

# An empirical study on the nexus between the emotional intelligence of top managers and their assessment of intellectual capital

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**Abstract** This study considers intellectual capital based on the assumption that this capital, which possesses social aspects, is related to the emotional capacities (i.e., emotional intelligence) of an organization's members. A literature review indicates that this relationship has been previously noted and studied, and researchers agree that the emotional intelligence of the members of an organization affects the organization's intellectual capital. Based on this analysis, this relationship is examined in the Turkish business context. Data are collected from top managers, who can affect the intellectual capital of their businesses and who, as human beings, are emotional. Thus, in this study, the emotional intelligence of top managers and their opinions regarding the intellectual capital of their businesses are considered to be related, with interesting results. When all of the factors of emotional intelligence that are likely to affect opinions regarding intellectual capital are examined using a multivariate model, the effect of emotional intelligence is revealed. Primarily, three factors of the emotional intelligence—empathy and communication skill, self-awareness and sociability—affect the participants' opinions regarding the intellectual capital of their businesses. Univariate models are used to evaluate the effect of each emotional intelligence factor on the participants' opinions regarding the intellectual capital of their businesses. Empathy and communication skills affect opinions about the quality of human capital. Self-awareness affects opinions about the organizational commitment of workers. Sociability can affect opinions about information technology and information sharing. In summary, emotional intelligence affects opinions about human capital quality, information technology and information sharing.

**Keywords** Intellectual capital · Emotional intelligence · Human capital · Top manager · Turkey

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## 1 Introduction

In today's business world, subjects such as the new economy, the service economy, innovation, process management and quality assurance are widely discussed. These subjects and many others, including global competition and the ever-changing circumstances of the business environment, influence managerial decisions and make it challenging to operate a business efficiently.

The foundation that all of these subjects share is *business intelligence* (Hameed 2004), which may be understood as the *fuel* that the decision-maker requires. The literature posits that this fuel is refined by the use of *knowledge management*, which is the systematic process of selecting, assessing and presenting business-related information (Hameed 2004). This connection between business intelligence and knowledge management has been noted by many scholars (McKnight 2002; Haimila 2001).

There are several commonalities between these two ideas, such as *data*, *data mining and text mining* (Cook and Cook 2000). If these commonalities are examined, core concepts such as data, information and knowledge emerge, and it is widely held that most of these core concepts comprise the ingredients of intellectual capital (Marco 2002). Together, these core concepts form the basic motivation for this study.

The analysis of intellectual capital reveals that some of its components, such as customer capital, are generally outwardly directed, whereas others, such as structural and human capital, are directed toward the internal environment (Bontis 1998). This assessment suggests that intellectual capital is important for business-related information and the evaluation of that information. In addition, unlike knowledge management, intellectual capital does not depend strongly on quantitative data), although most business-related information is qualitative (Cook and Cook 2000). Moreover, intellectual capital has advantages over business intelligence, which represents a *picture* of the reality that may have lost content in its composition (Kurtyka 2003).

In addition, certain factors reflect human nature and social relationships, that is, the humanistic aspects of intellectual capital. This *humanity* implies the following possibility: the emotionality of individuals in the work context may relate to the intellectual capital of a business. Humans are emotional beings, and thus emotionality may be observed in work contexts.

Unfortunately, only a small number of studies considering intellectual capital include an examination of human emotionality in the business environment. Thus, a significant contribution of this study is that it considers whether there is a relationship between the emotional capacity of an organization's members *and* their opinions regarding the intellectual capital of their businesses. Emotional capacity is referred to as *emotional intelligence* in the literature. The authors of the present study have determined that it would be appropriate to consider top managers as organizational members because the top managers control the entire company, including its intellectual capital, and because they are human beings who should possess emotions. Therefore, certain relationships may be revealed using data collected from such individuals.

This study aims to identify the possible relationships between the emotional capacities of Turkish top managers (i.e., their emotional intelligence) and their opinions about the intellectual capital of their businesses. More precisely, the authors first intend to understand the factors on which the emotional intelligence of top managers depend and the factors that influence their opinions regarding the intellectual capital of their businesses. Second, the study proceeds based on evidence from the literature (Man et al. 2002; Jerico 2001; Gratton and Ghoshal 2003; Badura 2000) that the emotional capacities of organizational members may be considered aspects of intellectual capital. Moreover, emotionality is held to affect

intellectual capital by preceding it (Gendron 2004; Coleman 1994). This second step is operationalized with emotional intelligence as an independent variable and by employing a general linear model to analyze the effect of emotional intelligence on the opinions of top managers regarding the intellectual capital of their businesses.

## 2 Emotional intelligence: definitions, contents and measurement

According to the literature, *emotional intelligence* was first used by Payne (1985), who asserted that emotional intelligence is the ability of a person to relate to fear, pain and ambition. This definition appears to be limited to a few emotions. However, a more general definition was presented by Salovey and Mayer (1990). These scholars briefly defined emotional intelligence as the ability of a person to analyze his or her own emotions and those of others and to use these analyses, to a certain extent, to accomplish private purposes. Salovey and Mayer's (1990) study, which uses a broad approach, is known as the *four branch model*, which implies that emotional intelligence is composed of four capacities: to perceive emotions, to decode emotional meanings, to use emotions to enrich one's thoughts and to direct emotions for specific purposes. After Salovey and Mayer (1990), other scholars studied emotional intelligence. For example, another model of emotional intelligence, suggested by Goleman (1995), includes five factors: understanding one's own emotions, maintaining successful social relationships, entering into specific social states willingly to be successful, understanding and affecting other people's emotions and directing one's own emotions. Davies et al. (1998) contended that emotional intelligence is composed of psychological processes that are interconnected and can be divided into three aspects: the assessment of one's own emotions and those of others verbally or in another manner, the use of emotions to contribute to the thinking process and regulating one's emotions. A study similar to Salovey and Mayer (1990) was conducted by Jordan et al. (2002), who considered emotional intelligence to be a combination of three factors: directing one's emotions, caring about the emotions of others and using emotions to solve problems.

Certain studies have focused on specific aspects of emotional intelligence. Some scholars (Nowicki and Duke 1994; Matsumoto et al. 2000; Elfenbein et al. 2006) have argued that emotional intelligence depends primarily on the skill and capacity of emotional perception, whereas other scholars, such as Averill and Nunley (1992), Parrott (2002) and Richards et al. (1992), focused on the role of emotions in the thinking process. By contrast, Innes-Ker and Niedenthal (2002), Lane et al. (1990) and MacCann et al. (2004) asserted that the capacity to successfully match specific emotions and specific conditions forms the basis of emotional intelligence. Finally, Eisenberg (2000) and Denham et al. (2003) claimed that the most important factor in emotional intelligence is emotional management capacity.

A similar variety of definitions and aspects of emotional intelligence appears in the various instruments used to measure emotional intelligence. One measurement method is the multifactor emotional intelligence scale (MEIS), which was developed by Mayer et al. (2000). This method was criticized by Conte (2005) and Van Rooy and Viswesvaran (2004) for low reliability, resulting in the creation of an improved scale: the Mayer–Salovey–Caruso emotional intelligence test (MSCEIT) (Mayer et al. 2002). Another prominent instrument is the emotional quotient inventory (EQ-i) developed by Bar-On (1997), which includes five subscales: intrapersonal, interpersonal, stress management, adaptability and general mood. Cooper (1997) incorporates social threats and satisfaction, the awareness of one's own emotions and those of others, creativity, passion, personal emotional power, the general health condition and quality of life in the method known as the *Emotional Quotient Map*. In addi-

tion, the emotional competence inventory of Boyatzis et al. (2000) considers factors such as self-awareness, social capabilities, social awareness and self-management. Similar to definitions that focus only on certain aspects of emotional intelligence, several instruments consider only specific aspects of emotional intelligence. The diagnostic analysis of nonverbal accuracy scale (DANVA) (Nowicki and Duke 1994) and the Japanese and caucasian brief recognition test (JACBART) (Matsumoto et al. 2000) are two examples of such instruments.

Because this study considers managers in the Turkish business context, it is appropriate to reference several studies on the emotional intelligence of Turkish managers. Notable, many current studies focus on the emotional intelligence of workers (Kalyoncu et al. 2012; Akbolat and Isik 2012). However, fewer studies primarily address the emotional intelligence of managers (Yan 2008; Titrek et al. 2009; Pamukoglu 2004; Ozdemir and Ozdemir 2007; Cengiz et al. 2006; Cakar and Arbak 2003; Ayranci 2010; Acar 2002).

The relevant Turkish studies generally concern specific issues, such as organizational performance, conflict management, management effectiveness and leadership. The emotional intelligence of managers has been found to be effective in conflict management; managers who exhibit greater emotional intelligence can foster a positive emotional atmosphere (Ozdemir and Ozdemir 2007). Moreover, emotional intelligence is a vital factor for management effectiveness (Yan 2008; Pamukoglu 2004), contributes to the creativity of the organizational leader and can be used to increase worker creativity (Cengiz et al. 2006). Furthermore, emotional intelligence contributes to positive behavior by leaders toward followers (Acar 2002), and there is a close relationship between transformational leadership and emotional intelligence (Cakar and Arbak 2003). In addition, the demographic characteristics of managers are a primary factor in their inability to regulate their emotions (Titrek et al. 2009), and the emotional and spiritual intelligence of managers relates to their perceptions of the financial performance of their organizations (Ayranci 2010).

### 3 Intellectual capital: definitions, components and measurement

In the two decades that intellectual capital has received attention in the literature, many different definitions have been established. *Intangible* or *unseen* are common features of these definitions. Typically, intellectual capital is defined as the knowledge ownership, experience, organizational technology, customer relationships and professional capabilities that foster competitiveness (Edvinsson and Malone 1997). In addition, intellectual capital includes the sum of all of the unseen assets that increase an organization's current and future profitability (Ordenez de Pablos 2002) and the knowledge, intellectual properties and experience that may contribute to the wealth of organizations (Stewart 1997). Moreover, intellectual capital is the sum of intangible assets that promote the continuation of organizational operations (Brooking 1996).

It is remarkable that all of these definitions describe the content of intellectual capital. For example, Bontis (1998) claims that intellectual capital possesses three components: *structural capital* (organizational work processes and policies), *human capital* (the intelligence, knowledge and experience of workers) and *customer capital* (the potential interests derived from relationships with customers and other groups who reside in the organization's external environment). In greater detail, Brooking (1996) posits that intellectual capital possesses four components: intellectual property assets (e.g., patents, copyrights and commercial secrets), market assets (e.g., customers, customer loyalty, license and cooperation agreements and partnerships), human-centered assets (the education, competency, knowledge and experience of workers) and infrastructural assets (e.g., organizational culture, management philosophy and

technology). Similar to Bontis (1998), Stewart (1997) considers intellectual capital a combination of human, structural and customer capital, whereas Edvinsson and Malone (1997) consider only human and structural capital.

Similar to emotional intelligence, intellectual capital is either fully and or partially focused on by different scholars. Some studies only consider human capital (O'Donnell et al. 2003; Choo and Bontis 2002), structural capital (Roos and Roos 1997) and customer (relational) capital (Prahalad and Ramaswamy 2000; Bontis 2002). Other scholars consider the legal aspects of intellectual capital. An example is Harrison and Sullivan (2000), who start with human capital (the tacit knowledge of workers) and then analyze human capital to reveal *intellectual assets*. When intellectual assets possess legal dimensions, *intellectual properties* emerge.

In addition to the emotions of an organization's members, for this study, the human dimension of intellectual capital is important. The literature agrees with this importance, and certain scholars, such as Backhuijs et al. (1999), Bontis (1998), Bontis and Fitz-Enz (2002), Gratton and Ghoshal (2003) and Johanson et al. (1999), contend that *human capital* is the most important component of intellectual capital.

Turkish studies are primarily concerned with the measurement of intellectual capital in work contexts (Kanibir 2004; Bozbura and Toraman 2004; Ayzit 2006; Arikboga 2003; Akyuz 2005; Akdemir 1998; Akbay 2007). Most of these studies conclude that prioritizing intellectual capital or considering intellectual capital in an organizational context benefits an organization's value, performance and competitive power. In addition, the Turkish literature has started to precisely report intellectual capital according to Turkish accounting and reporting principles (Yereli and Gersil 2005; Sipahi 2004; Erhan 2003), and certain recent studies (Demir and Bahadir 2007; Ceran 2007) consider the overlap of International Financial Reporting Standards (IFRS) with intellectual capital reporting in Turkey.

#### 4 Relating intellectual capital and emotionality

Notably, many intellectual capital studies do not consider worker emotions, values or commitment as *sub-capital*, although these phenomena may affect workers and thus human capital. However, certain studies consider these *intangible* subjects to be part of intellectual capital. Two such studies are Gubman (1998) and Mayo (2001), which emphasize the management of the organizational commitment and the emotions of workers toward the organization as if these matters belonged to the organization's intangibles. From a similar perspective, Jerico (2001) contends that organizational abilities strongly depend on the organization's workers and that this dependency is closely related to the competencies and commitment of the workers. In a more direct approach, Ulrich (1998) claims that intellectual capital is formed by organizational competencies, and the emotional and professional commitment of workers. Similarly, Man et al. (2002) include personal emotions, values and attitudes among the competencies and commitment of workers.

All of these studies imply that emotionality is primarily *related* to human or intellectual capital rather than regarding emotionality as a specific *sub-component* of human capital or intellectual capital itself.

Other studies focus on the emotionality-human capital relationship. For example, Badura (2000) notes that emotionality (in the form of satisfaction or dissatisfaction, fear or commitment) can affect human capital's effectiveness. Davenport (1999) goes further by asserting that the desire of workers to emotionally bond with the organization is the primary motivation of human capital investment. Litschka et al. (2006) consider human capital to be the

services of the workers for the organization, that is, human performance for the sake of the organization. These researchers define this performance as the product of the abilities and motivation of workers in addition to their satisfaction and commitment. [Tran \(1998\)](#) presents the formation, evolution and consequences of the emotional climate in learning organizations, concluding that this climate affects organization-level learning ability but that the experiences, knowledge and skills of workers act with the emotional climate to alter this learning ability.

A minority of scholars insist that emotionality should be thought of as a capital. For example, [Gratton and Ghoshal \(2003\)](#) accept *human and social (relational) capital*. However, these researchers consider that the third component of intellectual capital is *emotional capital*, that is, the ability to understand one's own emotions and those of others, to be sincere with respect to one's emotions and to act with will and hope. [Gendron \(2004\)](#) represents an advance on [Gratton and Ghoshal \(2003\)](#) in that the author considers emotional capital and relates it to other capital types. The relation reveals that emotional capital is a vital premise for human capital development and knowledge management.

An earlier study by [Coleman \(1994\)](#) asserts that emotional capital is relevant to social and human capital and thus may become a main ingredient of human capital. Similarly, [Goleman \(1998\)](#) notes that emotional capital is the set of emotional competencies that is learned from social context and religion and represents a supra-system, including human capital, that is not limited to the work context.

## 5 Method

The research aims to clarify the effects of the emotional capacities of Turkish top managers on their opinions regarding the intellectual capital of their businesses. To this end, the authors select a sample that includes the managers of businesses in the Ikitelli Organized Industrial Zone in Istanbul, Turkey. The sample is designed to include only one participant from each business, the top manager. There are more than 27,300 businesses in this zone ([Ikitelli Organized Industrial Zone 2012](#)), and with a 5% margin of error and a 95% confidence level, the sample size is calculated to be 374. Simple random sampling of 400 participants is used to compensate for missing or invalid data. At the end of the data-collection process, 363 valid cases remain.

Opinions about intellectual capital depend on the items presented in [Bontis \(1998\)](#). Emotional capacities (i.e., emotional intelligence) are measured using the items of [Bar-On's \(2002\)](#) emotional quotient inventory short version (EQ-i: S). Rewordings were performed for the Turkish language. Because of the length of the questionnaires and the aim of the research, the demographic characteristics of the participants were not collected.

### 5.1 Statistical structures and reliability of emotional intelligence and opinions about intellectual capital

The authors first perform confirmatory factor analyses on the emotional intelligence data and the opinions about intellectual capital. The results indicate that the original structures, as posited by [Bar-On \(2002\)](#) and [Bontis \(1998\)](#), are not valid for the sample, leading to the explanatory factor and reliability analyses.

The explanatory factor analysis of the emotional intelligence data is performed using principal components analysis with the extraction of the factors with eigenvalues larger than one, varimax rotation and the suppression of items with factor loadings smaller than

[0, 5]. The missing values are replaced with mean values. In total, 47 items remain to form the factors. The rest are omitted for several reasons. Certain factors are formed by only two items, which is undesirable (Norman and Streiner 2008), and certain items cannot be grouped under any factor. Before omission, the Kaiser–Meyer–Olkin (KMO) value is 0.637, and the Bartlett’s test value is significant, which indicates that the data are fairly suitable to be factorized. A total of 28 factors emerge that can explain 68.819 % of the total variance. After the omissions are performed, the KMO increases to 0.720 with a significant Bartlett test value. The remaining 47 items are grouped under nine factors that can explain 61.755 % of the total variance. Table 1 includes the results of the explanatory factor analysis of the emotional intelligence items and the reliability analysis results.

The explanatory factor analysis of the data on opinions regarding intellectual capital demonstrates that these data are more suitable to factorization than the emotional intelligence data (a KMO value of 0.810 compared with 0.637). Omissions are performed, which again leaves, surprisingly but coincidentally, 47 items. Before omissions, a total of 18 factors account for 72.549 % of the total variance. The omissions lead to the extraction of 7 factors that account for 69.618 % of the total variance. The omissions also cause the KMO value to increase to 0.849 with a significant Bartlett’s test value. Table 2 shows the results of the explanatory factor and reliability analyses of the top managers’ opinions about their businesses’ intellectual capital.

## 5.2 The proposed model for emotional intelligence

In accordance with the study’s goal, the authors performed second-level factor modeling using structural equation modeling (SEM). The items used were adopted from Bar-On (2002), and from these items, nine factors emerged. Although all of these factors are related to emotional intelligence, the authors question whether the nine factors can be aggregated under the title of *emotional intelligence*. The proposed model, with the optimization suggestions of LISREL applied, is presented in Fig. 1.

The evaluation of the model in Fig. 1 indicates that the model is realistic overall, with foremost fit indices within the limits suggested by the literature (Schermelleh-Engel and Moosbrugger 2003; Hooper et al. 2008). Table 3 shows the fit indices of the model in Fig. 1.

In addition, the model’s standardized residuals were considered for further evaluation. Both the stemleaf and Q–Q plots of the model’s standardized residuals (Fig. 2) suggest that the model is realistic overall.

In addition, this realistic model is valid in terms of all relationships, the error variances and the added error covariances according to LISREL’s suggestions on statistical significance. Table 4 shows the structural equations for the model.

Tables 3 and 4 and Fig. 2 demonstrate that the proposed model for emotional intelligence is realistic; therefore, the nine factors extracted from the explanatory analysis (Table 1) can be statistically aggregated under the idea of emotional intelligence. Unfortunately, the structural equations in Table 4 imply weak relationships between the nine factors and emotional intelligence.

## 5.3 The proposed model for opinions regarding intellectual capital

In this section, we introduce the modeling of the opinions of the top managers regarding the intellectual capital of their businesses (Fig. 3). This model requires no omissions, and the LISREL suggestions further increase the model’s accuracy. Therefore, one can conclude that

**Table 1** Explanatory factor and reliability analyses results for the emotional intelligence items

Empathy and communication skill	Item	Factor loading	Stress management	Item	Factor loading
Variance explained: 12.131 %	I easily notice the emotional needs of others	0.923	Variance explained: 10.161 %	I can endure intensive stress	0.838
	When I do not agree with someone, I can tell this fact to him or her	0.891		I can cope with stress without becoming angry	0.837
	I can realize when someone is suffering	0.853		I know how to remain calm in difficult circumstances	0.777
	I understand the emotions of others well, even if they do not express the emotions directly	0.847		Despite the difficulties that occasionally emerge, I usually believe that things will be better	0.773
Factor Cronbach's alpha value: 0.909	I form good relationships with others	0.813		I believe that I can cope with difficult situations	0.764
	Close relationships are vital for my friends and me	0.720		It is easy for me to cope with disagreeable events	0.764
	I can easily tell others what I think	0.706		It is easy for me to adapt to new circumstances	0.680
	I care what happens to others	0.704	I try to see matters realistically without fantasies or dreams	0.598	
	I am careful not to hurt the feelings of others	0.624			
Self-awareness	Item	Factor loading	Problem-solving	Item	Factor loading
Variance explained: 8.174 %	It is easy for me to define my emotions	0.948	Variance explained: 6.531 %	When I face a problem, I first stop and think	0.801
	I know what I feel	0.879		When I solve a problem, I analyze every possibility and then determine the best approach	0.790
	I know which tasks I am good at	0.830		My approach to difficulties is to advance step by step	0.670
Factor Cronbach's alpha value: 0.843	I have determined life goals	0.735		I know how to address annoying problems	0.667
			Factor Cronbach's alpha value: 0.800		

**Table 1** continued

Self-awareness	Item	Factor loading	Problem-solving	Item	Factor loading
	I feel positive when I examine my good or bad aspects	0.677		When I face difficult circumstances, I want to collect as much information as possible	0.650
	I know what upsets me when I feel bad	0.606		Even when matters become increasingly difficult, I generally have the motivation to continue	0.577
Openness to change	Item	Factor loading	Self-esteem	Item	Factor loading
Variance explained: 6.444 %	I can change my habits easily	0.811	Variance explained: 5.872 %	I can defend my rights	0.862
	It is easy for me to start new things	0.796		I am self-confident under most circumstances	0.846
	It is easy for me to change my ideas regarding any subject	0.787		I can make my own decisions	0.817
Factor Cronbach's alpha value: 0.816	It is easy to change my style	0.734	Factor Cronbach's alpha value: 0.835	I appreciate myself	0.668
	It is easy for me to say "no"	0.590			
Self-contentment	Item	Factor loading	Emotion presentation skill	Item	Factor loading
Variance explained: 4.602 %	I am happy with my physical appearance	0.856	Variance explained: 4.267 %	I can easily share deep emotions with others	0.770
	I am happy with my personality	0.795		It is easy for me to display my emotions	0.761
Factor Cronbach's alpha value: 0.768	I enjoy life	0.771	Factor Cronbach's alpha value: 0.664	I am generous with my love	0.735
Sociability	Item	Factor loading			
Variance explained: 3.573 %	Others think that I am sociable	0.741			
	I can make friends easily	0.715			
Factor Cronbach's alpha value: 0.521	I enjoy helping others	0.644			

**Table 2** Explanatory factor and reliability analyses results for opinions about intellectual capital

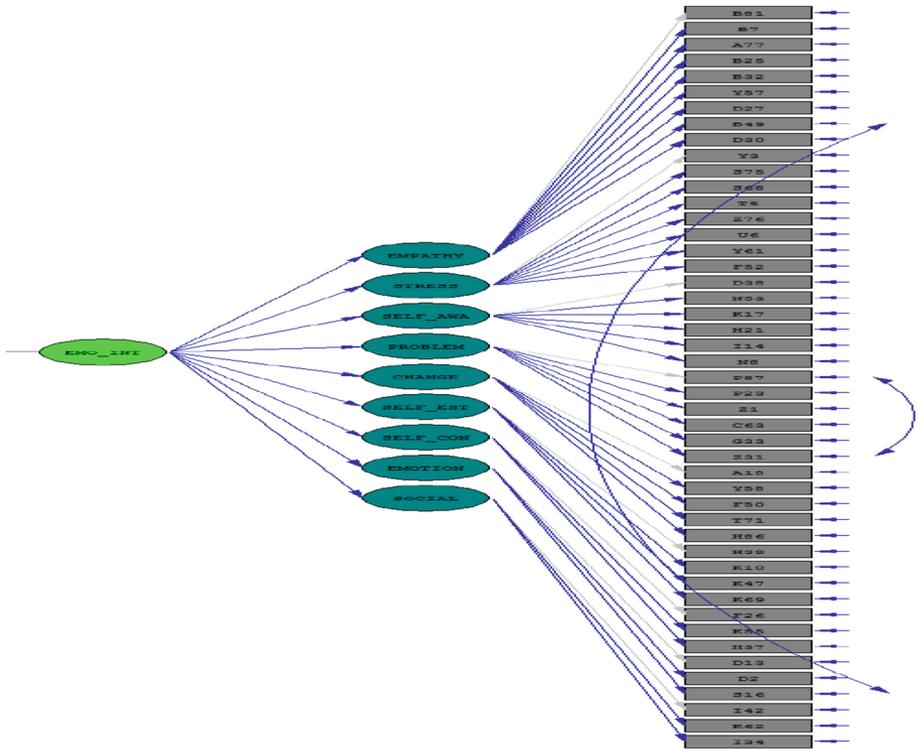
Human capital: the quality of human capital	Item	Factor loading	Customer capital: customer dimension	Item	Factor loading
Variance explained: 17.080 %	Our employees are skillful and creative	0.926	Variance explained: 16.513 %	Our customers are generally pleased with our institution	0.966
	The development of the skills and creativity of our employees is constantly supported	0.919		Our priority in customer relationships is to provide customer satisfaction	0.961
	Our employees possess sufficient job experience	0.914		We try to solve our customers' problems rapidly	0.940
	Our tenured employees exhibit high job performance	0.906		We always cooperate with our customers to satisfy their needs	0.935
	The sudden resignation of our qualified and educated employees affects our institution	0.871		We have relationships with our customers that last long years	0.923
	The university from which our employment candidates graduated is an important hiring criterion	0.834		We are constantly in contact with our customers	0.913
	The master's degrees or PhDs of our employees increase their contributions to our institution	0.809		Our customers are more loyal to us than those of our competitors	0.902
	We support the education and skill development of our employees	0.801		Many of our workers know our customer profile	0.897
	The education cost per employee is systematically increasing	0.732		We are increasing our business with our foreign customers	0.866
	Our employees always perform as well as possible	0.704			
Our employees take appropriate risks to be successful in their tasks	0.670				
We provide our employees with social motivational benefits (e.g., health insurance, free meals and private educational courses)	0.618				
Factor Cronbach's alpha value: 0.943			Factor Cronbach's alpha value: 0.978		

**Table 2** continued

Human capital: shared organizational climate	Item	Factor loading	Structural capital: information technology and information sharing	Item	Factor loading
Variance explained: 10.696 %	In our institution, there are relationships between employees and managers that depend on sharing and cooperation	0.791	Variance explained: 7.722 %	Our institution invests continuously and increasingly in the information technology substructure (e.g., computers, the Internet, the Intranet and databases)	0.955
	There is a participative management understanding in our institution	0.791		Our information technology substructure (e.g., computers, the Internet, the Intranet and databases) facilitates information sharing within our institution	0.944
	Our corporate culture is supportive and motivational	0.775	Factor Cronbach's alpha value: 0.959	There are processes and systems present to share information in our institution	0.943
	There are mission, vision and corporate values that are accepted and shared by institution's employees	0.767		Our institution adapts to technological advancements rapidly	0.918
Factor Cronbach's alpha value: 0.906	Our employees are willing to share information among themselves	0.766			
	The interpersonal relationships in our institution are good	0.719			
	Our employees are aware of working as a team	0.694			
	We encourage employee teamwork	0.694			
	The work atmosphere in our institution is positive	0.642			

**Table 2** continued

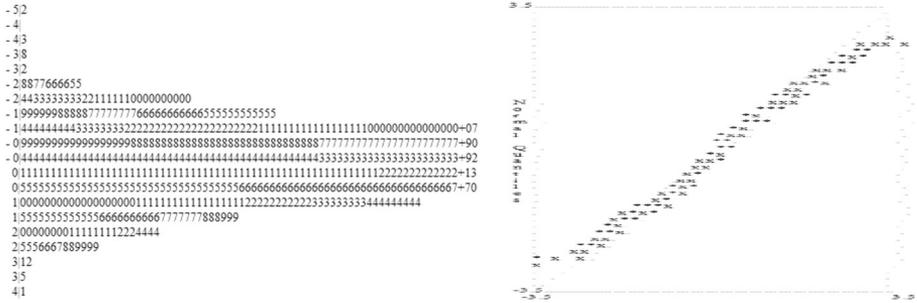
Human capital: organizational commitment of workers	Item	Factor loading	Customer capital: trademark dimension	Item	Factor loading
Variance explained: 6.995%	The commitment of our employees to our institution is strong	0.957	Variance explained: 6.584%	A widely recognized trademark is one of our most important institutional goals	0.869
	Our workers are pleased to be employed at our institution	0.879		Our institution's products are recognized as a trademark in the market	0.860
	One of the most important goals of our human resources policy is employee satisfaction	0.853		We patent or copyright the products that belong to our institution	0.762
Factor Cronbach's alpha value: 0.812	We support the individual contributions of our employees toward our institution's goals	0.659	Factor Cronbach's alpha value: 0.844	We monitor the protection of the patents or copyrights of our institution's products	0.686
	Our managers are successful at directing the employees toward institutional goals	0.596		Our institution is prominent and well known in the sector	0.609
Customer capital: market dimension					
Variance explained: 4.028%	Many of our institution's employees know our market targets	0.799	Factor Cronbach's alpha value: 0.646	Our institution tries to accomplish market targets in all of its operations	0.679
	For the last few years, our market share has been steadily increasing	0.749			



**Fig. 1** The proposed model for emotional intelligence. EMO\_INT: Emotional intelligence, EMPATHY: Empathy and communication skills, STRESS: Stressmanagement, SELF\_AWA: Self-awareness, PROBLEM: Problem-solving, CHANGE: Openness to change, SELF\_EST: Self-esteem, SELF\_CON: Self-contentment, EMOTION: Emotion presentation skill, SOCIAL: Sociability

**Table 3** Fit indices of the proposed model for emotional intelligence

Fit indices	Fit indices value
Expected cross-validation index (The index value is 6.23 for the saturated model and 38.49 for the independence model)	7.09
Root mean square error of approximation	0.060
Comparative fit index	1.00
Normed fit index	0.93
Non-normed fit index	1.00
Parsimony normed fit index	0.88
Incremental fit index	1.00
Relative fit index	0.92
Goodness of fit index	0.95
Adjusted goodness of fit index	0.95
Parsimony goodness of fit index	0.86
Standardized RMR	0.056



**Fig. 2** The stemleaf and Q-Q plots of the standardized residuals of the proposed model for emotional intelligence

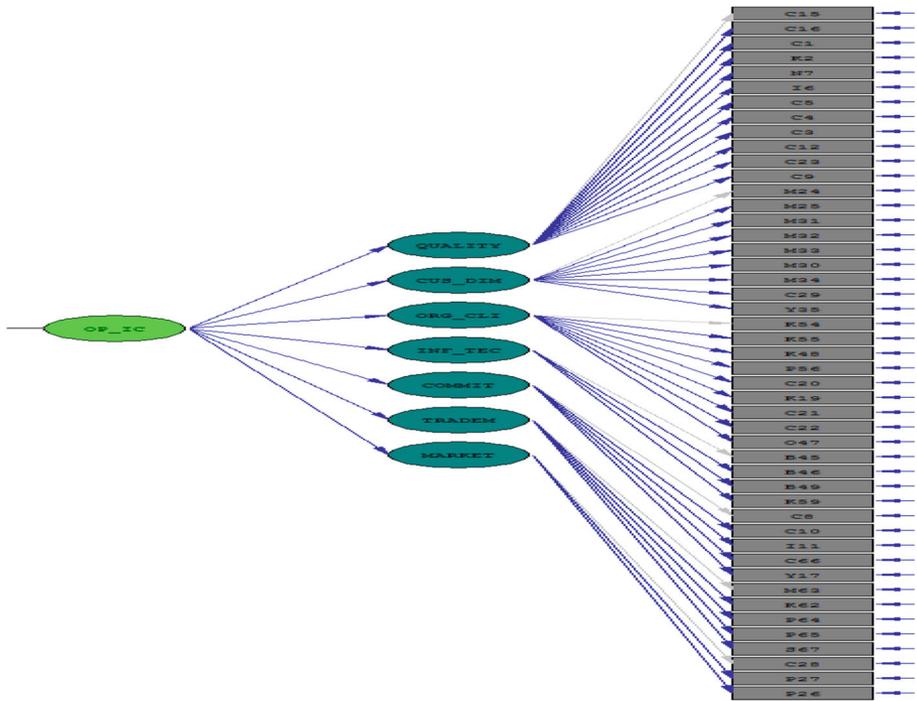
**Table 4** Structural equations of the proposed model for emotional intelligence

EMPATHY = -0.043*EMO_INT, Errorvar. = 1.00, $R^2 = 0.0018$ (0.019) (0.059) -2.26 16.88
STRESS = 0.40*EMO_INT, Errorvar. = 0.84, $R^2 = 0.16$ (0.039) (0.060) 10.17 14.04
SELF_AWA = 0.30*EMO_INT, Errorvar. = 0.91, $R^2 = 0.089$ (0.028) (0.063) 10.79 14.42
PROBLEM = - 0.44*EMO_INT, Errorvar. = 0.80, $R^2 = 0.20$ (0.025) (0.034) -17.59 23.78
CHANGE = 0.10*EMO_INT, Errorvar. = 0.99, $R^2 = 0.011$ (0.023) (0.064) 4.59 15.51
SELF_EST = -0.37*EMO_INT, Errorvar. = 0.87, $R^2 = 0.13$ (0.028) (0.051) -13.04 17.11
SELF_CON = 0.070*EMO_INT, Errorvar. = 1.00, $R^2 = 0.0048$ (0.023) (0.090) 3.05 11.08
EMOTION = 0.059*EMO_INT, Errorvar. = 1.00, $R^2 = 0.0035$ (0.027) (0.063) 2.21 15.82
SOCIAL = 0.039*EMO_INT, Errorvar. = 1.00, $R^2 = 0.0015$ (0.020) (0.070) 1.97 14.21

See the footnote to Fig. 1 for the definitions of the abbreviations

the factors for the opinions regarding intellectual capital are more readily modeled than those for emotional intelligence.

Table 5 clearly shows that the model for opinions about intellectual capital is realistic, and therefore details regarding the relationships can be presented.



**Fig. 3** The proposed model for opinions regarding intellectual capital. OP\_IC: Opinions regarding intellectual capital, QUALITY: Human Capital: the quality of human capital, CUS\_DIM: Customer capital: customer dimension, ORG\_CLI: Human capital: shared organizational climate, INF\_TEC: Structural capital: information technology and information sharing, COMMIT: Human Capital: Worker organizational commitment, TRADEM: Customer capital: trademark dimension, MARKET: Customer capital: market dimension

An analysis of the standardized residuals for the model also demonstrates that the model is realistic. The stemleaf and Q–Q plots of the model’s standardized residuals are shown in Fig. 4.

All of the relationships in the model are statistically significant, and Table 6 includes the structural equations. Nevertheless, most relationships are weak (Table 6).

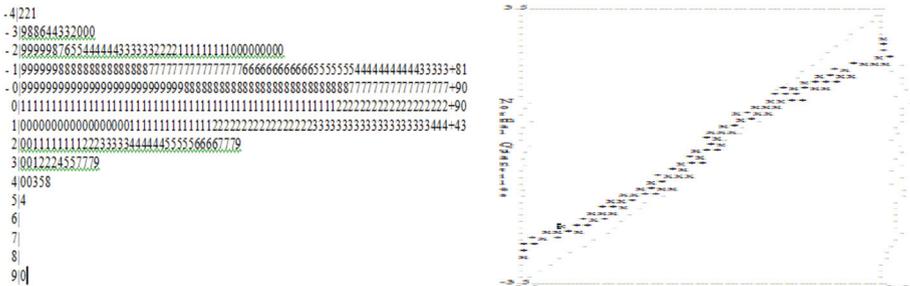
The findings demonstrate that the opinions of top managers regarding the intellectual capital of their businesses depend on seven factors. A remarkable result is that all seven factors can be grouped within the second-level latent variable (opinions regarding intellectual capital), albeit weakly.

#### 5.4 The effect of the emotional intelligence of top managers on their opinions about the intellectual capital of their businesses

As previously mentioned, certain scholars (Davenport 1999; Badura 2000) assert that emotionality is relevant to human capital, whereas others (Gratton and Ghoshal 2003; Gendron 2004) consider emotional capital to be a component of intellectual capital. In short, emotionality is claimed to be linked with intellectual capital. This study focuses on this claim and analyzes the statistical structures of emotional intelligence and opinions regarding intellectual capital. The explanatory factor and the SEM analyses demonstrate that the emotional

**Table 5** Fit indices of the proposed model for opinions regarding intellectual capital

Fit indices	Fit indices value
Expected cross-validation index (The index value is 6.23 for the saturated model and 77.17 for the independence model)	11.53
Root mean square error of approximation	0.089
Comparative fit index	0.98
Normed fit index	0.94
Non-normed fit index	0.98
Parsimony normed fit index	0.90
Incremental fit index	0.98
Relative fit index	0.94
Goodness of fit index	0.97
Adjusted goodness of fit index	0.97
Parsimony goodness of fit index	0.88
Standardized RMR	0.051



**Fig. 4** The stemleaf and Q–Q plots of the standardized residuals of the proposed model for opinions regarding intellectual capital

intelligence of the participants is composed of nine factors, whereas the opinions of the participants regarding the intellectual capital of their businesses are composed of seven factors. All of the factors can be grouped under their respective second-level latent variable.

Next, the general linear model (GLM) is used to investigate the effect of emotional intelligence on the opinions regarding intellectual capital. Table 7 shows the results of the multivariate model. The multivariate model is built by taking *main effects* into consideration. The Box’s test of equality of covariance matrices can not be computed because there are fewer than two nonsingular cell covariance matrices and is ignored as advised by [Cardinal and Aitken \(2006\)](#).

Table 7 assumes that all of the factors of emotional intelligence affect opinions regarding intellectual capital. According to Table 7, the empathy and communication skills, self-awareness and sociability of the top managers affect their opinions regarding the intellectual capital of their businesses. The partial eta squared values suggest that, among these three factors, the self-awareness of the top managers is the factor that is the most closely related to their opinions regarding intellectual capital, followed by their empathy and communication skills and, finally, their sociability.

**Table 6** Structural equations of the proposed model for opinions regarding intellectual capital

QUALITY = 0.11*OP_IC, Errorvar. = 0.99, $R^2 = 0.012$
(0.012) (0.046)
9.02 21.26
CUS_DIM = 0.30*OP_IC, Errorvar. = 0.91, $R^2 = 0.091$
(0.018) (0.045)
17.14 20.14
ORG_CLI = 0.25*OP_IC, Errorvar. = 0.94, $R^2 = 0.060$
(0.016) (0.041)
15.20 23.13
INF_TEC = 0.086*OP_IC, Errorvar. = 0.99, $R^2 = 0.0074$
(0.016) (0.073)
5.25 13.66
COMMIT = 0.045*OP_IC, Errorvar. = 1.00, $R^2 = 0.0020$
(0.016) (0.086)
2.74 11.61
TRADEM = 0.72*OP_IC, Errorvar. = 0.48, $R^2 = 0.52$
(0.041) (0.066)
17.53 7.22
MARKET = 0.21*OP_IC, Errorvar. = 0.95, $R^2 = 0.046$
(0.024) (0.078)
8.81 12.16

See the footnote to Fig. 3 for the definitions of the abbreviations

Next, the univariate tests are presented. In these tests, the aim was to determine how each factor contributing to top managers’ opinions regarding their businesses’ intellectual capital is affected by each factor of their emotional intelligence. The Levene test values for these effects are presented in Table 8.

As Table 8 indicates, only one factor of the opinions of top managers regarding the intellectual capital of their businesses is not related to their emotional intelligence: *Human Capital: Workers’ organizational commitment*. The study continues by examining the effects of each emotional intelligence factor on each factor for the opinions regarding intellectual capital (Table 9).

Each emotional intelligence factor of the top managers has been claimed to affect each factor of their opinions regarding the intellectual capital of their businesses (Table 9). However, there is little evidence to support these claims. The empathy and communication skills of the participants affect their opinions regarding the quality of the human capital of their businesses (sig.< 0.05;  $\partial\eta^2 = 0.529$ ). The self-awareness of the top managers can affect their opinions regarding worker organizational commitment (sig.< 0.05;  $\partial\eta^2 = 0.732$ ). Finally, the sociability of the participants can affect their opinions regarding information technology and information sharing related to their businesses. However, this relationship is weak (sig.< 0.05;  $\partial\eta^2 = 0.068$ ).

From a broader perspective (see “Corrected Model”, Table 9), the emotional intelligence of the top managers can affect their opinions regarding the quality of human capital in their businesses (sig.< 0.05,  $\partial\eta^2 = 0.555$  and adjusted  $R^2 = 0.531$ ) and their opinions regarding information technology and information sharing (sig.< 0.05,  $\partial\eta^2 = 0.084$  and adjusted  $R^2 = 0.033$ ) but, unfortunately, not their opinions regarding worker organizational commitment because of the variance homogeneity problem revealed by Table 8.

**Table 7** Results of the multivariate model for the effect of emotional intelligence factors on opinions regarding intellectual capital

Multivariate tests <sup>d</sup>		Value	F	Hypothesis df	Error df	Sig.	$\partial\eta^2$	Noncent. parameter	Observed power <sup>b</sup>
Intercept	Pillai's trace	0.882	359.355 <sup>a</sup>	7.000	337.000	0.000	0.882	2515.483	1.000
	Wilks's lambda	0.118	359.355 <sup>a</sup>	7000	337.000	0.000	0.882	2515.483	1.000
	Hotelling's trace	7.464	359.355 <sup>a</sup>	7.000	337.000	0.000	0.882	2515.483	1.000
	Roy's largest root	7.464	359.355 <sup>a</sup>	7.000	337.000	0.000	0.882	2515.483	1.000
Empathy and communication skill	Pillai's trace	0.559	18.751	14.000	676.000	0.000	0.280	262.518	1.000
	Wilks's lambda	0.452	23.498 <sup>a</sup>	14.000	674.000	0.000	0.328	328.969	1.000
Stress management	Hotelling's trace	1.190	28.560	14.000	672.000	0.000	0.373	399.837	1.000
	Roy's largest root	1.169	56.452 <sup>c</sup>	7.000	338.000	0.000	0.539	395.161	1.000
	Pillai's trace	0.036	0.897	14.000	676.000	0.562	0.018	12.563	0.583
	Wilks's lambda	0.964	0.896 <sup>a</sup>	14.000	674.000	0.563	0.018	12.549	0.582
Self-awareness	Hotelling's trace	0.037	0.895	14.000	672.000	0.564	0.018	12.536	0.582
	Roy's largest root	0.027	1.311 <sup>c</sup>	7.000	338.000	0.244	0.026	9.178	0.559
	Pillai's trace	0.739	28.314	14.000	676.000	0.000	0.370	396.390	1.000
	Wilks's lambda	0.264	45.561 <sup>a</sup>	14.000	674.000	0.000	0.486	637.860	1.000
Problem-solving	Hotelling's trace	2.776	66.628	14.000	672.000	0.000	0.581	932.791	1.000
	Roy's largest root	2.772	133.836 <sup>c</sup>	7.000	338.000	0.000	0.735	936.852	1.000
	Pillai's trace	0.019	0.954 <sup>a</sup>	7.000	337.000	0.465	0.019	6.680	0.412
	Wilks's lambda	0.981	0.954 <sup>a</sup>	7.000	337.000	0.465	0.019	6.680	0.412
Openness to change	Hotelling's trace	0.020	0.954 <sup>a</sup>	7.000	337.000	0.465	0.019	6.680	0.412
	Roy's largest root	0.020	0.954 <sup>a</sup>	7.000	337.000	0.465	0.019	6.680	0.412
	Pillai's trace	0.042	1.034	14.000	676.000	0.417	0.021	14.470	0.662
	Wilks's lambda	0.958	1.032 <sup>a</sup>	14.000	674.000	0.419	0.021	14.445	0.661
	Hotelling's trace	0.043	1.030	14.000	672.000	0.421	0.021	14.419	0.660

**Table 7** continued

Multivariate tests <sup>d</sup>													
Effect		Value	F	Hypothesis df	Error df	Sig.	$\partial\eta^2$	Noncent. parameter	Observed power <sup>b</sup>				
Self-esteem	Roy's largest root	0.029	1.385 <sup>c</sup>	7.000	338.000	0.210	0.028	9.698	0.587				
	Pillai's trace	0.039	0.640	21.000	1017.000	0.891	0.013	13.431	0.529				
	Wilks's lambda	0.961	0.637	21.000	968.232	0.893	0.013	12.797	0.503				
	Hottelling's trace	0.040	0.634	21.000	1007.000	0.896	0.013	13.320	0.524				
Self-contentment	Roy's largest root	0.019	0.938 <sup>c</sup>	7.000	339.000	0.477	0.019	6.566	0.405				
	Pillai's trace	0.052	0.846	21.000	1017.000	0.663	0.017	17.768	0.688				
	Wilks's lambda	0.949	0.845	21.000	968.232	0.664	0.017	16.978	0.662				
	Hottelling's trace	0.053	0.844	21.000	1007.000	0.666	0.017	17.723	0.687				
Emotion presentation skill	Roy's largest root	0.033	1.588 <sup>c</sup>	7.000	339.000	0.138	0.032	11.114	0.659				
	Pillai's trace	0.043	1.059	14.000	676.000	0.392	0.021	14.833	0.676				
	Wilks's lambda	0.957	1.062 <sup>a</sup>	14.000	674.000	0.390	0.022	14.866	0.677				
	Hottelling's trace	0.044	1.064	14.000	672.000	0.387	0.022	14.898	0.678				
Sociability	Roy's largest root	0.037	1.808 <sup>c</sup>	7.000	338.000	0.085	0.036	12.655	0.727				
	Pillai's trace	0.096	2.440	14.000	676.000	0.002	0.048	34.160	0.984				
	Wilks's lambda	0.905	2.458 <sup>a</sup>	14.000	674.000	0.002	0.049	34.416	0.985				
	Hottelling's trace	0.103	2.477	14.000	672.000	0.002	0.049	34.671	0.986				
	Roy's largest root	0.085	4.105 <sup>c</sup>	7.000	338.000	0.000	0.078	28.734	0.987				

<sup>a</sup> Exact statistic

<sup>b</sup> Computed using alpha = 0.05

<sup>c</sup> The statistic is an upper bound on F that yields a lower bound on the significance level

<sup>d</sup> Design: Intercept + Empathy and communication skill + Stress management + Self-awareness + Problem-solving + Openness to change + Self-esteem + Self-contentment + Emotion presentation skill + Sociability

**Table 8** Levene test results for the effects of emotional intelligence on each factor of opinions regarding intellectual capital

	<i>F</i>	df1	df2	Sig.
Human capital: the quality of human capital	1.201	296	66	0.187
Customer capital: customer dimension	1.246	296	66	0.141
Human capital: shared organizational climate	0.821	296	66	0.860
Structural capital: information technology and information sharing	0.649	296	66	0.991
Human capital: worker organizational commitment	1.514	296	66	0.022
Customer capital: trademark dimension	1.075	296	66	0.371
Customer capital: market dimension	0.860	296	66	0.799

Tests the null hypothesis that the error variance of the dependent variable is equal across groups

Design: Intercept + Empathy and communication skill + Stress management + Self-awareness + Problem-solving + Openness to change + Self-esteem + Self-contentment + Emotion presentation skill + Sociability

## 6 Conclusion and implications

A noteworthy result is that the self-awareness of top managers and their sensitivity toward and interactions with others (i.e., empathy and communication skills and sociability) affect their opinions regarding the intellectual capital of their businesses. That is, these psycho-social capacities and skills of the top managers affect their opinions regarding the intellectual capital of their businesses. This result is compatible with the literature, which demonstrates that intellectual capital contains certain psycho-social factors, such as human and customer capital, human-centered assets and relational capital. In this case, it becomes evident that the psycho-social capacities and skills of the top managers and the psycho-social factors in the intellectual capital of the business may be related. The authors contend that the literature on the psycho-social factors of intellectual capital may be considered to indicate this relationship.

In addition, there are significant outcomes when the factors of emotional intelligence and the factors of opinions regarding intellectual capital are considered to be related. One such result is that the empathy and communication skills of the top managers affect their opinions regarding the quality of the workers, i.e., the quality of the human capital, of their businesses. This factor (human capital: the quality of human capital) includes the opinions of the top managers regarding the importance of the educational level, tenure and skills of the workers. These worker qualities are related to behavior. That is, all of these qualities may be revealed by worker behavior in the work context. These worker qualities should be related to the managers because the managers should understand their subordinates' behavior to assess them correctly. In short, a link exists between the workers and the managers. This link is dependent on the behavior of the workers, which reveals their qualifications, and the skill of the managers to judge their subordinates. In fact, these skills concern empathy and communication, as the result indicates.

Another result is that the self-awareness of the top managers affects their opinions about the organizational commitment of their workers. There may be several reasons for this relationship. The self-awareness of the top managers includes their goals, and their opinions regarding worker commitment include directing workers toward organizational goals. Thus, the top managers may link their personal goals with the goals of their organizations and, consequently, with the goals of their workers. That is, the personal goals of the top managers may affect their organizations, including the organizations' workers. The relationship between the self-awareness of the top managers and their opinions regarding the organizational commit-

**Table 9** The effects of each emotional intelligence factor on each factor of the opinions regarding intellectual capital

Tests of between-subject effects									
Source	Dependent variable	Type III sum of squares	df	Mean square	F	Sig.	$\partial\eta^2$	Noncent. parameter	Observed power <sup>b</sup>
Corrected model	Human capital: the quality of human capital	82.276 <sup>a</sup>	19	4.330	22.535	0.000	0.555	428.159	1.000
	Customer capital: customer dimension	14.093 <sup>c</sup>	19	0.742	1.053	0.399	0.055	20.009	0.763
	Human capital: shared organizational climate	7.082 <sup>d</sup>	19	0.373	0.551	0.938	0.030	10.466	0.413
	Structural capital: information technology and information sharing	27.076 <sup>e</sup>	19	1.425	1.649	0.043	0.084	31.339	0.949
	Human capital: worker organizational commitment	65.789 <sup>f</sup>	19	3.463	53.459	0.000	0.748	1015.721	1.000
	Customer capital: trademark dimension	10.824 <sup>g</sup>	19	0.570	0.947	0.524	0.050	18.000	0.703
	Customer capital: market dimension	7.730 <sup>h</sup>	19	0.407	1.014	0.443	0.053	19.275	0.742
	Human capital: the quality of human capital	93.826	1	93.826	488.267	0.000	0.587	488.267	1.000
	Customer capital: customer dimension	174.262	1	174.262	247.407	0.000	0.419	247.407	1.000
	Human capital: shared organizational climate	103.431	1	103.431	152.857	0.000	0.308	152.857	1.000
Intercept	Structural capital: information technology and information sharing	189.170	1	189.170	218.952	0.000	0.390	218.952	1.000
	Human capital: worker organizational commitment	78.074	1	78.074	1205.382	0.000	0.778	1205.382	1.000
	Customer capital: trademark dimension	126.845	1	126.845	210.941	0.000	0.381	210.941	1.000
	Customer capital: market dimension	77.853	1	77.853	194.117	0.000	0.361	194.117	1.000

**Table 9** continued

Tests of between-subject effects									
Source	Dependent variable	Type III sum of squares	df	Mean square	F	Sig.	$\partial\eta^2$	Noncent. parameter	Observed power <sup>b</sup>
Empathy and communication skill	Human capital: the quality of human capital	74.016	2	37.008	192.587	0.000	0.529	385.174	1.000
	Customer capital: customer dimension	1.342	2	0.671	0.953	0.387	0.006	1.906	0.215
	Human capital: shared organizational climate	1.166	2	0.583	0.861	0.423	0.005	1.723	0.198
	Structural capital: information technology and information sharing	0.132	2	0.066	0.077	0.926	0.000	0.153	0.062
	Human capital: worker organizational commitment	0.050	2	0.025	0.386	0.680	0.002	0.773	0.112
	Customer capital: trademark dimension	1.390	2	0.695	1.156	0.316	0.007	2.311	0.253
	Customer capital: market dimension	0.460	2	0.230	0.573	0.564	0.003	1.147	0.145
	Human capital: the quality of human capital	0.024	2	0.012	0.064	0.938	0.000	0.127	0.060
	Customer capital: customer dimension	3.441	2	1.720	2.442	0.088	0.014	4.885	0.490
	Human capital: shared organizational climate	0.412	2	0.206	0.304	0.738	0.002	0.609	0.098
Stress management	Structural capital: information technology and information sharing	0.625	2	0.312	0.361	0.697	0.002	0.723	0.108
	Human capital: worker organizational commitment	0.303	2	0.152	2.341	0.098	0.013	4.682	0.473
	Customer capital: trademark dimension	0.064	2	0.032	0.053	0.948	0.000	0.106	0.058
	Customer capital: market dimension	0.040	2	0.020	0.049	0.952	0.000	0.098	0.057

**Table 9** continued

Tests of between-subject effects									
Source	Dependent variable	Type III sum of squares	df	Mean square	F	Sig.	$\partial\eta^2$	Noncent. parameter	Observed power <sup>b</sup>
Self-awareness	Human capital: the quality of human capital	0.072	2	0.036	0.189	0.828	0.001	0.377	0.079
	Customer capital: customer dimension	0.627	2	0.313	0.445	0.641	0.003	0.890	0.122
	Human capital: shared organizational climate	1.390	2	0.695	1.027	0.359	0.006	2.054	0.229
	Structural capital: information technology and information sharing	0.185	2	0.093	0.107	0.898	0.001	0.214	0.066
	Human capital: worker organizational commitment	60.685	2	30.342	468.457	0.000	0.732	936.915	1.000
	Customer capital: trademark dimension	0.110	2	0.055	0.092	0.912	0.001	0.184	0.064
Problem-solving	Customer capital: market dimension	0.520	2	0.260	0.649	0.523	0.004	1.298	0.159
	Human capital: the quality of human capital	0.153	1	0.153	0.795	0.373	0.002	0.795	0.144
	Customer capital: customer dimension	0.208	1	0.208	0.296	0.587	0.001	0.296	0.084
	Human capital: shared organizational climate	0.064	1	0.064	0.094	0.759	0.000	0.094	0.061
	Structural capital: information technology and information sharing	0.110	1	0.110	0.128	0.721	0.000	0.128	0.065
	Human capital: worker organizational commitment	0.141	1	0.141	2.175	0.141	0.006	2.175	0.313
Openness to change	Customer capital: trademark dimension	0.178	1	0.178	0.296	0.587	0.001	0.296	0.084
	Customer capital: market dimension	0.999	1	0.999	2.490	0.115	0.007	2.490	0.350
	Human capital: the quality of human capital	0.113	2	0.056	0.293	0.746	0.002	0.586	0.096
	Customer capital: customer dimension	1.061	2	0.531	0.753	0.472	0.004	1.506	0.178
	Human capital: shared organizational climate	0.079	2	0.040	0.059	0.943	0.000	0.117	0.059

**Table 9** continued

Tests of between-subject effects									
Source	Dependent variable	Type III sum of squares	df	Mean square	F	Sig.	$\partial\eta^2$	Noncent. parameter	Observed power <sup>b</sup>
Self-esteem	Structural capital: information technology and information sharing	1.002	2	0.501	0.580	0.560	0.003	1.160	0.146
	Human capital: worker organizational commitment	0.013	2	0.006	0.100	0.905	0.001	0.200	0.065
	Customer capital: trademark dimension	3.611	2	1.806	3.003	0.051	0.017	6.005	0.580
	Customer capital: market dimension	2.265	2	1.133	2.824	0.061	0.016	5.648	0.553
	Human capital: the quality of human capital	0.713	3	0.238	1.237	0.296	0.011	3.712	0.331
	Customer capital: customer dimension	0.818	3	0.273	0.387	0.762	0.003	1.161	0.126
Self-contentment	Human capital: shared organizational climate	0.462	3	0.154	0.228	0.877	0.002	0.683	0.093
	Structural capital: information technology and information sharing	1.898	3	0.633	0.732	0.533	0.006	2.196	0.206
	Human capital: worker organizational commitment	0.221	3	0.074	1.138	0.334	0.010	3.413	0.306
	Customer capital: trademark dimension	1.301	3	0.434	0.721	0.540	0.006	2.164	0.203
	Customer capital: market dimension	0.079	3	0.026	0.066	0.978	0.001	0.198	0.062
	Human capital: the quality of human capital	0.148	3	0.049	0.256	0.857	0.002	0.769	0.099
Emotion presentation skill	Customer capital: customer dimension	2.609	3	0.870	1.235	0.297	0.011	3.704	0.330
	Human capital: shared organizational climate	2.285	3	0.762	1.126	0.339	0.010	3.377	0.303
	Structural capital: information technology and information sharing	0.468	3	0.156	0.180	0.910	0.002	0.541	0.083
	Human capital: worker organizational commitment	0.153	3	0.051	0.787	0.502	0.007	2.360	0.219
	Customer capital: trademark dimension	0.366	3	0.122	0.203	0.894	0.002	0.609	0.088
	Customer capital: market dimension	2.194	3	0.731	1.824	0.142	0.016	5.472	0.473
Emotion presentation skill	Human capital: the quality of human capital	0.757	2	0.378	1.969	0.141	0.011	3.938	0.407
	Customer capital: customer dimension	1.686	2	0.843	1.197	0.303	0.007	2.394	0.261

**Table 9** continued

Tests of between-subject effects									
Source	Dependent variable	Type III sum of squares	df	Mean square	F	Sig.	$\partial\eta^2$	Noncent. parameter	Observed power <sup>b</sup>
Sociability	Human capital: shared organizational climate	0.886	2	0.443	0.655	0.520	0.004	1.309	0.160
	Structural capital: information technology and information sharing	1.019	2	0.509	0.590	0.555	0.003	1.179	0.148
	Human capital: worker organizational commitment	0.120	2	0.060	0.926	0.397	0.005	1.852	0.210
	Customer capital: trademark dimension	1.017	2	0.508	0.846	0.430	0.005	1.691	0.195
	Customer capital: market dimension	0.362	2	0.181	0.451	0.637	0.003	0.902	0.123
	Human capital: the quality of human capital	0.380	2	0.190	0.990	0.373	0.006	1.980	0.222
	Customer capital: customer dimension	0.390	2	0.195	0.277	0.758	0.002	0.554	0.094
	Human capital: shared organizational climate	0.203	2	0.102	0.150	0.860	0.001	0.301	0.073
	Structural capital: information technology and information sharing	21.617	2	10.808	12.510	0.000	0.068	25.020	0.996
	Human capital: worker organizational commitment	0.087	2	0.043	0.670	0.512	0.004	1.341	0.163
Error	Customer capital: trademark dimension	2.624	2	1.312	2.182	0.114	0.013	4.364	0.445
	Customer capital: market dimension	0.340	2	0.170	0.424	0.655	0.002	0.848	0.119
	Human capital: the quality of human capital	65.912	343						
	Customer capital: customer dimension	241.593	343						
	Human capital: shared organizational climate	232.092	343						
	Structural capital: information technology and information sharing	296.345	343						
	Human capital: worker organizational commitment	22.216	343						
	Customer capital: trademark dimension	206.256	343						
Customer capital: market dimension	137.564	343							

**Table 9** continued

Tests of between-subject effects									
Source	Dependent variable	Type III sum of squares	df	Mean square	F	Sig.	$\partial \eta^2$	Noncent. parameter	Observed power <sup>b</sup>
Total	Human capital: the quality of human capital	2267.000	363						
	Customer capital: customer dimension	3005.000	363						
	Human capital: shared organizational climate	2087.000	363						
	Structural capital: information technology and information sharing	3326.000	363						
	Human capital: worker organizational commitment	1465.000	363						
	Customer capital: trademark dimension	2307.000	363						
	Customer capital: market dimension	1534.000	363						
Corrected total	Human capital: the quality of human capital	148.187	362						
	Customer capital: customer dimension	255.686	362						
	Human capital: shared organizational climate	239.174	362						
	Structural capital: information technology and information sharing	323.421	362						
	Human capital: worker organizational commitment	88.006	362						
	Customer capital: trademark dimension	217.080	362						
	Customer capital: market dimension	145.295	362						

<sup>a</sup>  $R^2 = 0.555$  (adjusted  $R^2 = 0.531$ )

<sup>b</sup> Computed using alpha = 0.05

<sup>c</sup>  $R^2 = 0.055$  (adjusted  $R^2 = 0.003$ )

<sup>d</sup>  $R^2 = 0.030$  (adjusted  $R^2 = 0.024$ )

<sup>e</sup>  $R^2 = 0.084$  (adjusted  $R^2 = 0.033$ )

<sup>f</sup>  $R^2 = 0.748$ (adjusted  $R^2 = 0.734$ )

<sup>g</sup>  $R^2 = 0.050$  (adjusted  $R^2 = 0.003$ )

<sup>h</sup>  $R^2 = 0.053$  (adjusted  $R^2 = 0.001$ )

ment of their workers may also be due to the consciousness of the top managers regarding the strong and weak aspects of their characters, which is an aspect of their self-awareness. The emotional intelligence skill enables individuals to criticize themselves. Such self-criticism is expected to result in objectivity, and this objectivity may be reflected in the opinions of the top managers regarding the pleasure that workers derive from the work context, which is one aspect of the opinions regarding worker organizational commitment. Furthermore, top managers, as the *leaders* of their businesses, are expected to identify themselves with their businesses. This identification may be extended to the workers. The concept of *organizational citizenship* might be involved in this identification.

The third result is that the sociability of the top managers affects their opinions regarding information technology and information sharing. Sociability includes being social, making friends and helping others: in short, social interactions and sharing. In addition, the top managers may have believed that the information technology infrastructure of their businesses could promote such social interaction in addition to processing business-related intelligence.

These three results may be considered together, from which it can be observed that two effective factors related to emotional intelligence (i.e., empathy and communication skills and sociability) are outwardly directed, whereas one factor (self-awareness) is inwardly directed. The affected factors of the opinions regarding intellectual capital are related to the workers and the issues of information system and sharing. The aggregate results suggest that outwardly directed emotional capacities play a larger role in opinions regarding intellectual capital. In addition, the characteristics of the human capital, in the form of the quality and the commitments of the workers, are obviously considered by the top managers. This outcome is in agreement with the literature, which notes that emotionality is significantly related to human capital within intellectual capital.

The paper's conclusions reflected two different approaches so far. First, the authors considered the effect of each emotional intelligence factor on the opinions regarding intellectual capital. Then, the effect of each emotional intelligence factor on each factor of the opinions regarding intellectual capital was addressed.

Finally, the authors examined the effects of the emotional intelligence of the top managers on each factor that contributes to the opinions regarding intellectual capital. The findings demonstrate that the emotional intelligence of the top managers affects their opinions about the quality of human capital and information technology and sharing.

Together, these three approaches enable the following inferences. The emotional intelligence of the top managers partly affects their opinions about the intellectual capital of their businesses. This partial effect stems from the psycho-social aspects of the emotional intelligence of the top managers and affects their opinions regarding their organization's workers and the information-sharing infrastructure. In general, all of the outcomes agree with the literature, which asserts that emotionality is not sub-capital of intellectual capital and that emotional intelligence is relevant to the human and information aspects of intellectual capital.

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