The Emotional Intelligence of Civil Engineers in Spain and its Relation with Professional Satisfaction

Javier Aguilar Villajos[1], Olga Pons Peregort[2]

[1]Civil Engineer, Department of Business Administration, Universidad Politécnica de Catalunya (UPC), Spain, jaguilar@atenea.cat
[2]Department of Business Administration, Universidad Politécnica de Catalunya (UPC), Spain, olga.pons@upc.edu

Abstract

Different studies show the relevance of Emotional Intelligence (EI) to the development of the work conducted by civil engineers in terms of their satisfaction and well-being, and also their individual and collective performance regarding good organisational results (Larson et al., 2015; Rezvani et al., 2018; Zhang et al., 2020). The purpose of this present work is to analyse the relation between the emotional intelligence of civil engineers in Spain and their degree of professional satisfaction, as well as to determine the existence of any differences in the variables studied according to their gender and years of experience. The focus of the methodology is both quantitative and exploratory, together with descriptive and correlational analyses involving a survey conducted with 248 Civil Engineers. The main results show that a positive and significant relation exists between the emotional intelligence of those participating in the survey and their degree of professional satisfaction, and furthermore that significant differences exist in this level of satisfaction in terms of their years of experience. These results endorse the relevance that the EI competencies have for the development of Civil Engineering, both for those who practice this profession and for the organisations where they work, as well as the impact this work may have on the social systems involved.

Keywords: Emotional Intelligence, Professional Satisfaction, Civil Engineering, Competencies, Project Management.

1. Introduction

The sustainability of global, future, socio-economic development requires the assimilation and integration of environmental variables such as the optimisation of raw materials, efficient waste management, and the deployment of preventive and corrective measures for tackling climate change. To that end, civil engineering constitutes a primary, crucial and strategic sector.

It is for that reason that for years now the competencies demanded of civil engineers have been the object of many studies aimed at preparing them for these new requirements. In this sense,

Azyaki et al. (2020) state that the civil engineering sector, and hence the professional competencies of civil engineers themselves, must be adapted and updated on the basis of the key elements of innovation and lifelong learning.

The commission of civil engineering projects is characterised by a complex management process in which the interaction of many actors with conflicting interests leads to situations that put the achievement of the desired objective in jeopardy (Zheng et al., 2017). On the basis of this difficulty, Maqbool et al. (2017) state that 61% of all significant civil engineering projects fail to be completed or are delivered unsatisfactorily.

It is reasonable to assume that failure in the execution of these types of projects implies, on the majority of occasions, not only the incurrence of additional financial costs but also a considerable human cost on all those involved, with direct consequences for the personal and professional satisfaction of our civil engineers. Given this situation, Lester and Torero (2019) advocate the need to overhaul the scope of competency for both men and women civil engineers in order to minimise these risks. In this regard, the work by Wu et al. (2017) is focused on the goal of characterising the conflicts arising in the construction sector.

Among the conflicts identified, those that have to do with the management of interpersonal relationships come pretty high on the list, so that for Larson et al. (2015) the execution of construction projects requires at its head a civil engineer with considerable organisational powers in order to coordinate all the activities and to mediate between the actors involved.

There is no doubt that the management of complex environments has an impact on professional civil engineers, who are required to undertake a long list of tasks involving management and control in many areas that carry a great responsibility (Gustavsson and Hallin, 2014), while for their part Pinto et al. (2016) maintain that this highly demanding work takes its toll on these professionals, leading to a high rate of staff turnover and a deterioration in the organisational structure of construction companies.

In their study, Edum-Fotwe and McCaffer (2000) point out that the current orientation of traditional engineering is insufficient for effectively and comprehensively tackling the challenges posed to civil engineering by social and economic development. Thus, in order to adapt and evolve the professional competencies pertaining to civil engineering, it is necessary to encourage innovation in the training of new competencies that can be integrated into professional experience.

In this sense, Larson et al. (2015) point out that during the execution of a construction project civil engineers should be equipped with a significant organisational capability in order to coordinate the activities of the many actors engaged in undertakings that involve a high degree of complexity and uncertainty. In the opinion of Zhang et al. (2020), such complexity implies a constant personal vulnerability in which emotional management is vital for addressing the conflicts that may arise in order to ensure the success of a project while preserving the emotional health of the professionals involved. So there is a patent need to provide civil engineers with training in the personal resources required to enable them to manage their own emotions, as well as broadening the competencies of efficient leadership (Simmons et al., 2020).

Thus, with their focus on the emotional dimension, Rezvani et al. (2018) conducted research into different hypotheses that link the development of EI with the impact it has on productivity. Zhang et al. (2020) also proposed the development of EI in construction teams as a tool for minimising conflict and increasing productivity. These authors maintain that if a manager does not possess a high level of EI, both the management and resolution of conflict may lead to a high personal cost, with negative results that affect both outcome and productivity, a situation that if sustained over time will be the cause of exhaustion and frustration for any project manager.

To date, some of this concern for improving the performance of project managers in the construction sector has been focused on the broad context of leadership, as in the work by Skipper and Bell (2006), who concluded that the best results in project management were obtained thanks to leadership behaviour that was notably above the average.

In the light of the foregoing, it is clear that in order to successfully complete any public works project it is necessary to establish a direct relationship between the difficulty of managing one's own emotions, team management, productivity and professional satisfaction. Thus, the presence of EI in project management favours and facilitates the creation of working environments conducive to a successful completion of projects, which ultimately leads to professional satisfaction. On the basis of this relationship, we may define professional satisfaction as a variable that depends on EI competencies, which in turn are the independent variables.

This relation between productivity and the EI of project management teams reveals that the emotionally intelligent teams possess a clear vision about the management of their own individual emotions as well as those of their colleagues, since they promote interpersonal, constructive interaction and thereby improve cooperation and collaboration, and by extension productivity and efficient project management. A low degree of EI, on the other hand, will cause interpersonal conflicts to develop into unproductive situations among the members of the team, (Dreu and Weingart, 2003). It is for this reason that Stephens and Rosch (2015) believe that the training that engineering students currently receive on soft skills and leadership from a broad perspective is insufficient. In fact, different authors have conducted studies involving engineering students on the concept of leadership that includes aspects of EI as well as personal characteristics (Crumpton-Young et al., 2010).

As far as this current work is concerned, the main objective is to analyse the relation between emotional intelligence (and its dimensions) of civil engineers in Spain and their degree of professional satisfaction, as well as to determine if any differences exist in the variables under study according to gender and years of professional experience.

2. Theoretical Framework

Emotional Intelligence

The earliest antecedent of this concept can be found in Thorndike in 1920. However, it was not until 1990 that Mayer and Salovey provided a direct definition of EI, after the appearance of different approximations ranging from Cattell et al. (1972), where it was referred to as Fluid Intelligence or Crystalising Intelligence, to Gardner (1995), who referred to it as multiple

intelligences, among which differentiation was made between interpersonal and intrapersonal intelligence and where EI could already be sensed to emerge.

There are several definitions that may fit the bill in response to growing demand for EI competencies, such as that offered by Bar-On (1997): “An array of noncognitive capabilities, competencies, and skills that influence one's ability to succeed in coping with environmental demands and pressures”. A further example is that proposed by Weisinger (1998, p.156): “The intelligent use of emotions; you intentionally make your emotions work for you by using them to help guide your behaviour and thinking in ways that enhance the results”.

At present, there is no accepted unified definition of Emotional Intelligence (EI). Rather it seems that a great diversity of studies and authors propose new definitions based on previous models. For Muñoz et al. (2016), currently the most widely accepted definition is that put forward by Mayer and Salovey (2002), who define EI as: “The ability to perceive, assimilate, understand and control one’s own emotions and those of others”.

From the literature currently available on this subject, there appears to be a consensus on the acceptance of a classification based on three models; the mixed model, the ability model and others. The main authors who advocate the mixed model are Goleman (1995) and Bar-On (1997). This model consists of a broad scope that includes a set of constant personality traits, socio-emotional competencies, motivational perspectives and different cognitive skills.

The mixed model on which the Goleman Theory (1995, 1998) is postulated is not only notable for its application to EI in regard to personal development, but also for establishing a direct relation between excellent work performance and the integration and assimilation of EI competencies.

Figure 1 shows the classification of EI competencies according to Goleman in terms of the four dimensions; self-awareness, social awareness, self-management and relationship management.

	Oneself (personal competency)	Others (social competency)
Recognition	Self-awareness • Emotional self-awareness • Accurate self-assessment • Self-confidence	Social awareness • Empathy • Service • Organisational awareness
Regulation/Control	Self-management • Emotional self-control • Reliability • Thoroughness • Adaptability • Achievement • Initiative	Relationship management • Developing others • Influence • Communication • Conflict management • Inspirational leadership • Change catalyst • Building bonds • Teamwork and collaboration

Fig1. Emotional Intelligence competencies classified into 4 dimensions. Source: Goleman 1998

EMOTIONAL INTELLIGENCE IN CIVIL ENGINEERING

In recent years, different studies on management in the civil engineering sector have approached EI from the perspective of the need to develop a more up-to-date and efficient leadership competency. Thus for many authors leadership is regarded as a key competency in the professional profile of civil engineers, and the one which they urge should therefore be included in different study plans (Delatte, 2020; Ellis and Petersen, 2011; Ahn et al., 2014).

The study of project managers has gradually revealed the overall importance of EI for this aspect of project management, and authors such as Dvir et al. (2006) have stressed the relevance and importance of EI. Other researchers in project management have joined those who advocate this doctrine, such as Muller and Turner (2010), who demonstrated the relationship between the emotional sensibility of project managers and the success of their projects, both in the techno-economic field and on a personal level. The results they obtained showed that managers of successful engineering projects expressed satisfaction with their professional development and scored above average or high marks in terms of emotional sensibility.

During the execution of an engineering project, and as a consequence of the coexistence and concurrence of a great variability of different professional profiles, which in turn involve their own emotional states in accordance with their respective personal and professional situations, Zheng et al. (2017) proposed the development of EI in construction teams as a tool for minimising conflicts and enhancing productivity.

On the basis of a similar difficult and complex conception that matches the commission of these types of projects, other authors also support the implementation and development of EI in management teams as an objective that is indispensable for progress and improvement of not only productivity, but also the personal and professional satisfaction of those engaged in civil engineering (Clarke, 2010; Maqbool et al., 2017; Rezvani et al., 2018).

In this sense, Rezvani et al. (2018) investigate the different hypotheses that link the development of EI in construction teams with the impact it has on productivity and conflictive situations. Regarding the influence of EI on construction teams, Wolftet al. (2002) affirm that teams with emotional intelligence are able to handle the range of emotions that oscillate between negative and positive emotions, while adding that those teams with a high degree of EI stimulate and enhance positive interpersonal relationships, thereby promoting collaboration and cooperation as well as the satisfaction of team members belonging to organisations.

As borne out in the literature, we may therefore point out that the first hypothesis proposed in our research is as follows:

H1: A positive and significant relationship exists between the emotional intelligence of civil engineers in Spain and their professional satisfaction.

Goleman (1998) states that emotions constitute an important factor in the predicting the success of anyone engaged in engineering projects. In this regard, the results obtained in different studies show that differences exist in terms of gender in the management of emotions, and therefore in the level of EI (Kant, 2019; Extremera et al., 2019).

In the result for the validation of the Wong and Law (WLEIS-S) emotional intelligence scale, undertaken by Extremera et al. (2019), gender differences are found in the total score and the appraisal dimension of the emotions of others, women being those who scored higher than men.

Our second hypothesis therefore is as follows:

H2: Differences of emotional intelligence and its dimensions as well as professional satisfaction exist, depending on the gender of the civil engineers.

On the basis of the second hypothesis, a third hypothesis is put forward that may respond to a possible relation between experience, age and a greater or lesser degree of EI, this third hypothesis being as follows:

H3: Differences in emotional intelligence, its dimensions and professional satisfaction exist, depending on the experience of the civil engineers.

3. Methodology

Participants.

Through the College of Public Works Technical Engineers and Civil Engineers (CITOP), an email was sent to a total of 8,983 members explaining the purpose of the research and the voluntary and anonymous nature of participation in the survey. A link through the "Google docs" application was provided in the email for access to the questionnaire, available between March and December, 2021. This method is used to ensure that any errors in the transcription of data processing, should they occur, are kept to a bare minimum, and is a reliable and tried and trusted means for conducting surveys (Alarco, 2012).

Confidentiality was guaranteed and the participants were not required to reveal their identities in the survey. The email they received explained the origin and reason for their voluntary and anonymous participation in the survey, access to which was facilitated through the link provided. A total of 248 valid questionnaires were obtained.

Of the 248 members who responded, 69 were women, 177 were men, and in two questionnares gender was not specified.

The years of experience of those who completed the questionnaire ranged between 1 and 30 years of professional experience. They were classified into 3 groups on the basis of these years of experience: 10 years or less (69 participants), between 11 and 20 years (80 participants), and more than 20 years (98 participants).

Instruments.

The self-report questionnaire was drawn up in accordance with an adaptation of the following instruments of measure: the Emotional Quotient Inventory (EQ-i Spanish version) (Bar-On, 1997) and the Emotional Competency Inventory (ECI) (Boyatzis, Goleman and Rhee, 2000).

From the two instruments of measure referred to above, 25 statements were selected for this present work. This selection took into account those statements expressing the closest relation with the management tasks involved in the civil engineering sector.

To the 25 statements selected, one more was added in order to measure the degree of professional of the civil engineers, as follows: "I feel satisfied with the way my professional career has developed". This single-item corresponds to that employed by Camman et al. (1983).

The participants rated each item by using the Likart 5-Point Scale (1 if in their case the phrase is completely false, i.e. they strongly disagree with it; 2 if the phrase is usually false, or they disagree with it; 3 if the phrase is just as false as it is true, that is, they neither agree nor disagree with it; 4 if the phrase is more often than not true, and they agree with it, and 5 if the phrase is completely true, and they agree strongly with it).

In order to verify the reliability of the statements and the scales used, internal consistency was checked by means of Cronbach's Alpha, yielding a an internal consistency value of 0.765, which indicates a good level of internal consistency.

Table 1: Cronbach's Alpha.

Cronbach's Alpha	Cronbach's Alpha of the standardised items	Number of Questions
0.765	0.788	26

Source: the authors

In order to be considered consistent, a factor must be theoretically consistent, include the contribution of at least three variables and have a Cronbach Alpha greater than 0.6. The minimum accepted value for the Cronbach Alpha is 0.7 (Robinson and Shaver, 1973). However, 0.6 is accepted in the exploratory research.

The following table shows the Inter-Item correlation Matrix. Here one may observe that most of the data are positive, which demonstrates a high correlation of each question with the total of all those posed in the questionnaire. Thus, it indicates the high degree to each element correlates with the overall score.

Table 2: Item Correlation Matrix - Total.

Question	Means of the scale if the question were removed	Variance of the scale if the question was removed	Total Item Correlation	Cronbach Alpha if the question were removed
1	93.7682	82.645	0.383	0.752
2	93.3636	89.210	0.208	0.770
3	92.8545	86.591	0.292	0.758
4	93.1227	82.985	0.376	0.753
5	93.1091	86.509	0.267	0.759
6	93.2864	85.319	0.326	0.756
7	93.818	84.030	0.413	0.752
8	93.3773	82.373	0.578	0.745
9	93.6909	81.100	0.474	0.746
10	93.2545	83.771	0.421	0.751
11	93.0500	84.577	0.357	0.755
12	93.1455	84.335	0.431	0.752

Question	Means of the scale if the question were removed	Variance of the scale if the question was removed	Total Item Correlation	Cronbach Alpha if the question were removed
13	93.4545	83.582	0.363	0.754
14	93.6636	81.603	0.515	0.745
15	93.6000	82.415	0.480	0.748
16	93.4545	82.057	0.405	0.751
17	93.1955	84.788	0.345	0.759
18	93.2273	84.688	0.364	0.760
19	92.8409	86.518	0.355	0.757
20	94.1636	87.635	0.313	0.774
21	93.4000	83.383	0.420	0.751
22	93.3182	92,145	0.356	0.783
23	93.4409	85.133	0.298	0.766
24	94.6500	86.238	0.212	0.769
25	95.3364	88.398	0.353	0.771
26	94.9682	84.332	0.238	0.762

Source: the authors

Data Analysis.

The data obtained from the responses to the online self-report questionnaire were transferred to an Excel database in order to obtain descriptive information. These data were subsequently passed to the IBM software SPSS version 29.0.0.0(241) in order to perform the correlations by means of the Pearson p and the means comparison tests by the student's t for comparing women and men. ANOVA was used to compare the years of experience.

4. Results

In what follows we present the results obtained for the sample of Civil Engineers in Spain; firstly, the correlations between the different variables in the study, and then the comparisons according to gender and years of experience.

As may be observed in Table 3, there is a 1% positive and significant correlation between the professional satisfaction of the Civil Engineers in Spain and their emotional intelligence. This correlation is of medium-size.

Table 3: Correlations between Professional Satisfaction and Emotional Intelligence of the Civil Engineers in Spain.

	M	DE	Emotional Intelligence	Professional Satisfaction
Professional Satisfaction	3.88	0.87	.346**	
Emotional Intelligence	3.60	0.37		.346**

**. The correlation is significant at the level 0.01 (bilateral).

Source: the authors.

The professional satisfaction of the Civil Engineers in Spain correlates positively and significantly to 1% with 3 of the 4 dimensions of emotional intelligence, since the correlation with social awareness is not significant, as may be seen in Table 4. The effect size of the significant correlations is small for self-awareness and self-management, and medium-sized for relationship management.

The largest significant correlation is found between self-management and relationship management.

Table 4: Correlations between Professional Satisfaction and the Dimensions of Emotional Intelligence of the Civil Engineers in Spain.

	M	DE	Professional Satisfaction	Self-awareness	Self-management	Social Awareness	Relationship Management
Professional Satisfaction	3.88	0.87					
Self-awareness	3.36	0.47	.203**				
Self-management	3.29	0.45	.264**	.319**			
Social Awareness	4.28	0.54	0.115	.229**	.219**		
Relationship Management	3.89	0.52	.336**	.344**	.553**	.340**	
Personal Assessment	3.43	0.65	.243**	.385**	.162*	.135*	.299**

**. The correlation is significant at the level 0.01 (bilateral).
*. The correlation is significant at the level 0.05 (bilateral).

Source: the authors.

Comparison of means

Table 5 shows the significant differences that exist between women (n=69) and men (n=177) for only the social awareness dimension, with a small effect size, in which women present a mean greater than that of men.

Table 5. Comparison of means according to the gender of the Civil Engineers in Spain

	Women		Men				
	M	DE	M	DE	t	p	d
Emotional Intelligence	3.57	0.38	3.61	0.36	-0.74	0.23	
Professional Satisfaction	3.78	1.06	3.93	0.77	-1.21	0.11	
Self-awareness	3.39	0.43	3.36	0.46	0.48	0.31	
Self-management	3.21	0.51	3.32	0.43	-1.67	0.06	
Social Awareness	4.39	0.47	4.23	0.56	2.13	0.01	0.31
Relationship Management	3.85	0.50	3.91	0.52	-0.83	0.20	

Source: the authors.

In order to compare the means according to years of experience, we divide the groups in those with 10 years or less (n=69), those between 11 and 20 years (n=80) and those with more than 20 years (n=98). Since the division consists of 3 groups, ANOVA was applied and the results can be seen in Table 6, where only significant differences are found, with a small effect size for professional satisfaction.

In order to determine in which groups differences can be found, a post hoc. analysis was performed. The significant differences are identified between the group consisting of those with

more than 20 years of experience and the group with fewer than 10 years, these latter presenting a lower professional satisfaction.

Table 6: Comparison of means according to the years of experience of the Civil Engineers in Spain.

	10 years or less		Between 11 and 20		More than 20							
	M	DS	M	DS	M	DS	SC	gl	MC	F	p	n^2
Emotional Intelligence	3.632	0.379	3.620	0.367	3.561	0.371	0.25	2	0.12	0.90	0.40	
Professional Satisfaction	3.72	0.998	3.78	0.886	4.06	0.730	5.79	2	2.88	3.87	0.02	0.03
Self-awareness	3.406	0.507	3.331	0.456	3.37	0.468	0.20	2	0.10	0.45	0.63	
Self-management	3.279	0.447	3.331	0.498	3.258	0.427	0.23	2	0.12	0.57	0.56	
Social Awareness	4.289	0.545	4.318	0.492	4.255	0.593	0.18	2	0.09	0.30	0.74	
Relationship Management	3.977	0.518	3.917	0.504	3.821	0.537	1.04	2	0.52	1.93	0.14	

Source: the authors

5. Discussion

The purpose of this study was to analyse the relationship between emotional intelligence (and its dimensions) of Civil Engineers in Spain and their professional satisfaction, as well as to determine whether any differences in the variables studied existed in terms of the gender and years of experience of the civil engineers. The results obtained enable us to improve the understanding of EI in the sphere of civil engineering as well as to determine its potential benefits, with the aim of enhancing the development and the final outcome of the projects.

Given that a positive correlation is found between professional satisfaction with EI and 3 of the 4 dimensions, these results confirm Hypothesis 1. First of all, it is necessary to highlight the correlation between the relationship management dimension, followed by the self-management dimension and that of self-awareness.

This result is in line with the approach adopted by Sy et al. (2005), who showed that emotionally intelligent managers trusted their human teams and expressed their satisfaction with the work environment. Furthermore, they obtained good results in the management of complex projects.

In the classification of this study, the relationship dimension includes among others the teamwork, leadership, communication, and conflict resolution competencies. To that end, the correlation obtained between professional satisfaction and the relationship dimension is supported by the affirmation made by Turner and Lloyd-Walker (2008), who state that EI may provide a predictive variable for the majority of complex work environments, a stance also adopted by Meisler and Gabot (2014) when they establish a relation between a high degree of EI and the improvement in organisational performance as a key variable that enables a greater capability, which minimises the negative result of complex projects.

Likewise, Zheng et al. (2017), Clarke (2010), Maqbool et al. (2017), Rezvani et al. (2018) and Larson et al. (2015), among others, all point out that EI is a vital factor for improving the

professional environment as well as for successfully addressing conflict resolution. Similarly, Di Fabio et al. (2012) remark that EI plays a fundamental role in complex decision-making processes.

Our result is also consistent with the proposal put forward by Zhang and Fan (2013), who affirm that when practiced during the execution of building projects, EI brings many benefits, among which favourable interpersonal relationships and the increase in professional satisfaction are worthy of mention, as well as cohesive teamwork when tackling challenging situations. In this regard, Troth et al. (2012) state that EI enhances the communication capability between team members and leads to a work context that fosters creativity and decision-making, thereby improving the overall performance of the team.

The importance that our study attributes to the development of EI competencies in civil engineering professionals is consistent with the affirmations of different authors in their consideration that emotional competencies constitute the most significant skills and capabilities that firms engaged in the civil engineering sector demand of senior managers, who are destined to be at the helm of projects and companies (Clarke, 2010; Ekrot et al., 2016; Sunindijo et al., 2017).

Regarding our hypothesis about the existence of differences in the variables according to the gender of the participants in the study, we are obliged to rule it out, since we only find significant differences in the social awareness dimension.

According to Goleman (1995, 1998) and Mayer et al. (2004), EI is always present and evolves throughout life, so it constitutes in itself a process of continuous learning. Studies such as ours led us to propose a hypothesis concerning differences in the emotional intelligence of our participants, depending on their work experience, which we must now disregard because no such differences exist in our sample. Where differences according to work experience were indeed identified was in the professional satisfaction variable, as is reflected in the results.

While it is true that this study is not without its limitations, it would be interesting to replicate it with a larger sample of civil engineers. It is worth pointing out that in our own sample there were more men than women. In addition, the self-report measures are prone to different biases, such as a limited self-awareness and social desirability. These limitations could be reduced in future studies by the application of comprehensive measuring instruments such as MSCEIT, which facilitates the obtention of less interpretaive results.

We believe that it is necessary to extend future studies in order to determine whether EI competency indicators can be found that measure new and different aspects with predictive value, above and beyond those that have been obtained to date regarding traditional management skills and competencies.

6. Conclusions

Emotional intelligence is present in the daily life of every individual and is crucial for the self-management of everyone, as well as for the decisions we make in our personal lives on a daily

basis. It also plays a role in our social contacts and is inherent to relationship management in the workplace.

On conclusion of the quantitative study we have conducted with the participation of 248 civil engineers, the results obtained indicate that the emotional intelligence competencies in the profile of civil engineering are both necessary and very much in demand for achieving overall success in the execution of current construction projects.

The need to boost the learning and assimilation of EI is backed up by the results obtained in studies in which it has emerged that 61% of all the large-scale civil engineering projects did not fully come to fruition or were completed unsatisfactorily (Maqbool et al., 2017). Thus, it is clear that, as stated by Simmons et al. (2017), the situational and temporal complexity of civil engineering projects require professionals trained in personal resources in order to facilitate both self-management and the management of human teams.

On the basis of the results obtained, the recommendation arising from this study is to analyse and consider the possible ways of implementing spaces for training in the development of EI competencies as part of university education or post-graduate studies for both students and professionals of civil engineering.

With the aim of fostering and improving the sphere of civil engineering, it is necessary to seek out, appoint and promote people who possess EI skills so that the quality of interaction in projects can develop organically, especially in the construction sector, where management styles are often aggressive and authoritarian (Smithers and Walker, 2000).

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