

THE RELEVANCE OF EQ TO CONSTRUCTION PROJECT MANAGEMENT EDUCATION AND PRACTICE: AN INVESTIGATIVE FRAMEWORK

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Construction is a project-based industry and involves bringing different combinations of clients, designers, contractors and suppliers to work together for relatively short periods of time. The complexity and dynamism of industry's project-based background makes it one of the most challenging environments to manage people effectively and ensure that project and organisational goals are met. To successfully manage construction activities in such an environment requires good interaction between project participants. This, in turn, often demands high levels of Emotional Intelligence (EI) amongst project participants. EI has come to be viewed as an important factor in the management as well as an important predictor of one's ability to succeed on the job. However, despite burgeoning research into EI and management, few empirical studies have been taken under the construction context and so little is known of whether those that work in the industry are fully equipped with the emotional skills required by the construction industry. This paper presents a critical review of the EI literature and its relationship with construction project management performance. It suggests directions for future research that will elucidate understanding of its influence on project manager performance.

Keywords: emotional intelligence, engineering education, human interaction, project managers.

INTRODUCTION

The construction industry has been referred to as one of the most challenging environments to manage people effectively to ensure project and organisational success (Loosemore *et al.* 2003). The project-based nature of construction activities that involves bringing together different combinations of the clients, designers, contractors and suppliers for relative short periods of time to achieve project and organisational objectives. The multidisciplinary characteristics of its project teams present particular challenges for managers attempting to secure appropriate staff for projects at different stages and based in geographically dispersed locations (Dainty *et al.* 2003). To successfully manage construction activities among diverse project participants, there are a number of skills and attributes are prerequisite for the position of project management. Edum-Fotwe and McCaffer (2000) listed five main general skills that are the foundation for developing project management skills, i.e. leadership, communication, problem solving, negotiation and marketing. Collectively, these skills

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have been termed as ‘social’ or ‘soft’ skills, which are one of the four defining dimensions of ‘Emotional Intelligence’ (Goleman 1998).

Emotional Intelligence (EI) refers to emotional skills which include: accurately perceiving and expressing emotions; integrating emotions with cognitive processes; understanding emotions and their implications for various situations; and managing emotions (Mayer and Salovey 1997). Several studies to date have shown that EI has become a crucial factor in management performance as well as an important predictor of an individual’s ability to succeed on (Goleman 1998; Bar-on 1997 and Mayer *et al.* 2000). There have been many research studies which have demonstrated the positive impact of EI on an individual’s leadership (Sternberg, 1997; Day 2000 and Scheusner 2002); interview performance (Fox and Spector 2000); managerial ability (Slaski and Cartwright 2002); academic performance (Schutte *et al.* 1998 and Petrides *et al.* 2004); and contribution to team performance (Jordan *et al.* 2002). Despite a burgeoning amount of research into EI and management, the link between EI and construction has only been examined by a limited number of empirical studies (see, e.g. Chinowsky and Brown 2004 and Songer *et al.* 2004). Given that the important role of EI, there is an urgent need to explore the EI within a construction domain. Chinowsky and Brown (2004) were the first researchers to evaluate EI as measured by emotional quotient (EQ) of engineering education in US, the results indicating that civil engineering educational programmes can inhibit students’ EQ growth. This research extends Chinowsky and Brown’s study by exploring engineering student’s EI within the UK educational environment. The aim is to develop a model of practice for emotional intelligence enhancement in engineering undergraduates. A second phase of the research will then extend this EI analysis by exploring the EI of practicing professionals working within the industry.

This paper conducts an exploratory investigation of EI within construction domain. It establishes a foundation for understanding the impact of different construction careers on individuals’ EI development; and using this information to provide direction for future employees training and career development interventions.

WHAT IS EMOTIONAL INTELLIGENCE?

Emotional Intelligence (EI) is a relatively new term for a construct that is aimed at complementing the traditional view of intelligence by emphasising the emotional, personal, and social contributions to intelligent behaviour (Gardner 1983; Mayer and Salovey 1995; Wechsler 1958). The concept of EI was initially developed by Salovey and Mayer (1990) to represent the ability of people to deal with their emotions. Since then, interest in emotional intelligence has increased dramatically, with several popular books being written on the topic, most notably that by Goleman (1995), who made strong claims about the contribution of EI to individual success and specifically to success in the workplace. He identified intellectual intelligence as contributing 20 per cent towards life success and intimated that the remaining 80 per cent was attributable to EI.

The roots of EI can be traced back to the concept of ‘social intelligence’, coined by Thorndike (1920) to refer to the ability to understand and manage people and to act wisely in human relations. Its proximal roots lie in the work of Gardner (1983) and, more specifically, in his concepts of intrapersonal and interpersonal intelligence. Intrapersonal intelligence relates to one’s intelligence in dealing with oneself, while interpersonal intelligence relates to one’s intelligence in dealing with others. Until

1990, EI was firstly proposed by Salovey and Mayer who defined emotional intelligence 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'* (p. 189). After that, subsequent writers such as Goleman (1995), Cooper and Sawaf (1996), Bar-On (1997) and Weisinger (1998) defined their own notions of EI and have developed models of its dimensions and manifestations. All, however, share a common reference to EI as the ability to accurately perceive, evaluate, regulate and express one's own emotions (Songer *et al.* 2004).

The construct initially used in this paper was based on Goleman's EI model which refer to a long list of attributes or abilities that appear drawn from a number of aspects of personality. Goleman (1998) defined EI is *"the capacity for recognising our own feeling and those of others, for motivating ourselves, and for managing emotions well in ourselves and in our relationships"* (p. 317). From the perspective of Goleman, EI is said to include four parts: Self-Awareness; Self-Management; Social Awareness; and Social Skills. He broke down these four dimensions of EI into twenty different emotional competencies, including measures of developing others, leadership, communication, conflict management, teamwork, collaboration etc. As mentioned earlier, these competences have collectively also been viewed as essential emotional factors within construction management.

RATIONAL FOR DEVELOPING EI IN THE CONSTRUCTION DOMAIN

EI Benefits for Construction Project Management

As alluded to earlier, the complexity and dynamism of the construction industry's project-based background requires construction project managers to have high levels of EI if they are to be successful. Having reviewed EI related material, there are many examples demonstrating how EI has had a positive impact on the relationship between managers' EI and employees work outcomes. Carmeli (2003) suggested that managers with high EI produce positive work attitudes and altruistic behaviours. Likewise, Zhou and George (2003) stated that managers with high EI are able to use emotion to facilitate cognitive processes underlying problem identification and opportunity recognition. According to Fredrickson (2003), managers with high EI can improve the performance of their employees by managing employees' emotions that foster creativity, resilience and confidence. Furthermore, managers with high EI tend to be more adept at nurturing more positive interactions between employees resulting in better cooperation (Barsade 2002), coordination (Sy, Cote and Saavedra 2005), and organisational citizenship all of which contribute to improved performance (Mossholder *et al.* 1981 and Wong and Law 2002). Additionally, employees with high EI are more likely to perform well and experience high job satisfaction (Wong and Law 2002 and Sy, *et al.* 2006).

EI Through Engineering Education

There have been recent calls to pay more attention to EI related competencies in engineering courses. The Finniston Report (1980) called for the engineering education to be broadened away from purely engineering science to include more awareness of the place the engineer in society and skills development. Over ten years later, an ACOST (Advisory Community on Science and Technology 1991) report recommended that in engineering education: *'The overwhelming factual content*

should be reduced; more emphasis should be placed on the development of communication, leadership, teamwork and other personal skills'. American civil engineering educators and practitioners (Bakos 1997: 15) also stated that *'future needs are focusing an improvement of non-technical abilities and skills of civil engineering graduate who, in future, will be involved in an increasing complex and interactive society'*. Jagger and Connor (1998: 463) surveyed employers' views about newly qualified postgraduate engineers and the results showed that employers look for particular 'soft skills' among graduates, these include: interpersonal skills; communication skills; business awareness; flexibility/versatility; team working; and initiative/proactively. In terms of the construction sector, the interviewed employers stressed the importance of 'soft skills' in combination with technical competence.

Several recent reports and studies have suggested that industry professionals believed that engineering students continue to graduate with strong technical skills but are still missing critical leadership and management skill (NSF 1995). Also, in the survey of employers' views about newly qualified postgraduate engineers (Jagger and Connor 1998) revealed a general perception that there was a shortage of graduates with appropriate 'soft' skills, especially project management skills and communication skills. Thus, despite widespread calls for 'EI competences' improvement within engineering education, employers and the professions are still expressing general disappointment with graduates' attributes which collectively contribute to EI. More recently, Chinowsky and Brown's (2004) research into US civil engineering indicated that the EI development of civil engineering students lags well behind their comparison sample (liberal arts students). They suggested that the lack of EI growth would directly affect educational development and professional preparedness. In addition, students without adequately developed EI will lack the problem solving capabilities as well as other professional attributes such as leadership, communication skills, creativity and an understanding of the external variables impacting upon their business.

This paper summarises the approach adopted as part of doctoral research into EI development within construction education and practice. This research aims to develop a mode of practice for emotional intelligence enhancement in engineering undergraduates, and to explore the effects of emotional intelligence on construction management performance. It will comprise two phases:

- Phase 1 will explore the EI level of engineering students and investigate how well their EI has developed through four-years university study; and
- Phase 2 will examine influence of EI in terms of the effectiveness of construction project managers and will identify how it develops amongst such managers.

In particular, the Phase 2 research will focus on the EI change of newly graduated employees in their first five years of their career. Wechsler (1958) suggested that cognitive intelligence increases up until late adolescence, before beginning to decline in the second and third decades of life. Thus, focusing on those in the earlier stages of their careers is logical in terms of identifying the peak levels of EQ within their career.

STRATEGIES FOR MEASURING EI AMONGST STUDENTS AND PROFESSIONALS

Several measures of EI have been advanced in literature and the conceptual underpinnings differ according to which model is selected. Mayer, Salovey and Caruso (2000), in a review of the EI literature, identified two distinct models of EI which have been described as “ability models” or “mixed models”. Mayer and Salovey’s model defines EI as an ability, emphasising individual differences in cognitive processing of affective information. This model is based on the interaction of emotions and thought. In contrast, mixed models (Bar-On 1997 and Goleman 1995) have included emotional abilities together with personality, motivation and affective dispositions. Parallel to the ability and mixed model classification of EI measures, Petrides and Furnham (2001) classified EI measures as trait and ability measures. Trait EI refers to self-perceptions concerning one’s ability to recognise, process, and utilise emotion-laden information; while ability EI refers to one’s actual ability to recognise, process and utilize emotion-laden information. From the perspective of Petrides and Furnham (2001), trait EI is best measured through self-report questionnaires and pertains to the realm of personality. Ability EI requires the use of maximum performance tests with correct and incorrect responses and pertains primarily to the realm of cognitive ability. Given that the current study examines participants’ EI level based on Goleman’s EI model that refers to various aspect of personality, the focus is on trait EI which, as mentioned before, is best measured by self-report inventories.

In order to measure EI effectively, it is necessary to choose a simple, practical and psychometrically sound measures which are appropriate for the subjects under investigation. The Schutte Self-report Emotional Intelligence (SEI, Schutte *et al.*, 1998) has been selected as the method to obtain the EI scores. This method was selected because:

- the elements have a theoretical foundation and were based on an earlier version of an EI model (Salovey and Mayer 1990);
- a recent meta-analytic review of EI literature conducted by Van Rooy and Viswesvaran (2004) revealed that the SEI has been used in most of the related research studies, of the 59 studies in their meta-analytic database, the SEI was used by nearly 25 per cent of the studies;
- SEI has been found to consistently measure aspects of personality relevant to EI (Schutte *et al.* 1998; Brackett and Mayer 2003; Saklofske *et al.* 2003); and
- SEI also has a good validity of 0.23, which was larger than several other measures assessed and good internal reliability ($\alpha = .78$) as well as high consistency ($\alpha = .90$) in comparison to other tools.

The self-report questionnaire developed by Schutte *et al.* (1998) uses the three-component model of EI (appraisal/expression of emotions, regulation of emotions and utilisation of emotions) as originally proposed by Salovey and Mayer (1990). The test comprises 33 self-referencing statements, three of which are reverse-scored. It requires subjects to rate the extent to which they agree or disagree with a set of statements measured on a five-point Likert scale (1=strongly disagree; 5=strongly agree) and takes approximately 15 minutes to complete. There is some debate within the EI literature as to whether SEI is better assessed as an unidimensional (single factor) or multidimensional (four-factor) measurement. Given the inconsistent

subscale reliabilities reported in the literature (Ciarrochi *et al.*, 2001 and Schutte *et al.*, 1998) and the satisfactory full score reliability reported for adolescents ($\alpha = .78$), it was decided to use total scale scores only in the current investigation.

Current Study Process

Although the previous research demonstrated that engineering students did not achieve their full potential in EI development (Chinowsky and Brown 2004), it remains unclear as to whether programmes aimed specifically at developing managerial skills would result in different outcomes. It could be hypothesised, given the strong emotional factors that are included in managerial courses, that students enrolled in managerial programmes are more emotionally intelligent than those in traditional engineering courses. In the first phase of current study, SEI questionnaires will be administered to students of Department of Civil Engineering's Construction Engineering Management and Civil Engineering Programmes, and the School of Mechanical and Manufacturing Engineering's Product Design and Manufacture and Manufacturing Engineering Management Programmes in the first semester of 2006. Participants will be given a brief introduction of emotional intelligence and the purpose of this study and a copy of the Schutte Self-report Emotional Intelligence instrument (SEI) for measuring emotional intelligence. In addition, participants also complete a one-page of questionnaire that will record certain variables used for analysing the results of the EI test. Four cohorts of students in each stage of four years of university education have been selected for EI assessment. The data are designed to answer three specific questions:

- To what extent students' EI has developed through engineering education programme
- What is the impact of individual modules on EI in relation to the mode of teaching and assessment
- Does particular module option that students taken has different influence on their EI development and what courses are perceived as contributing to students' EI growth

A follow-up interview will be conducted to students and lecturers regarding the better modules for collating of good practice, in terms of the types of modules and teaching activities that promote EI development.

In the second phase, the students' EI development following their entry into the construction industry will be evaluated. This will explore whether the EI of construction professionals significantly increases with age and work experience, as is evidenced on other industries (Bar-On 1997; Mayer *et al.* 1999 and Denise *et al.* 2003). It is reasonable to hypothesise that the project-based nature of construction industry should improve the social skills of adaptability and flexibility, as well as their independence and stress management skills, all of which are key components of EI.

CONCLUSIONS

To successfully master the collaborative based work environment in the construction industry, more people are coming around to understanding the realities of being an excellent project manager requires not only being technically competent, but also developing emotional competences and abilities to foster more cooperation coordination and collaboration all of which contribute considerably to organisational success. This paper has reviewed the EI literature and has presented its relevance in

the construction domain. The research aims to develop a model of practice for enhancing the EI of engineering undergraduates that should enhance their educational achievement. In addition, this research will extend EI assessment into the construction industry to explore the lifelong EI growth of construction employees throughout the work they experience. This study will fill a significant gap in the extant EI literature by providing a better understanding of why EI is important to investigating in the construction area. It is hoped that the cumulative outcomes of the research will make a contribution to the education and future growth and development of project managers in the future.

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