Full length article

Emotional intelligence and communication levels in information technology professionals

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ABSTRACT

In today's digital and technical environment, employers are looking for personnel that can contribute to the organization not only with the use of technical skills but can also express their expertise with the use of positive emotional intelligence and communication effectiveness. As research is lacking in the investigation of soft skills used by information technology professionals, the relationship between emotional intelligence and communication adaptability is the focus of this research. This quantitative non-experimental correlational analyses the emotional intelligence and communication adaptability level of 111 Information Technology professionals that work in the United States. The research found a significant positive relationship between emotional intelligence and the communication adaptability of the information technology professional. The positive outcome of this study suggests that information technology professions that have a strong relationship between emotional intelligence and communication aptitude can have positive implications for organizations for organizational teamwork/relationship building.

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1. Introduction

Today, businesses increasingly requires that information technology (IT) professionals have both technical skills, emotional intelligence (EI) and communication aptitude (CA). Interpersonal skills are increasingly appearing as official job requirements; however, IT professionals often lack the appropriate interpersonal skills. Moreover, IT professionals are generally an introverted personality type thereby accentuating their lack of interpersonal skills. As Promís (2008) contended, the "soft skills, traditionally most valued in upper management, are now essential at all levels of the professional workforce" (p.28). While these soft-skills have traditionally been valued in other parts of the organization, namely senior management, as IT becomes more pervasive it is increasingly required to demonstrate and utilize soft-skills. Given the large investments in IT and the critical impact of IT on the organization, the discipline needs to make adjustments to become more business oriented and customer focused. This work serves as an important first step in determining the EI and CA of IT professionals via the

Schutte Self-Report Emotional Intelligence Test (SSEIT) and the Communication Adaptability Scale (CAS).

As organizations are requiring IT professionals to effectively use their soft skills within their roles, the value that a varied skilled employee (mix of technical expertise and soft skills) are important for organizational success. Gallagher, Kaiser, Simon, Beath, and Goles (2010) found that relationship skills are paramount to allowing the IT staff to communicate and work well with others, which in turn leads to effective development and delivery of technical and operational solutions. The connection between an individual's EI level and their CA can lead to the identification of deficiencies in relationship building and management. If deficiencies are improved upon an IT professional can develop a heightened positive balance of technical expertise and soft skills.

As it stands the correlation between EI and CA has not been studied to provide insight into the IT culture within the U.S. population. This gap needs to be studied not only to understand the technology culture but, to provide a self-reflective tool to enhance organizational skills that can be elevated to enrich human capital. As Akhtar, Boustani, Tsivrikos, and Chamorro-Premuzic (2015), established that "personality factors are valid predictors of work engagement", seeking an advanced EI or CA within an employee may allow for the development of the soft skills needed for

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retention (p.46). Finding the missing link between what is expected within the workplace and what the individual is providing can allow for training of effective communication with positive EI. Such training may focus on the development of the skills needed to build stronger relationships, communicate more efficiently, and use soft skills (e.g., empathic communication and interaction with others in an emotionally regulated state) to advance in the professional environment.

EI and communication skills are the valued within an organization and retention of IT professionals with higher EI and clear communication are organizationally valuable (Şimşek & Aktaş, 2013). This research examines the relationship between EI and CA among U.S. IT professionals. Individuals entering the IT field or who seek to understand the professional culture can use this study to further research the implications of emotions in the workplace on organizational behavior. This study has practical implications for IT professionals, departments, and organizations, as well as help contribute to the body of knowledge.

The remainder of this paper is structured as follows: Section 2 provides a review of the literature to support this study, Section 4 illustrates the methods, participants, measures, procedure, and data analysis. Subsequently, Section 5 offers the results of this study with Section 6 providing conclusions and limitations.

2. Literature review

Information technology (IT) departments and IT professionals play a vital role in the creation, education, dissemination, and application of the information used within an organization, as well as the collaboration of ideas to problem solve technological problems within an organization (Park, Lee, & Lee, 2014). However, IT professionals lack appropriate interpersonal skills to interact with end-users/clients delivering the services in a connective manner that can have a positive impact on service quality, customer/user satisfaction, and performance (Lie & Liu, 2014).

Shih, Lie, Klein, and Jiang (2014) found IT professionals are expected to parallel their technical skills with their service skills. Positive emotional intelligence traits or competence as Vaida and Opre (2014) reasoned are personality qualities that can be developed. Wilkerson (2012) provided a review of the current literature on MIS-related job skills and skill gaps. Wilkerson (2012) found that only 2 of 20 papers reviewed did not include interpersonal skills in required MIS job skills. Furthermore, the research found that MIS professional soft skills are found to be more important than technical skills for career success. Spath, Bauer, and Praeg (2010), echo this understanding in their qualitative study that examined the IT service climate. In that study, a senior IT manager stated; "I would rather hire someone who may not be as technically strong but can work and communicate with our clients effectively. The project may take longer, but the outcome is going to be much better" (p.176).

Research conducted by Bassellier and Benbasat (2004) stated that "Organizations need to educate and train their IT professionals to be more business oriented, given that they invest substantial amounts of money in IT and often depend on IT to gain competitive advantage, to avoid a competitive disadvantage, and to ensure the survival of the business" (pp.677). Their study identified specific business knowledge, skills and abilities including, but not limited to, organization unit, leadership, and inter-personal communication. Additionally, a research study conducted by Huang, Kvasny, Joshi, Trauth, and Mahar (2009) synthesized information technology job skills identified in academic studies, practitioner publications and job ads. They found an increasing demand for business acumen, which may include, but is not limited to, project management, financial analysis, and communication skills.

A more recent study by Stevens and Norm (2016) also found similar results. However, their research recognized the ongoing global shortage of information technology workers, which is driving renewed interest from leading government policy-makers to examine alternatives to recruiting overseas. The study sought to identify industry expectations of soft skills in information technology graduates. Their study identified specific business knowledge, skills and abilities, including, but not limited to, interpersonal skills and teamwork/project management skills.

2.1. Emotional intelligence importance

Research by Lounsbury, Sundstrom, Levy, and Gibson (2014) found that "IT professionals had significantly higher levels of agreeableness and tough-mindedness, and lower conscientiousness, emotional stability, extraversion, assertiveness, customer service orientation, optimism, and work drive" (p.38). They also found that these qualities characterized a customer service professional who was able to adapt to change. The consistent interaction with clients while applying enhanced interpersonal skills and positively-driven emotions aids in establishing connections with customers; some IT professionals may lack these qualities.

Shih et al. (2014), validated and furthered Lounsbury et al. (2014) findings. They found IT professionals usually have introverted personalities, which can be a barrier to understanding the customer/client's position or thought process. As such, an IT professional may lack the emotional intuitiveness to pick up on the cues that are communicated by the person with whom he or she is communicating. Without this emotional connection, the IT professional may not be able to teach a client or coworker how to solve the problem; he or she also needs to be able to offer reassurance that the problem can be solved. Thus, the blending of cognitive and emotional intelligence (EI) is found to be an essential characteristic when one expects an IT professional to engage in service relations successfully (Moquin & Riemenschneider, 2014).

2.2. Emotional intelligence

The concept of EI grew from Taine's (1871) evaluation of common human capacities and the need to measure an individual's intellectual qualities to provide a conceptual understanding of human capacities. Salovey and Mayer (1990) defined EI as "the subset of social intelligence that involves the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" (p.188). Many scholars call for a clearer and more unified definition and theory in order to explain further what an individual's emotional intelligence can tell us about human characteristics and behaviors, the methods by which the assessment is proctored can reveal what the researcher is attempting to uncover in an individual behavior (Matthews, Zeidner, & Roberts, 2012; Nafukho, 2009; Petrides & Furnham, 2003). Mayer, Salovey, and Caruso (2008) have found that there are a many observations and discussions from researchers in the emotional field of study that find the term emotional intelligence is used too generally and too all-inclusively to define the term successfully.

Currently, EI individuals have been found to have not only advanced interpersonal skills but also higher levels of effective communication. From an organizational perspective, the need for communication can affect culture, team building, dissemination and transfer of knowledge, as well as the ability to maintain successful relations (Moquin & Riemenschneider, 2014). The connection between emotional intelligence and communication adaptation may provide a link that can not only assess how an individual uses emotion to convey a message, but also how that information is successfully accepted by the receiver.

2.3. Emotional intelligence among information technology professions

It has been found that there are professional job activities that differentiate an IT professional's position from other occupations. As Lounsbury et al. (2014) state that "IT workers displayed significantly lower levels of customer service orientation than employees in other occupations" (p.44). The social cultural and the organizational culture can possibly have an affect an individual's EI and CA. As Information Technology (IT) service requires a close relationship between business professionals and technology experts, the enhancement of inter-relational skills can improve a user's satisfaction which can improve the organization.

As EI grows in popularity the knowledge of how can be applied to an individual in the context of work-behavior has been explored cross-culturally. Kremenitzer, Mojsa, and Brackett (2008) demonstrate that social behaviors can vary in relation to the cultural setting. Noting that emotions are not hard wired but rather based upon the social influences to which an individual is exposed. As Marzuki, Mustaffa, and Saad (2015, p. p267) found a relation was evident between EI, Communication and IT skills. The study demonstrated individual with a positive EI level display more confidence, which strengthen the individual's self-reliance on their IT ability and in doing so enhanced the communication skills through demonstrations and explanations. Marzuki et al. study was performed in Malaysia the question of cultural differences can still be challenged.

Turkish studies of Çetinkaya and Alparslan (2011); Erigüç and Serap-Durukan (2013) and Şimşek and Aktaş (2013) focused on the positive link between individuals with a higher level of both emotional intelligence and communication, thus enhancing the workplace with their interpersonal skills. The positive enhancement of interpersonal skills can be recognized as a valuable element of customer service (Hurrell, Scholarios, & Thompson, 2013). The relationship between EI and CA has not been explored to date in an IT professional working within the United States therefore this study is need to fill the gap in literature.

3. Purpose statement

The purpose of this non-experimental, correlational research is to investigate emotional intelligence and communication adaptability levels in IT professionals. Specifically, this study will determine if a correlation exists between emotional intelligence and communication levels of IT professionals. This research study seeks to answer the following research question:

- Will a relationship between an IT professional's level of emotional intelligence and level of communication adaptability be found?

4. Method

4.1. Measures

The study involves capturing demographic data of U.S. IT professionals and using two survey instruments, the Schutte Self-Report Emotional Intelligence Test (SSEIT) and the Communication Adaptation Scale (CAS). The study focuses on IT personnel in the United States who registered with, and were selected randomly from panel recruitment through Cint©.

4.1.1. Schutte Self-Report Emotional Intelligence Test (SSEIT)

The Schutte Self-Report Emotional Intelligence Test (SSEIT) was developed by Schutte et al. (1998) as a self-reported tool of data collection and measurement of an individual's emotional intelligence. Within the study, the SSEIT measurement tool will collect data for hypotheses 1–5 with a Likert-type scale. A selection of 1 represents a "*strongly disagree*" response and 5 represents a "*strongly agree*" response from the participant. Internal consistency analysis showed a Cronbach's alpha of 0.90 for the 33-item scale. Schutte et al. (1998) developed the SSEIT from the Salovey and Mayer (1990) model, which contains three broad components of emotional intelligence, consisting of an appraisal of: expression of emotion, regulation of emotion, and the use of emotion.

The Schutte Self-Report Emotional Intelligence Test (SSEIT) provides a single score of an individual's emotional intelligence level. The SSEIT is a self-reporting instrument that includes 33-items using a Likert scale of 1 (*strongly agree*) to 5 (*strongly disagree*) for responses. Each subtest score is graded and then added together to give the total score for the participant (Schutte et al., 1998). The SSEIT's 33 self-report measurement has been validated as a reliable instrument to assess the emotional intelligence of individuals on a self-reporting basis (Austin, 2005; Austin, Saklofske, Huang, & McKenney, 2004; Bailie, 2006; Petrides, Furnham, & Frederickson, 2004).

Ciarrochi, Chan, and Bajgar (2001) used the SSEIT measurement tool with an overall EI value of $\alpha = 0.84$, while Saklofske, Austin, and Minski (2003) found a Cronbach α overall EI value of 0.89. As Kottner and Streiner (2010) specified, "Cronbach's α is regarded as the measure of the interrelatedness of item scores constituting one instrument or test" (p. 927). From studies that have been found to have higher than a 0.8 Cronbach α, the studies affirm that the 33-item scale can be used to identify an individual's overall emotional intelligence score within reliable and valid measurements.

4.1.2. Communication Adaptation Scale (CAS)

The Communication Adaptability Scale (CAS) was originally developed by Duran and Wheeless (1980) as a 67-item response. Duran detailed the questions to attain a six-dimensional measure, consisting of 30 self-reporting measures focusing primarily on measuring the skills of a socially competent communicator. According to Duran (1992), "the six-factor structure has remained consistent across ten studies published by the scale's author with adults and students for a total sample size of over 4000 participants" (p.259).

Duran's (1992) six-dimensional scale maintained a measurable average alpha reliability as follows: "Social Experience, 0.80; Social Confirmation, 0.84; Social Composure, 0.82; Appropriate Disclosure, 0.76; Articulation, 0.80; and Wit, 0.74" (p.259).

In measuring communication, Wee Choen, Swain, and Gale (2013) found that the CAS was a valid instrument tool when measuring communication skills of doctors and the communication skills conveyed to their patients. Hullman (2007) also used the CAS to explore the validity and reliability of the CAS measurement of competence in relationship to other reports of adaptability, cognitive flexibility, and conversational appropriateness. Hullman found Cronbach α level results between 0.78 and 0.84, which proved the CAS to be a generally acceptable and reliable scale to measure an individual's communication level. The CAS, Hullman concludes, "offers a perspective different from one's report of their communication competence, which is critical to communication interactions. It demonstrated construct validity, concurrent validity, and acceptable reliabilities" (p.71).

The Communication Adaptability Scale (CAS) is a whole-level measure of social communication competence. The CAS is a multidimensional measure consisting of six dimensions: social experience, social confirmation, social composure, appropriate

disclosure, articulation, and wit. It has demonstrated good reliability with alpha coefficients ranging from 0.74 to 0.84. The CAS has also proved to be a valid measure (Service, 2005).

4.2. Participants

The population of the study comprised adult information technology professionals in the U.S. who have worked in the IT field for two or more years. According to Tabachnick and Fidell (2013), the sample size is calculated using the desired power and alpha level using Green's (1991) rule of thumb. The rule of thumb assumes a medium relational size between the IV's and the DV's $\alpha = 0.05$ and $= 0.20$ the foundation formula of $N \geq 104 + m$ (m = number of IV's). The formula for the study's sample size would be $N \geq 104 + 5 = 109$. The sample size is calculated at 109 participates to reach saturation for the study. The sample size was also calculated using Gpower 3, resulting in 111 participants. Use of Gpower3 with the following parameters will be applied to establish a saturation sample size for the study: Target 200 survey participants who work or have worked within the IT field with the expectation of reaching saturation at 111 participants; 95% Confidence level ± 5% error ratio. Expected Results: Non-centrality parameter 3.3133098; Critical t 1.6589535; Df 109; Total sample size 111; Actual Power 0.9522 (Faul, Erdfelder, Buchner, & Lang, 2009).

While the sample size is limited to 111 participants, a recent Turkish study provided a population sample size between 100 and 200 participants. Therefore, it is plausible to replicate survey findings with the use of Cint©'s panel of 600 U.S. IT professionals and to target completed survey responses from at least 150 participants and a population saturation calculated at 111. Table 1 shows details regarding this study's sample population.

4.3. Procedure

The data collection procedures for the study begin with the initial phase, the creation of online surveys with SurveyGizmo©. The online surveys will enable both instruments - the SSEIT and the CAS - to be distributed online in a tracking enabled format. SurveyGizmo© will then pass the formatted SSEIT and CAS surveys in their entirety to Cint©.

Cint© will solicit completion of surveys from IT professionals with their pool of individuals within the U.S. who match the IT field requirement. Cint© uses Geo-IP verification technology to ensure that the registrant is located in the panel's stated country (Cint, 2014). The participants who meet the requirements for the research panel will receive an email from SurveyGizmo© inviting them to participate in the study and to complete the online survey.

The participant has the option of consenting to the study and completing the survey by linking from the invitation email. The link will take the participant to the web-based survey provided by SurveyGizmo©. The survey will first collect the participant's demographical information of gender, age range, race, and years in the IT field (the study's IVs). The 63-question survey averaged 6.4 min to complete.

Table 1
Description of the sample.

| Years in the technology field and gender | | | | | |
	2–4 years	5–10 years	10–15 years	15–20 + years	Total
Male	7	21	13	15	56
Female	18	20	5	12	55
Total	25	41	18	27	111

4.4. Data analysis

This research study analyzed the two dependent variables (EI, CAS) with a Bivariate Pearson's Product Moment Correlation Coefficient analysis. To determine if the two independent correlations are significantly different, a calculation of z score was performed to note the difference between the z transformed correlations (Walk & Rupp, 2010). In order to find the strength of the relationship in numeric form, Pearson's correlation coefficient examined a scatter plot generation in SPSS to check for outliers. The data was screened for violations of assumptions or homoscedasticity (Wilcox & Keselman, 2012). The scatter plot also provided a visual insight into the relational direction and strength of relationship from the data scores. The *r*-value of 1–0.75 represents a perfect relation, (0.74–0.5) reflects a normal relation, and less than 0.5 determines a weak relationship. Additionally, negative values (-1 to -0.01) will determined a negative perfect to weak relationship (Walk & Rupp, 2010).

Once a determination of a relationship was found, the variables were added to the analysis for investigate as to which, if any, demographic variance can or will had an effect on the relationship between the EI and CAS levels in general. The total EI and CAS scores with the moderating independent demographic variable were utilized within a MANOVA (Multivariate Analysis of Variance) analysis. The MANOVA analysis aided in the discovery of how the moderating variable strengthen or weaken the established relationship between the emotional and communication level of the IT professional.

5. Results

As indicated in Table 2, the z scores for both the SSEIT and CAS fall between $z = -2$ to $z = +2$, which means that they are no more than 2 standard deviated units away from the mean.

The SSEIT and CAS are interval variables and therefore are considered continuous. Both variables create a linear relation as displayed in Fig. 1.

Both variables were normally distributed, as assessed by Shapiro-Wilk's test ($p > 0.05$) in Fig. 2.

As the tri-model demonstrates within the scatter plot, additional studies can be conducted to further explore the variance in SEIS and CAS scoring. Factors that can contribute to the variance that will be explored in addition studies include, gender and the IT professional's years of service within the field.

As shown in Table 3, there is a strong, positive correlation between the EI score (SEIS) and communication score (CAS), which was statistically significant ($r = 0.658$, $n = 111$, $p < 0.0005$). Therefore, there is a relationship between an IT professional's

Table 2
SSEIT and CAS descriptive data table.

	N	Minimum	Maximum	Mean	Std. Deviation
SSEIT_TOTAL	111	108	176	141.06	13.894
CAS_TOTAL	111	79	135	106.41	12.621
Valid N (listwise)	111				

Fig. 1. Relationship between SSEIT and CAS variables.

Fig. 2. SSEIT and CAS histogram.

Table 3
EI score and CA score Correlations.

		SSEIT	CAS
SSEIT	Pearson Correlation	1	0.658[**]
	Sig. (2-tailed)		0.000
	N	111	111
CAS	Pearson Correlation	0.658[**]	1
	Sig. (2-tailed)	0.000	
	N	111	111

[**]Correlation is significant at the 0.01 level (2-tailed).

emotional intelligence level and his or her level of communication adaptability. The null hypothesis1 was rejected and the alternative hypothesis1 was accepted.

6. Discussions and limitations

Current EI literature focuses on management's use of EI and the use of EI in transformational leadership, organizational psychology, and the multigenerational workplace. However, it is also important to focus on the benefits of EI and CA at the service level. The identification and comparison to previous literature in relation to this study found a positive relationship is possible between EI and CA variables. The Turkish studies of Çetinkaya and Alparslan (2011); Erigüç and Serap-Durukan (2013) and Şimşek and Aktaş (2013) established a positive relationship between individuals with a higher level of both emotional intelligence and communication, which demonstrated positive interpersonal skills within the workplace.

As Masrek, Osman, Khamis, and Paiman (2014) found a relation was evident between EI, Communication and IT skills. The study demonstrated individual with a positive EI level display more confidence, which strengthen the individual's self-reliance on their IT ability and in doing so enhanced the communication skills through demonstrations and explanations. The study of Marzuki et al. (2015, p. p267) was performed in Malaysia the question of cultural differences can still be challenged. The finding of a significant relationship between EI and CAS can be a valuable tool for the IT employee as well as the organization that strives to continually develop their human capital and the value of their technology services.

7. Limitations

It is important to note that this study is not without limitations. First, this study was developed from a sample received with the aid of Cint©, a third-party panel recruitment service. Although this process eliminates bias, the researcher has no methods of ensuring the panel members are truthful when providing their demographic data or when answering the survey questions. Participation in the research study required individuals to have two or more years' experience in the IT field while working in the U.S. Using this participation requirement to answer the research questions of this study. However, this study can be expanded to include an individual's positional category within the IT discipline (e.g., Webmaster, Systems developer, Helpdesk Technician). As categorization was out of the scope of this study, further research is planned that would include this category to determine if there are differences between positions within the IT discipline.

The methodology and sample size constitute another limitation. The methodology could be changed to look at the EI and CAS through a qualitative lens. As both the Gpower 3 and the calculation using the desired power and alpha level using Green's (1991) rule of thumb the 111 sample size was acquired to ensure a true sample size. As this sample size is sufficient, the study can be expanded with more additional variables and by using a qualitative methodology. The change in methodology would also change the sample size.

Finally, a limitation can be seen within the measurement instruments of the research. The use of different instruments can provide different results. This study focused on a self-evaluation

method of EI and Communication analysis. The IT professional's self-assessment of both EI and Communication skills can be less than realistic at the time of the test and responses can be affected by personal biases (Patten, 2012). For example, if given time for reflection, a participant may reply to a behavioral question in a manner that would not reflect an innate reaction. The inability to study the participant in an environment that does not allow time to reflect on the behavior before responding can be a limitation. Despite the abovementioned limitations, the findings provide insights that a positive correlation exist between EI and CA among IT professionals. Therefore, organizations and academic institutions should not simply look at hiring IT professionals based upon their technical strength without also considering their EI and CA skills.

8. Conclusion

Employers are concerned not only with technical skills but also employees with emotional intelligence and communication effectiveness as evidenced by an increased frequency of soft-skills in official job requirements. Research is missing in the correlation between EI and CA. To address this gap, this work performed a quantitative non-experimental correlation analysis of EI and CA on 111 Information Technology Professionals in the U.S. This study found that there is a strong relationship between a U.S. IT professional's EI and CAS. To add to and enhance established literature on EI and CAS, this study has proven that there is a strong positive correlation between a U.S. IT professional's EI and communication levels. As Emotional Intelligence and Communication are more than a single theory, they can be rather broad in scope; the findings of this study suggest that more attention is needed in EI and communication theories as they relate to the IT professional to broaden this study towards the understanding of connectional dimensions. Attention to emotional strength and communication skills within technology professions is found to be deficient in the literature. As many studies have been produced concerning the skills that organizations are seeking from IT employees, the link between emotion and communication among U.S. IT professionals is deficient. This study can be used as a starting point for the exploration of the many dimensions of IT professionals' emotional and communication behavior, thereby providing a method and direction for interpersonal development. The benefit of emphasizing EI in IT is that it leads to many organizational opportunities. Current EI literature focuses on management's use of EI and the use of EI in transformational leadership, organizational psychology, and the multigenerational workplace. However, it is also important to focus on the benefits of EI at the service level. The enhancement of the employee, his or her job satisfaction, person-organization fit, the employee's commitment to the organization, as well as employee-employer relations should also be viewed from a discipline-specific perspective.

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