Emotional Intelligence Levels of IIT Students in India

Christabel Odame[1], Mrinalini Pandey[2]

[1] Indian Institute of Technology-Dhanbad, Dhanbad, India
E-mail: codame@anuc.edu.gh
ORCID: https://orcid.org/0000-0001-5360-6872

[2] Indian Institute of Technology-Dhanbad, Dhanbad, India
E-mail: mrinalini@iitism.ac.in
ORCID: https://orcid.org/0000-0001-5253-0693

Abstract
Emotional Intelligence (EI) has been identified as a key competence that helps people to relate with one another easily. As such, EI coupled with IQ makes one a star performer at the workplace. Therefore, students need to possess both EI and IQ. For this reason, a descriptive study was conducted to assess the EI levels of IIT students at IIT (ISM)-Dhanbad, India. The analysis was done in two folds; first, to assess the EI levels of the participants. Secondly, to compare the EI levels of the participants using demographic variables. The purposive sampling technique was used to sample 200 engineering students from various engineering departments. The study results unveiled that students from IIT (ISM) Dhanbad were somewhat emotionally intelligent. Also, when the demographic variables were assessed, it was revealed that gender and age were not statistically significant on EI which means that gender and age does not affect a person's EI. Albeit, in this study, work experience and family income were statistically significant on EI which implied that a person's work experience and family income could affect their EI. When the EI levels of these participants are developed and improved, they will thrive and succeed both at the workplace, college and in life as a whole as their EI levels are significantly high.
Keywords: emotional intelligence, IIT students, education, India.

Уровни эмоционального интеллекта у индийских студентов технологического института

Кристабель Одаме[1], Мриналини Панди[2]

[1] Индийский технологический институт в Дханбаде, Дханбад, Индия
E-mail: codame@anuc.edu.gh
ORCID: https://orcid.org/0000-0001-5360-6872

[2] Индийский технологический институт в Дханбаде, Дханбад, Индия
E-mail: mrinalini@iitism.ac.in
ORCID: https://orcid.org/0000-0001-5253-0693

Аннотация
Установлено, что эмоциональный интеллект (ЭИ) является важной компетенцией, помогающей людям общаться друг с другом. Человек, обладающий эмоциональным интеллектом

в сочетании с высоким IQ, лучше справляется с рабочими задачами. Студенты должны развивать как ЭИ, так и IQ. По этой причине было проведено исследование для определения уровня эмоционального интеллекта у студентов технологического института в Дханбаде, Индия. Работа проходила в два этапа: на первом этапе оценивался уровень ЭИ участников исследования, на втором – проводился сравнительный анализ уровней ЭИ и демографических факторов. Для отбора участников была использована целенаправленная выборка. Участниками исследования стали 200 студентов различных инженерных специальностей. Результаты исследования показали, что студенты технологического института в Дханбаде обладают эмоциональным интеллектом. При анализе демографических факторов было установлено, что пол и возраст не влияют на ЭИ, но имеется статистически значимая связь между уровнем ЭИ и опытом работы, а также доходом семьи. Если участники исследования будут развивать ЭИ, то смогут добиться высоких результатов в работе и учебе, будут более успешны в жизни.

Ключевые слова: эмоциональный интеллект, студенты технологического института, образование, Индия.

Introduction

In recent times, many institutions educate their students on acquiring soft skills. Some business colleges have added EI in their syllabus and it forms part of substantial research area (Raghavendra & Senthil, 2017). Emotional Intelligence (EI) is the ability to recognize and manage one's emotions and that of others and discriminate among them to guide one's thinking and behaviour. Nelson and Low (2003) suggest that EI is an essential skill that helps in a successful career, leadership and personal goals. If students are seeking jobs in either the private or public sectors or deciding to start their own company, EI is an essential soft skill (Chamorro-Premuzic et al., 2010).

An important way to boost the employability of young people is by success in higher education (Jayawardena & Gregar, 2013). This is why universities, institutions and colleges pay attention to the skills of students to make them get jobs upon their graduation. Hence, when 640 college recruiters were arbitrarily chosen by the National Association of Colleges and Employers (NACE) to find out what potential employers look out for, findings unveiled that interpersonal skills were rated as the most essential skills sought after in graduates, followed by ethics and integrity, leadership, perseverance, and knowledge (Shivpuri & Kim, 2004). Similarly, studies related to skills sought by potential employers in graduates suggest that emotional intelligence (EI) competencies are equally important as other job-related skills like "hard skills". Even though hard skills are essential, today's graduate needs more than that to succeed at the workplace (Liptak, 2005).

Previous studies report that there is a positive relationship between EI and college students (Barchard, 2003; Brackett & Mayer, 2003; Codier & Odell, 2014; Parker et al., 2004). EI also appears to be a good foundation in helping graduates succeed at the workplace. This suggests that graduates who possess such skills and knowledge become successful employees and citizens as a whole. The importance of EI has been identified by many well-known professional institutions working in different sectors of business (Kautish, 2010). Thus, EI is an essential ingredient for a productive workplace (Smigla & Pastoria, 2000).

In light of this, the current study is conducted to assess the emotional intelligence (EI) levels of IIT students at IIT (ISM)-Dhanbad, India, as IIT's are the top most Engineering Institutes in India. These institutes educate and produce most of the world's best technology specialists. Despite their intellectual prowess, success at the workplace requires a combination of intelligence quotient (IQ) and emotional quotient (EQ). The study assesses the EI levels of the participants under study and compares the EI levels using demographic variables.

Literature review

The Theory of Emotional Intelligence (EI)

Different authors have their own perspectives on how EI is defined and these set forth the theories of EI. The EI theory stipulates a framework which helps students to be successful at the workplace after completion of their higher education (Liptak, 2005).

Gardner (1983) addressed two types of EI which are intrapersonal and interpersonal intelligence. According to him, intrapersonal intelligence entails the capability to explore a broad spectrum of one's emotions and the capability to immediately control and differentiate between those emotions, code them, and to use them to guide one's actions. On the other hand, interpersonal intelligence is the capability to discern and distinguish between others specifically their motivations and intentions, temperament and moods. It can be taught and nurtured as well (Gardner, 1983).

Daniel Goleman (1995) defined EI as an array of competencies unlike IQ, which is conventionally seen as a primary inborn trait that can be learned by anyone. EI involves skills such as motivation, diligence in accomplishing tasks and overcoming challenges, management and delaying desires and gratification, regulation of feelings, rational thinking and empathy. Goleman (1995) stated that there are five basic EI competencies that form the two main domains of EI.

Mayer, Salovey and Caruso (2000) proposed that EI is a set of capabilities that illustrates how detailed interpretation of emotion guides people to overcome issues in their emotional lives.

Learning and Developing Emotional Intelligence Skills

Research suggests that EI competence can be taught and one can be trained. Emotional life is a domain that can either be handled with greater or lesser skill just as mathematics or reading, it requires unique set of competencies (Goleman, 1995). Goleman suggested that EI is made up of personal and social competencies. Personal competencies involve how individuals manage themselves, whereas social competencies involve how individuals manage relationships. Goleman (1995) believed that individuals who have emotional skills tend to be happy and successful in their lives, and this assertion proves that emotionally intelligent people know how to handle their own feelings and can cope effectively with other people's feelings.

Similarly, Salovey et al. (2002) concluded that an individual capable of understanding emotions knows how to sync and develop over time. Thus, this individual is truly endowed with the ability to understand important aspects of human nature and interpersonal relationship.

Emotional Intelligence, Leadership and Success at the Workplace

On the job, EI refers to how workers work, such as dealings between co-workers and encounters between heads and faculty members, students, stakeholders, etc. An organisation where people can effectively understand feelings can work together effectively to achieve the desired objectives. In order to be good employees, college students would need to do more than fulfilling the requirements of a job. Goleman (1998) suggests that irrespective of where people work, they are often judged on the abilities they possess other than job-related skills. Therefore, to be successful, college students need to build EI competencies needed to excel in the workplace. Consequently, National Association of Colleges and Employers (NACE) current findings indicate that career counsellors need to continuously help their clients improve on both soft and hard skills (Lelenta, 2020).

Hard skills or career and job skills are the basic skills that college students need to possess to make them competitive at the workplace, whereas personal skills are the

secondary skills needed to be competitive at the workplace. The third skills are social competence skills. These skills are based on a confluence therapy model (Patacsil & Tablatin, 2017).

Conversely, institutions, companies or organizations require good leadership and it is important to understand that leaders make decisions and overall governance. Leaders will make the best decisions and realize the effects of emotions and how they help achieve organizational goals.

Also, leaders who are emotionally intelligent help organizations to succeed continuously. An organization with emotionally intelligent leaders has inspired, effective, efficient and committed employees (Mishra, 2021). EI is appropriate for any human activity either in academia or in the industry.

Pieterse & Rosemary (2011) concluded that technical competency and intelligence are important assets for every worker, but when competing with another candidate for a promotion or a new job, dynamic interpersonal skills will set the candidates apart. According to one survey of hiring managers, almost 75% of respondents suggested that they valued an employee's EQ more than their IQ.

In addition, emotions have a great effect on leadership, and consistency of decisions gives rise to EI as EI is about teamwork, leadership, collaboration and vision.

Methodology

Type of study

The study conducted was a descriptive study. This method is an appropriate choice as the research aims to assess the Emotional Intelligence (EI) levels of students.

Who are IIT Students (IITians)?

The report of the N R Sarkar Committee during the post-war in 1946 brought about the need for technical education and it led to the establishment of an advanced technology institute in Kharagpur (Singh, 1995). Some years later, it was elevated to the status of a technology institute (IIT). This simultaneously occurred with Nehru's aim for a future in India where science and technology will play a significant role in development. From the onset, it was visualised as those institutes that could compare to the best of its kind in the world.

The fact that the model was adopted by MIT in Boston did not prevent other leading countries in the world from becoming involved in their planning and establishment. These included the United States, the Soviet Union, West Germany and the United Kingdom.

Over time, each IIT has developed its own identity. As a result, what was going on at American universities greatly affected what was going on at the IITs. IIT students (IITians) have begun to move to the United States for further study; more significant than that a large number of them have remained. Various studies have been carried out, and the overall trend shows that over time, roughly 30% of them have relocated to other nations. The review committee agreed in 1986 to minimize the loss of talent to India when some of the brightest minds in the country decided to settle abroad. Each IIT has a different period of its formation: old IIT's (7 IIT's at least 15 years old), new IIT's (9 new IIT's formed during 2008-2012) and recent IITs (7 IITs established during 2015-2016).

Population and sample of the study

Students at IIT (ISM) Dhanbad were the target population for the study. Students from the Computer Science and Engineering, Petroleum, Industrial and Civil Engineering participated in the study. The purposive sampling technique was employed to select

200 students. This technique was used because the study specifically aimed to involve engineering students.

Lastly, 200 students were sampled from various engineering departments, i.e. 75 from petroleum engineering department, 37 from computer science and engineering, 33 from chemical as well as 33 from civil engineering department and 22 from electronic and communication engineering.

Data collection technique and procedure

The researchers prepared an Emotional Intelligence scale consisting of 40 items based on the Daniel Goleman mixed model (Raghavan & Panboli, 2018). The scale was in two parts, the first part consisting of (5) items measured the participants' demographic variables and the remaining thirty-five (35) items measured emotional intelligence.

The scale consisted of five (5) sub scales of EI which are self-awareness (items 1-7), self-management (items 8-14), motivation (items 15-21), empathy (items 22-28) and social skills (items 29-35). The questions were rated on a five (5) point Likert scale of which 5 represented strongly agree, 4 agree, 3 neither agree/disagree, 2 disagree and 1 strongly disagree.

In the calculation of the sub scales, the scores of the answers given to the items that comprised the sub scales were summed and the average scores were found. The score of emotional intelligence was also calculated by summing all the 35 items of the scale and calculating the average. An increasing score depicts highness of the scale, while a decrease score depicts lowness of the scale. Thus, scores 1 and 2 mean students have low EQ, score 3 means somewhat emotionally intelligent, and it can be improved and developed. Scores 4 and 5 means that EQ is high.

Data was acquired from each selected IIT graduate students utilizing a questionnaire technique after the review of the relevant literature. Approaching and meeting with students on campus was used to conduct the assessment. During the monsoon (spring) semester, the data collection forms were administered at the IIT, between the 2nd January of 2019 and the 31st of June, 2019. The information was then structured in an Excel spreadsheet before being entered into the Statistical Package for the Social Sciences (SPSS).

Tools and Statistical Methods

The data was analysed and assessed with the help of statistical package for social science (SPSS version 20). This software is best fit for analysing psychometric data. First, to check whether the questionnaire was reliable, a Cronbach's alpha (reliability test) was performed. Also, descriptive statistics and independent sample t-test and one-way ANOVA analysis were employed.

Results

Reliability analysis

Reliability analysis was performed to assess the internal consistency of the dataset. Such items as self-awareness, self-management, motivation, empathy, social skills and emotional intelligence were assessed.

The Cronbach's Alpha value of 0.841 or 84.1% suggested that the items had a relatively high internal consistency and hence were reliable and satisfactory for analysis. This was because the items met the minimum acceptable level of 0.6 and therefore, was accepted for analysis.

Table 1. *Frequency Table*

Variable	Demographics	Frequency	Percent
Gender	Male	142	71.00
	Female	58	29.00
Age	18-22 years	188	94.00
	23-27 years	12	6.00
Family income	Less than 100000	62	31.00
	100000-300000	52	26.00
	Above 300000	86	43.00
Work experience	Yes	7	3.50
	No	193	96.50
Department	Chemical	33	16.50
	Petroleum	75	37.50
	Civil	33	16.50
	Computer sci. & Eng.	37	18.50
	ECE	22	11.00

Source: (Author's compilation)

In terms of the participants' work experience, majority of the respondents representing more than 96.5 percent indicated that they do not have any work experience. Albeit, 3.5% of the respondents agreed that they have work experience. As a result, the effectiveness of students at the workplace can be enhanced while their EI levels are being assessed.

Similar conclusion is established for income of the respondents with a mean of 2.120 and a S.D of 0.854. It can be seen that with a mean income of 2.120 which lies between 1 lakh-3 lakhs, respondents are believed to be emotionally composed to exercise good and sound judgement. This is because a person who is financially stable has higher tendencies of satisfaction and fulfilment, hence would be able to manage his/her emotional life issues very well and in the case of an IIT student, exhibit somewhat high emotional intelligence.

Table 2. *Analysis on the Levels of EI and its sub components*

Sub scales	N	Min.	Max.	Mean	Rank	Level
Self-awareness	200	1.71	4.86	3.87	4	Somewhat high
Self-management	200	2.14	4.86	3.77	5	Somewhat high
Motivation	200	2.57	4.86	3.98	1	Somewhat high
Empathy	200	2.29	5.00	3.94	2	Somewhat high
Social skills	200	2.00	4.86	3.89	3	Somewhat high
Emotional intelligence	200	2.20	4.69	3.89	3	Somewhat high

Source: (Author's compilation)

In Table 2, the mean score of emotional intelligence and its sub scales are analysed. The sub scales means are closely the same to each other. According to the various mean

levels they are ranked in order of highest with motivation ranked as the highest with a mean value of 3.97 and a standard deviation of 0.48 with the values ranging from 2.57 to 4.86. This figure indicates that the participants understand their internal state and what drives them to succeed. Mostly, to be admitted into an IIT, one needs to have a very good academic performance. This implies that the participants understand their internal state so as to strive for the best.

Empathy (with a mean value of 3.97) and social skills (with a mean value of 3.89) is ranked second (2nd) and third (3rd) respectively. This means that individuals can understand the viewpoints of others, become attentive listeners, perceive the unmentioned emotions and understand others by putting yourself in others shoes. Whilst social skills implies that individuals are able to manage the emotions of others and are able to smoothly interact with others.

Self-awareness has values ranging from with a mean score of 3.89 with a standard deviation of 0.49 is ranked fourth and its better than self-management which had a mean value of 3.77 and a standard deviation of 0.46 ranked last. This indicates that, among the EI sub scales, self-management is the least among all the sub scale.

Overall, with regards to the Likert scale scores, all the sub scales mean scores were found within 3 which represent somewhat emotionally intelligent. Therefore, it can be suggested that IIT ISM Dhanbad students are somewhat emotionally intelligent according to this current study.

Examining the asymmetric nature of variables, it is evident that all the variables are negatively skewed based on the results of the skewness. Moreover, the values obtained from the results of the skewness show that Motivation, Empathy and Social Skills are close to Zero (0) unlike Self-awareness and Self-management which had values far from Zero (0).

Independent t-Test

The EI levels of the participants are compared to the various demographic variables (gender, work experience, age, family income and participants department). This analysis is done to check whether there is any difference based on the participants' gender, work experience, age, family income and participants' department based on their EI. The results indicated that for some of the demographic variables and EI, there is a statistical difference in the scores while for some, there is no statistical difference.

Firstly, for gender, the results revealed that there was no statistical difference in the scores for EI, male (M=3.87, SD=0.43) and female (M=3.96, SD=0.13) conditions t (-1.50) =198, p=0.14. Likewise for age, the results indicated that there was no statistical difference in the scores for EI; 18-22 (M=3.88, SD=0.38) and 23-27 (M= 4.07, SD=0.38) condition t (-1.69) =198 p=0.93.

Albeit, for work experience the results indicated that there was a statistical difference in the scores for EI, Yes (M=2.85, SD=0.64) and No (M= 3.93, SD=0.30) condition t (-8.80)=198 p=0.00.

Also, a one-way ANOVA was conducted to find the levels of EI on family income thus less than 1 lakh, 1-3 lakhs and above 3 lakhs. There was a significant effect of the levels of EI on family income at the p<0.05 level for the three conditions. That is EI F (2,197) =12.18, p=0.00. Post hoc comparisons using the Tukey HSD test indicated that the mean score for EI for less than 1 lakh (M=3.71, SD=0.53), 1-3 lakhs (M=4.00, SD=0.17) and above 3 lakhs (M=4.00, SD=0.27).

Again, the ANOVA results showed that there was a significant effect of the levels of EI on the participants' department at the p<0.05 level, EI F (4,195) =6.20, p=0.00.

Table 3. *T-test: EI and Demographic Variables*

Emotional Intelligence	Demographic Variables	M	SD	F	Sig
	Gender	3.90	0.43	63.23	0.14
	Male	3.96	0.13		
	Female				
	Work experience	2.85	0.64	20.21	0.00***
	Yes	3.93	0.30		
	No				
	Age	3.88	0.38	2.85	0.09*
	18-22	4.07	0.03		
	23-27				
	Family income	3.71	0.53	4.98	0.00***
	Less than 1 lakh	4.00	0.17		
	1-3 lakhs	4.00	0.27		
	Above 3 lakhs				
	Participant's department	3.92	0.24	6.20	0.00***
	Chemical	3.10	0.37		
	Petroleum	3.90	0.27		
	Civil	3.90	0.34		
	Computer science and Eng.	3.70	0.55		
	Electronic and Comm.				

Note: *, **, *** Significant at 10, 5 and 1 percent levels, respectively
Source: (Author's compilation)

EI sub scales and Gender

An independent sample t-test was conducted to compare the sub scales of EI amongst males and females (self-awareness (SA), self-management (SM), motivation (M), empathy (E) and social skills (SS)). The results revealed that for self-awareness (SA), self-management (SM), and empathy there was no significance difference. SA male (M=3.90, SD=0.58) and female (M=3.81, SD=0.11) condition t (1.12) =198 p=0.27, SM male (M=3.76, SD=0.52) and female (M=3.80, SD=0.27) condition t (-0.66) =198 p=0.51, E male (M=3.96, SD=0.65) and female (M=3.72, SD=0.39) condition t (-0.12) =198 p=0.90.

However, motivation and social skills results revealed that there was a statistical difference: Male (M=3.90, SD=0.48) and female (M=4.17, SD=0.42) condition t (-3.76) =198 p=0.00, and SS male (M=3.83, SD=0.64) and female (M=4.03, SD=0.41) condition t (-2.11) =198 p=0.04.

Table 4. *T-Test: Gender and EI sub scales*

Sub scales	Gender	M	SD	F	Sig
Self-awareness	Male	3.90	0.58	35.89	0.27
	Female	3.81	0.11		
Self-management	Male	3.76	0.52	23.47	0.51
	Female	3.80	0.27		
Motivation	Male	3.90	0.48	1.81	0.00***
	Female	4.17	0.42		
Empathy	Male	3.96	0.65	8.02	0.90
	Female	3.72	0.39		
Social skills	Male	3.83	0.65	4.23	0.04**
	Female	4.03	0.39		

Note: *, **, *** Significant at 10, 5 and 1 percent levels, respectively
Source: (Author's compilation)

Work Experience and EI Sub Scales

The EI levels of the participants were compared to check whether there was any difference between participants with working experience or not. The results in Table 5 indicates that there is a statistical difference in the scores for EI sub scales. That is SA yes (M=3.43, SD=0.87) and no (M=3.92, SD=0.39) condition t (-9.45)= 198 p=0.00, SM yes (M=2.51, SD=0.36) and no (M=3.82, SD=0.39) condition t (-8.63)=198 p=0.00, M yes (M=3.14, SD=0.53) and no (M=4.01, SD=0.45) condition t (-4.94)=198 p=0.00, E yes (M=3.24, SD=0.63) and no (M=4.00, SD=0.57) condition t(-3.41)=198 p=0.00 and SS yes (M=2.94, SD=0.93) and no (M=3.93, SD=0.55) condition t (-4.55)=198 p=0.00.

Table 5. *T-Test: Work experience and EI Sub Scales*

Sub scales	Work experience	M	SD	F	Sig
Self-awareness	Yes	3.43	0.87	9.51	0.00***
	No	3.92	0.39		
Self-management	Yes	2.51	0.36	0.00	0.00***
	No	3.82	0.39		
Motivation	Yes	3.14	0.53	1.39	0.00***
	No	4.01	0.45		
Empathy	Yes	3.24	0.63	0.10	0.00***
	No	4.00	0.57		
Social skills	Yes	2.94	0.93	8.65	0.00***
	No	3.93	0.55		

Note: *, **, *** Significant at 10, 5 and 1 percent levels, respectively
Source: (Author's compilation)

Age and EI Sub Scales

The age of the participants was compared to check whether there was any difference in the level of EI in regards to their age or not. The results in Table 6 indicates that there is no statistical difference in the scores for EI, and its sub scales except for SA 18-22 (M=3.85, SD=0.50) and 23-27 (M=4.29, SD=0.00) t (-3.06) =198, p=0.00 and SM 18-22 (M=3.75, SD=0.46), 23-27 (M=4.14, SD=0.00) t (-2.96) =198, p=0.00. M 18-22 (M=3.99, SD=0.49) and 23-27 (M=3.76, SD=0.22) t (1.61) =198, p=0.11, E 18-22 (M=3.96, SD=0.60) and 23-27 (M=4.00, SD=0.00) t (-0.21) = 198, p= 0.83 and SS 18-22 (M=3.87, SD=0.60) and 23-27 (M=4.17, SD=0.06) t (-1.68) =198, p=0.10.

Table 6. *ANOVA: Age and EI Sub scales*

Sub scales	Age	M	SD	F	Sig
Self-awareness	18-22	3.85	0.50	9.35	0.00***
	23-27	4.29	0.00		
Self-management	18-22	3.75	0.46	8.76	0.00***
	23-27	4.14	0.00		
Motivation	18-22	3.99	0.49	2.61	0.11*
	23-27	3.76	0.22		
Empathy	18-22	3.96	0.60	0.05	0.83
	23-27	4.00	0.00		
Social skills	18-22	3.87	0.60	2.83	0.01*
	23-27	4.17	0.06		

Note: *, **, ***Significant at 10,5, and 1 percent levels, respectively
Source: (Author's compilation)

Family Income and EI Sub Scales

A one-way ANOVA was conducted to find the levels of EI on family income that is less than 1 lakh, 1-3 lakhs and above 3 lakhs. There was a significant effect of the levels of EI on family income at the p<0.05 level for the three conditions. The results show SA $F_{(2, 197)}$ =4.37, p=0.01, SM $F_{(2, 197)}$ =5.90, p=0.00, M $F_{(2,197)}$ =21.32, p=0.00, E $F_{(2,197)}$ =3.08, p=0.05, SS $F_{(2,197)}$ =17.08, p=0.00.

Post hoc comparisons using the Tukey HSD test indicated that the mean score for SA for less than 1 lakh (M=3.79, SD=0.72) was significantly different than above 3 lakhs (M=3.99, SD=0.35). However, 1-3 lakhs (M=3.78, SD=0.31) did not significantly differ from the less than 1 lakh and above 3 lakhs. SM shows less than 1 (M=3.63, SD=0.63), 1-3 lakhs (M=3.92, SD=0.16) and above 3 lakhs (M=3.77, SD=0.41). M less than 1 lakh (M=3.75, SD=0.52), 1-3 lakhs (M=3.75, SD=0.52), 1-3 lakhs (M=4.29, SD=0.26) and above 3 lakhs (M=3.96, SD=0.46), E less than 1lakh (M=3.83, SD=0.77), 1-3 lakhs (M=3.95, SD=0.39) and above 3 lakhs (M=4.07, SD=0.51), SS less than 1 lakh (M=3.55, SD=0.77), 1-3 lakhs (M=4.04, SD=0.44) and above 3 lakhs (M=4.04, SD=0.40).

Table 7. *ANOVA: Family Income and EI sub scales*

Sub scales	Income (per annum)	M	SD	F	Sig
Self-awareness	Less than 100000 100000-300000 Above 300000	3.79 3.78 3.99	0.72 0.31 0.35	2.99	0.01***
Self-management	Less than 100000 100000-300000 Above 300000	3.63 3.92 3.77	0.63 0.16 0.41	2.09	0.00***
Motivation	Less than 100000 100000-300000 Above 300000	3.75 4.29 3.96	0.52 0.26 0.46	7.65	0.00***
Empathy	Less than 100000 100000-300000 Above 300000	3.83 3.95 4.07	0.77 0.39 0.51	0.98	0.05**
Social skills	Less than 100000 100000-300000 Above 300000	3.55 4.04 4.04	0.77 0.44 0.40	3.68	0.00***

Note: *, **, ***Significant at 10, 5, and 1 percent levels, respectively
Source: (Author's compilation)

Participant's Department and EI Sub Scales

The ANOVA results showed that there was a significant effect of the levels of EI on participants' department at the p<0.05 level except SS $F_{(4,195)}$ =6.20, p=0.15. For SA $F_{(4, 195)}$ =5.42, p=0.00, SM $F_{(4,195)}$ =6.62, p=0.00, M $F_{(4,195)}$ =6.59, p=0.00, E $F_{(4,195)}$ =7.23, p=0.00.

Table 8. *ANOVA: Participant's department and EI sub scales*

Sub scales	Department	M	SD	F	Sig
Self-awareness	Chemical department Petroleum department Civil department Computer Sci., & Eng. Electronics & Comm.	3.84 3.98 3.98 3.83 3.47	0.29 0.52 0.30 0.35 0.81	5.42	0.00***
Self-management	Chemical department Petroleum department Civil department Computer Sci., & Eng. Electronics & Comm.	3.84 3.84 3.72 3.87 3.34	0.28 0.44 0.44 0.42 0.61	6.62	0.00***
Motivation	Chemical department Petroleum department Civil department Computer Sci., & Eng. Electronics & Comm.	4.19 4.07 3.76 3.97 3.70	0.37 0.43 0.47 0.48 0.60	6.59	0.00***
Empathy	Chemical department Petroleum department Civil department Computer Sci., & Eng. Electronics & Comm.	3.91 4.22 3.84 3.77 3.69	0.47 0.48 0.72 0.53 0.63	7.23	0.00***
Social skills	Chemical department Petroleum department Civil department Computer Sci., & Eng. Electronics & Comm.	3.83 3.87 4.00 4.02 3.66	0.54 0.62 0.40 0.61 0.70	1.70	0.15

Note: *, **, ***Significant at 10, 5, and 1 percent levels, respectively

Source: (Author's compilation)

Pearson's correlation matrix

Pearson's correlation matrix was employed on all variables to check the level of correlation between them. The presence of normal distribution of data warrants the use of Pearson correlation to test for the correlation that exits among the various key variables shown in Table 9. The overall EI efficiency is significant and correlated with all sub variables at 1 percent. Among the variables, it was found that all other variables which represent the subcomponents of EI have significant correlation with each other. Among all, SM has the highest correlation with SE whilst SM and SS have the lower significant correlation. According to the suggestions of Kennedy (1985), a correlation coefficient exceeding 0.8 depicts the multicollinearity among variables. However, from the results of correlation matrix, no evidence of multicollinearity is observed. This means that the data is free from multicollinearity.

Table 9. *Pearson Correlation*

Variables	SA	SM	M	E	SS	EI
Self-awareness	1.00					
Self-management	.48** .00	1.00				
Motivation	.23** .00	.45** .00	1.00			
Empathy	.40** .00	.37** .00	.38** .00	1.00		
Social Skills	.45** .00	.47** .00	.24** .00	.53** .00	1.00	
Emotional Intelligence	.70** .00	.76** .00	.64** .00	.75** .00	.75** .00	1.00

Notes: EI is Emotional Intelligence; SA is Self-Awareness; SM is Self-Management; M stands for Motivation; E is for Empathy; SS stands for Social Skills.

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

Source: (Author's compilation)

Discussion

This present study sought to assess the emotional intelligence levels of IIT students in India. From the descriptive statistics, the present study establishes that the students (the research participants) at IIT (ISM) are somewhat emotionally intelligent. This implies that when the participants develop and improve on their EI, they could be star performers at the work place. According to Daniel Goleman (1998), it takes both EQ and IQ for a person to be a star performer. The results further provide empirical evidence that students at IIT (ISM) can develop a high level of emotional intelligence which could make them star performers. The possible reason could be that some subscales of emotional intelligence can be linked to academic performance which is measured by GPA. As such students who have moderately high GPA have the required EI skills than those who have lower GPA. As IIT's are top most engineering institute, only students who are academically inclined (moderate to high GPA) can gain admission. For this reason, these students can better manage their emotions. Additionally, it is possible to teach and develop the "interpersonal intelligence" that IIT students possess. This skill enables one to recognize and differentiate between the emotions of others, in particular, their motivations and goals, temperament, and moods (Gardner, 1983). The results of this study further fit the trending results in the literature (Shipley et al., 2010).

Again, gender and EI was not statistically significant. This implies that a person's gender does not affect his or her EI. Therefore, students at IIT (ISM) Dhanbad, whether male or female, do not have their EI dependent on their gender. This result corroborates with previous studies (Ahmad et al., 2009; Cakan & Altun, 2005; Goleman, 1998; Meshkat & Nejati, 2017; Nasir & Marsur, 2010; Shehzad & Mahmood, 2013). The possible explanation for this could be that both males and females may have their unique way of handling emotions. Previous literature shows how differently males and females deal with emotional issues (Ahmad et al 2009; Goleman 1998). As research shows EI as "the ability

to logically think with emotions to improve decision" (Mayer et al., 2016) may be different in the male and female gender. This difference may result in the differences in the sub scales of EI. In this current study, aside self-awareness, self-management, and empathy, gender has a significant effect on the other EI sub scales (social skills, and motivation) and EI. This could be that the participants are able to easily interact with their colleagues so as to work in teams and are able to internally drive themselves amidst challenges and setbacks to achieve the needed result.

In line with the existing literature, there is evidence proving the reason why EI is not statistically dependent on a person's age. The study results show that age has no significant relationship with EI. This implies that a person's age does not affect his or her EI. That is to say, in whatever age category people might find themselves, it does not affect their EI. The majority (94%) of the participants were between the ages of 23-27 years which is predominantly the age range with which adolescence enter college. This makes the sample limited and generalising the results would be challenging. Therefore, a broader range of ages should be considered and examined in future studies. Even though few studies suggest that age affect EI (Mayer et al., 2000; Rippeth, 2002, the results of this study warrant and explain why most researchers have opined that age is not a predictor of EI (Atkins & Stough, 2005; Cakan & Altun, 2005; Shipley et al., 2010).

Concerning work experience and family income, the results proved that there is statistically significant relationship with EI. This implies that an individual's work experience and family income can affect his or her emotional intelligence. That is for those having working experience, their EI could be affected due to their previous working experience; they might work better with others than someone with no working experience. The finding is also consistent with previous studies (Podila, 2018) which affirmed that the working experience an individual has gained can shape his or her level of emotional intelligence.

Similarly, for family income, the study revealed a convincing and a significant relationship which proves to affect an individual's EI because it is believed that people from rich or well to do family backgrounds tend to behave better than those from very poor background because those from rich backgrounds are well exposed and know how to act and behave well. This result is in consonance to previous studies (Cakan & Altun, 2005; Podila 2018; Shipley et al 2010).

Conclusion and Research Implications

There is no doubt that the evidence of identifying a student's emotional intelligence helps in predicting personal and academic success, and this has consequential implications for students.

In light of this, the current study set out to assess the emotional intelligence (EI) levels of IIT students at IIT (ISM)-Dhanbad in India. First, the EI levels of the participants were evaluated; second, demographic data were used to compare the EI levels of the participants. 200 engineering students from different engineering departments were selected using a purposive sampling technique.

Drawing from the results obtained from the present study, it can be concluded that emotional intelligence is an essential competence for success both in academia and in life in general. Students who are able to manage their emotions effectively tend to do well in the corporate world. Thus, it is imperative for students to be taken through emotional intelligence training, seminars, workshops and courses. This adds an important aspect to education as it prepares students to better cope with life's demands and increase their ability to function and succeed in life.

Overall, the study establishes that EI is a key competence that people possess which helps in recognising and managing emotions and the emotions of others. With this, interacting and working with people is much easier. Goleman (1998) stated that irrespective of where people work, they are often judged on the abilities they possess rather than on the job-related skills. Therefore, to be successful, college students need to identify and build EI competencies needed to excel in the workplace.

Universities provide a setting in which students can improve their emotional intelligence. Students should be supported to become skilled at recognizing their own emotions, analyzing their emotional reactions in the face of circumstances, and managing their emotions throughout their education in order for these environments to contribute to the development of emotional intelligence. Furthermore, this support will assist students not only during their academic years, but also after graduation and in their personal lives, in becoming happy individuals who perform well at work. As a result, restrictions in curriculums are required to build emotional intelligence and to create social sharing situations that contribute to the development of emotional intelligence in students.

Through the development of strong interpersonal interactions between teachers and students, as well as among peers, emotional intelligence plays a crucial part in creating a healthy classroom environment. It can also help with learning by harnessing the good energy of happy emotions and reducing the negative consequences of negative emotions. Increased emotional competences in university students may lead to better educational results in terms of improved academic performance, healthier personality development, and greater workplace success. Emotional intelligence can develop critical life skills connected to effective teamwork, leadership, and management that are useful in the workplace, as university graduates are expected to enter practical life after completing their studies. Emotional skills are not just a requirement; they are also a plus.

From the salient contributions highlighted from this present study, it must be reiterated that the study has some pitfalls as well. First, the sample size of 200 is limited to provide evidence to support the generalisability of this study. As such, it is recommended that future studies should factor all IIT's in India to provide results that will not put the generalisability of the results in question.

Also, this study applied the Daniel Goleman's Mixed model which has received some criticism from scholars. For this reason, it is recommended for future studies to apply other EI models such as the ability-based model and trait model, etc.

Open data and research ethics

Permission was duly sought to conduct the survey at IIT-ISM, Dhanbad. Therefore, the data is open to access.

Conflict of interest

There is no conflict of interest

References

Ahmad, S., Bangash, H., & Khan, S. A. (2009). Emotional intelligence and gender differences. *Sarhad Journal Agriculture*, *25*(1), 127-130.

Atkins, P., & Stough, C. (2005). Does emotional intelligence change with age? In *Society for Research in Adult Development annual conference, Atlanta, GA*

Barchard, K. A. (2003). Does emotional intelligence assist in the prediction of academic success? *Educational and Psychological Measurement*, *63*(5), 840-858. https://doi.org/10.1177/0013164403251333

Brackett, M. A., & Mayer, J. D. (2003). Convergent, discriminant, and incremental validity of competing measures of emotional intelligent. *Personality and Social Psychology Bulletin, 29*(9), 1147-1158. https://doi.org/10.1177/0146167203254596

Cakan, M., & Altun, S. A. (2005). Adaptation of an emotional intelligence scale for Turkish educators. *International Education Journal, 6*(3), 367-372

Chamorro-Premuzic, T. Arteche, A., Bremner, A J. Greven, C., & Furnham, A. (2010). Soft skills in higher education: importance and improvement ratings as a function of individual differences and academic performance. *Educational Psychology, 30*(2), 211-241. https://doi.org/10.1080/01443410903560278

Codier, E., & Odell, E. (2014). Measured emotional intelligence ability and grade point average in nursing students. *Nurse Education Today*, *34*(4), 608-612. https://doi.org/10.1016/j.nedt.2013.06.007

Gardner, H. (1983). *Frames of mind*. Basic Books.

Goleman, D. P. (1995). *Emotional intelligence: Why it can matter more than iq for character, health and lifelong achievement*. Bantam Books.

Goleman, D. (1998). The emotionally competent leader. *The Healthcare Forum Journal*, *41*(2), 36-38.

Jayawardena, C., & Gregar, A. (2013). Transformational leadership, occupational self-efficacy, and career success of managers. In M. Th. Semmelrock-Picej & A. Novak (Eds.)., *Proceedings of the 9th European Conference on Intellectual Capital and Knowledge Management* (pp. 376-383).

Kautish, P. (2010). Emotional intelligence and business education: An analysis. *Journal of All India Association for Educational Research*, *22*(1), 89-100.

Kennedy, P. (1985). *A guide to econometrics* (2nd ed.). MIT Press.

Lelenta, F. (2020). *Moving the counseling profession forward: Strategies for supporting the personal and professional development of counselors-in-training*. https://www.naceweb.org/career-development/organizational-structure/moving-the-counseling-profession-forward/

Liptak, J. J. (2005). Using emotional intelligence to help college students succeed in the workplace. *Journal of Employment Counselling*, *42*(4), 171-178. https://doi.org/10.1002/j.2161-1920.2005.tb01088.x

Mayer, J. D., Caruso, D. R., & Salovey, P. (2016). The ability model of emotional intelligence: Principles and updates. *Emotion Review*, *8*(4), 290-300. https://doi.org/10.1177/1754073916639667

Mayer, J. D. Salovey. P., & Caruso, D. (2000). Models of emotional intelligence. In R. J. Sternberg (Ed.), *Handbook of Intelligence* (pp. 39W20). Cambridge University Press.

Meshkat, M., & Nejati, R. (2017). Does emotional intelligence depend on gender? A study on undergraduate English majors of three Iranian universities. *Sage Open*, *7*(3). https://doi.org/10.1177/2158244017725796

Mishra, A. (2021). Do organizations need emotionally intelligent leadership at the workplace?. In *Leadership-New Insights*. IntechOpen.

Nasir, M., & Masrur, R. (2010). An exploration of emotional intelligence of the students of IIUI in relation to gender, age and academic achievement. *Bulletin of Education and Research*, *32*(1), 37-51.

Nelson, D. B., & Low, G. R. (2003). *Emotional Intelligence: Achieving academic and career success*. Prentice Hall, Upper Saddle River.

Parker, J. D., Creque Sr, R. E., Barnhart, D. L., Harris, J. I., Majeski, S. A., Wood, L. M., & Hogan, M. J. (2004). Academic achievement in high school: does emotional intelligence matter? *Personality and Individual Differences*, *37*(7), 1321-1330. https://doi.org/10.1016/j.paid.2004.01.002

Patacsil, F. F., & Tablatin, C. L. S. (2017). Exploring the importance of soft and hard skills as perceived by IT internship students and industry: A gap analysis. *Journal of Technology and Science Education*, *7*(3), 347-368. https://doi.org/10.3926/jotse.271

Pieterse, G., & Rosemary, Q. (2011). The impact of digital story-telling on trait emotional intelligence (EI) amongst adolescents in South Africa – A case study. *Procedia - Social and Behavioral Sciences, 28*, 156-163. https://doi.org/10.1016/j.sbspro.2011.11.031

Raghavan, N., & Panboli, S. (2018). Measuring Emotional Intelligence of School Children – A Pilot Study. *IMPACT: International Journal of Research in Humanities, Arts and Literature*, *6*(1), 207-218.

Raghavendra, S. N., & Senthil, B. A. (2017). An empirical study on measuring the trait emotional intelligence of B-School students in South India. *IUP Journal of Organizational Behavior*, *16*(3), 52-64.

Rippeth, R. A. M. (2002). *An investigation of the relationship between emotional intelligence and family environment, ego development and alexithymia*. Ohio University.

Salovey, P., Mayer, J. D., & Caruso, D. (2002). The positive psychology of emotional intelligence. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of Positive Psychology* (pp.1 59-171). Oxford University Press.

Podila, S. P. (2018). Emotional Intelligence and Income- A Case Study. International Journal of Advance Research, *6*(12), 282-288. https://doi.org/10.21474/IJAR01/8141

Shehzad, S., & Mahmood, N. (2013). Gender differences in emotional intelligence of university teachers. *Pakistan Journal of Social* & *Clinical Psychology*, *11*(1), 16-21.

Shipley, N. L., Jackson, M. J., & Segrest, S. (2010). The effects of emotional intelligence, age, work experience, and academic performance. *Research in Higher Education Journal, 9*, 1-18.

Shivpuri, S., & Kim, B. (2004). Do employers and colleges see eye-to-eye? College student development and assessment. *Nace Journal*, *65*(1), 37-44.

Singh, A. (1995). IITs Yesterday and Tomorrow. *Economic and Political Weekly*, *30*(38), 2389-2394.

Smigla, J. E., & Pastoria, G. (2000). Emotional intelligence: Some have it, others can learn. *The Cpa Journal*, *70*(6), 60.