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The mediating role of self-efficacy between emotional intelligence and academic achievement: a study among postgraduate students

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Abstract: This study examined the mediating effect of self-efficacy on the relationship between emotional intelligence and academic achievement. A total of 257 postgraduate diploma students from the Bangladesh Institute of Management were conveniently sampled. The Schutte Self-Report Emotional Intelligence Test (SSEIT) advanced by Schutte et al. (1998) was applied for measuring 'emotional intelligence'. In assessing self-efficacy, the study adopted the 'Generalised Self-Efficacy Scale (GSES)' formulated by Schwarzer and Jerusalem (1995). The study revealed that all the variables included in the study, i.e., emotional intelligence, self-efficacy, and academic achievement were significantly correlated to each other. Moreover, the results of the study showed that the link between emotional intelligence and academic achievement was fully mediated through self-efficacy. Based on the findings of the study, academic institutions are recommended to include emotional intelligence and self-efficacy in their curriculum.

Keywords: emotional intelligence; self-efficacy; academic achievement.

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1 Introduction

Academic achievement by students has always been education researchers' main concern over a long period of time. In general, it is considered as a learned capability in basic skills and content knowledge about a particular content area (McCoy et al., 2005, as cited in Pov et al., 2020). Certainly, achievement in academic areas is highly significant for a student's attainment in life. It is vital to move in the chosen direction, find out dream jobs and eventually succeed in life. Therefore, the performance of the students, especially at the higher education level, is a concern not only to the students, teachers, and parents but also to everyone.

In the past decades, academic achievement was predicted by different factors, e.g., students' intelligence quotient (IQ), socioeconomic status, teacher-student relationship, parental involvement, motivation, and personality. Among all these factors, IQ was highlighted as a key factor of academic success in the earlier studies. However, in a best seller book *Emotional Intelligence: Why It Can Matter More Than IQ*, Goleman (1995) claimed that IQ may cause up to 20% of a person's success. Emotional intelligence, on the other hand, "can be as powerful and at times more powerful, than I.Q." (Goleman, 1995, as cited in Sitaram and Khurana, 2014). Thus, several recent studies have paid more and more attention to emotional intelligence as a key predictor of academic achievement. In the opinion of Parker et al. (2009), as cited in Khalaf (2016), although cognitive abilities are significant predictors of success in pre-university level education, their importance decreases remarkably in the university setting. Accordingly, emotional intelligence is nowadays well-thought to be a crucial element in achieving academic success (Abdel-Hafez and Hassan, 2011).

In general, emotional intelligence refers to an individual's "ability to perceive, understand, and manage emotions in oneself and others" (Salovey and Mayer, 1990, as cited in Satterfield et al., 2009). It is neither the reverse of intelligence nor just the clash between heart and mind but it is the inimitable intersection of both (Shrestha, 2018). The term overlaps with but differs from emotional regulation, which focuses on "the processes that permit individuals to influence which emotions they have, when they have them, and how they experience and express these emotions" (Gross, 1998). As said by Peña-Sarrionandia et al. (2015), the latter focuses on basic emotion regulation processes, while the former focuses on individual differences in the emotion regulation process.

There are many reasons behind the impact of emotional intelligence on academic performance. Usually, students having higher emotional intelligence are better competent to deal with negative emotions, such as nervousness, monotony, and anger that can influence academic performance negatively (MacCann et al., 2020). Similarly, emotionally intelligent students will be better able to cope with the social world around them through the development of healthy relationships with teachers, classmates, and others which are essential to academic success. Moreover, a study carried out by Rode et al. (2007), as cited in Ebinagbome and Nizam (2016), reasoned that emotional intelligence was related to academic performance for two reasons. Firstly, academic performance encompasses a great deal of uncertainty. Secondly, the majority of academic effort is self-directed, demanding high levels of self-management. Hence, students with a higher level of emotional intelligence would perform better academically. It is therefore recommended to incorporate emotional intelligence courses at schools and universities to raise the levels of students' achievement (Festus, 2012; Abdel-Hafez and Hassan, 2011; Svetlana, 2007).

Self-efficacy, on the other hand, refers to "an individual's belief in his or her capabilities to accomplish a specific task within a given context" (Stajkovic and Luthans, 2003). This is also important to academic success as it reflects confidence in the students' ability to achieve the end result. Countless studies have confirmed that students with higher levels of self-efficacy were more likely to result in higher levels of academic performance. Köseoğlu (2015) noted that students having high self-efficacy favoured mastery goals, which demanded challenges and new knowledge, along with performance goals that contained good grades.

Thus, emotional intelligence and self-efficacy are two key factors that need to be kept in mind while examining the determinants of academic achievement. Till today, various studies have been conducted showing the direct effects of these two predictors on academic achievement. However, many of them focused on the bivariate relationship: either between emotional intelligence and academic achievement, or between emotional intelligence and self-efficacy, or between self-efficacy and academic achievement. In most cases, the simple linear regression method was used as a statistical technique to analyse their cause-effect relationships. In addition, only a few studies have been found in the literature that investigates the combined impact of emotional intelligence and self-efficacy on academic achievement. Such a study conducted among students of Cairo University in Egypt indicated that emotional intelligence and self-efficacy were significantly associated with academic achievement (Afifi et al., 2016). In another study on this issue carried out in Turkey among high school students reported a similar result (Yazici et al., 2011). Nevertheless, the possible mediation effect on the relationship between 'emotional intelligence and academic achievement' has not been addressed so far. Moreover, there is no study conducted among the students of career-oriented specialised professional courses in the context of Bangladesh.

Therefore, the study has been undertaken to develop a mediation model in order to explore the mediating role of self-efficacy on the association between emotional intelligence and academic achievement among the postgraduate diploma students of the Bangladesh Institute of Management.

2 Objectives of the study

The major objective of this study is to examine the mediation effect of self-efficacy on the association between emotional intelligence and academic achievement. The following specific objectives aided in achieving this aim:

a to explore the relationship between emotional intelligence and self-efficacy

b to investigate the relationship between self-efficacy and academic achievement

c to explore the relationship between emotional intelligence and academic achievement

d to examine whether there is a mediating effect of self-efficacy on the relationship between emotional intelligence and academic achievement.

3 Literature review and hypotheses development

3.1 Emotional intelligence and self-efficacy

Internationally, various studies have been carried out to explore the association between emotional intelligence and self-efficacy. A recent study conducted among teachers at different levels in Istria, Croatia confirmed that self-efficacy was significantly predicted by emotional intelligence (Kostić-Bobanović, 2020). It was also identified that emotional intelligence contributed to the growth of self-efficacy through self-consciousness and self-regulation of emotions (Black et al., 2019). Another study was conducted among

university students in Romania using Owen and Froman's (1988) College Academic Self-Efficacy Scale and Schutte et al.'s (1998) Emotional Intelligence Scale. The study noticed that academic self-efficacy is predicted by emotional intelligence to a small extent. Among the dimensions of emotional intelligence, management of own emotions and use of emotions were found relatively poor predictors for academic self-efficacy (Cicei et al., 2012). Many other studies on the same topic came up with the similar finding that a higher degree of emotional intelligence directed to a higher degree of self-efficacy (Abdel Aziz et al., 2019; Okwuduba et al., 2019; Alrajhi et al., 2017; Al-Khayat and Al-Adwan, 2016; Amirian and Behshad, 2016; Gharetepeh et al., 2015; Mouton et al., 2013; Hashemi and Ghanizadeh, 2011).

Based on the above literature, the following hypotheses are proposed:

H1 Emotional intelligence is positively related to self-efficacy.

3.2 Self-efficacy and academic achievement

Extensive investigations by numerous researchers over many years confirmed that students' academic achievement was associated with self-efficacy. A meta-analysis consisting of 38 studies between 1977 and 1988 found a positive association between self-efficacy and academic achievement (Multon et al., 1991). Many other similar studies were carried out among different levels of students across the countries. Such a study was conducted among final year college students in Nigeria using the academic self-efficacy questionnaire developed by Muris (2001). The study revealed a positive but weak correlation between self-efficacy and academic performance (Kolo et al., 2017). Another study was conducted in Romanian college students applying Owen and Froman's (1988) College Academic Self-Efficacy Scale (CASES). The study observed that about 48% variation of academic achievement was explained by academic self-efficacy (Cicei et al., 2012). One more study was conducted among high school students in Iran using self-efficacy scale developed by Pour Jafar Doust (2007), as cited in Motlagh et al. (2011). As said by this study, among the sub-factors of self-efficacy, self-evaluation and self-regulation were come out as the significant predictors of academic achievement (Motlagh et al., 2011).

Based on the above findings, the following hypothesis is developed:

H2 Self-efficacy is positively related to academic achievement.

3.3 Emotional intelligence and academic achievement

Although several studies have been undertaken to examine the relationship between emotional intelligence and academic achievement, yet the findings obtained are not in accord with each other. Very recently, MacCann et al. (2020) carried out a meta-analysis of 162 studies to assess the degree to which emotional intelligence is linked to academic performance. As said by the study, emotional intelligence had a small to moderate association with academic performance. The association was stronger for ability-based measures of emotional intelligence compared to self-report measures of emotional intelligence. Another meta-analysis of 20 studies found a significant positive relationship between emotional intelligence and academic achievement (Manimozhi and Srinivasan, 2018). But a meta-analysis of 23 studies displayed mixed findings: nine studies reported a

lack of correlation, while 14 studies reported a direct and significant correlation between emotional intelligence and academic achievement in the context of Iranian university students (Ranjbar et al., 2017). Likewise, a systematic review of 26 studies came up with diverse findings. Among the studies reviewed, 13 studies indicated a significant positive correlation, two studies reported a strong but indirect relationship, two studies demonstrated an insignificant but negative association and two studies observed no link between emotional intelligence and academic achievement. The results of the remaining seven studies showed that not all, but some components of emotional intelligence were significantly related to academic achievement (Halimi et al., 2020). Moreover, in an earlier meta-analysis of 48 studies, Perera and DiGiacomo (2013) reported a modest-to-moderate effect of emotional intelligence on academic performance. The effects were stronger for students at earlier levels of education.

In addition to meta-analysis, several cross-sectional studies have been carried out to assess the link between emotional intelligence and academic achievement. For example, Halimi et al. (2020) examined the role of emotional intelligence on academic achievement among students at a private university in Kuwait. Using the 16-item emotional intelligence scale developed by Wong and Law (2002), the study revealed that academic success was strongly associated with self-emotion appraisal (SEA) and use of emotions (UOE). Fillipova and Bilyalov (2020) examined this relationship among undergraduate students in Kazakhstani universities. They used the emotional skills assessment process (ESAP) questionnaire consists of four main competencies: interpersonal, leadership, self-management, and intrapersonal. The study claimed a statistically significant relationship between emotional intelligence and academic achievement. Khalaf (2016) examined this link using Wong and Law's (2002) emotional intelligence scale in the Egyptian context. According to the study, academic achievement was positively correlated with self-emotion appraisal, regulation of emotion, use of emotion, and overall emotional intelligence. Many other studies showed a positive relationship between emotional intelligence and academic achievement (Jan et al., 2020; Okwuduba et al., 2019; Tekle et al., 2019; Tiwari, 2016; Raj and Chandramohan, 2015; Mohzan et al., 2013; Fayombo, 2012; Fallahzadeh, 2011; Zahed-Babelan and Moenikia, 2010). All these studies argued that students with a high level of emotional intelligence were more likely to attain higher CGPAs. However, a few studies claimed an insignificant relationship between emotional intelligence and academic achievement (Ngu et al., 2016; Adnan et al., 2012).

Based on the above findings, the following hypothesis is developed:

H3 Emotional intelligence is positively related to academic achievement.

3.4 Emotional intelligence, self-efficacy and academic achievement

Although a good number of studies have been carried out to assess the relationship between emotional intelligence and academic achievement, yet only a very few studies have been found in literature exploring the underlying mechanism by which emotional intelligence affects academic achievement. In a very recent time, Estrada et al. (2021) conducted such a mediation study among the students in Spain. The study found that emotional intelligence was positively linked to compassion and engagement, which in turn led to academic performance. Further, Singh and Ryhal (2021) examined the mediating role of job satisfaction on the link between teachers' emotional intelligence

and students' academic achievement. The results of the study showed that this relationship was partially mediated by job satisfaction. Furthermore, in the recent past decade, MacCann et al. (2011) conducted a study to examine the mediating role of coping styles on this relationship. The results of the study reported that problem-focused coping style significantly mediated the link between emotional intelligence and grade point average (GPA). The results recommended that better educational performance might be achieved by aiming for skills in emotion management and problem-focused coping.

However, there is no study so far that investigates the mediating role of self-efficacy on the link between emotional intelligence and academic achievement. Given a strong relationship between emotional intelligence and self-efficacy, as well as the relationship between self-efficacy and academic achievement, it is argued that self-efficacy serves as a mediator on the relationship between emotional intelligence and academic achievement.

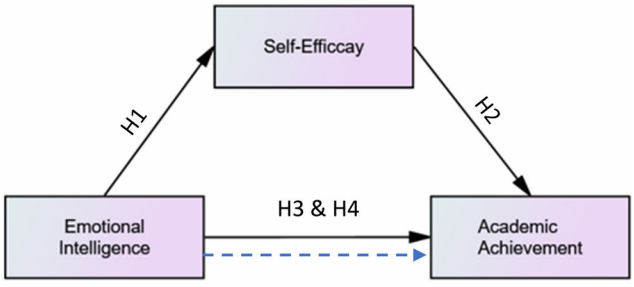
Thus, the following hypothesis is formulated:

H4 Self-efficacy mediates the link between emotional intelligence and academic achievement.

4 Hypothesised model

Based on the literature review and hypotheses above, the following mediation model has been hypothesised:

Figure 1 Hypothesised mediation model (see online version for colours)



As shown in Figure 1, academic achievement is included as endogenous variable while emotional intelligence is involved as an exogenous variable as it is assumed to have a link with academic achievement. In addition, the model incorporates self-efficacy as a mediator variable on the link between emotional intelligence and academic achievement.

5 Methodology

The study is of cross-sectional survey design. Both primary and secondary sources of data were applied in the study. The primary data were collected directly and through electronic mail from the respondents using a structured questionnaire divided into three parts:

1 demographic profile of the respondents (e.g., gender, age, and program)

2 the level of emotional intelligence

3 the level of self-efficacy.

Secondary data, grade points average (CGPA) earned by the sampled students, were collected from the diploma cell of BIM.

5.1 Determination of sample size

All the 750 current postgraduate diploma students of the Bangladesh Institute of Management (BIM) were the study population. Using Slovin's formula (as cited in Osunsan et al., 2015), a sample size of 257 students comprised of 73.9% males and 26.1% females was selected from the population. The convenience-sampling technique was used to select the targeted sample due to COVID-19 conditions and restrictions. A post hoc power analysis using G*Power version 3.1.9.4 was done to determine whether the sample size was adequate to assess the mediation effect. The study achieves a power of 1.00 with an alpha error of 0.05 and an effect size of 0.79, clearly indicating the adequacy of the data.

5.2 Measurement instrument

The following measurement instruments were used in this study.

5.2.1 Emotional intelligence

The Schutte Self-Report Emotional Intelligence Test (SSEIT) advanced by Schutte et al. (1998) was used for measuring 'emotional intelligence'. Written permission was received from Dr. Nicola Schutte through e-mail to use the SSEIT. The scale is comprised of 33 items divided into four dimensions: perception of emotions, management of one's emotions, management of others' emotions, and use of emotions. The test uses a five-point Likert scale ranging from strongly disagree to strongly agree.

5.2.2 Self-efficacy

In assessing self-efficacy, the study adopted the 'Generalised Self-Efficacy Scale (GSES)' formulated by Schwarzer and Jerusalem (1995). The scale measures the self-efficacy beliefs of respondents based on their insights on their ability to overcome challenging tasks. A total of 10 items are included in the survey questionnaire. The study uses a five-point Likert scale ordering from strongly disagree to strongly agree.

5.3 Data analysis procedure

Measures of central tendency (mean), measures of variation (standard deviation), and measures of association (correlation) have been used as part of descriptive analysis while independent samples t-test has been used as part of inferential statistics. Also, mediation analysis has been conducted with a structural model to measure the mediation effects. Statistical software – the Statistical Package for Social Sciences (SPSS) version 20

together with Advanced Analysis of Composites (ADANCO 2.0) has been applied to analyse the data.

6 Results and discussion

In this part, the researcher evaluates the results of descriptive and inferential analysis, and also the results of mediation analysis.

6.1 Descriptive and inferential analysis

Respondents' levels of emotional intelligence, self-efficacy, and academic achievement have been assessed based on their mean scores. Further, the Independent Samples t-Test was used to examine whether there is a significant difference between males and females regarding these variables. Besides, the degree and direction of relationships among these variables are calculated using the Pearson correlation coefficient. Tables 1 to 3 display the results for descriptive and inferential statistics.

Table 1 Mean scores and standard deviation

Variable	*Total*		*Male*		*Female*	
	Mean	*Standard deviation*	*Mean*	*Standard deviation*	*Mean*	*Standard deviation*
Emotional intelligence	*3.97*	*0.37*	*3.97*	*0.38*	*3.98*	*0.36*
Academic achievement	*3.00*	*0.65*	*3.00*	*0.64*	*3.00*	*0.68*
Self-efficacy	*3.85*	*0.50*	*3.87*	*0.47*	*3.78*	*0.55*

Note: n = 257 (male = 190 and female= 67)

Table 1 shows that the respondents' level of emotional intelligence is fairly good on average ($\overline{x} = 3.97$ on a five-point scale). Further, in connection with the level of self-efficacy, respondents' mean score is also fairly good ($\bar{x}$ =3.85 on a five-point scale). Furthermore, respondents' academic achievement in terms of grade point average (GPA) score is just 'good' ($\overline{x} = 3.00$ on a four-point scale).

Table 2 Independent samples test

	t-test for equality of means						
	t	*df*	*p-value*	*Mean difference*	*Std. error difference*	*95% confidence interval of the difference*	
						Lower	*Upper*
Emotional intelligence	–0.27	255	0.79	–0.01	0.05	–0.12	0.09
Academic achievement	0.07	255	0.94	0.01	0.09	–0.18	0.19
Self-efficacy	1.27	255	0.21	0.09	0.07	–0.05	0.23

Table 2 indicates that all of the p-values (p for emotional intelligence = 0.79, p for academic achievement = 0.94, and p for self-efficacy = 0.21) are greater than the desired level of significance (0.05). Thus, it can be concluded that there are no significant differences between males and females in emotional intelligence, academic achievement, and self-efficacy.

Table 3 Correlation matrix

	Emotional intelligence	*Academic achievement*	*Self-efficacy*
Emotional intelligence	1	-	-
Academic achievement	.437**	1	-
Self-efficacy	.690**	.614**	1

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

Table 3 depicts that all the correlation coefficients are positive and significant. As found in the study, emotional intelligence is moderately correlated with academic achievement ($r = 0.437$, $p < 0.01$). Further, results show that there are strong correlations between emotional intelligence and self-efficacy ($r = 0.690$, $p < 0.01$); and between self-efficacy and academic achievement ($r = 0.614$, $p < 0.01$). Thus, self-efficacy, as hypothesised, has been come up as a mediator variable to explain the relationship between emotional intelligence and academic achievement. This is because the correlation coefficient supports the relationship between emotional intelligence and academic achievement; between academic achievement and self-efficacy; and between self-efficacy and academic achievement, which are basic requirements for mediation analysis (Baron and Kenny, 1986).

6.2 Mediation analysis

In order to study the mediation effect, the hypothesised structural model has been analysed using the ADANCO 2.0 software. The following assessments are performed for this analysis.

6.2.1 Assessment of multicollinearity

Before moving on to mediation analysis with a structural model, it is prerequisite to examine the level of collinearity among predictor constructs in the model (Hair et al., 2014). This is essential for the reason that the path coefficients might be biased due to a high level of collinearity. Since ADANCO does not generate VIF and tolerance values, SPSS has been used for collinearity assessment. The collinearity statistics are shown in Table 4.

Table 4 Collinearity statistics

Constructs	*Collinearity statistics*	
	Tolerance	*VIF*
Self-efficacy	.523	1.911
Emotional intelligence	.523	1.911

Note: Dependent variable – academic achievement.

Table 4 clearly indicates that there is no issue of multicollinearity as the values of tolerance are above the 0.2 thresholds, and all values of VIF are below the threshold of 5. Accordingly, the analysis of the hypothesised structural model has been advanced to assess the goodness of model fit.

6.2.2 Coefficient of determination

The coefficient of determination (R^2) quantifies the proportion of an endogenous variable's variance that the exogenous variables explain. This measure, also known as the 'goodness of fit', is represented as a value ranging from 0.0 to 1.0. Further, the adjusted R^2 is a modification of the R^2 that takes the sample size into account and compensates for the independent variables added to the model. The adjusted R^2 will never exceed the R^2. Table 2 provides the value of the coefficient of determination (R^2) for the model hypothesised in the study.

Table 5 R^2 and adjusted R^2

Endogenous variable	*Coefficient of determination (R^2)*	*Adjusted R^2*
Academic achievement	0.377[a]	0.373[a]
Self-Efficacy	0.476[b]	0. 474[b]

Notes: [a]Predictors: (constant), self-efficacy.
[b]Predictors: (constant), emotional intelligence.

As can be seen in Table 5, the R^2 and adjusted R^2 values for each endogenous variable are well over the acceptable level of 0.25 (Hair et al., 2017). Here, the adjusted R^2 value of 0.373 for academic achievement indicates that 37.3% of its variation is explained by self-efficacy. Further, the adjusted R^2 value of 0.474 for self-efficacy directs that 47.4% of its variation is predicted by emotional intelligence. Thus, the model is fit for further examination and allows for an analysis of the direct, indirect, and total effects between the variables in the model.

6.2.3 Direct, indirect, and total effects

As the model includes a mediator, the total effect needs to be broken into two parts: direct and indirect effect. The direct effect is not mediated, whereas the indirect effect is transmitted through one or more mediator variables. Mathematically, the indirect effect is the product of the effect of the exogenous variable on the mediator variable and the effect of the mediator variable on the endogenous variable. To see the total effect of the exogenous variable, we need to add the direct and indirect effects. The value of the standardised total effect is interpreted as the increase in the dependent variable if the independent variable is increased by one standard deviation.

For determining the significance of the path coefficients of direct, indirect, and total effects, the non-parametric bootstrapping (1,000 samples) method has been applied. A path coefficient is regarded as significant if the p-value is below the pre-defined α-level. In this study, an α of 0.05 is used. Table 6 provides the path coefficients along with T-values and P-values.

Table 6 Direct, indirect and total effects

Effect	*Path*	*Path coefficient (Beta)*	*Standard bootstrap results*		*Percentile bootstrap quantiles*				*Comments*
			t-value	*p-value*	*0.5%*	*2.5%*	*97.5%*	*99.5%*	
Direct	Emotional intelligence → Self-efficacy	0.69	18.88	0.00	0.59	0.61	0.75	0.77	H1 is supported
	Self-efficacy → Academic achievement	0.60	7.74	0.00	0.38	0.46	0.75	0.79	H2 is supported
	Emotional intelligence → Academic achievement	0.03	0.32	0.75	–0.18	–0.13	0.18	0.24	H3 is rejected
Indirect	Emotional intelligence → Academic achievement	0.41	6.64	0.00	0.25	0.30	0.54	0.57	H4 is supported
Total	Emotional intelligence → Academic achievement	0.44	7.50	0.00	0.28	0.32	0.55	0.58	-
	Emotional intelligence → Self-efficacy	0.69	18.88	0.00	0.59	0.61	0.75	0.77	-
	Self-efficacy -> Academic achievement	0.60	7.74	0.00	0.38	0.46	0.75	0.79	-

Table 6 clearly shows that emotional intelligence has a significant direct effect on self-efficacy ($\beta = 0.69$; $p < 0.001$). This result supports H1, which states that emotional intelligence is positively related to self-efficacy. Further, the data shows a significant direct effect of self-efficacy on academic achievement ($\beta = 0.60$; $p < 0.001$). This result supports H2, which states that self-efficacy is positively related to academic achievement. Further, the output shows that emotional intelligence has no significant direct effect ($\beta = 0.03$; $p > 0.05$). This result rejects H3, which claims that emotional intelligence is positively related to academic achievement. However, emotional intelligence, after controlling for self-efficacy, has a significant indirect effect on academic achievement ($\beta_{indirect} = 0.41$, $p < 0.001$). This result indicates the existence of a full mediation effect supporting H4, which hypothesises that self-efficacy mediates the link between emotional intelligence and academic achievement. The decision is primarily made based on the thumb rule that if the indirect effect is significant but the direct effect is not significant, there is a full mediation (Rucker et al., 2011).

6.2.4 Effect size

The effect size indicates the substantiality of direct effect. It is measured by Cohen's (1988) f^2. As said by Cohen, $f^2 \geq 0.35$, $0.15 \leq f^2 < 0.35$, and $0.02 \leq f^2 < 0.15$ indicate strong, moderate and weak effects respectively. f^2 value of below 0.02 is considered unsubstantial (Chuan and Penyelidikan, 2006). Table 7 shows the effect size of the direct relationships.

Table 7 Effect size

Path	*Direct effects*	*Cohen's f^2*	*Effect size*
Emotional intelligence → Academic achievement	0.03	0.005	Unsubstantial
Emotional intelligence → Self-efficacy	0.69	0.911	Strong
Self-efficacy → Academic achievement	0.60	0.299	Moderate

Table 7 shows that the direct effect of emotional intelligence on self-efficacy and the direct effect of self-efficacy on academic achievement are strong and moderate ($f^2 = 0.911$ and 0.299 respectively) while the direct effect of emotional intelligence on academic achievement is unsubstantial ($f^2 = 0.005$).

6.2.5 Magnitude of mediation effect

The magnitude of the mediation effect has been finally measured with variance accounted for (VAF). The VAF is computed as indirect effect divided by total effect. According to Hair et al. (2014), VAF > 80% assumes full mediation, 20% ≤ VAF ≤ 80% suggests partial mediation and VAF < 20% indicates no mediation (Ali and Park, 2016). Table 8 shows the magnitude of the mediation effect.

Table 8 Magnitude of mediation effect

Path	*Total effects*	*Indirect effects*	*VAF (%)*
Emotional intelligence → Academic achievement	0.44	0.41	93.18%

Table 8 shows that 93.18% of the effect of emotional intelligence on academic achievement is explained via self-efficacy. Since the value of VAF is more than 80%, self-efficacy is likely to be considered as a full mediator relating to this relationship.

6.3 Discussion

Using a structural model, the study examines the direct effect of emotional intelligence on self-efficacy and the direct effect of self-efficacy on academic achievement. In addition, the direct effect of emotional intelligence, after controlling for self-efficacy, on academic achievement has been calculated. Finally, the indirect effect of emotional intelligence on academic achievement through self-efficacy has been computed to assess the mediation effect.

As found in the study, self-efficacy is significantly predicted by emotional intelligence. This result is consistent with several prior studies (e.g., Kostić-Bobanović, 2020, Alrajhi et al., 2017; Al-Khayat and Al-Adwan, 2016; Amirian and Behshad, 2016; Gharetepeh et al., 2015) who pointed out that self-efficacy is influenced by emotional intelligence.

Regarding the direct effect of self-efficacy on academic achievement, the finding of the study also supports previous studies (e.g. Multon et al., 1991; Cicei et al., 2012; Motlagh et al., 2011) who pointed out that self-efficacy significantly predicted academic achievement.

The study also found that there is no significant direct effect of emotional intelligence on academic achievement after controlling for the mediator variable (self-efficacy). This finding supports the findings of Adnan et al. (2012) and Ngu et al. (2016) who found that there was no significant relationship between emotional intelligence and academic achievement. Therefore, it can be concluded that emotional intelligence can't directly affect students' academic achievements. In other words, only a high level of emotional intelligence is not enough to increase academic achievement.

Although emotional intelligence, after controlling for self-efficacy, has no significant direct effect but has a significant indirect effect on academic achievement via self-efficacy. This means that the relationship between emotional intelligence and academic achievement is fully mediated through self-efficacy. To put it simply, emotional intelligence helps a student build self-efficacy, and that in turn matters to academic achievement. The findings of the study support the results of Belanger et al. (2007) who indicated that even though students' emotional intelligence was not directly related to academic performance, students with higher levels of emotional intelligence had more self-efficacy and that in turn improved their academic performance.

Based on the above findings, it can be concluded that self-efficacy completely mediates the relationship between emotional intelligence and academic achievement. In other words, emotional intelligence affects self-efficacy, which in turn affects academic achievement.

7 Managerial implications

The current study has produced some important findings that have implications for both educational and training institutes. First of all, the study confirms the positive significant relationship between emotional intelligence, self-efficacy, and academic achievement.

Secondly, the study strengthens the fact that emotional intelligence affects self-efficacy, and which in turn affects academic success. Finally, the study identifies the full mediation effect of self-efficacy on the relationship between emotional intelligence and academic achievement.

In line with the findings of the study, education and training institutes should realise the importance of emotional intelligence and self-efficacy to enhance students' academic achievement. Further, academic institutions are required to incorporate emotional intelligence and self-efficacy in their curriculum. In addition, training institutes like the BIM should design short courses on emotional intelligence on regular basis. Moreover, students should also come forward to boost their emotional intelligence and self-efficacy as the essential components for academic success.

8 Limitations of the study

The generalisability of the results is limited due to several factors. First, the sample was conveniently selected only from the postgraduate diploma students of the BIM. Using random samples from different educational institutes (schools or universities) might extend the applicability of the findings of this study. Second, the instruments used to measure emotional intelligence and self-efficacy are self-report questionnaires that can be affected by social desirability bias. This means the respondents may answer questions in a manner that will be regarded favourably by others. Applying other types of measures such as ability-based measures or situation-based measures could give more reliable results. Finally, the current study has focused only on examining the predictive role of emotional intelligence on academic achievement via self-efficacy. Yet further studies may explore the moderating effect of sex on the association between emotional intelligence and academic achievement.

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