>The stakeholders’ communication needs.</td>
<td>0.83</td>
</tr>
<tr>
<td>Developing a working control system.</td>
<td>0.82</td>
</tr>
<tr>
<td>Conflicts arising with other stakeholders.</td>
<td>0.81</td>
</tr>
<tr>
<td>Obtaining organisational support.</td>
<td>0.81</td>
</tr>
<tr>
<td>Team members’ different geographic locations.</td>
<td>0.81</td>
</tr>
<tr>
<td>Team member changes.</td>
<td>0.80</td>
</tr>
<tr>
<td>Unexpected and unforeseen events (e.g., subcontractor goes bankrupt).</td>
<td>0.80</td>
</tr>
<tr>
<td>Managing external stakeholders’ expectations.</td>
<td>0.79</td>
</tr>
<tr>
<td>Belief that you and the project team can solve the project’s problems.</td>
<td>0.79</td>
</tr>
<tr>
<td>Conflicts arising with subcontractors.</td>
<td>0.78</td>
</tr>
<tr>
<td>Lack of information to make a fully informed decision.</td>
<td>0.77</td>
</tr>
<tr>
<td>Changes in the external environment (e.g., legislative and economic).</td>
<td>0.77</td>
</tr>
<tr>
<td>Managing internal stakeholders’ expectations.</td>
<td>0.76</td>
</tr>
<tr>
<td>Conflicts arising internal to the team.</td>
<td>0.74</td>
</tr>
<tr>
<td>Conflicts arising external to the team but internal to the parent organisation.</td>
<td>0.73</td>
</tr>
<tr>
<td>Team members’ cultural backgrounds.</td>
<td>0.72</td>
</tr>
<tr>
<td>Team members’ personal goals and resultant personal agendas.</td>
<td>0.70</td>
</tr>
<tr>
<td>The stakeholders’ professional backgrounds.</td>
<td>0.69</td>
</tr>
<tr>
<td>The stakeholders’ different geographic locations.</td>
<td>0.69</td>
</tr>
<tr>
<td>Team members’ native language differences.</td>
<td>0.67</td>
</tr>
<tr>
<td>Team members’ professional backgrounds.</td>
<td>0.65</td>
</tr>
<tr>
<td>The stakeholders’ cultural backgrounds.</td>
<td>0.65</td>
</tr>
<tr>
<td>The stakeholders’ native language differences.</td>
<td>0.59</td>
</tr>
</tbody>
</table>
To test the significance of the rankings of the problems considered the top 11, items in the relative importance index (there being a tie for 10th place) were compared using the Friedman test. The results were $\chi^2 (2)=15.572$ and $p=0.113$. Based on this, the null hypothesis was accepted, leading to the conclusion that the order of the top 11 problems is not statically significant.

However, when the 11th ranked problem is compared to the 24th ranked problem (11th from the bottom) using a Wilcoxon test, a $p$ value of 0.036 is obtained. This led to the rejection of the null hypothesis and to the conclusion that for the problems considered, there is a statistically significant difference between the problems ranked in the top 11 items as compared to those problems ranked in the bottom 11 items.

Significant comments received from the panel concerning the top 11 items in the relative importance index for problems were given below.

- **With respect to change:**
  
  Change is the killer on most major projects. There is a lack of appetite for change, and the mechanisms for change are heavy and readily exploited. I rank "change" as the biggest problem for project delivery. Change to correct technical specification issues, external factors, concessions and options are usually small in comparison to the contract scope. But they consume us, creating frustration and mistrust. Often the change results from conflicting requirements and client-preferential engineering. Contracts with high levels of risk transfer to the contractor increases ambiguity. (Response 4)

- **With respect to team building:**
  
  Establishing trust and building a cohesive team is strongly influenced by the PM’s freedom and ability to secure and empower team members. Often organizational factors, beyond the project have great influence. Also project health engenders these qualities, but is quick to falter when times get tough. (Response 5)

With respect to stakeholder management and communication the following significant comments were made:

The issues arise from the poor facilitation and communication skills of those charged with stakeholder management. The deeper communication issues are
poor skills in seeking the real "agenda" or needs of stakeholders. Profession background issues are prevalent when clients are investing in a sector they aren’t familiar with and don’t listen to their advisors. (Response 6)

The question leans towards stakeholders being remote or with different cultural or languages. In the absence of good (and open) stakeholder management frameworks, these factors would be very significant. But by recognizing the need for effective management to build a bridge for engagement to overcome the remoteness, culture and language factors these factors can be much reduced. So for me the issue is not location, culture or language, but taking the time to recognize the need to actively manage and keep managing these relationships. In Asia, it takes time to build relationships and that must be factored into project planning, together with demonstration of respect, collaboration and a less transactional approach. (Response 7)

The impact of the team’s geographic location placed in the bottom five items of the relative importance index but 6th in the top 10 problems by frequency (see Table 24). Despite its relative index results, it was the receipt of considerable commentary from the panel it was discussed, together with team members’ cultural backgrounds. The commentary, as summarised below, emphasised the impact of these factors leading to the undesirable fragmentation of a project team.

The problems often arise due to mistaken belief that you can disaggregate the project and the people. I don’t see it as cultural per se. The designers and construction staff need to intermingle due to the close inseparable link between design and construction and need for both to feed off each other. Two separate teams means two separate project objectives and two different team cultures, a recipe for disaster. (Response 8)

Distance is the issue coupled with lack of recognition of cultural differences. There is plenty of technology (teleconferences, email etc.) to bridge these divides, but without attuned cultural skills remote parties do not join and separate groups form. (Response 9)

People have a tendency to build teams within their own location, even their own floor or area in the office. Active effort is needed to bring the wider group together—project culture, values and strong group communications. Local culture (e.g., different countries) and also different disciplines have cultural resistance. An example is the construction site office that becomes its own project, isolated from the wider project and project goals. (Response 10)
Table 24 Problem areas by mean frequency

<table>
<thead>
<tr>
<th>Problem area</th>
<th>Mean frequency of problem</th>
<th>Problem frequency rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team members’ communication needs.</td>
<td>79%</td>
<td>Frequent Occurrence</td>
</tr>
<tr>
<td>Stakeholders’ goals and resultant agendas.</td>
<td>78%</td>
<td>Frequent Occurrence</td>
</tr>
<tr>
<td>Understanding the issues involved in the particular project.</td>
<td>74%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Scope changes as the project progresses.</td>
<td>73%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Belief that you and the project team can solve the project’s problems.</td>
<td>72%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Team members’ different geographic locations.</td>
<td>72%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Team member changes.</td>
<td>71%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Building a cohesive team.</td>
<td>71%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Develop rapport with stakeholders.</td>
<td>71%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Managing external stakeholder expectations.</td>
<td>70%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Disputes arising with subcontractors.</td>
<td>69%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Stakeholders’ communication needs.</td>
<td>69%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Lack of a clearly defined project scope.</td>
<td>68%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Lack of information to make a fully informed decision.</td>
<td>65%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Building trust within the team.</td>
<td>64%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Managing internal stakeholder expectations.</td>
<td>61%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Develop a working control system.</td>
<td>58%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Team members’ personal goals and resultant agendas.</td>
<td>57%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Obtain organisational support.</td>
<td>56%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Stakeholders’ different geographic locations.</td>
<td>56%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Team members’ cultural backgrounds.</td>
<td>53%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Disputes arising with other stakeholders.</td>
<td>52%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Stakeholders’ cultural backgrounds.</td>
<td>52%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Team members’ professional backgrounds.</td>
<td>51%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Team members’ native language differences.</td>
<td>47%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Loss of a cohesive team.</td>
<td>46%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Stakeholders’ professional backgrounds.</td>
<td>45%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Stakeholders’ native language differences.</td>
<td>45%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Unexpected and unforeseen events (e.g., subcontractor goes bankrupt).</td>
<td>44%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Disputes arising external to the team but internal to the parent organisation.</td>
<td>40%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Disputes arising internal to the team.</td>
<td>39%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Loss of trust between team members.</td>
<td>36%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Loss of relationships with key stakeholders.</td>
<td>35%</td>
<td>Average Occurrence</td>
</tr>
<tr>
<td>Changes in the external environment (e.g., legislative and economic).</td>
<td>29%</td>
<td>Average Occurrence</td>
</tr>
</tbody>
</table>

5.5 Additional Problems in Project Management Identified by Panel Members

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 new 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. Problems resulting from the original consensus achieved in round 4.

Figure 12 summarises the consensus view of the panel on these items and table 25 summarises the relative importance index together with the mode panel answers for these problems.

Figure 12 Panel members’ views of the additional problems identified in project management
Table 25 Additional project problems identified by panel members

<table>
<thead>
<tr>
<th>Problem Identified</th>
<th>Relative Importance Index</th>
<th>Mode of Agreement Regarding the Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Externally imposed salary caps that make the recruitment of suitably qualified project personnel difficult.</td>
<td>0.84</td>
<td>Agree</td>
</tr>
<tr>
<td>Unavailability of suitable personnel when a contract is awarded unexpectedly.</td>
<td>0.81</td>
<td>Agree</td>
</tr>
<tr>
<td>Change in ownership, particularly a new government.</td>
<td>0.80</td>
<td>Agree</td>
</tr>
<tr>
<td>Loss of key personnel due to a negative feedback loop which is created when a project is in trouble.</td>
<td>0.75</td>
<td>Agree</td>
</tr>
<tr>
<td>Original project proponents’ optimism bias.</td>
<td>0.74</td>
<td>Agree</td>
</tr>
</tbody>
</table>

The following comments were made regarding externally imposed salary caps:

In Government organisations, the bureaucracy for recruitment can be a major limiting factor. Often requested to recruit the person at a specific pay grade rather than the best person for the job. Individual manager salaries can be a very small contribution to the contract costs (on large projects) but can have profound consequences to the achievement of the goals. (Response 11)

I could also add, on large public sector projects, government procurement policy is the biggest problem. The selection of teams is undertaken through Procurement sections whose main focus is about demonstrated value for money, particularly the cheapest price. Hence, the teams delivered from these processes could present challenges. (Response 12)

5.6 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.


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 emotions and 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 13. The resultant relative importance index and the associated mode answer are presented in Table 26.
Table 26 The consensus position of panel members on commentary regarding success factors associated with team management

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

The panel members were specifically asked to comment on the conflict between creating a no-blame culture and maintaining an environment of personal responsibility. Significant comments received were:

No blame is when you do something, and it is wrong. Personal responsibility (or lack thereof) is when you don’t do anything. (Response 13)

It is important that an atmosphere of acceptance of mistakes is critical. It is by making mistakes that we all are able to learn. What cannot be tolerated is the occurrence of making the same mistake twice (or a number of times). To make the same mistake is indicative of not learning from your mistakes That means that you do not have your job at heart and are therefore better off elsewhere! (Response 14)
A culture of personal responsibility together with a no-blame culture should be achievable. Team members have a personal responsibility to manage their component of the project within defined goals and boundaries. Where there are mistakes made, a no-blame approach will assist in (a) better identifying problem issues early so they won’t be hidden and (b) allowing better coordinated and cooperative action to address such issues. This is particularly relevant with competent team members. The benefits of a no-blame culture should on balance outweigh the negatives. However, it is always necessary to understand team members’ performance, and in the event of unsatisfactory performance or incompetence affecting project objectives corrective action is obviously required. While not necessarily the first step in improving performance, replacement of team members may eventually be necessary. A good PM will continuously mould his team with a longer-term view of optimising overall performance either through placing team members where they can optimise their individual performance and/or by improving the overall team competence by changes and replacements. (Response 15)

One respondent’s comment related to the issue of recognising the importance of emotions as opposed to logic in dealing with disputes and the importance of establishing a no-blame culture as follows:

Generally, when working with people, emotions play a significant part in progressing and resolving issues. There may be underlying technical logic to establish the right or wrong of an issue. But getting effective resolution effectively requires appropriate engagement on the issue (people skills). Regardless of logic and technical proof, an adversarial environment will be less effective for resolution than a collaborative, no-blame environment. (Response 16)

The last comment concerned the importance of understanding your team members’ strengths and weaknesses and the constraints they work under. It is presented below.

The project manager’s role in conducting a team is not far different from an orchestra conductor that has to know the musical team members S&W. Without such knowledge, it is unlikely the conductor can get the best out of the collective team. (Response 17)
5.7 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 14 summarises the results.

The panel members were given the definition of reflection as provided by Schön (1983, 1987). Figure 14 clearly demonstrates the significance given to reflection by the panel members with respect to career development and its importance in solving the unique problems involved in projects as they develop. Some responses from panel members concerning the importance of reflection were:

Earlier in my career, my reflections were more defensive, leaning towards justification of my actions. More recently, I have focused on open and objective reflection of project outcomes and my own personal performance. I now derive great value from these reflections, identifying areas for improvement. I see this as a skill I have developed. I use proactively and also engage/develop my team, asking them to reflect and review. (Response 18)
Reflection and prior learnings have assisted my approach to understanding the intricacies and risks of major project. (Response 19)

Reflection has led to career choices and also to making conscious decisions at various times to attempt to change the way things are traditionally done, reflecting on why you think things have happened and communicating this. Project record usually only record the "what" not the "why" and the "why" is usually more important if lessons are to be learnt and an event is not to be repeated. (Response 20)

5.8 The Relevance of EI in Dealing with Project Problems Identified in the Literature

The Goleman-Boyatzis model (Goleman et al. 2013), as summarised in Table 10 of Chapter 2, together with background examples to give context, were presented to the panel in four rounds. In each round, the panel members were asked to rank the various competency clusters in order of importance in dealing with the problems in project management identified in the literature. The problems and their impacts that the panel members were asked to consider are summarised in Table 27. The respondents were given the option of deciding that a particular competency was not relevant in dealing with a particular problem.

A significant comment received from a panel member concerning IQ and EI was

I think you should not downplay the degree of IQ necessary in dealing with some of the above challenges. The crucial point is that there will be a dynamic interplay of the EI and IQ when dealing with some of these problems. (Response 21)

This comment is discussed further in Section 6.3.6.
<table>
<thead>
<tr>
<th>Fundamental problem</th>
<th>Resultant impact of the problem considered in the evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>The project’s limited time frame.</td>
<td>Building a cohesive team. Building trust within the team. Developing rapport with stakeholders. Developing a working control system. Obtaining organisational support.</td>
</tr>
<tr>
<td>The team members’ diverse backgrounds.</td>
<td>Team members’ personal goals and resultant personal agendas. Team members’ cultural backgrounds. Team members’ professional backgrounds. Team members’ communication needs. Team members’ different geographic locations. Team members’ native language differences.</td>
</tr>
<tr>
<td>The stakeholders’ diverse backgrounds.</td>
<td>Stakeholders’ personal goals and resultant personal agendas. Stakeholders’ cultural backgrounds. Stakeholders’ professional backgrounds. Stakeholders’ communication needs. Stakeholders’ different geographic locations. Stakeholders’ native language differences.</td>
</tr>
<tr>
<td>The unique nature of each project.</td>
<td>Understanding the issues involved in the particular project. Managing internal stakeholder expectations. Managing external stakeholder expectations. Belief that you and the project team can solve the project’s problems.</td>
</tr>
<tr>
<td>Ambiguity and change.</td>
<td>Lack of a clearly defined project scope. Scope changes as the project progresses. Lack of information to make a fully informed decision. Team member changes. Unexpected and unforeseen events (e.g., subcontractor goes bankrupt). Changes in the external environment (e.g., legislative and economic).</td>
</tr>
<tr>
<td>Changes in project team and stakeholder personnel.</td>
<td>Loss of a cohesive team. Loss of trust between team members. Loss of relationships with key stakeholders.</td>
</tr>
<tr>
<td>Conflicts (the disagreements that arise prior to a formal dispute).</td>
<td>Those arising internal to the team. Those arising external to the team but internal to the parent organisation. Those arising with subcontractors. Those arising with other stakeholders.</td>
</tr>
</tbody>
</table>
Table 28 presents the importance index results for the self-awareness cluster and Table 29 presents the results concerning the relevance of these competencies to the problems summarised in Table 28.

<table>
<thead>
<tr>
<th>Problem Considered</th>
<th>Emotional self-awareness (E1)</th>
<th>Accurate self-assessment (E2)</th>
<th>Self-confidence (E3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The project’s limited time frame.</td>
<td>0.65</td>
<td>0.68</td>
<td>0.65</td>
</tr>
<tr>
<td>The diverse team members’ backgrounds</td>
<td>0.72</td>
<td>0.67</td>
<td>0.56</td>
</tr>
<tr>
<td>The stakeholders’ diverse backgrounds.</td>
<td>0.67</td>
<td>0.63</td>
<td>0.69</td>
</tr>
<tr>
<td>The unique nature of each project.</td>
<td>0.60</td>
<td>0.67</td>
<td>0.72</td>
</tr>
<tr>
<td>Ambiguity and change.</td>
<td>0.64</td>
<td>0.71</td>
<td>0.61</td>
</tr>
<tr>
<td>Changes in project team and stakeholder personnel.</td>
<td>0.65</td>
<td>0.61</td>
<td>0.72</td>
</tr>
<tr>
<td>Conflicts.</td>
<td>0.84</td>
<td>0.60</td>
<td>0.56</td>
</tr>
<tr>
<td>Average.</td>
<td>0.68</td>
<td>0.65</td>
<td>0.66</td>
</tr>
<tr>
<td>Average result ranking.</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

The above importance index rankings appeared very close. To check the statistical significance of the rankings, a Friedman test was performed.

The results were $\chi^2(2)=0.074$ and $p=0.964$. Based on this, the null hypothesis was accepted, leading to the conclusion that there was no statistically significant difference in the EI rankings for the individual competencies in this cluster.

As indicated in Table 28, the panel found the EI competencies in this cluster were 97% relevant in dealing with the project problems posed to them.

The largest finding of irrelevant by the panel members for a competency in this cluster was 2.7% in the case of self-confidence. The 97% result is thus obtained by subtracting 2.7% from 100%.
In discussing this cluster, the importance of self-confidence was the subject of commentary from the panel that is summarised below:

Self-confidence is fundamental to developing a following (trust, rapport, etc.) in a team. Who could be confident in a leader if the leader is not confident in him/herself? (Response 22)

Self-confidence to work in different spaces and places. This includes being able to trust. (Response 23)

Lack of self-confidence in a conflict can quickly make one a victim. Understanding what you know and what you can contribute is key. Assertiveness not aggression. (Response 24)

Responses 22, 23 and 24 agree with my commentary on event 19, in which I identify self-confidence as a major requirement in team building.

<table>
<thead>
<tr>
<th>Problem Considered</th>
<th>Competency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Emotional self-awareness</td>
</tr>
<tr>
<td>The project’s limited time frame.</td>
<td>0</td>
</tr>
<tr>
<td>The team members’ diverse backgrounds</td>
<td>1</td>
</tr>
<tr>
<td>The stakeholders’ diverse backgrounds.</td>
<td>1</td>
</tr>
<tr>
<td>The unique nature of each project.</td>
<td>0</td>
</tr>
<tr>
<td>Ambiguity and change.</td>
<td>0</td>
</tr>
<tr>
<td>Changes in project team and stakeholder personnel.</td>
<td>1</td>
</tr>
<tr>
<td>Conflicts.</td>
<td>0</td>
</tr>
<tr>
<td>Total.</td>
<td>3</td>
</tr>
<tr>
<td>% non-relevant.</td>
<td>1.7%</td>
</tr>
</tbody>
</table>

Tables 30 and 31 summarise the results for the self-management cluster.
To check the statistical significance of the rankings, a Friedman test was performed. The results were $\chi^2 (5) = 19.327$ and $p = 0.02$. Based on this, the null hypothesis was rejected, leading to the conclusion that there was a statistically significant difference in the EI rankings for the individual competencies in this cluster.

Table 30 Importance Index for competencies in the self-management cluster

<table>
<thead>
<tr>
<th>Problem Considered</th>
<th>Emotional self-control (E4)</th>
<th>Trustworthiness/Transparency (E5)</th>
<th>Achievement orientation (E6)</th>
<th>Adaptability (E7)</th>
<th>Initiative (E8)</th>
<th>Optimism (E9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The projects’ limited time frame.</td>
<td>0.59</td>
<td>0.74</td>
<td>0.65</td>
<td>0.55</td>
<td>0.38</td>
<td>0.58</td>
</tr>
<tr>
<td>Team members’ diverse backgrounds.</td>
<td>0.67</td>
<td>0.81</td>
<td>0.48</td>
<td>0.73</td>
<td>0.45</td>
<td>0.36</td>
</tr>
<tr>
<td>Stakeholders’ diverse backgrounds.</td>
<td>0.81</td>
<td>0.84</td>
<td>0.38</td>
<td>0.65</td>
<td>0.47</td>
<td>0.33</td>
</tr>
<tr>
<td>The unique nature of each project.</td>
<td>0.60</td>
<td>0.67</td>
<td>0.58</td>
<td>0.74</td>
<td>0.38</td>
<td>0.52</td>
</tr>
<tr>
<td>Ambiguity &amp; change.</td>
<td>0.72</td>
<td>0.46</td>
<td>0.47</td>
<td>0.68</td>
<td>0.58</td>
<td>0.59</td>
</tr>
<tr>
<td>Changes in project, team &amp; stakeholder personnel.</td>
<td>0.66</td>
<td>0.76</td>
<td>0.47</td>
<td>0.68</td>
<td>0.40</td>
<td>0.51</td>
</tr>
<tr>
<td>Conflicts.</td>
<td>0.86</td>
<td>0.75</td>
<td>0.44</td>
<td>0.59</td>
<td>0.42</td>
<td>0.43</td>
</tr>
<tr>
<td>Average.</td>
<td>0.70</td>
<td>0.72</td>
<td>0.50</td>
<td>0.66</td>
<td>0.44</td>
<td>0.48</td>
</tr>
<tr>
<td>Average result ranking.</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>5</td>
</tr>
</tbody>
</table>
Table 31 Competencies found not relevant in the self-management cluster

<table>
<thead>
<tr>
<th>Problem Considered</th>
<th>Emotional self-control (E4)</th>
<th>Trustworthiness/Transparency (E5)</th>
<th>Achievement orientation (E6)</th>
<th>Adaptability (E7)</th>
<th>Initiative (E8)</th>
<th>Optimism (E9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The projects’ limited time frame.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Team members’ diverse backgrounds.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Stakeholders’ diverse backgrounds.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>The unique nature of each project.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Ambiguity &amp; change.</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Changes in project team and stakeholder personnel.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Conflicts.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Total.</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>% non-relevant.</td>
<td>0.0</td>
<td>0.7</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>5.0</td>
</tr>
</tbody>
</table>

A Wilcoxon test was performed on the apparent group edges to establish that competencies could be regarded as being ranked statistically different. The results of this are summarised in Table 32.

Table 32 Wilcoxon test results for self-management cluster

<table>
<thead>
<tr>
<th>EI competencies</th>
<th>Wilcoxon asymmetrical p value</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>E5 to E7</td>
<td>0.309</td>
<td>Accept null hypothesis</td>
</tr>
<tr>
<td>E7 to E6</td>
<td>0.028</td>
<td>Reject null hypothesis</td>
</tr>
<tr>
<td>E6 to E8</td>
<td>0.352</td>
<td>Accept null hypothesis</td>
</tr>
</tbody>
</table>

From the above analysis, it is clear that the panel ranked emotional self-control, trustworthiness/transparency and adaptability higher than optimism, achievement orientation and initiative.
As indicated in Table 31, irrespective of the ranking results, it should be noted that the panel found all competencies—with the exception of initiative that scored 95%—to have a relevance to the problems in excess of 99%.

In terms of commentary, the two comments below provide insight into panel members’ views of the importance of adaptability and the interaction of competencies needed for success. Response 26 also relates to the need for consistent messaging as one of the key success factors identified by the panel and presented in section 5.6. Finally, Response 27 was interesting in that it dealt with the combined impact of optimism and the need for developing trust.

Adaptability is critical because every matter planned will not work out as predicted. When a time line is tight, adaptability (as in ability to implement change) is critical. Without this characteristic, fast-moving projects will move too far in the wrong direction before the necessary change is executed. (Response 25)

A leadership role requires retention of the vision (i.e., the objectives). Retaining that common focus will develop team cohesion, ensure consistent internal and external messaging and garner wider organisational support. Optimism and initiative rank highest as the beacons to success. (Response 26)

With a diverse team . . . building trust leads to open communication. Lack of trust shuts it down! Poring optimism into the discussion helps collaboration, leading to solutions/resolution of problems. (Response 27)

Tables 33 and 34 summarises the results for the social awareness cluster. The results of a Friedman test were $\chi^2(2)=2.000$ and $p=0.368$. The null hypothesis was therefore accepted, indicating there was no statistically significant difference in the overall EI ranking.

The panel found the competencies in this cluster to be 100% relevant in dealing with the project questions considered.
Table 33 Importance index for competencies in the social-awareness cluster

<table>
<thead>
<tr>
<th>Problem Considered</th>
<th>Empathy (E10)</th>
<th>Service orientation (E11)</th>
<th>Organisational awareness (E12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The project’s limited time frame.</td>
<td>0.58</td>
<td>0.60</td>
<td>0.82</td>
</tr>
<tr>
<td>The team members’ diverse backgrounds</td>
<td>0.79</td>
<td>0.49</td>
<td>0.72</td>
</tr>
<tr>
<td>The stakeholders’ diverse backgrounds.</td>
<td>0.67</td>
<td>0.71</td>
<td>0.63</td>
</tr>
<tr>
<td>The unique nature of each project.</td>
<td>0.56</td>
<td>0.65</td>
<td>0.79</td>
</tr>
<tr>
<td>Ambiguity and change.</td>
<td>0.60</td>
<td>0.75</td>
<td>0.65</td>
</tr>
<tr>
<td>Changes in project team and stakeholder personnel.</td>
<td>0.74</td>
<td>0.46</td>
<td>0.81</td>
</tr>
<tr>
<td>Conflicts.</td>
<td>0.68</td>
<td>0.53</td>
<td>0.79</td>
</tr>
<tr>
<td>Average.</td>
<td>0.66</td>
<td>0.60</td>
<td>0.74</td>
</tr>
<tr>
<td>Average result ranking.</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

The importance of service orientation and its necessary interaction with other competencies are summarised in the following comments received from panel members:

I place service orientation at the top because regardless of the effort that is put into team, if the customer’s real needs are not understood, then all else will fail. PMs are not taught these skills, so they don’t make time to set projects up for success from the beginning. (Response 28)

Service orientation is a given but to be truly successful awareness and empathy are essential. (Response 29)

Table 34 Competencies found not relevant in the social awareness cluster

<table>
<thead>
<tr>
<th>Problem Considered</th>
<th>Empathy</th>
<th>Service orientation</th>
<th>Organisational awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td>The project’s limited time frame.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>The team members’ diverse backgrounds.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>The stakeholders’ diverse backgrounds.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>The unique nature of each project.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ambiguity and change.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Changes in project team and stakeholder personnel.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Conflicts.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>% non-relevant.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Tables 35 and 36 summarise the results for the relationship management cluster.

To check the statistical significance of the rankings, a Friedman test was performed. The results were $\chi^2 (5)=24.33$ and $p=0.000$. Based on this, the null hypothesis was rejected, leading to the conclusion that there was a statistically significant difference in the EI rankings for the individual competencies in this cluster.

Wilcoxon tests were performed on the apparent group edges to establish that competencies could be regarded as being ranked statistically different. The results of the Wilcoxon are summarised in Table 37.

<table>
<thead>
<tr>
<th>Problem Considered</th>
<th>Influence (E13)</th>
<th>Inspirational leadership (E14)</th>
<th>Change catalyst (E15)</th>
<th>Conflict management (E16)</th>
<th>Teamwork &amp; collaboration (E17)</th>
<th>Developing others (E18)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The project’s limited time frame.</td>
<td>0.69</td>
<td>0.76</td>
<td>0.44</td>
<td>0.51</td>
<td>0.76</td>
<td>0.31</td>
</tr>
<tr>
<td>The team members’ diverse backgrounds.</td>
<td>0.64</td>
<td>0.72</td>
<td>0.35</td>
<td>0.59</td>
<td>0.87</td>
<td>0.31</td>
</tr>
<tr>
<td>The stakeholders’ diverse backgrounds.</td>
<td>0.43</td>
<td>0.72</td>
<td>0.43</td>
<td>0.60</td>
<td>0.64</td>
<td>0.33</td>
</tr>
<tr>
<td>The unique nature of each project.</td>
<td>0.70</td>
<td>0.75</td>
<td>0.51</td>
<td>0.54</td>
<td>0.75</td>
<td>0.23</td>
</tr>
<tr>
<td>Ambiguity and change.</td>
<td>0.60</td>
<td>0.74</td>
<td>0.75</td>
<td>0.62</td>
<td>0.60</td>
<td>0.17</td>
</tr>
<tr>
<td>Changes in project team and stakeholder personnel.</td>
<td>0.61</td>
<td>0.78</td>
<td>0.49</td>
<td>0.49</td>
<td>0.75</td>
<td>0.37</td>
</tr>
<tr>
<td>Conflicts.</td>
<td>0.68</td>
<td>0.70</td>
<td>0.46</td>
<td>0.86</td>
<td>0.59</td>
<td>0.21</td>
</tr>
<tr>
<td>Average.</td>
<td>0.62</td>
<td>0.74</td>
<td>0.49</td>
<td>0.60</td>
<td>0.71</td>
<td>0.28</td>
</tr>
<tr>
<td>Average result ranking.</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>
Table 36 Competencies found not relevant in the relationship management cluster

<table>
<thead>
<tr>
<th>Problem Considered</th>
<th>Competency</th>
<th>Influence (E13)</th>
<th>Inspirational leadership (E14)</th>
<th>Change catalyst (E15)</th>
<th>Conflict management (E16)</th>
<th>Teamwork &amp; collaboration (E17)</th>
<th>Developing others (E18)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The project’s limited time frame.</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>The team members’ diverse backgrounds.</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>The stakeholders’ diverse backgrounds.</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>The unique nature of each project.</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Ambiguity and change.</td>
<td></td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Changes in project team and stakeholder personnel.</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Conflicts.</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>% non-relevant.</td>
<td></td>
<td>0.0</td>
<td>0.7</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>5.0</td>
</tr>
</tbody>
</table>

Table 37 Wilcoxon test results for the relationship management cluster

<table>
<thead>
<tr>
<th>EI competencies tested</th>
<th>Wilcoxon asymmetrical p value</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>E14 to E16</td>
<td>0.090</td>
<td>Accept null</td>
</tr>
<tr>
<td>E14 to E15</td>
<td>0.027</td>
<td>Reject null</td>
</tr>
<tr>
<td>E17 to E15</td>
<td>0.043</td>
<td>Reject null</td>
</tr>
<tr>
<td>E13 to E15</td>
<td>0.75</td>
<td>Accept null</td>
</tr>
<tr>
<td>E16 to E15</td>
<td>0.116</td>
<td>Accept null</td>
</tr>
<tr>
<td>E16 to E15</td>
<td>0.043</td>
<td>Reject null</td>
</tr>
<tr>
<td>E16 to E18</td>
<td>0.018</td>
<td>Reject null</td>
</tr>
<tr>
<td>E17 to E18</td>
<td>0.018</td>
<td>Reject null</td>
</tr>
</tbody>
</table>

This analysis indicates that the competencies have been ranked into three statistically significant groups with some overlap. Group 1 consists of inspirational leadership, teamwork and collaboration, influencing others and conflict management. Group 2 consists of conflict management and change catalyst. Group 3 consists of developing others.

As indicated in the comments below, the interaction of the competencies in this cluster, particularly with respect to their impact on stakeholders, was highlighted by panel members.
A very complex area given the parameters of both internal and external stakeholders, influence, leadership and teamwork are all paramount. Managing change is an essential skill as the project moves forward and new challenges are encountered. (Response 30)

Stakeholders need to see and feel a cohesive project delivery organisation. Weaknesses here allow stakeholders to increase influence (positive & negative), leading to change. Hence the importance of influence and strong (inspirational) leadership. (Response 31)

5.9 Summary

This section has presented the results of the Delphi study that involved an average of 23 respondents who had managed projects in the infrastructure and mining industry that between them total in excess of 50 projects greater in value than $0.5 billion.

In the case of team management skills and PMBoK type skills, it was the panel’s opinion that the importance of these skills increased with project size and that this increase was more significant in the case of team management skills.

The comments received during the rounds, when fed back to the panel, produced a consensus view concerning a number of project management issues that are not immediately apparent from a consideration of the nature of projects. These issues were:

1. Lack of suitably experienced personnel being available when a contract is awarded unexpectedly.

2. Externally imposed salary caps that make the recruitment of suitably qualified project personnel difficult.

3. Problems resulting from a change in ownership, particularly a new government.

4. Problems created via a feedback loop that is created when a project is in trouble resulting in the loss of staff, which in turn exacerbates the problems.
5. Problems resulting from the original project proponent’s optimism bias.

Other comments, when consolidated, produced a consensus relating to the “how to” of project delivery that included:

1. The importance of the project director communicating a consistent vision of the project’s goals at every opportunity.

2. 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.

3. The importance of maintaining a no-blame culture.

4. The importance of maintaining an environment of personal responsibility.

5. The need to recognise emotions as opposed to logic in dealing with disputes.

6. When problem solving, recognising the emotions and drivers of team members and not just their technical expertise in problem solving.

7. The importance of knowing your team members’ strengths and weaknesses and the constraints they work under.

The panel members confirmed the relevance of the competencies contained in the Goleman-Boyatzis model (2013) in dealing with those problems of project management arising from a consideration of the nature of projects. In so doing, they confirmed the results of my autoethnography. When asked to rate the relative significance of the competencies, the panel found no statistically significant difference in the case of the self-awareness cluster and the social awareness cluster. In the case of the self-management cluster, the panel found self-control, trustworthiness and
adaptability to have a statically significantly higher ranking than optimism, achievement orientation and initiative.

In the case of the relationship management cluster, the panel found three statistically significant groups. Group 1 contains inspirational leadership, teamwork and collaboration, influencing others and conflict management. Group 2 consists of conflict management and change catalyst. Group 3 contains the development of others.

Finally, 90% of the panel indicated that they had found reflection to be a significant or very significant factor in their career development and in assisting them in dealing with the problems in project management as they arose.

Several comments (see Responses 26, 27, 29, 30 and 31) were received from the panel with respect to both individual competencies and the interaction of competencies. These comments provide further confirmation of the panels’ acceptance of the relevance of the EI competencies in the Goleman-Boyatzis model to the problems encountered in project management.

The results in this section are discussed in more detail in Chapter 6, Section 6.3
Chapter 6: Discussion

6.1 Introduction

The objective of this chapter is to discuss the research presented in Chapter 4, the results of the autoethnography, and in Chapter 5, the results of the Delphi study. This Chapter then goes on to discusses the major findings of the research with respect to the literature and cross-references the results of my autoethnography and the Delphi study. The structure of this chapter is as follows:

- section 6.2 discusses the results of my autoethnography;
- section 6.3 discusses the results from the Delphi study.

6.2 Discussion of the Autoethnography Results

The investigation of project management using a practice approach has been encouraged (Blomquist et al. 2010) and used by other researchers (Cicmil 2006; Cicmil et al. 2006; Remington 2011). These researchers did not, however, use autoethnography in their investigation. Autoethnography has been used in project field (Nugapitiya 2007) and in hypermedia design (Duncan 2004); however, neither of these works dealt with the topic of EI. This would, therefore, appear to be the first time autoethnography has been used in the context of furthering the understanding of the need for EI in project management and the first time it has been used as a means of verifying the Goleman-Boyatzis model of EI (Goleman et al. 2013).

The autoethnography contains relevant events of my experience as a project manager and incorporated relevant experiences that, whilst having occurred outside my career as a project manager, did provided insights that I have used during my career in project management. Of the total experiences analysed, four related to experiences outside work and five to a work environment other than project management. This
results in slightly more than one quarter of the important learning events that I used in my career coming from situations outside project management and 12% of them from experiences outside the working environment. This would indicate, as suggested by Moon (2004), that experience outside work is a suitable area for reflection and confirms that the reflective practitioner should regard every experience as an opportunity to develop their management skills.

A summary of my autoethnography is presented as Table 38. In all, 33 events were described and analysed to identify the learning experience resulting from the event, the skills that were needed and identified as a result of the learning experience and the EI competencies associated with those skills in terms of the Goleman-Boyatzis model (Goleman et al. 2013). Table 10 in section 2.8.2 presents a summary of these EI competencies.

<table>
<thead>
<tr>
<th>EI skill contained in the Goleman-Boyatzis model</th>
<th>Examples where EI skill identified in autoethnography</th>
<th>Total events in autoethnography</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teamwork and collaboration</td>
<td>2, 9, 11, 12, 13, 14, 15, 17, 19, 20, 21, 23, 26, 28, 29</td>
<td>15</td>
</tr>
<tr>
<td>Conflict management</td>
<td>3, 10, 11, 13, 16, 22, 24, 25, 27, 30</td>
<td>10</td>
</tr>
<tr>
<td>Empathy</td>
<td>5, 7, 15, 16, 21, 22, 23, 25, 26</td>
<td>9</td>
</tr>
<tr>
<td>Self-confidence</td>
<td>9, 18, 19, 26, 27, 31, 32</td>
<td>7</td>
</tr>
<tr>
<td>Emotional self-awareness</td>
<td>3, 4, 10, 11, 21, 24, 25</td>
<td>7</td>
</tr>
<tr>
<td>Organisational awareness</td>
<td>6, 10, 13, 27, 33</td>
<td>5</td>
</tr>
<tr>
<td>Developing others</td>
<td>1, 4, 8, 18, 31</td>
<td>5</td>
</tr>
<tr>
<td>Transparency</td>
<td>7, 11, 30</td>
<td>3</td>
</tr>
<tr>
<td>Service orientation</td>
<td>11, 13, 16</td>
<td>3</td>
</tr>
<tr>
<td>Emotional self-control</td>
<td>3, 8, 26</td>
<td>3</td>
</tr>
<tr>
<td>Influence</td>
<td>15, 26, 28</td>
<td>3</td>
</tr>
<tr>
<td>Inspirational leadership</td>
<td>17, 20</td>
<td>2</td>
</tr>
<tr>
<td>Adaptability</td>
<td>20, 31</td>
<td>2</td>
</tr>
<tr>
<td>Optimism</td>
<td>17, 20</td>
<td>2</td>
</tr>
<tr>
<td>Accurate self-assessment</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>Change catalyst</td>
<td>18</td>
<td>1</td>
</tr>
<tr>
<td>Achievement orientation</td>
<td>32</td>
<td>1</td>
</tr>
<tr>
<td>Initiative</td>
<td>32</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>80</td>
</tr>
</tbody>
</table>
As can be seen, this summary of all the problems highlighted in the events identified would have benefited from the application of one or more competencies contained in the Goleman-Boyatzis model of EI (Goleman et. al. 2013).

The events were selected because of their impact on my professional development. Whilst other events that influenced my development as a project manager must have occurred, their impact was much less, and, unlike the events discussed, were not brought to mind when I was making important managerial decisions.

Acknowledging the possible bias just discussed, it would still appear significant that the autoethnography presented did confirm the relevance of the Goleman-Boyatzis model (Goleman et al. 2013) in dealing with the problems I had to contend with in the day-to-day practice of project management. However, it was precisely to overcome any criticism related to any personal bias I may have had that a Delphi study was conducted; it would also help establish whether other practitioners also recognised the competencies in the Goleman-Boyatzis model as relevant to the problems they faced during their careers as project managers. By combining these two methods, autoethnography and Delphi study, a robust test of the model was performed.

Table 39 compares my autoethnography rankings by frequency of occurrence with the rankings of the competencies by the Delphi group (adjusting for statistical significance) in terms of the various EI clusters. The difference in the rankings obtained from my experience to that of the Delphi panel is explained by the frequency of the competencies in my autoethnography being based on my developmental needs and their emotional impact on me. The relative ranking obtained from the Delphi panel members reflects their view of the importance of the competencies in managing large projects.
Furthermore even within the Delphi panel the individual results were different from the average results of the group as a whole.

Table 39 Comparison of autoethnography and Delphi study results

<table>
<thead>
<tr>
<th>Competency</th>
<th>Autoethnography ranking by frequency of occurrence</th>
<th>Ranking by Delphi group (adjusting for statistical significance)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self-awareness cluster</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional self-awareness</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Accurate self-assessment</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Self-confidence</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Self-management cluster</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transparency</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Emotional self-control</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Adaptability</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Achievement orientation</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Initiative</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Optimism</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Social awareness cluster</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organisational awareness</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Empathy</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Services orientation</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td><strong>Relationship management cluster</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspirational leadership</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Teamwork and collaboration</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Influence</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Conflict management</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Change catalyst</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Developing others</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

6.3 Discussion of the Delphi Study Results

The Delphi panel members were asked to provide their views concerning the importance of PMBoK and soft skills as project size increased, to confirm or otherwise
the management issues resulting from the temporary nature of projects, to rate the importance of reflection in the development of their career and in managing projects and to confirm or otherwise the relevance of the competencies contained in the Goleman-Boyatzis model (Goleman et al. 2013). In addition, the panel were asked to provide a ranking for competencies within each cluster for the competencies found to be relevant.

During the course of the study, panel members’ comments on the issues under discussion in each round were invited. Those comments were fed back to the panel to establish whether a consensus (regarded as greater than 67% agreement) view could be obtained regarding their significance. The results from this process resulted in the panel identifying five project management problems resulting from their practical experience rather than a consideration of the temporary nature of projects. The panel also identified seven team management factors associated with project success.

The results from the study on these issues are presented in Chapter 5. This section compares those results with other published research.

6.3.1 The Relative Importance of PMBoK and Team Management Skills

Section 5.3 presents the results of the panel concerning the relative importance of PMBoK type skills and project management skills as project size increased. The size split used in the questions was based on my experience. It should, however, be noted that no adverse commentary was received from the panel concerning the size of projects selected for discussion.

As can be seen by reference to Figure 3, the percentage allocated to very important and important increases from 86% for projects less than $50 million to
100% for projects greater than $500 million. When the percentage only allocated to very important is considered, the change is more pronounced. For projects greater than $500 million in size, 95% of the panel members rated team management skills as very important, up from 32% for projects less than $50 million.

In comparison, the importance given to PMBoK-type skills, when very important and important are considered together, increased to 77% from 68% for projects in the same size range. When the percentage only allocated to very important is considered, a result of 55% was obtained for project sizes greater than $500 million, up from 27% for project sizes less than $50 million.

From the above results, it is obvious that the number of panel members who regard team management skills and PMBoK type skills as very important increases with project size. The difference in team management skills being more marked than PMBoK type skills and in the percentages increasing as project value increased from $50 million to over $500 million was approximately 200% for team management skills and 100% for PMBoK type skills.

This result concerning the impact of project size on the need for team management skills is also confirmed in my autoethnography (event 19) in which I discuss my realisation that as project size increased, I could no longer rely on my own efforts but had to develop my team management skills in order to ensure the successful delivery of a project.

The results, consisting of 68% of panel members rating PMBoK-type skills as important or very important, appear to contradict the findings of certain work (Whitty 2010) regarding the use of PMBoK methods such as Gantt charts. This research suggests that Gantt charts are used mainly to meet the reporting requirements of senior
managers rather than to be a project control tool. As discussed in section 5.3, when it
was suggested to the panel that Gantt charts were not relevant in project management
and were used primarily to meet the requirements of senior management, 78% of the
panel strongly disagreed or disagreed with this proposition, and only 4% agreed. The
remaining group had a neutral stance on the issue.

In addition, as indicated in the comments presented in section 5.3, the panel
commentary was supportive of the use of Gantt charts as planning tools and was
critical of project managers who used them otherwise.

The panel’s view, however, should be contextualised with the question put to
them. They were specifically asked to comment on the importance of Gantt charts in
the management of large projects. In my experience, Gantt charts, which are produced
from a more detailed network diagram, are essential in this environment. There are
certain situations when a Gantt chart (being a list of activities with dates) is not
needed. These situations include small projects where a list of things to be done in the
month will suffice and in certain situations, even in large projects, such as close-out
activities.

The Delphi panel’s views, with respect to large projects, appear to be supported
by the research of Papke-Shields et al. (2010) which found that the use of control
systems increased as construction projects increased in size. The assumption was that
the increase was due to a greater level of importance being assigned to control systems
by managers who run larger construction projects.

This position is further supported by a literature review of research findings
concerning project success and failure. It was found that according to the research
work reviewed, project planning and control was the most frequent factor associated
with a project’s success or failure (Camilleri 2012).
Outside the construction industry, in a review of the perceived benefits of project management methodologies in the IT industry, Wells (2012) found that there was a U-shaped relationship between the experience of project managers and their view of the importance of project management methodologies as indicated in Figure 15.

As discussed in Chapter 1 this difference in experience is also suggested by Flyvbjerg (2014)

Thus, the apparent contradiction in these findings may be explained by the difference in experience level of the different groups of project managers under investigation.

Based on the above results, it would appear that when the project managers’ opinion regarding the importance of PMBoK-type skills is sought, the size of projects they have managed is an important variable that needs to be established to give context to the opinions expressed.
6.3.2 Problems Resulting from the Nature of Projects

The identification of the seven major problems and the subsidiary issues put to the Delphi panel, as discussed in both section 2.3.4 and section 5.4, presents the results of the panel’s view of the relative importance and frequency of these problems.

Relative Importance Results

As shown in Table 23, the category that achieved the equal highest with respect to relative importance was ambiguity and change. The bottom two problem categories resulting from diverse team members’ backgrounds and problems resulting from diverse stakeholders’ backgrounds are very close, receiving scores of 0.74 and 0.72 respectively. This is not surprising, as the problems within these categories all deal with the same issue, that is, that of diversity. It is recognised that team members are, in terms of the definition, also stakeholders. It was decided, however, to split them out as a subset of stakeholders on the grounds that they have different motivations and relationships with the project manager. For example, it is possible to remove a disgruntled member of the team from a project, but a disgruntled stakeholder, who is not a team member, has to be dealt with on a continuing basis.

Reviewing Table 23, it is interesting to note that the problem specifically related to PMBoK-type skills, namely developing a working control system, ranked 13. Table 40 presents an analysis of the question categories relating to the top 13 items in the relative importance index, that is, all issues up to and including the PMBoK-type issue.

When the 12 issues ranking higher than that of development of a working control system are considered, two out of the top three places were taken by problems relating to scope change, with building a cohesive team ranking an equal second. Of
the remaining nine issues, four relate to stakeholder management, five to team management and one to understanding the particular needs of a project.

Table 40 Analysis of the top 13 items in the relative importance index by problem

<table>
<thead>
<tr>
<th>Problem Area</th>
<th>Team Management</th>
<th>Stakeholder Management</th>
<th>PMBoK</th>
<th>Conflict</th>
<th>Scope Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of a clearly defined project scope.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Scope changes as the project progresses.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Building a cohesive team.</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loss of relationships with key stakeholders.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Team members’ communication needs.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understanding the issues involved in the particular project.</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loss of trust between team members resulting from team changes.</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stakeholders’ personal goals and resultant personal agendas.</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Building trust within the team.</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loss of a cohesive team.</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developing rapport with stakeholders.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Stakeholders’ communication needs.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Developing a working control system.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>6</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

When all the 34 problem areas reported in Table 23 are analysed in a manner similar to Table 40, 64% of the question categories are found to relate to team management or stakeholder management. Based on this percentage (i.e., 64%), the expected value for problems in those categories in the top 13 items of the relative importance index would be 8 rather than 10. When the expected and achieved results are compared using a chi-square test, a $p$ value of 0.368 is obtained, resulting in the acceptance of the null hypothesis, i.e. the result is not statistically significant.

Table 41 was used to convert the relative importance index results to a significance description of the problem.
Table 41: Significance ratings resulting from the relative importance index result

<table>
<thead>
<tr>
<th>Relative Importance Range</th>
<th>Result Problem Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 0.8 to 1.0</td>
<td>Very significant</td>
</tr>
<tr>
<td>0.6 to &lt; 0.8</td>
<td>Significant</td>
</tr>
<tr>
<td>0.4 to &lt; 0.6</td>
<td>Neutral</td>
</tr>
<tr>
<td>0.2 to &lt; 0.4</td>
<td>Little significance</td>
</tr>
<tr>
<td>0.0 to &lt; 0.2</td>
<td>Very little significance</td>
</tr>
</tbody>
</table>

Table 23, concerning the relative importance index, indicates that the top 10 problems received a rating of very significant. Indeed, it is not until the 18th problem that a rating below very significant (and then by 0.01) is given. Finally, all the problems except the last one received rating of significant, the last problem only failing to do so by 0.01 which is clearly not statistically significant. Based on this analysis, the panel is regarded as having confirmed the importance of the problems in project management identified from a review of the nature of projects.

Frequency Results

Two issues, those being team members’ communication needs and stakeholders’ goals and resultant agendas, received a mean frequency rating of frequent. All other problems achieved a rating of average.

An interesting problem occurring in the top five results by mean frequency was that of “belief that you and the project team can solve the project’s problems” and its relative importance index result of .79 placing it in the significant category. The high significance and frequency given to this problem would point to the need for the project manager to possess the EI competencies of self-confidence (in order to
overcome his own self-doubts) and influence in order to persuade team members that they are up to solving the projects many problems.

The lowest scoring problem on the relative importance index scale was 0.59. This was above the level of insignificant. In addition, all the problems were rated by the panel as having at least an average likelihood of occurring on any given project. Based on this result, and the importance of the problems in project management identified from a review of the nature of projects, these were regarded as having been confirmed by the panel. The results in Table 24 should be treated with caution. Rather than regarding the ranking of the problems as definitive, particularly those having a mean frequency below 75% (i.e., average occurrence), they should instead be regarded as establishing that in the panel’s collective experience, all of the problems have a reasonable chance of occurring on any given project.

To reach a better understanding of the impact of the importance of a problem coupled with its frequency, a severity index was used. The index was calculated in a similar manner to Assaf et al. (2006) with the mean frequency being used to replace the author’s frequency index. The formula for the significance index thus becomes:

$$\text{item’s significance index} = \text{item’s mean frequency} \times \text{item’s relative ranking}$$

The results for the top 10 problems by severity index are compared with the same results, and the rating of the same problems obtained using the relative importance index are presented in Table 42.

As can be seen, when frequency is taken into account, the order of the top 10 items in the significance index is different from that in the relative importance index. The top five items in the significant index still contain four of the top five from the relative importance index. In addition, the top 10 items in the significance index are
made up of the top 14 items in the relative importance index. It would appear, therefore, that adjusting for frequency does affect the ranking of the problems but not in any markedly significant way.

Table 42 Comparison of top significance ranking problems with their position using the relative importance index

<table>
<thead>
<tr>
<th>Problem Ranking</th>
<th>Problem Area</th>
<th>Significance Index</th>
<th>Relative Importance Index Ranking of Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Team members’ communication needs.</td>
<td>0.71</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>Stakeholders’ goals and resultant agendas.</td>
<td>0.68</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>Scope changes as the project progresses.</td>
<td>0.67</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Building a cohesive team</td>
<td>0.65</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>Lack of a clearly defined project scope.</td>
<td>0.63</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Develop rapport with stakeholders.</td>
<td>0.61</td>
<td>9</td>
</tr>
<tr>
<td>7</td>
<td>Understanding the issues involved in the particular project.</td>
<td>0.59</td>
<td>6</td>
</tr>
<tr>
<td>8</td>
<td>Team members’ different geographic locations.</td>
<td>0.58</td>
<td>14</td>
</tr>
<tr>
<td>9</td>
<td>Stakeholders’ communication needs.</td>
<td>0.57</td>
<td>12</td>
</tr>
<tr>
<td>10</td>
<td>Team member changes.</td>
<td>0.56</td>
<td>14</td>
</tr>
</tbody>
</table>

6.3.3 Additional Problems in Project Management Identified by the Panel

Section 5.5 presents the results concerning the additional problems in project management identified by the panel members. These problems are of a practical nature as they cannot necessarily be determined from a consideration of the nature of projects but from the practical experience of running projects. These results are discussed with reference to the academic literature and my autoethnography in this section.

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 in section 5.5 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 (Alzahrani et al. 2013; Nguyen et al. 2004; Jha et al. 2007).

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 et al. 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 et al. 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 lack of 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 was identified by several such authors as Pinto and Slevin (1987; Pinto & Slevin 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, both of these methods do not 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 that could result 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 was noted by several researchers (Jha et al. 2007; Pinto & Prescott 1988; Pinto et al. 1987; Thamhain 2004a; Thamhain 2004b; Westerveld 2003).

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 potential change of government is also a major problem, as it initiates a caretaker mode. 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 modification 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 third, achieving a 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.

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 to a moderate extent.

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 (Atkinson et al. 2006; Bain 2009; Flyvbjerg 2008, 2013, 2014; Flyvbjerg et al. 2013; Kahneman et al. 1993; Love et al. 2012).

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 my autoethnography event 33.

Confirmation of this hypothesis was beyond this study and could be an area for further work.
6.3.4 Factors Identified by the Panel as Important to Delivering a Project Successfully

Section 5.6 presents the results concerning factors panel members associated with team management. These results are discussed with reference to the academic literature and to my autoethnography in this section.

Understanding a Team Member’s Strengths and Weaknesses

Understanding a team member’s strengths and weaknesses 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 et al. 2003; Flyvbjerget al. 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 et al. 2006). The understanding of the characteristics of team members was found to be important in developing successful multifunctional teams (Chen et al. 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 et al. 2012), which is contained in the Goleman-Boyatzis model (Goleman et al. 2013).

The importance of this factor is therefore endorsed by four sources: the Delphi panel, the literature, my autoethnography (events 8 and 18) and 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 (Heagney 2011; Pinto et al. 1987; Pinto et al. 1990) and also in the case of diverse geographically located teams (Cramton et al. 2005; Hertel et al. 2005; Lee-Kelley et al. 2008; MacGregor 2005; Montoya et al. 2009; Verburg et al. 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 (Hwang et al. 2013; Kerzner 2013; Snowden et al. 2007).

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 my autoethnography (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 (see section 5.6) 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 (Goleman 2000; Kerzner 2013; McHugh et al. 2012; Munns et al. 1996).

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

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 my autoethnography (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 (Amabile et al. 2007; Barsade 1998; Cicmil et al. 2006; Randolph et al. 1988), as has the need to meet team members professional needs (Thamhain 2004a).

In addition to the literature, my autoethnography 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 relative importance index ranking for this category, with a 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 et al. 1979).

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

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

6.3.5 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 as they arose are presented in section 5.7. As can be seen by reference to this section, 90% of panel members rated the 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.

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

6.3.6 The Relevance of EI in Dealing with Project Problems Identified in the Literature

The panel’s results concerning the relevance of the competencies in the Goleman-Boyatzis model of EI (Goleman et al. 2013) for dealing with the problems in
The role of emotional intelligence in the management of large construction projects

As can be seen, all but three of the competencies (self-confidence, optimism and developing others) were found to have a relevance to the problems of over 98%. The other were slightly lower, with self-confidence scoring 97.3% and optimism and developing others 95%.

This result from the panel confirmed the findings of my autoethnography that also found that one or more of the competencies in the model were relevant in dealing with the issues that arose during my career as a project manager.

The comments reported in section 5.8 regarding the interplay of IQ and EQ are significant. Whilst the goal of this research is to establish the relevance of EI in dealing with the challenges of project management, it does not seek to suggest that the
need for EI is greater than or indeed can replace IQ. This position—that is, the importance of IQ as well as EI—is supported by several works (Dulewicz et al. 2005; Goleman et al. 2013; Lindebaum et al. 2012; Muller et al. 2012; Müller et al. 2007).

6.4 Summary

6.4.1 Verification of the Goleman-Boyatzis Model of EI (Goleman et al. 2013)

This chapter has discussed the results from my autoethnography and the Delphi study and compared them with findings in the academic literature.

The literature showed that the Goleman-Boyatzis model of EI (Goleman et al. 2013) has been found applicable to project management in the areas of individual and workgroup performance (Hobbs et al. 2012), investigation of competencies leading to superior performance (Mount 2006), job satisfaction and performance (Turner 2007), trust (Boot-Handford et al. 2013), professional success and leadership style (Sunindijo et al. 2007). In the case of project managers’ possession of selected competencies, it was also a component of superior project performance (Zhang et al. 2013).

The results of the autoethnography showed the applicability of the competencies contained in the Goleman-Boyatzis model of EI (Goleman et al. 2013) in dealing with the team management problems I experienced during my career as a project manager. All the competencies in the model were found to have had application in dealing with one or more of the events discussed in the autoethnography.

The Delphi study was first used to confirm that the problems identified from the literature review had been experienced by members of the Delphi panel in their practice as project managers. The panel results were also used to provide an indication of these problems’ relative importance and frequency. The study then moved on to address the relevance of the competencies in the Goleman-Boyatzis model (Goleman...
et al. 2013) in dealing with these issues and found that the minimum relevance for a competency was 95%, the majority of the competencies achieving a relevance of over 98%.

The literature review, which identified the problems in project management, the general relevance of EI and the specific significance of the Goleman-Boyatzis model (Goleman et al. 2013), together with the results from the autoethnography and Delphi study, provided a triangulated verification (Yin 2010) of the significance of the competencies in the Goleman-Boyatzis model (Goleman et al. 2013) as important tools that assist in dealing with team management issues in project management.

6.4.2 Additional information provided by the Delphi study

In addition to acting as a method of verification of the findings of the literature review and autoethnography the Delphi study also confirmed:

- that the need for PMBoK and team management skills do increase as project size increases.

- the importance of reflection in the career development of a project manager and in his ability to deal with problems as they arise during the course of a project.

As a result of the discussion phase which took place in the various rounds of the Delphi study the panel members also identified:

- additional problems relating to the management of projects not immediately apparent from a consideration of their nature;

- several factors that are concerned with team management and which are important in the successful delivery of a project.
Finally, by its confirmation of the results of my autoethnography, the Delphi study gave support to the validity of autoethnography as a research method.
Chapter 7: Conclusions

7.1 Introduction

The findings of this research contributes to the understanding of the need for soft skills in general and EI in particular in the management of mining and infrastructure construction projects. The change in the need for these skills, together with traditional PMBoK skills as project size increases, was also investigated. In developing the understanding of the need for EI, this research used the Goleman-Boyatzis model of EI (Goleman et al. 2013) and was unique in its use of the lived experience of project managers (via an autoethnography and a Delphi study) who had held a position of significant responsibility in construction projects larger than $0.5 billion.

This chapter is organised as follows:

- Section 7.2 presents a summary of the research.
- Section 7.3 summarises the important conclusions that may be drawn from this research.
- Section 7.4 reviews the limitations of the research.
- Section 7.5 makes suggestions as to future work that may follow this research.

7.2 Summary of the research

The focus of this research was developed from the literature review contained in Chapter 2. The literature review highlighted a number of approaches used in developing an understanding of the leadership skills and competencies required in project management, one of which was EI. The various models of EI were reviewed, and the Goleman-Boyatzis model (Goleman et al. 2013) was selected for further study. The literature review then went on to establish how the temporary nature of projects and the
potential geographic dispersion of team members differentiated project management requirements from those required in general management.

This approach established the research question which was twofold:

1. Does the need for hard and soft skills increase as project size increases?

2. What are problems involved in project managements and how useful is the Goleman-Boyatzis model in dealing with those problems, with particular reference to large (> $0.5 billion) construction projects?

During the course of the Delphi study, the research also identified five more problems in project management and seven key factors in the successful delivery of projects that were apparent from the experience of the project managers involved in the Delphi study.

7.2.1 Research Methodology

The study used a mixed methods approach consisting of an autoethnography that provided data of a qualitative nature and a Delphi study which provided data of both a qualitative and quantitative nature.

The autoethnography, developed using reflection-on-action, enabled me to reflect on my career and thereby introduce my lived experience as a project manager and use that experience to highlight the relevance of EI to various problems I faced during my career.

To overcome the potential challenge associated with verification of data obtained from my autoethnography, I also used a Delphi study involving a panel averaging 23 members.
In addition to verifying the results from my autoethnography concerning the relevance of EI in project management, the Delphi study was also used to confirm or otherwise the problems in project management resulting from the unique nature of projects identified in the literature and to establish the change in importance of project management hard and soft skills as project size increased.

As a result of comments received during the course of the Delphi study, the consensus view of the panel was obtained concerning other problems the panel members thought were of significance in project management that do not necessarily result from a study of the nature of projects; the factors that assist in the “how to” of project management; and finally, the relevance of reflection in a project manager’s career development and in his ability to deal with project problems as they arise.

7.2.2 Results and Analysis of My Autoethnography

The autoethnography outlined my lived experience as a project manager and incorporated relevant experiences that occurred outside my career as a project manager that provided insights I had used during my career in project management. In all, 33 events were described and analysed to identify the learning experience resulting from the event, the skill needs identified as a result of the learning experience and the EI competencies associated with those skill needs identified.

The analysis of the events indicated that each of the events highlighted the need for one or more of the competencies in the Goleman-Boyatzis model (Goleman et al. 2013) and that in the course of the 33 events, all the competencies were needed. The autoethnography thereby established the relevance of the model in dealing with problems in project management in my career.
7.2.3 Results and analysis of the Delphi study

The Delphi study was conducted over six rounds.

In round 1, panel members were asked to rate the significance and frequency of the issues resulting from the unique nature of projects that had been identified in the literature. In addition, panel members were asked to express their opinion regarding the importance of hard (PMBoK) and soft skills as project size increased. From the results of this round, a ranking of the issues identified using a relative importance index was produced. The frequency of the issues was calculated using the mean frequency the panel estimated of their occurrence. All but the last four issues (in terms of the relative importance index) identified in the literature were given an average rating of significant or above, and of the remainder, none were rated as insignificant. No issue had a calculated mean frequency of occurrence below that of average.

The significance of these issues was thus regarded as confirmed.

Rounds 2 to 5 asked panel members to rank the relative importance of the EI competencies contained in the four clusters in the Goleman-Boyatzis model of EI. Round 2 dealt with the emotional awareness cluster, round 3 with the self-awareness cluster, round 4 with the self-management cluster and round 5 with the social awareness cluster.

The results of the rankings of the EI competencies in rounds 2 to 5 were analysed for significance using the Freidman test and were appropriated by the Wilcoxon test. No statistically significant difference was found between the rankings of the competencies in the emotional awareness and self-management clusters. A statistically significant difference was found in the ranking of the competencies in the self-awareness and social awareness clusters.
In rounds 2 to 5, the panel members were given the opportunity to rate a competency as not relevant to a particular issue in project management. Fifteen out of the 18 competencies in the model were rated as 98% relevant or above, and the other three were rated as 95% or of greater relevance to dealing with the issues resulting from the unique nature of projects.

Round 6 asked panel members to rate the significance of reflection in their career development and in their ability to handle project problems as they arose. Ninety percent of panel members rated reflection as either significant or very significant in both career development and management of project problems.

A relative importance index was calculated on the issues arising from the comments received from the panel during the course of the Delphi study on which consensus (> 67% agreeing) had been achieved. In all, five project management problems not specifically identified from a consideration of the unique nature of projects were highlighted, and seven factors that assist in the successful delivery of a project were also identified. The results concerning these items are presented in sections 5.5 and 5.6 and summarised in Table 44. A detailed discussion of the items is presented in sections 6.3.3 and 6.3.4.
Table 44 Summary of additional problems and key success factors identified by the Delphi panel.

<table>
<thead>
<tr>
<th>Addition problems identified by the panel</th>
<th>Success factors identified by the panel</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Lack of suitably experienced personnel being available when a contract is awarded unexpectedly.</td>
<td>1. The importance of the project director communicating a consistent vision of the project’s goals at every opportunity.</td>
</tr>
<tr>
<td>2. Externally imposed salary caps making the recruitment of suitably qualified project personnel difficult.</td>
<td>2. 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.</td>
</tr>
<tr>
<td>3. Loss of support resulting from a change in ownership, particularly a new government.</td>
<td>3. The importance of maintaining a no-blame culture.</td>
</tr>
<tr>
<td>4. Loss of staff when a project is in trouble.</td>
<td>4. The importance of maintaining an environment of personal responsibility.</td>
</tr>
<tr>
<td>5. The original project proponent’s optimism bias.</td>
<td>5. The need to recognise emotions as opposed to logic in dealing with disputes.</td>
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<tr>
<td></td>
<td>6. Recognising the emotions and drivers of team members and not just their technical expertise in problem solving.</td>
</tr>
<tr>
<td></td>
<td>7. Knowing your team members’ strengths and weaknesses and the constraints they work under.</td>
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</table>

7.3 Conclusions

The conclusions in this section are developed from the literature review and results of the autoethnography and Delphi study presented in Chapters 4 and 5 and the discussion in Chapter 6. The main areas these conclusions cover are:

- the relevance of the competencies in the Goleman Boyatzis model of EI (Goleman et al. 2013) to the problems experienced in project management;

- the confirmation of autoethnography as a method of research;
• the impact of project size on the need for PMBoK and team management skills;

• the confirmation of the problems in project management identified from a review of the nature of projects;

• the identification of additional problems in project management not apparent from a review of the nature of projects;

• the identification of critical success factors in team management that contribute to a project’s success;

• the confirmation of the importance of the role of reflection in project management.

In terms of developing the understanding of project management policy and practice, the relevance of these conclusions may be summarised as follows:

The Relevance of EI in Dealing with the Problems in Project Management

The conclusion reached in this section is very important in developing the understanding of project management as, in the case of large projects, it moves the need for EI for a project manager from a nice to have to a necessity.

The Validity of Autoethnography as a Research Method

The advantage of autoethnography is that it allows the writer to introduce his/her lived experience as a research base concerning issues with which he/she is familiar. The challenges to this method were discussed in detail in Chapter 3.

The results of the Delphi study, which confirms the findings of the autoethnography, supports the validity of the use of autoethnography as a research method.
The Impact of Project Size on Management Skills and Key Factors in a Project’s Delivery

The conclusion reached in this section emphasises that the development of team management skills is an absolute necessity for a project manager hoping to manage larger projects and that reliance on the skills developed for certification, whilst important, will not be sufficient.

In addition, the conclusion reached in section 7.3.3 establishes that the experience of a project manager is a variable that needs to be considered in research.

Problems in Project Management Identified from the Experience of the Delphi Panel Members

Of the five problems identified, of particular importance for project policy were the lack of suitably experienced personnel being available when a project is awarded unexpectedly and the impact of externally imposed salary caps on the recruitment of project personnel. Both of these issues have an impact on the mechanisms by which projects teams are selected and therefore warrant further investigation.

The Importance of Reflection

The conclusion in this section is important in that it confirms the impact of the role of reflection as a skill in developing a successful career as a project manager.

7.3.1 Conclusion Regarding the Relevance of EI in the Management of the Project Problems Identified in the Academic Literature

The results of the Delphi study concerning the relevance of EI in dealing with the problems identified from a review of the unique nature of projects is presented in section 5.8 and discussed in section 6.3.6. The results of the autoethnography on the issues is presented in section 4.2 and discussed in section 6.2.
Based on the results of the Delphi study and the autoethnography it is concluded that the Goleman-Boyatzis model of EI (Goleman et al. 2013) is relevant to dealing with problems in project management.

7.3.2 Conclusion Regarding the Validity of Autoethnography as a Research Method

The Delphi study’s verification of the results of my autoethnography lend support to the conclusion that autoethnography is a valid form of research particularly if used as part of a mixed method.

7.3.3 Conclusion Concerning the Impact of Project Size on the Need for Team Management and PMBoK Skills

This research concluded that the importance of both team management skills and PMBoK skills increased as project size increased. This conclusion is supported by the Delphi study results contained in section 5.3 that presented the panel’s view of the importance of team management skills and PMBoK skills, which are discussed in section 6.3.1.

The difference in opinion in research results regarding the use of PMBoK skills, such as Gantt charts highlighted in section 2.6.1 and discussed in section 6.3.1, can be explained by assuming that if a project manager only had experience of smaller projects, his views would be different from a manager who had been exposed to larger projects.

This leads to the additional conclusion that when the opinion of project managers is sought regarding the importance of team management skills and PMBoK-type skills, the size of projects they have managed is an important variable that needs to be established to give context to the opinions expressed.
7.3.4 Conclusion Concerning Project Problems Resulting from the Unique Nature of Projects

The development of the major problems and the subsidiary issues put to the Delphi panel are discussed in section 2.3.

The panel’s views concerning the problems are summarised in section 5.4 and discussed in section 6.3.2. None of the problems or their associated issues received an average rating of insignificant or below. In addition, they all received a mean frequency rating for their occurrence of average or above. Based on this, it is concluded that the relevance of these problems to the management of projects has been confirmed for large projects.

7.3.5 Conclusion Regarding Project Problems Additional to Those Identified from a Consideration of the Nature of Projects

The results concerning problems in project management did not arise from a review of the nature of projects but were highlighted from comments received from the panel. They are presented in section 5.5, discussed in section 6.3.3 and summarised in Table 44.

These problems were essentially of a practical nature and led to the conclusion that the problems in managing projects can’t be entirely ascertained by an analysis of the nature of projects themselves. They are often identified through the lived experience of the project management community.

7.3.6 Conclusion Regarding Factors Contributing to the Successful Delivery of a Project

During the course of the study, comments received from panel members indicated several factors that they found important in ensuring the successful
completion of a project. The results of these factors, on which a consensus view was obtained, are presented in section 5.6 and discussed in section 6.3.4. The factors highlighted were all factors related to team management, and it was therefore concluded that issues related to team management are important to the successful delivery of a project.

7.3.7. Conclusion Regarding the Importance of Reflection in Project Management

The results of the Delphi study concerning reflection are presented in section 5.7 and discussed in section 6.3.5. The Delphi study panel members rated reflection as significant or very significant in their career development and their ability to solve project management problems.

My autoethnography is presented in section 4.2 and discussed in section 6.2. As indicated in the autoethnography, reflection was the tool that enabled me to modify my management style and successfully develop my career and develop tools for dealing with the team management aspects of project management.

Based on the results of my autoethnography and the Delphi study, it was concluded that the ability to reflect on situations is an important success factor in project management.

7.4. Limitation of this Research

This research was conducted using project managers who had mainly managed projects in the construction industry and did not consider other significant industries such as IT and defence. Although members of the panel had managed projects across different cultural environments, no attempt was made to differentiate the results by this factor.
The sample of members in the Delphi panel was opportunistic and purposive in nature. Whilst an analysis of the representative nature of the sample by age or ethnic basis was not carried out, a comparison of the percentage by gender was checked by comparing the number of women in the Delphi panel with those achieving the grade of fellow in the Australian Institute of Project Management. Approximately 10% of fellows were women, this percentage being reduced if an allowance was made for those who achieved the level of fellow by academic contribution as opposed to the practice of project management.

A chi-square analysis resulted in a $p$ value of 0.32 indicating the difference between the number of women in the Delphi panel and those who were fellows of the Australian Institute of Project Management was not significant at $p < 0.05$.

In developing the conclusions in section 7.3.1 (relevance of EI in dealing with the problems in project management), 7.3.2 (verification of autoethnography as a research method.), 7.3.5 (significance of the problems in project management developed from a consideration of the nature of projects), 7.3.6 (additional problems in project management) and 7.3.7 (key factors in the successful delivery of a project), the panel were asked to consider large-value projects. Conclusions reached in the other sections are not affected by this limitation.

7.5. Recommendation for Further Work

The intent of this research was to investigate the change in skills needed as project value increases and the relevance of the Goleman-Boyatzis model of EI (Goleman et al. 2013) in dealing with the problems in project management resulting from the nature of projects. In the course of the investigation, several other matters were also highlighted, namely, the additional problems not directly identifiable from
the nature of projects, the factors assisting in the successful delivery of projects and the importance of reflection in a project manager’s career and his ability to solve the project’s problems. Recommendations for further work on these topics are discussed in the sections below.

7.5.1 Recommendation for Further Work with Regard to the Use of Autoethnography

This research is the first of its kind in which the lived experience of a project manager is used to investigate the importance of EI in dealing with project management problems.

Further autoethnographies would be of benefit to provide verification of this research and to provide insights into other issues raised in the course of the Delphi study. In order to further increase the understanding of project management, autoethnographies could be provided dealing with such issues as:

- Success factors relating to the successful delivery of projects.
- Problems other than those apparent from a consideration of the fundamental nature of projects.

7.5.2 Recommendation for Further Work on the Impact of Project Size

The Delphi study panel members clearly indicated that in their opinion, the need for both soft skills and PMBoK-type skills increased with project size. Confirmatory work in this area could be carried out by canvassing the opinion of project managers who had run various sizes of projects (not just those who had progressed to the $0.5 billion project) and comparing the opinions grouped according to project size.
It would also be of benefit to establish whether the views of project managers could be differentiated by type of organisation, such as client project manager government and private organisation and contractor.

In view of the apparent differences of opinion on the need for certain PMBoK-type skills highlighted by this and other research, it may also be beneficial to develop a more finely tuned research methodology to establish whether there is any variance in the views of the need for particular PMBoK skills rather than PMBoK type skills in general as project size increases.

7.5.3 Recommendation for Further Work on the Impact of Procurement Method and Project Prospective

In the Delphi study, no attempt was made to differentiate the results based on procurement type (lump sum, EPCM, PPP, etc.) or project perspective (client side as opposed to contractor). Obtaining information via a Delphi study or otherwise on project problems and key success factors based on these variables would provide a valuable contribution to the understanding of the situational dependence needs of project management.

7.5.4 Recommendation for Further work on Project Problems Resulting from the Nature of Projects

The importance index derived from the Delphi study results relates to larger projects. As project size decreases, say below $50 million and certainly below $10 million, a change in the relative importance index could be expected. In the writer’s experience, major issues with external stakeholders are unlikely to occur at this level, and the problems associated with the geographical dispersion of team members are less pronounced or may not exist at all.
Further research could, therefore, be carried out to establish a relative importance index for the problems identified relating to the nature of projects in the case of smaller projects and then compare the result with the relative importance index obtained for larger projects.

7.5.5. Recommendations Regarding Project Problems Additional to Those Suggested in the Academic Literature

The additional problems to those resulting from a consideration of the nature of projects identified in this research resulted from an analysis of comments received from the Delphi panel. The method used was not, therefore, rigorous and did not attempt to exhaust the list of project management problems that could be identified from the lived experience of project managers as opposed to those resulting from a consideration of the nature of projects. Further research in this area would, therefore, be of benefit to establish a more exhaustive list. Research that differentiated the practical problems by project size would also be of interest, as it is the writer’s experience that the practical problems experienced in smaller projects can be different from those experienced in larger projects.

Additional research concerning the practical problems and key success factors could be conducted by procurement method and project perspective.

7.5.6. Recommendations for Further Work on Factors Contributing to the Successful Delivery of a Project

Similar to section 7.5.4, the factors identified as contributing to the successful delivery of a project were obtained from an analysis of comments received from the Delphi panel. The list therefore cannot be regarded as exhaustive; further work is
needed to establish a more comprehensive list and the relative significance of the problems identified.

Of the factors identified in this research, one area lacking significant academic comment was the conflict between creating a no-blame environment and establishing a culture of personal responsibility. As the panel consensus on the importance of these issues was over 90%, more investigation of the interaction of these two factors would appear to be warranted.

Additionally, as the impact of optimism bias produced the largest disagreement among the panel concerning its impact on project success, further research in this area would appear warranted.

7.5.7. Recommendations for Further Work on the Relevance of EI in the Management of the Project Problems Identified in the Academic Literature

This research investigated the relevance of EI in dealing with the management of large projects. This was undertaken by canvassing the opinions of project managers who, by virtue of the project size they had been given to manage, would be regarded as successful by their peers and the entity that appointed them.

Further research that would be of value would involve establishing the EI of the project managers at this level, preferably by using an objective method. Here EI could then be compared to those managers of a similar age who are managing smaller projects.

7.5.8. Recommendations for Further Work to Broaden the Basis of This Study

As noted in the limitations, this research confined itself to the construction industry in Australia. It would be of value to establish whether the findings of this
research could be generalised to the IT and defence industries and to projects undertaken in other cultural environments such as Asia.
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Appendix A. Details of the Delphi Study

Round 1 Review of the problems in the management of construction projects.

Round 2 Project characteristics and their impact on emotional intelligence (self-awareness).

Round 3 Project characteristics and their impact on emotional intelligence (self-management).

Round 4 Project characteristics and their impact on emotional intelligence (social awareness).

Round 5 Project characteristics and their impact on emotional intelligence (relationship management).

Round 6 The importance of reflection.
Review of the problems in the management of construction projects.

1. Information Sheet (HREC approval No. 2014000264)

My name is Peter Livesey and I am a student undertaking research as part of the University of Technology Sydney’s PhD program. I am being supervised by Prof Spike Boydell, Prof Göran Runeson & Dr Mano Nuggatiya.

The purpose of this research/online survey is to explore the particular challenges involved in running major construction projects (larger than $500 million) and the role of Emotional Intelligence (EI) competencies in managing such projects.

I am asking for your participation in an online questionnaire, which has five rounds (one round each week). Each round will take approximately 15-20 minutes to complete.

I will provide a synthesis of the group responses, or any unexpected issues, at the start of Round 2 and subsequent rounds, which will hopefully be useful to all participants.

You can change your mind about participation at any stage and can discontinue your participation in the survey without consequence.

If you agree to be part of the research and to the research data gathered from this survey being published, in a form that does not identify you, please continue with answering the survey questions.

If you have concerns about the research that you think I, or my primary supervisor, can help you with, please feel free to contact either of us as indicated below:

Dr Spike Boydell Tele +612 9514 8675 Email Spike.Boydell@uts.edu.au.

Peter Livesey Tele +61416 023 891 Email petervincent.livesey@student.uts.edu.au.

If you would like to talk to someone who is not connected with the research, you may contact the Research Ethics Officer on +612 9514 9772 or Research.ethics@uts.edu.au and quote this number: 2014000264

**1. Please indicate your willingness to proceed with the questionnaire**

☐ I do wish to proceed with the questionnaire

☐ I do not wish to proceed with the questionnaire
2. In your answers to these questions, please indicate your view of the relative importance of technical skills (often called PMBoK type skills) and team management skills (often called soft skills), for the sizes of project indicated. Please use the drop down boxes to answer all the columns.

<table>
<thead>
<tr>
<th></th>
<th>&lt;$50M</th>
<th>&gt;$50M - $500M</th>
<th>&gt;$500M</th>
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<tbody>
<tr>
<td>The importance of technical</td>
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<tr>
<td>(PMBoK type skills).</td>
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<td>The importance of team</td>
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<td>management skills.</td>
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</table>
Review of the problems in the management of construction projects.

3. Round 1

The next 7 questions deal with the characteristics of projects and their resultant problems. For large projects (say over $500 M) please indicate your view of the importance and the frequency of the problems identified.

If you would like to discuss additional problems you do not believe have been identified or expand on your answers please use the comments box.

*3. The limited time frame (i.e. having a set time period to achieve a set of defined objectives) of a project causes problems resulting from a need to quickly achieve the following:

<table>
<thead>
<tr>
<th>Your view of the significance of the problems</th>
<th>Your view of the frequency of the problems</th>
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<tbody>
<tr>
<td>Build a cohesive team.</td>
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<tr>
<td>Build trust within the team.</td>
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<tr>
<td>Develop rapport with stakeholders.</td>
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<tr>
<td>Develop a working control system.</td>
<td></td>
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<tr>
<td>Obtain organisational support.</td>
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</table>

Any other problems you have identified in this area:
Review of the problems in the management of construction projects.

4. Round 1

*4. The diverse team members' backgrounds (ethnic and experiential) and locations (e.g. concept design in Australia, detailed design in India, manufacturing in China, procurement run from Brisbane and a construction site in remote Australia) causes problems for team member management as a result of differences in:

<table>
<thead>
<tr>
<th></th>
<th>Your view of the significance of the problems</th>
<th>Your view of the frequency of the problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team members' personal goals and resultant personal agendas.</td>
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<tr>
<td>Team members' cultural backgrounds.</td>
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<td>Team members' professional backgrounds.</td>
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<tr>
<td>Team members' communication needs.</td>
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<td>Team members' different geographic locations.</td>
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<td>Team members' native language differences.</td>
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</table>

Any other problems you have identified in this area:


**5. The diverse stakeholders' backgrounds and locations causes problems for stakeholder management as a result of differences in:**

<table>
<thead>
<tr>
<th>Stakeholder Aspect</th>
<th>Your view of the significance of the problems</th>
<th>Your view of the frequency of the problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>The stakeholders' goals and resultant agendas.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The stakeholders' cultural backgrounds.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The stakeholders' professional backgrounds.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The stakeholders' communication needs.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The stakeholders' different geographic locations.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The stakeholders' native language differences.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Any other problems you have identified in this area:
**6. The unique nature of each project (e.g. moving from a rail car project, to a desalination plant and then to a tunnel project. Alternatively the different problems encountered on technically similar projects such as different special interest groups creating their own unique problems) results in the following problems:**

| Understanding the issues involved in the particular project. | Your view of the frequency of the problems | | | |
|---------------------------------------------------------------|-------------------------------------------|---|---|
| Managing internal stakeholder expectations.                  | | | |
| Managing external stakeholder expectations.                   | | | |
| Belief that you and the project team can solve the project's problems. | | | |

Any other problems you have identified in this area:
### 7. Round 1

**7. Ambiguity and change arising from:**

<table>
<thead>
<tr>
<th>Lack of a clearly defined project scope.</th>
<th>Your view of the significance of the problems</th>
<th>Your view of the frequency of the problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope changes as the project progresses.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of information to make a fully informed decision.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Team member changes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unexpected and unforeseen events (e.g., subcontractor goes bankrupt).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changes in the external environment (legislative, economic).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Any other problems you have identified in this area:
8. Round 1

**8. Changes in project team and stakeholder personnel resulting in:**

<table>
<thead>
<tr>
<th>Loss of a cohesive team.</th>
<th>Your view of the significance of the problems</th>
<th>Your view of the frequency of the problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loss of trust between team members.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loss of relationship with key stakeholders.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Any other problems you have identified in this area:
9. Round 1

*9. The conflicts (the disagreements that arise prior to a formal dispute) that arise during a project and their impact:

<table>
<thead>
<tr>
<th>Problem Description</th>
<th>Your view of the significance of the problems</th>
<th>Your view of the frequency of the problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Those arising internal to the team.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Those arising external to the team but internal to the parent organisation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Those arising with subcontractors.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Those arising with other stakeholders.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Any other problems you have identified in this area:
Review of the problems in the management of construction projects.

10. Round 1

Finally please provide some background information on yourself which will be treated anonymously.

10. What is your sex?

☐ Male.

☐ Female.

11. What are your qualifications?

☐ Degree Qualified.

☐ Certified in Project Management.

☐ None of the above.

12. How many projects, with a value of over $500 million in today's dollars, have you held a significant management position (Project Director, Dep Project Director, Commercial Director or Construction Director)?

<table>
<thead>
<tr>
<th>Working for a contractor.</th>
<th>Number of Projects.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Working for a client.</th>
<th>Number of Projects.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Working for a consultant.</th>
<th>Number of Projects.</th>
</tr>
</thead>
</table>

13. What is your age bracket

<table>
<thead>
<tr>
<th>Bracket range</th>
<th>Select Range</th>
</tr>
</thead>
</table>

Please add any comments you wish to make regarding these questions.
Project Characteristics and their impact on Emotional Intelligence (EI).

Thank you for your feedback to the first round last week. In round #2 we start with a synthesis of the feedback from the first round, and then focus on the role of self-awareness in managing projects. To provide context, on this page we provide some background and definitions. For those of you unfamiliar with Emotional Intelligence (EI), we have provided a hyperlink to a useful background of EI in Wikipedia together with some important definitions relating to the particular EI model we will be analysing.

Important Definitions

It has been suggested that Emotional Intelligence (EI) is an important factor differentiating job performance involving leadership of teams. One of the Models of EI (Goleman-Boyatzis) identified important EI competencies in the areas of:

• Self-awareness: Reading one's own emotions and recognising their impact.
• Self-management: Keeping disruptive emotions and impulses under control.
• Social awareness: Attuned to how others feel.
• Relationship management: The ability to guide the emotional tone of the group.

This round deals specifically with the competencies grouped under self-awareness. These competencies are:

Emotional awareness: Recognizing one’s emotions and their effects. People with this competence:
• Know which emotions they are feeling and why.
• Realize the links between their feelings and what they think, do, and say.
• Recognize how their feelings affect their performance.
• Have a guiding awareness of their values and goals.

Accurate self-assessment: Knowing one’s strengths and weaknesses. People with this competence are:

• Aware of their strengths and weaknesses,
• Reflective, learn from experience.
• Open to candid feedback, new perspectives, continuous learning, and self-development.
• Able to show a sense of humour and perspective about themselves.

Self-confidence: Sureness about one’s self-worth and capabilities. People with this competence:

• Present themselves with self-assurance, have “presence”.
• Can voice views that are unpopular and go out on a limb for what is right.
• Are decisive, able to make sound decisions despite uncertainties and pressures.

In this round the first question gives feedback from round 1. Please indicate if you agree with the feedback.

The next seven questions deal with the EI competencies grouped under self-awareness which are outlined above. Please rate the importance of the competencies in dealing with the problems identified in managing larger projects.

Please note:
1. In answering the questions all the competencies need to be rated independently using the drop down boxes provided.
2. Not all the competencies are necessarily relevant to all the problem areas.
3. If you select a competency as not relevant you will need to uncheck this box if you later decide to then rank it.
Project Characteristics and their impact on Emotional Intelligence (EI).

*1. These comments regarding significant project problems were made by some panel members. Please indicate if you agree or disagree that these problems are significant in your experience. Should you disagree or strongly disagree please provide a brief comment on your reasons for doing so.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Disagree Nor Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significant problems can result from the PM's lack of power to choose the most appropriate team due to lack of suitable personnel being available when a contract is awarded.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The problem of lack of suitable personnel can be worsened by externally imposed salary caps which make the recruitment of suitably qualified project personnel difficult.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A major problem arising out of diverse team member locations results from the difficulty this causes in creating a common project intent and culture.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>An additional challenge in this area involves dealing with the local culture and resistance to external input.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in ownership, particularly a new government, can be a major source of problems.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A feedback loop is created when a project is in trouble resulting in loss of staff which in turn exacerbates the problems.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>As project problems increase and solutions to these problems are needed controls and constraints often need to be relaxed rather than strengthened.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please add any comments you feel are relevant to these questions.
Page 3 contained no data and is intentionally left blank.
Project Characteristics and their impact on Emotional Intelligence (EI).

The limited time frame (i.e. having a set time period to achieve a set of defined objectives) of a project causes problems resulting from a need to quickly achieve the following:

* Build a cohesive team.
* Build trust within the team.
* Develop rapport with stakeholders.
* Develop a working control system.
* Obtain organisational support.

1. Please rank the following three EI competencies associated with self-awareness in dealing with the problems outlined above:

   - Emotional awareness (recognising your emotions and their effects on your personal performance).
   - Accurate self-assessment (knowing your strengths and limitations).
   - Self-confidence (a strong sense of your self-worth).

2. Please add any comments you feel are relevant to this question.
Project Characteristics and their impact on Emotional Intelligence (EI).

The diverse team members’ backgrounds (ethnic and experiential) and locations (e.g. concept design in Australia, detailed design in India, manufacturing in China, procurement run from Brisbane and a construction site in remote Australia) causes problems for team member management as a result of differences in:

* Team members’ personal goals and resultant personal agendas.
* Team members’ cultural backgrounds.
* Team members’ professional backgrounds.
* Team members’ communication needs.
* Team members’ different geographic locations.
* Team members’ native language differences.

*1. Please rank the following three EI competencies associated with self-awareness in dealing with the problems outlined above:

<table>
<thead>
<tr>
<th>Competency</th>
<th>Not Relevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional awareness (recognising your emotions and their effects on your personal performance)</td>
<td></td>
</tr>
<tr>
<td>Accurate self-assessment (knowing your strengths and limitations)</td>
<td></td>
</tr>
<tr>
<td>Self-confidence (a strong sense of your self-worth)</td>
<td></td>
</tr>
</tbody>
</table>

2. Please add any comments you feel are relevant to this question.
The diverse stakeholders' backgrounds and locations causes problems for stakeholder management as a result of differences in:

* The stakeholders' goals and resultant agendas.
* The stakeholders' cultural backgrounds.
* The stakeholders' communication needs.
* The stakeholders' different geographic locations.
* The stakeholders' native language differences.

1. Please rank the following three EI competencies associated with self-awareness in dealing with the problems outlined above:

<table>
<thead>
<tr>
<th>Competency</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Emotional awareness (recognising your emotions and their effects on your personal performance)</td>
<td></td>
</tr>
<tr>
<td>Accurate self-assessment (knowing your strengths and limitations)</td>
<td></td>
</tr>
<tr>
<td>Self-confidence (a strong sense of your self-worth)</td>
<td></td>
</tr>
</tbody>
</table>

2. Please add any comments you feel are relevant to this question.
Project Characteristics and their impact on Emotional Intelligence (EI).

The unique nature of each project (e.g. moving from a rail car project, to a desalination plant and then to a tunnel project. Alternatively the different problems encountered on technically similar projects such as different special interest groups creating their own unique problems) results in the following problems:

*Understanding the issues involved in the particular project.
*Managing internal stakeholder expectations.
*Managing external stakeholder expectations.
*Belief that you and the project team can solve the project’s problems.

**1. Please rank the following three EI competencies associated with self-awareness in dealing with the problems outlined above:**

- [ ] Emotional awareness (recognising your emotions and their effects on your personal performance).
- [ ] Accurate self-assessment (knowing your strengths and limitations).
- [ ] Self-confidence (a strong sense of your self-worth).

2. Please add any comments you feel are relevant to this question.
Project Characteristics and their impact on Emotional Intelligence (EI).

Considering problems arising from ambiguity and change resulting from:

* Lack of a clearly defined project scope.
* Scope changes as the project progresses.
* Lack of information to make a fully informed decision.
* Team member changes.
* Unexpected and unforeseen events (e.g. subcontractor goes bankrupt).
* Changes in the external environment (legislative, economic).

1. Please rank the following three EI competencies associated with self-awareness in dealing with the problems outlined above:

   - Emotional awareness (recognising your emotions and their effects on your personal performance).
   - Accurate self-assessment (knowing your strengths and limitations).
   - Self-confidence (a strong sense of your self-worth).

   - Not Relevant

2. Please add any comments you feel are relevant to this question.
**Project Characteristics and their impact on Emotional Intelligence (EI).**

Changes in project team and stakeholder personnel resulting in:

* Loss of a cohesive team.
* Loss of trust between team members.
* Loss of relationship with key stakeholders.

**1. Please rank the following three EI competencies associated with self-awareness in dealing with the problems outlined above:**

<table>
<thead>
<tr>
<th>Competency</th>
<th>Not Relevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional awareness (recognising your emotions and their effects on your personal performance).</td>
<td></td>
</tr>
<tr>
<td>Accurate self-assessment (knowing your strengths and limitations).</td>
<td></td>
</tr>
<tr>
<td>Self-confidence (a strong sense of your self-worth).</td>
<td></td>
</tr>
</tbody>
</table>

2. Please add any comments you feel are relevant to this question.
Project Characteristics and their impact on Emotional Intelligence (EI).

The conflicts (i.e. disagreements that arise prior to a formal dispute) that arise during a project including:

*Those arising internal to the team.
*Those arising external to the team but internal to the parent organisation.
*Those arising with subcontractors.
*Those arising with other stakeholders.

1. Please rank the following three EI competencies associated with self-awareness in dealing with the problems outlined above:

   - Emotional awareness (recognising your emotions and their effects on your personal performance).
   - Accurate self-assessment (knowing your strengths and limitations).
   - Self-confidence (a strong sense of your self-worth).

2. Please add any comments you feel are relevant to this question.
Project Characteristics and their impact on Emotional Intelligence (EI).

1. Round 3 (HREC approval no. 201400264)

Thank you for your timely feedback to round #2 last week. As in the previous round we start with feedback from your answers of last week. We then move on to analyse EI competencies relating to self-management for which we have provided some background and definitions.

**Important Definitions**

Keeping with Goleman-Boyatzis model of EI this round deals specifically with the competencies grouped under self-management: Keeping disruptive emotions and impulses under control. These competencies are:

**Self-control:** Managing disruptive emotions and impulses. People with this competence:
- Manage their impulsive feelings and distressing emotions well.
- Stay composed, positive, and unflappable even in trying moments.
- Think clearly and stay focused under pressure.

**Trustworthiness/Transparency:** Maintaining standards of honesty and integrity. People with this competence:
- Act ethically and are above reproach.
- Build trust through their reliability and authenticity.
- Admit their own mistakes and confront unethical actions in others.
- Take tough, principled stands even if they are unpopular.

**Achievement orientation:** Taking responsibility for personal performance. People with this competence:
- Meet commitments and keep promises.
- Hold themselves accountable for meeting their objectives.
- Are organized and careful in their work.

**Adaptability:** Flexibility in handling change. People with this competence:
- Smoothly handle multiple demands, shifting priorities, and rapid change.
- Adapt their responses and tactics to fit fluid circumstances.
- Are flexible in how they see events.

**Initiative:** Having a readiness to act in order to seize opportunity. People with this competence:
- Seek out fresh ideas from a wide variety of sources.
- Entertain original solutions to problems.
- Generate new ideas.
- Take fresh perspectives and risks in their thinking.

**Optimism:** Persistence in pursuing goals despite obstacles and setbacks. People with this competence:
- See an opportunity rather than a threat in a set-back.
- Maintain a positive outlook.

In this round the first question gives feedback from round 2. Please indicate if you agree with the feedback. The next seven questions deal with the EI competencies grouped under self-management which are outlined above. Please rank the importance of the competencies in dealing with the problems identified in managing larger projects.

Please note:
1. In answering the questions all the competencies need to be rated independently using the drop down boxes provided.
2. You may find it quicker and easier to answers the questions by going down the columns rather than across the rows.
3. Not all the competencies are necessarily relevant to all the problem areas.
4. If you select a competency as not relevant you will need to uncheck this box if you later decide to the rank it.
2. Round 3

*1. These comments regarding the issues raised in round 2 were made by some panel members. Please indicate if you agree or disagree with these comments. Should you disagree or strongly disagree please provide a brief comment on your reasons for doing so.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Disagree Nor Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>In project management understanding your team member strengths and weaknesses together with recognition and understanding of the constraints they work under is of great importance.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>In managing stakeholders understanding their real agendas is of particular importance.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>The importance of emotions as opposed to logic must be recognised in dealing with disputes (in this case disputes being defined as disagreements that arise prior to a formal dispute).</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Understanding the emotions and drivers of team members and not just their technical expertise is important in problem solving.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

Please add any comments you feel are relevant to these questions.
3. Round 3

The limited time frame (i.e. having a set time period to achieve a set of defined objectives) of a project causes problems resulting from a need to quickly achieve the following:

* Build a cohesive team.
* Build trust within the team.
* Develop rapport with stakeholders.
* Develop a working control system.
* Obtain organisational support.

**1. Please rank the following six EI competencies associated with self-management in dealing with the problems outlined above:**

<table>
<thead>
<tr>
<th>Competency</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Self-control (managing disruptive emotions and impulses).</td>
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<td></td>
</tr>
</tbody>
</table>

**2. Please add any comments you feel are relevant to this question.**

[Blank space for comments]
4. Round 3

The diverse team members’ backgrounds (ethnic and experiential) and locations (e.g. concept design in Australia, detailed design in India, manufacturing in China, procurement run from Brisbane and a construction site in remote Australia) causes problems for team member management as a result of differences in:

* Team members’ personal goals and resultant personal agendas.
* Team members’ cultural backgrounds.
* Team members’ professional backgrounds.
* Team members’ communication needs.
* Team members’ different geographic locations.
* Team members’ native language differences.

**1. Please rank the following six EI competencies associated with self-management in dealing with the problems outlined above:**

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</table>

2. Please add any comments you feel are relevant to this question.
Project Characteristics and their impact on Emotional Intelligence (EI).

5. Round 3

The diverse stakeholders’ backgrounds and locations cause problems for stakeholder management as a result of differences in:

* The stakeholders’ goals and resultant agendas.
* The stakeholders’ cultural backgrounds.
* The stakeholders’ communication needs.
* The stakeholders’ different geographic locations.
* The stakeholders’ native language differences.

**1. Please rank the following six EI competencies associated with self-management in dealing with the problems outlined above:**

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<thead>
<tr>
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**2. Please add any comments you feel are relevant to this question.**


6. Round 3

The unique nature of each project (e.g. moving from a rail car project, to a desalination plant and then to a tunnel project. Alternatively the different problems encountered on technically similar projects such as different special interest groups creating their own unique problems) results in the following problems:

*Understanding the issues involved in the particular project.
*Managing internal stakeholder expectations.
*Managing external stakeholder expectations.
*Belief that you and the project team can solve the project’s problems.

**1. Please rank the following six EI competencies associated with self-management in dealing with the problems outlined above:

- Self-control (managing disruptive emotions and impulses).  [ ] Not Relevant
- Trustworthiness/Transparency (maintaining standards of honesty and integrity).  [ ] Not Relevant
- Achievement orientation (taking responsibility for personal performance).  [ ] Not Relevant
- Adaptability (flexibility in handling change).  [ ] Not Relevant
- Initiative (having a readiness to act in order to seize opportunity).  [ ] Not Relevant
- Optimism (persistence in pursuing goals despite obstacles and setbacks).  [ ] Not Relevant

2. Please add any comments you feel are relevant to this question.


Project Characteristics and their impact on Emotional Intelligence (EI).

7. Round 3

Considering problems arising from ambiguity and change resulting from:

*Lack of a clearly defined project scope.
*Scope changes as the project progresses.
*Lack of information to make a fully informed decision.
*Team member changes.
*Unexpected and unforeseen events (e.g. subcontractor goes bankrupt).
*Changes in the external environment (legislative, economic).

*1. Please rank the following six EI competencies associated with self-management in dealing with the problems outlined above:

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<td></td>
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</tbody>
</table>

2. Please add any comments you feel are relevant to this question.

Page 7
Changes in project team and stakeholder personnel resulting in:

* Loss of a cohesive team.
* Loss of trust between team members.
* Loss of relationship with key stakeholders.

1. Please rank the following six EI competencies associated with self-management in dealing with the problems outlined above:

<table>
<thead>
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<td>Trustworthiness/Transparency (maintaining standards of honesty and integrity)</td>
<td></td>
</tr>
<tr>
<td>Achievement orientation (taking responsibility for personal performance)</td>
<td></td>
</tr>
<tr>
<td>Adaptability (flexibility in handling change)</td>
<td></td>
</tr>
<tr>
<td>Initiative (having a readiness to act in order to seize opportunity)</td>
<td></td>
</tr>
<tr>
<td>Optimism (persistence in pursuing goals despite obstacles and setbacks)</td>
<td></td>
</tr>
</tbody>
</table>

2. Please add any comments you feel are relevant to this question.
Project Characteristics and their impact on Emotional Intelligence (EI).

9. Round 3

The conflicts (i.e. disagreements that arise prior to a formal dispute) that arise during a project including:

*Those arising internal to the team.
*Those arising external to the team but internal to the parent organisation.
*Those arising with subcontractors.
*Those arising with other stakeholders.

*1. Please rank the following six EI competencies associated with self-management in dealing with the problems outlined above:

<table>
<thead>
<tr>
<th>Competency</th>
<th>Not Relevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-control (managing disruptive emotions and impulses).</td>
<td></td>
</tr>
<tr>
<td>Trustworthiness/Transparency (maintaining standards of honesty and integrity).</td>
<td></td>
</tr>
<tr>
<td>Achievement orientation (taking responsibility for personal performance).</td>
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</table>

2. Please add any comments you feel are relevant to this question.
# Project Characteristics and their impact on Emotional Intelligence (EI).

## 1. Round 4 (HREC approval no. 2014000264)

Thank you for your timely feedback to the third round last week. In round #4 we start with a synthesis of the feedback from the third round. We then move on to analyse EI competencies relating to social-awareness for which we have provided some background and definitions.

### Important Definitions

Keeping with Goleman-Boyatzis model of EI this round deals specifically with the competencies grouped under Social awareness: Attuned to how others feel. These competencies are:

**Empathy:** Sensing others’ feelings and perspectives, and taking an active interest in their concerns. People with this competence:

- Are attentive to emotional cues and listen well.
- Show sensitivity and understand others’ perspectives.
- Provide assistance based on understanding other people's needs and feelings.

**Service orientation:** Anticipating, recognizing, and meeting customers' needs. People with this competence:

- Understand customers’ needs and match them to services or products.
- Seek ways to increase customers' satisfaction and loyalty.
- Gladly offer appropriate assistance.
- Grasp a customer’s perspective, acting as a trusted advisor.

**Organisational awareness:** Reading a groups emotional currents and power relationships. People with this competence:

- Accurately read key power relationships.
- Detect crucial social networks.
- Understand the forces that shape the views and actions of clients, customers, or competitors.
- Accurately read situations and organizational and external realities.
- Are politically aware.

In this round the first question gives feedback from round 3. Please indicate if you agree with the feedback.

The next seven questions deal with the EI competencies grouped under social awareness which are outlined above. Please rate the importance of the competencies in dealing with the problems identified in managing larger projects.

Please note:
1. In answering the questions all the competencies need to be rated independently using the drop down boxes provided.
2. You may find it quicker and easier to answers the questions by going down the columns rather than across the rows.
3. Not all the competencies are necessarily relevant to all the problem areas.
4. If you select a competency as not relevant you will need to uncheck this box if you later decide to the rank it.
# Project Characteristics and their impact on Emotional Intelligence (EI)

## 2. Round 4

*1. These comments regarding the issues raised in round 3 were made by some panel members. Please indicate if you agree or disagree with these comments. Should you disagree or strongly disagree please provide a brief comment on your reasons for doing so.*

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Disagree Nor Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>It is important for the project director to keep the project moving and at times it may be necessary for him to accept that making some decision (right or wrong) is better than no decision.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Building the correct team environment is very important and in working out how to deal with problems it is essential to maintain a no blame culture.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Again with respect to team environment it is also essential to maintain a culture of personal responsibility (comments on how the clash between maintaining personal responsibility and a no blame culture can be achieved would be appreciated).</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Please add any comments you feel are relevant to these questions.
Page 3 contained no data and is intentionally left blank.
3. Round 4

The limited time frame (i.e. having a set time period to achieve a set of defined objectives) of a project causes problems resulting from a need to quickly achieve the following:

* Build a cohesive team.
* Build trust within the team.
* Develop rapport with stakeholders.
* Develop a working control system.
* Obtain organisational support.

*1. Please rank the following three EI competencies associated with Social awareness in dealing with the problems outlined above:

<table>
<thead>
<tr>
<th>Competency</th>
<th>Not Relevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empathy (sensing others' feelings and perspective, and taking an active interest in their concerns)</td>
<td></td>
</tr>
<tr>
<td>Service orientation (anticipating, recognizing, and meeting customer needs)</td>
<td></td>
</tr>
<tr>
<td>Organisational awareness (reading a group emotional needs and power relationships)</td>
<td></td>
</tr>
</tbody>
</table>

2. Please add any comments you feel are relevant to this question.
Project Characteristics and their impact on Emotional Intelligence (EI).

4. Round 4

The diverse team members’ backgrounds (ethnic and experiential) and locations (e.g. concept design in Australia, detailed design in India, manufacturing in China, procurement run from Brisbane and a construction site in remote Australia) causes problems for team member management as a result of differences in:

* Team members’ personal goals and resultant personal agendas.
* Team members’ cultural backgrounds.
* Team members’ professional backgrounds.
* Team members’ communication needs.
* Team members’ different geographic locations.
* Team members’ native language differences.

**1. Please rank the following three EI competencies associated with Social awareness in dealing with the problems outlined above:**

- [ ] Empathy (sensing others’ feelings and perspective, and taking an active interest in their concerns).
- [ ] Service orientation (anticipating, recognizing, and meeting customer needs).
- [ ] Organisational awareness (reading a group emotional needs and power relationships).

**2. Please add any comments you feel are relevant to this question.**
Project Characteristics and their impact on Emotional Intelligence (EI).

5. Round 4

The diverse stakeholders’ backgrounds and locations causes problems for stakeholder management as a result of differences in:

* The stakeholders’ goals and resultant agendas.
* The stakeholders’ cultural backgrounds.
* The stakeholders’ communication needs.
* The stakeholders’ different geographic locations.
* The stakeholders’ native language differences.

**1. Please rank the following three EI competencies associated with Social awareness in dealing with the problems outlined above:**

- [ ] Empathy (sensing others’ feelings and perspective, and taking an active interest in their concerns).
- [ ] Service orientation (anticipating, recognizing, and meeting customer needs).
- [ ] Organisational awareness (reading a group emotional needs and power relationships).

**2. Please add any comments you feel are relevant to this question.**
Project Characteristics and their impact on Emotional Intelligence (EI).

6. Round 4

The unique nature of each project (e.g. moving from a rail car project, to a desalination plant and then to a tunnel project. Alternatively the different problems encountered on technically similar projects such as different special interest groups creating their own unique problems) results in the following problems:

*Understanding the issues involved in the particular project.
*Managing internal stakeholder expectations.
*Managing external stakeholder expectations.
*Belief that you and the project team can solve the project’s problems.

**1. Please rank the following three EI competencies associated with Social awareness in dealing with the problems outlined above:**

- [ ] Empathy (sensing others' feelings and perspective, and taking an active interest in their concerns).
- [ ] Service orientation (anticipating, recognizing, and meeting customer needs).
- [ ] Organisational awareness (reading a group emotional needs and power relationships).

[Not Relevant]

2. Please add any comments you feel are relevant to this question.
Project Characteristics and their impact on Emotional Intelligence (EI).

7. Round 4

Considering problems arising from ambiguity and change resulting from:

*Lack of a clearly defined project scope.
*Scope changes as the project progresses.
*Lack of information to make a fully informed decision.
*Team member changes.
*Unexpected and unforeseen events (e.g. subcontractor goes bankrupt).
*Changes in the external environment (legislative, economic).

**1. Please rank the following three EI competencies associated with Social awareness in dealing with the problems outlined above:**

- Empathy (sensing others’ feelings and perspective, and taking an active interest in their concerns).
- Service orientation (anticipating, recognizing, and meeting customer needs).
- Organisational awareness (reading a group emotional needs and power relationships).

**2. Please add any comments you feel are relevant to this question.**
Changes in project team and stakeholder personnel resulting in:

* Loss of a cohesive team.
* Loss of trust between team members.
* Loss of relationship with key stakeholders.

1. Please rank the following three EI competencies associated with Social awareness in dealing with the problems outlined above:

- Empathy (sensing others’ feelings and perspective, and taking an active interest in their concerns).
- Service orientation (anticipating, recognizing, and meeting customer needs).
- Organisational awareness (reading a group emotional needs and power relationships).

2. Please add any comments you feel are relevant to this question.
9. Round 4

The conflicts (i.e. disagreements that arise prior to a formal dispute) that arise during a project including:

* Those arising internal to the team.
* Those arising external to the team but internal to the parent organisation.
* Those arising with subcontractors.
* Those arising with other stakeholders.

*1. Please rank the following three EI competencies associated with Social awareness in dealing with the problems outlined above:

- [ ] Empathy (sensing others’ feelings and perspective, and taking an active interest in their concerns).
- [ ] Service orientation (anticipating, recognizing, and meeting customer needs).
- [ ] Organisational awareness (reading a group emotional needs and power relationships).

2. Please add any comments you feel are relevant to this question.
Project Characteristics and their Impact on Emotional Intelligence (EI).

1. Round 5 (HREC approval no. 2014000264)

Thank you for your timely feedback from round four. In this last round we start with a synthesis of the feedback from round 4 and then focus on the importance of relationship management for which we have provided some background and definitions.

Important Definitions

Keeping with Goleman-Boyatzis model of EI this round deals specifically with the competencies grouped under relationship management: the ability to guide the emotional tone of the group. These competencies are:

Influence: Wielding effective tactics for persuasion. People with this competence:
- Are skilled at persuasion.
- Use complex strategies like indirect influence to build consensus and support.
- Orchestrate dramatic events to effectively make a point.

Inspirational leadership: Inspiring and guiding groups and people. People with this competence:
- Inspire and arouse enthusiasm for a shared vision and mission.
- Step forward to lead as needed, regardless of position.
- Guide the performance of others while holding them accountable.
- Lead by example.

Change catalyst: Initiating or managing change. People with this competence:
- Recognize the need for change and remove barriers.
- Challenge the status quo to acknowledge the need for change.
- Champion the change and enlist others in its pursuit.
- Model the change expected of others.

Conflict management: Negotiating and resolving disagreements. People with this competence:
- Handle difficult people and tense situations with diplomacy and tact.
- Spot potential conflict, bring disagreements into the open, and help de-escalate.
- Encourage debate and open discussion.
- Orchestrate win-win solutions.

Teamwork and collaboration: Working with others toward shared goals and guiding the group to achieve a collective goal. People with this competence:
- Model team qualities like respect, helpfulness, and cooperation.
- Draw all members into active and enthusiastic participation.
- Build team identity, esprit de corps, and commitment.
- Model team qualities like respect, helpfulness, and cooperation.
- Draw all members into active and enthusiastic participation.
- Develop others - sensing others' development needs and bolstering their abilities. People with this competence:
  - Looks for means of improving a team members' skill by training or supporting him/her.
  - Look to improve the team's performance by obtaining the optimum mix of team members' skills.
- Are genuinely interested in developing others.
- Understand team members' goals and aspirations.
- Give timely and constructive feedback.

In this round the first question gives feedback from round 4. Please indicate if you agree with the feedback.

The next seven questions deal with the EI competencies grouped under relationship management which are outlined above.

Please rank the importance of the competencies in dealing with the problems identified in managing larger projects. Please note:
1. In answering the questions all the competencies need to be rated independently using the drop down boxes provided.
2. You may find it quicker and easier to answer the questions by going down the columns rather than across the rows.
3. Not all the competencies are necessarily relevant to all the problem areas.
4. If you select a competency as not relevant you will need to uncheck this box if you later decide to rank it.
2. Round 5

*1. This week your agreement or disagreement is sought regarding the following issues. As usual any additional comments you would like to make would be greatly appreciated.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Disagree Nor Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>It has been suggested by some academics (and indeed by some project managers) that Gantt charts and similar tools are used to keep senior managers happy rather than for their value in controlling a project.</td>
<td></td>
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</tr>
</tbody>
</table>

A major cause of project overruns is optimism bias caused by project proponents who underestimate the delivery time and or the delivery costs thus making delivery of the project extremely difficult in terms of these parameters.

Please add any comments you feel are relevant to these questions.

3. Round 5

The limited time frame (i.e. having a set time period to achieve a set of defined objectives) of a project causes problems resulting from a need to quickly achieve the following:

* Build a cohesive team,
* Build trust within the team,
* Develop rapport with stakeholders,
* Develop a working control system,
* Obtain organisational support.
Project Characteristics and their impact on Emotional Intelligence (EI).

1. Please rank the following six EI competencies associated with relationship management in dealing with the problems outlined above:

- Influence (yielding effective tactics for persuasion).
- Inspirational leadership (inspiring and guiding groups and people).
- Change catalyst (initiating or managing change).
- Conflict management (negotiating and resolving disagreements).
- Teamwork and collaboration (working with others toward shared goals).
- Developing others (sensing others’ development needs and bolstering their abilities).

2. Please add any comments you feel are relevant to this question.

4. Round 5

The diverse team members’ backgrounds (ethnic and experiential) and locations (e.g., concept design in Australia, detailed design in India, manufacturing in China, procurement run from Brisbane and a construction site in remote Australia) causes problems for team member management as a result of differences in:

* Team members’ personal goals and resultant personal agendas.
* Team members’ cultural backgrounds.
* Team members’ professional backgrounds.
* Team members’ communication needs.
* Team members’ different geographic locations.
* Team members’ native language differences.
Project Characteristics and their impact on Emotional Intelligence (EI).

1. Please rank the following six EI competencies associated with relationship management in dealing with the problems outlined above:

- Influence (wielding effective tactics for persuasion).
- Inspirational leadership (inspiring and guiding groups and people).
- Change catalyst (initiating or managing change).
- Conflict management (negotiating and resolving disagreements).
- Teamwork and collaboration (working with others toward shared goals).
- Developing others (sensing others’ development needs and bolstering their abilities).

2. Please add any comments you feel are relevant to this question.

5. Round 5

The diverse stakeholders’ backgrounds and locations cause problems for stakeholder management as a result of differences in:

* The stakeholders’ goals and resultant agendas.
* The stakeholders’ cultural backgrounds.
* The stakeholders’ communication needs.
* The stakeholders’ different geographic locations.
* The stakeholders’ native language differences.

1. Please rank the following six EI competencies associated with relationship management in dealing with the problems outlined above:

- Influence (wielding effective tactics for persuasion).
- Inspirational leadership (inspiring and guiding groups and people).
- Change catalyst (initiating or managing change).
- Conflict management (negotiating and resolving disagreements).
- Teamwork and collaboration (working with others toward shared goals).
- Developing others (sensing others’ development needs and bolstering their abilities).
Project Characteristics and their impact on Emotional Intelligence (EI).

2. Please add any comments you feel are relevant to this question.

6. Round 5

The unique nature of each project (e.g. moving from a rail car project, to a desalination plant and then to a tunnel project. Alternatively the different problems encountered on technically similar projects such as different special interest groups creating their own unique problems) results in the following problems:

* Understanding the issues involved in the particular project.
* Managing internal stakeholder expectations.
* Managing external stakeholder expectations.
* Belief that you and the project team can solve the project’s problems.

* 1. Please rank the following six EI competencies associated with relationship management in dealing with the problems outlined above:

- Influence (wielding effective tactics for persuasion).
- Inspirational leadership (inspiring and guiding groups and people).
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- Developing others (sensing others' development needs and bolstering their abilities).

2. Please add any comments you feel are relevant to this question.

7. Round 5

Considering problems arising from ambiguity and change resulting from:

* Lack of a clearly defined project scope.
* Scope changes as the project progresses.
* Lack of information to make a fully informed decision.
* Team member changes.
* Unexpected and unforeseen events (e.g. subcontractor goes bankrupt).
* Changes in the external environment (legislative, economic).
Project Characteristics and their impact on Emotional Intelligence (EI).

*1. Please rank the following six EI competencies associated with relationship management in dealing with the problems outlined above:

- Influence (wielding effective tactics for persuasion).
- Inspirational leadership (inspiring and guiding groups and people).
- Change catalyst (initiating or managing change).
- Conflict management (negotiating and resolving disagreements).
- Teamwork and collaboration (working with others toward shared goals).
- Developing others (sensing others’ development needs and bolstering their abilities).

2. Please add any comments you feel are relevant to this question.

8. Round 5

Changes in project team and stakeholder personnel resulting in:

*Loss of a cohesive team.
*Loss of trust between team members.
*Loss of relationship with key stakeholders.

*1. Please rank the following six EI competencies associated with relationship management in dealing with the problems outlined above:

- Influence (wielding effective tactics for persuasion).
- Inspirational leadership (inspiring and guiding groups and people).
- Change catalyst (initiating or managing change).
- Conflict management (negotiating and resolving disagreements).
- Teamwork and collaboration (working with others toward shared goals).
- Developing others (sensing others’ development needs and bolstering their abilities).
9. Round 5

The conflicts (i.e. disagreements that arise prior to a formal dispute) that arise during a project including:

* Those arising internal to the team.
* Those arising external to the team but internal to the parent organisation.
* Those arising with subcontractors.
* Those arising with other stakeholders.

* 1. Please rank the following six EI competencies associated with relationship management in dealing with the problems outlined above:

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<tr>
<th>Competency</th>
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</thead>
<tbody>
<tr>
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<tr>
<td>Developing others (sensing others’ development needs and bolstering their abilities).</td>
<td></td>
</tr>
</tbody>
</table>

2. Please add any comments you feel are relevant to this question.
Thank you for your involvement in this supplementary question, where we are reviewing the importance of reflection on your career development. The reflective process being described below:

Usually a knowledge, or skill, is built up over a period of time, such as riding a bike. The practitioner uses this knowledge in his everyday work.

Occasionally when this knowledge is used, the practitioner gets an unexpected and/or undesired result. He or she can then choose to ignore the event or reflect on what has happened and, as a result of those reflections, challenge the underlying assumptions used, and modify their behaviour.
1. Thinking of your use of reflection.

<table>
<thead>
<tr>
<th></th>
<th>Very significant</th>
<th>Significant</th>
<th>Neutral</th>
<th>Little significance</th>
<th>Very little significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Please rate the significance of reflection on your career development.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Please rate the significance of reflection on your ability to deal with the problems as they arise in a project.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

Please add any comments you feel are relevant to these questions.