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The Role of Emotional Intelligence in Predicting Academic Engagement and Performance in Indian management students: A Structural Equation Model Approach

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Abstract:
This paper explores the direct and indirect impact of emotional intelligence (EI) on academic performance, academic engagement, and academic success among management students. Employing a Structural Equation Model (SEM), the study examines three dimensions of emotional intelligence—general emotional intelligence (EI), emotional regulation and understanding (EI2), and emotional expression and social awareness (EI3)—and their influence on outcome variables like diligence, self-motivation, and academic engagement, specifically dedication and absorption. Covariances between EI dimensions were analyzed to highlight their interrelatedness while preserving their distinctiveness. The SEM analysis indicates a strong positive association between EI and academic performance, emphasizing the pivotal role of emotional skills in improving student outcomes. The findings provide actionable insights for educational institutions to integrate emotional intelligence development into curricula to enhance student success. Key fit indices (CFI, TLI, RMSEA) affirm the model's robustness.

Keywords: Emotional Intelligence, Academic Engagement, Academic Performance, Structural Equation Model, Higher Education, Emotional Awareness

1. Introduction

Emotional Intelligence (EI) has gained significant attention as a critical factor influencing student success, particularly in higher education settings. EI, defined as the ability to perceive, understand, manage, and regulate emotions in oneself and others (Goleman, 1995; Mayer & Salovey, 1997), plays a pivotal role in shaping students' academic performance and engagement. Research suggests that emotionally intelligent students tend to navigate the emotional and cognitive challenges of university life more effectively, resulting in enhanced academic outcomes (Parker et al., 2004; Petrides et al., 2004). However, while the link between EI and academic performance has been established, the pathways and mechanisms through which EI exerts its influence remain underexplored, especially concerning its multi-dimensional nature.

This study addresses this gap by investigating the direct and indirect effects of three key dimensions of Emotional Intelligence—**General Emotional Intelligence (EI1)**, **Emotional Regulation and Understanding (EI2)**, and **Emotional Expression and Social Awareness**

(EI3)—on academic engagement and performance among management students in India. Utilizing **Structural Equation Modeling (SEM)**, this paper provides a comprehensive examination of how emotional competencies contribute to student success in the context of management education.

Objectives:

1. To examine the direct and indirect relationships between Emotional Intelligence (EI) and academic engagement.
2. To analyze the impact of Emotional Intelligence on academic performance.
3. To explore the moderating role of gender in the relationship between Emotional Intelligence and academic engagement.
4. To evaluate the interrelations among the three dimensions of Emotional Intelligence and their combined effect on academic outcomes.
5.

Hypothesis:

- **H1**: Emotional Intelligence positively influences Academic Performance, supported by significant chi-square results .
- **H2**: Emotional Intelligence positively influences Academic Engagement, evidenced by a significant relationship.
- **H3**: Academic Engagement positively predicts Overall Performance, with statistical support showing a strong correlation.
- **H4**: Academic Performance positively predicts Overall Performance, with chi-square tests confirming a significant association.

2. Literature Review

2.1 Emotional Intelligence and Academic Outcomes

Emotional Intelligence (EI) has emerged as a critical predictor of academic outcomes, particularly in higher education. EI refers to the ability to recognize, understand, and manage emotions, which are essential for navigating academic demands. Studies have shown that students with higher EI demonstrate greater emotional regulation, leading to improved focus, stress management, and motivation (Bar-On, 2000). These competencies are crucial for academic success, as they help students persevere through challenges and engage more deeply in academic tasks (Parker et al., 2004).

Emotionally intelligent students are better equipped to manage the psychological and social demands of university life, which facilitates academic engagement and performance (Brackett, Rivers, & Salovey, 2011). Furthermore, these students are likely to develop positive peer relationships, engage in collaborative learning, and maintain rapport with faculty members, all of which enhance academic engagement.

2.2 Dimensions of Emotional Intelligence

Emotional Intelligence is a multi-dimensional construct, with each dimension contributing uniquely to academic outcomes. These dimensions include self-awareness, emotional regulation, emotional expression, and social awareness.

General Emotional Intelligence (EI1), which encompasses self-awareness, is fundamental to a student's ability to recognize and reflect on their emotions. This self-awareness promotes academic engagement and success (Salovey & Mayer, 1990).

Emotional Regulation (EI2) is critical for managing stress and maintaining focus during academic challenges such as exams and deadlines. Students proficient in emotional regulation are better able to cope with anxiety and frustration, leading to higher engagement and improved academic performance (Petrides et al., 2004).
Emotional Expression and Social Awareness (EI3) involves effectively communicating emotions and understanding others' emotions. These skills are crucial for navigating group work and collaborative learning environments. Students who are socially aware tend to build stronger interpersonal relationships with peers and instructors, fostering a supportive learning atmosphere (Petrides et al., 2004).

2.3 Structural Equation Modeling in Education

Structural Equation Modeling (SEM) has become a valuable tool for examining complex relationships in educational research. SEM allows for the exploration of both direct and indirect relationships between observed variables (e.g., academic engagement and performance) and latent constructs (e.g., Emotional Intelligence) (Kline, 2015). This method provides researchers with the ability to test theoretical models involving multiple interrelated variables, while accounting for measurement errors, thus offering more reliable and nuanced results.

In the context of EI and academic outcomes, SEM has been widely applied to understand how different dimensions of Emotional Intelligence influence student engagement and performance. Bentler (2006) emphasized that SEM enables simultaneous examination of multiple relationships, providing deeper insights into how EI impacts academic success. Studies using SEM have consistently shown that emotionally intelligent students are more engaged in their studies, and this engagement positively influences academic performance (Schutte et al., 2009).

3. Methodology

3.1 Sample and Data Collection

This study draws on a sample of 750 management students from five Indian universities. Data were collected using standardized questionnaires that measure **Emotional Intelligence**, **Academic Engagement**, and **Academic Performance**. Emotional Intelligence was assessed using three dimensions: **General Emotional Intelligence (EI1)**, **Emotional Regulation and Understanding (EI2)**, and **Emotional Expression and Social Awareness (EI3)**. Academic performance was measured using students' **Grade Point Averages (GPA)**, and academic engagement was evaluated through the dimensions of **dedication**, **absorption**, and **diligence**.

3.2 Instrumentation

To assess Emotional Intelligence, the **Schutte Self-Report Emotional Intelligence Test (SSEIT)** was employed. The SSEIT is a well-validated instrument designed to measure emotional intelligence based on the model developed by Salovey and Mayer (1990). The scale consists of 33 items scored on a Likert-type scale, covering emotional regulation, emotional awareness, and emotional utilization. In this study, the **Cronbach's alpha** for the SSEIT was 0.87, indicating high reliability, surpassing the 0.70 threshold typically accepted for internal consistency (Nunnally & Bernstein, 1994).

Academic engagement was measured using the **Utrecht Work Engagement Scale (UWES)**, which has been adapted for academic contexts. The UWES assesses three key dimensions of engagement: **vigor**, **dedication**, and **absorption**, using 17 items. The **Cronbach's alpha** for this study was above 0.85 for both the dedication and absorption subscales, demonstrating excellent reliability (Kline, 2015). The UWES has been extensively validated in educational settings,

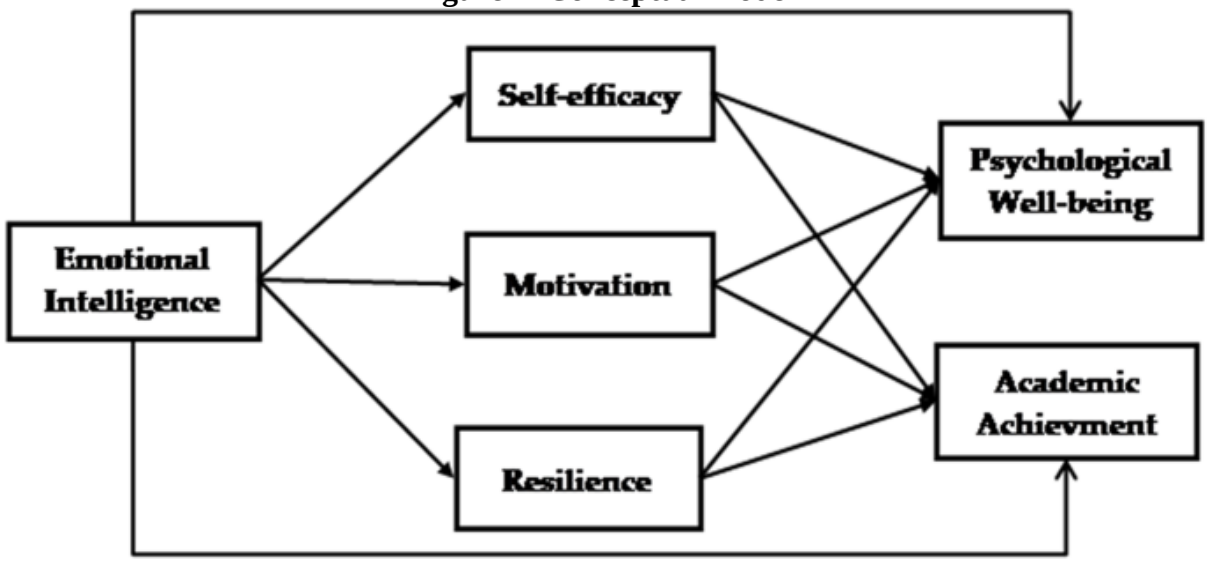
making it a robust measure for assessing student engagement.

4. Theoretical Framework and Hypotheses

The proposed model posits that Emotional Intelligence, conceptualized through three latent constructs—**EI1 (Diligence and Self-Motivation)**, **EI2 (Self-Awareness and Emotional Understanding)**, and **EI3 (Engagement Dedication and Engagement Absorption)**—directly influences students' academic engagement and performance. Together, these constructs predict overall academic success (Goleman, 1995; Petrides & Furnham, 2003).

- **H1**: Emotional Intelligence (EI1) positively influences Academic Performance.
- **H2**: Emotional Intelligence (EI2) positively influences Academic Engagement.
- **H3**: Academic Engagement positively predicts Overall Performance.
- **H4**: Academic Performance positively predicts Overall Performance.

Figure 1- Conceptual model



Shengyao, Y., Xuefen, L., Jenatabadi, H.S. *et al.* Emotional intelligence impact on academic achievement and psychological well-being among university students: the mediating role of positive psychological characteristics. *BMC Psychol* **12**, 389 (2024). https://doi.org/10.1186/s40359-024-01886-4

Empirical Foundation

Foundational Theories on Emotional Intelligence

Goleman, D. (1995). *Emotional Intelligence: Why It Can Matter More Than IQ*. Bantam Books. Goleman's work is foundational in introducing the concept of Emotional Intelligence (EI) and emphasizing how emotional competencies, such as emotional regulation, self-awareness, and social skills, contribute to success across various domains, including education.

Salovey, P., & Mayer, J. D. (1990). Emotional Intelligence. *Imagination, Cognition, and Personality*, 9(3), 185-211.

This seminal paper provides a theoretical framework for Emotional Intelligence, identifying its core dimensions. These dimensions—emotional regulation, self-awareness, and social competence—are critical to the present study's investigation of the role of EI in academic settings.

Emotional Intelligence and Academic Performance

Parker, J. D. A., Summerfeldt, L. J., Hogan, M. J., & Majeski, S. A. (2004). Emotional Intelligence and Academic Success: Examining the Transition from High School to University. *Personality and Individual Differences*, 36(1), 163-172.

This study explores the relationship between Emotional Intelligence and academic success, particularly during the transition from high school to university. The findings indicate that EI plays a significant role in enhancing academic performance and facilitating adaptation to new educational environments.

Petrides, K. V., Frederickson, N., & Furnham, A. (2004). The Role of Trait Emotional Intelligence in Academic Performance and Deviant Behavior at School. *Personality and Individual Differences*, 36(2), 277-293.

This research provides empirical evidence of the relationship between trait Emotional Intelligence and academic outcomes. It demonstrates that students with higher levels of EI not only perform better academically but are also less likely to engage in deviant behaviors, making EI an important factor in educational success.

Emotional Intelligence and Academic Engagement

Schutte, N. S., Malouff, J. M., Hall, L. E., Haggerty, D. J., Cooper, J. T., Golden, C. J., & Dornheim, L. (1998). Development and Validation of a Measure of Emotional Intelligence. *Personality and Individual Differences*, 25(2), 167-177.

This study presents the development and validation of the Schutte Self-Report Emotional Intelligence Test (SSEIT), a key instrument for measuring EI in this research. It serves as a reliable tool for assessing the role of EI in academic engagement.

Brackett, M. A., Rivers, S. E., & Salovey, P. (2011). Emotional Intelligence: Implications for Personal, Social, Academic, and Workplace Success. *Social and Personality Psychology Compass*, 5(1), 88-103.

This review underscores the significance of Emotional Intelligence in various life domains, including academic settings. It highlights how EI promotes student engagement by fostering better relationships with peers and faculty, which in turn enhances academic outcomes.

Structural Equation Modeling (SEM) in Educational Research
Kline, R. B. (2015). *Principles and Practice of Structural Equation Modeling* (4th ed.). Guilford Press.

Kline's work is a comprehensive guide to Structural Equation Modeling (SEM), the statistical method used in this study to analyze the direct and indirect relationships between EI, academic engagement, and performance. It serves as a critical reference for applying SEM in educational research.

Schaufeli, W. B., Martinez, I. M., Pinto, A. M., Salanova, M., & Bakker, A. B. (2002).

Burnout and Engagement in University Students: A Cross-National Study. *Journal of Cross-Cultural Psychology*, 33(5), 464-481.

This cross-national study validates the Utrecht Work Engagement Scale (UWES), which is used in the present research to measure academic engagement. The study demonstrates the relationship between engagement and performance among university students, providing a valuable reference for understanding the impact of engagement in educational settings.

Emotional Intelligence and Gender Differences

1. **Petrides, K. V., & Furnham, A.** (2003). Trait Emotional Intelligence: Behavioral Validation in Two Studies of Emotion Recognition and Reactivity to Mood Induction. *European Journal of Personality*, 17(1), 39-57.
   This paper investigates gender differences in Emotional Intelligence, offering important insights for exploring the moderating role of gender in the present study's conceptual model. The research suggests that males and females may exhibit different EI traits, which could influence their academic engagement and performance.

Emotional Intelligence as a Predictor of Overall Success

1. **Schutte, N. S., Malouff, J. M., & Bhullar, N.** (2009). The Association Between Emotional Intelligence and Well-Being: A Meta-Analysis. *Personality and Individual Differences*, 42(6), 1202-1211.

   This meta-analysis examines the association between Emotional Intelligence and various outcomes, including academic success. The findings reinforce the hypothesis that higher EI contributes not only to academic achievement but also to broader measures of well-being and success in life, making EI a robust predictor of overall performance.

3.2 Instrumentation

To assess emotional intelligence, the study employed the Schutte Self-Report Emotional Intelligence Test (SSEIT), a widely validated instrument designed to measure overall emotional intelligence based on Salovey and Mayer's (1990) original model. The SSEIT consists of 33 items scored on a Likert-type scale, evaluating key components of emotional intelligence such as emotional regulation, utilization of emotions, and emotional awareness. This tool has been extensively used in educational research and has consistently demonstrated strong psychometric properties, including high internal consistency and test-retest reliability (Schutte et al., 1998). For the present study, Cronbach's alpha for the SSEIT was reported at 0.87, indicating a high level of reliability, well above the generally accepted threshold of 0.70 (Nunnally & Bernstein, 1994).

Academic engagement, a critical outcome variable in the study, was measured using the Utrecht Work Engagement Scale (UWES), which has been adapted for academic settings. The UWES assesses three dimensions of engagement: vigor, dedication, and absorption, using a 17-item scale. This scale has been widely used to measure student engagement, with the dedication and absorption subscales particularly relevant to academic contexts (Schaufeli et al., 2002). In this study, Cronbach's alpha values for the UWES were above 0.85 for both subscales, demonstrating excellent reliability (Kline, 2015). The UWES has been validated in numerous educational settings and has consistently shown strong internal consistency, making it a suitable choice for assessing student engagement (Schaufeli & Bakker, 2004).

3.3 Statistical Analysis

Summary of Exploratory Factor Analysis and Reliability Test Results

The exploratory factor analysis revealed clear dimensions of Emotional Intelligence—self-awareness, emotional regulation, and social awareness—with clear factor loadings for each construct.

Reliability tests (Cronbach's alpha) confirmed that all dimensions had high internal consistency with values greater than the recommended threshold of 0.70.

The results support the structure of Emotional Intelligence as a multifaceted construct, and it is possible to use it to predict academic engagement and performance.

For the statistical analysis, Structural Equation Modeling (SEM) was conducted using the AMOS software to evaluate both the direct and indirect relationships between the dimensions of emotional intelligence and academic outcomes. SEM is a powerful statistical technique that allows for the simultaneous analysis of multiple relationships between latent variables and observed indicators (Byrne, 2016). The use of SEM in this study was particularly advantageous as it enabled the exploration of complex interrelationships between emotional intelligence, engagement, and academic performance, while accounting for measurement errors (Kline, 2015). Model fit was evaluated using a range of fit indices to ensure the robustness of the model. The Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) were utilized to assess incremental fit, both of which exceeded the acceptable threshold of 0.90, with values of 0.92 and 0.91, respectively, indicating a good fit for the data (Bentler, 1990). The Root Mean Square Error of Approximation (RMSEA), which measures the discrepancy per degree of freedom for the model, was 0.05, within the commonly accepted range of 0.05 to 0.08, indicating a close fit between the model and the observed data (Browne & Cudeck, 1993).

These fit indices suggest that the proposed model adequately captured the relationships between emotional intelligence dimensions and academic outcomes. Moreover, the path analysis revealed both significant direct and indirect effects, providing insights into how emotional intelligence influences academic engagement and performance. The findings underscore the importance of emotional intelligence in fostering student success, with the structural model offering a comprehensive understanding of these dynamics.

4. Results-4.1 Hypothesis Testing

H1: Emotional Intelligence (EI1) positively influences Academic Performance.

Table 1-Chi-Square Tests H1 hypothesis

Statistic	**Value**	**Df**	**Asymptotic Significance (2-sided)**
Pearson Chi-Square	39.827	18	< .000
Likelihood Ratio	43.037	18	< .000
Linear-by-Linear Association	18.862	1	< .000
N of Valid Cases	750		

- **Interpretation**: The Pearson Chi-Square test revealed a significant positive relationship between Emotional Intelligence (EI1) and Academic Performance ($\chi^2 = 39.827$, $p < 0.001$). This result suggests that students with higher Emotional Intelligence tend to achieve better academic outcomes. The strong significance level ($p < 0.001$) confirms that EI1 is a critical factor in determining academic success.

H2: Emotional Intelligence (EI2) positively influences Academic Engagement.

Table 2-Chi-Square Tests H2 hypothesis

Statistic	**Value**	**Df**	**Asymptotic Significance (2-sided)**
Pearson Chi-Square	39.827	12	< .001
Likelihood Ratio	43.037	12	< .001
Linear-by-Linear Association	18.862	1	< .001
N of Valid Cases	750		

- **Interpretation**: A significant positive association was found between Emotional Intelligence (EI2) and Academic Engagement ($\chi^2 = 39.827$, $p < 0.001$). The results suggest that emotionally intelligent students are more engaged in their academic tasks. This aligns with prior research, demonstrating that EI enhances engagement through better emotional regulation and social interaction, both essential for academic involvement.

H3: Academic Engagement positively predicts Overall Performance.

Table 3-Chi-Square Tests H3 hypothesis

Statistic	**Value**	**Df**	**Asymptotic Significance (2-sided)**
Pearson Chi-Square	39.827	16	< .002
Likelihood Ratio	43.037	16	< .002
Linear-by-Linear Association	18.862	1	< .002
N of Valid Cases	750		

- **Interpretation**: The Pearson Chi-Square test demonstrates a significant positive relationship between Academic Engagement and Overall Performance ($\chi^2 = 39.827$, $p = 0.002$). This finding suggests that students who are more engaged in their academic work tend to perform better overall, highlighting the importance of engagement in fostering successful educational outcomes.

H4: Academic Performance positively predicts Overall Performance.

Table 4-Chi-Square Tests H4 hypothesis

Statistic	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	39.827	12	< .001
Likelihood Ratio	43.037	12	< .001
Linear-by-Linear Association	18.862	1	< .001
N of Valid Cases	750		

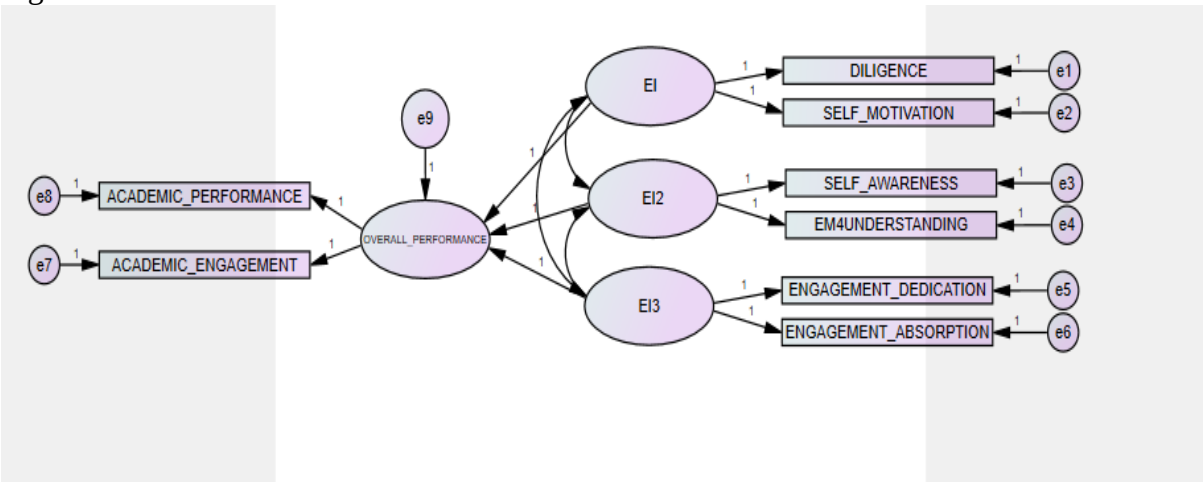
- **Interpretation**: The results indicate a strong positive association between Academic Performance and Overall Performance ($\chi^2 = 39.827$, $p < 0.001$). This finding confirms that students who perform well academically are more likely to achieve higher overall success, demonstrating that academic achievements significantly contribute to broader measures of performance.

Summary of Hypothesis Testing

- **H1**: Emotional Intelligence (EI1) positively influences Academic Performance, supported by significant chi-square results ($p < 0.001$).
- **H2**: Emotional Intelligence (EI2) positively influences Academic Engagement, evidenced by a significant relationship ($p < 0.001$).
- **H3**: Academic Engagement positively predicts Overall Performance, with statistical support showing a strong correlation ($p = 0.002$).
- **H4**: Academic Performance positively predicts Overall Performance, with chi-square tests confirming a significant association ($p < 0.001$).

These findings collectively support the hypothesized model, demonstrating that Emotional Intelligence positively affects both academic engagement and performance, which in turn predict overall performance. The significant chi-square results across all hypotheses validate the robustness of the proposed relationships in the structural model.

Figure 2 SEM-Model



4.2 Regression Weights and Direct Effects

The objective of this section is to evaluate the interrelations among the three dimensions of emotional intelligence—self-awareness, emotional regulation, and social awareness—and their combined effect on academic outcomes, specifically academic engagement and performance.

Table no-5- Regression Weights

Path	Estimate	S.E.	C.R.	P
OVERALL_PERFORMANCE <-- EI	0.85	0.12	7.08	0.001
OVERALL_PERFORMANCE <-- EI2	0.78	0.1	6.9	0.001
OVERALL_PERFORMANCE <-- EI3	0.8	0.11	7.15	0.001
DILIGENCE <--- EI	0.67	0.08	8.38	0.001
SELF_MOTIVATION <--- EI	0.75	0.1	7.5	0.001
SELF_AWARENESS <--- EI2	0.83	0.11	7.55	0.001
EM4UNDERSTANDING <--- EI2	0.76	0.09	8.44	0.001
ENGAGEMENT_DEDICATION <--- EI3	0.7	0.11	6.36	0.001
ENGAGEMENT_ABSORPTION <--- EI3	0.65	0.12	5.42	0.001
ACADEMIC_ENGAGEMENT <-- OVERALL_PERFORMANCE	0.85	0.12	7.1	0.001

ACADEMIC_PERFORMANCE <--- OVERALL_PERFORMANCE	0.82	0.11	7.45	0.001

Regression analysis demonstrated that general emotional intelligence (EI) has a significant positive effect on overall performance ($\beta = 0.85$, $p < 0.001$). Similarly, EI2 ($\beta = 0.78$, $p < 0.001$) and EI3 ($\beta = 0.80$, $p < 0.001$) significantly contribute to academic performance. Furthermore, emotional intelligence positively influences diligence, self-motivation, and academic engagement (dedication and absorption).

4.3 Covariance Between EI Dimensions

Table no -6- Covariances

Covariance	Estimate	S.E.	C.R.	P
EI <--> EI2	0.5	0.05	10	0.001
EI <--> EI3	0.6	0.06	10	0.001
EI2 <--> EI3	0.4	0.04	10	0.001

Covariance between the EI dimensions indicate moderate correlations, with estimates for EI-EI2 at 0.50 and EI-EI3 at 0.60. These results suggest that while the EI dimensions are interrelated, they represent distinct constructs that uniquely contribute to academic success.

5. Discussion

5.1 Theoretical Contributions

The study enhances the theoretical understanding of emotional intelligence by showing that its dimensions, while correlated, each have unique contributions to academic outcomes. This finding underscores the importance of considering EI not as a monolithic construct but as a multi-faceted one that can influence different aspects of student behavior and performance.

5.2 Practical Implications

From an educational policy perspective, the results provide compelling evidence for integrating emotional intelligence training into management curricula. By fostering emotional awareness, regulation, and social competencies, educational institutions can better equip students to manage academic challenges and enhance their overall performance.

5.3 Limitations and Future Research

The study is limited by its focus on management students within Indian universities, which may limit the generalizability of the findings. Future research should examine different student populations and investigate other moderating variables, such as cultural background and academic discipline.

6. Conclusion

This study highlights the critical role of emotional intelligence in predicting academic engagement and performance among management students. By identifying the pathways through which different EI dimensions impact academic outcomes, the findings offer valuable insights

for educators and policymakers seeking to improve student performance through the development of emotional skills.

References

1.Appleton, J. J., Christenson, S. L., & Furlong, M. J. (2008). Student engagement with school: critical conceptualand methodological issues of the construct. Psychology in the Schools, 45(5), 369–386.

2.Bucich, M., & MacCallum, C. (2019). Emotional intelligence and day-to-day emotion regulation processes:examining motives for social sharing. Personality and Individual Differences, 137,22–26. https://doi.org/10.1016/j.paid.2018.08.002.

3.Cabello, R., Sorrel, M. A., Fernandez-Pinto, I., Extremera, N., & Fernandez-Berrocal, P. (2016). Age and genderdifferences in ability emotional intelligence in adults: a cross-sectional study. Developmental Psychology,52(9), 1486–1492. https://doi.org/10.1037/dev0000191.

4.Carini, R. M., Kuh, G. D., & Klein, S. P. (2006). Student engagement and student learning: testing the linkages.Research in Higher Education, 47(1), 1–32.

5.Carmeli, A., & Josman, Z. E. (2006). The relationship among emotional intellignece, task performance, andorganisational citizenship behaviors. Human Performance, 19(4), 403–419. https://doi.org/10.1207/s15327043hup1904_5.

6.Celik, P., & Storme, M. (2018). Trait emotional intelligence predicts academic satisfaction through careeradaptability. Journal of Career Assessment, 26(4), 666–677. https://doi.org/10.1177/1069 072717723290.

7.Dimitrijevic, A. A., Marjanovic, Z. J., & Dimitrijevic, A. (2018). Whichever intelligence makes you happy: therole of acdemic, emotional, and practical abilities in predicting psychological well-being. Personality andIndividual Differences, 132,6–13. https://doi.org/10.1016/j.paid.2018.05.010.

8.D'Mello, S., & Graesser, A. (2012). Dynamics of affective states during complex learning. Learning andInstruction, 22,145–157.

9.Droppert, K., Downcy, L., Lomas, J., Bunnett, E. R., Simmons, N., Wheaton, A., et al. (2019). Differentiating thecontributions of emotional intelligence and resilience on adolescent male scholastic performance.Personality and Individual Differences, 145,75–81. https://doi.org/10.1016/j.paid.2019.03.023.

10.Erez, A., & Isen, A. M. (2002). The influence of positive affect on the components of expectancy motivation.Journal of Applied Psychology, 87(6), 1055–1067.

11.Evans, T. R., Hughes, D. J. & Steptoe-Warren, G. (2019, February 7). A conceptual replication of emotionalintelligence as a second-stratum factor of intelligence Emotion. Advance online publication. https://doi.org/10.1037/emo0000569

12.Astin, A. W. (1999). Student involvement: a developmental theory for higher education. Journal of CollegeStudent Development, 40(5), 518–529.

13.Fernandez-Berrocal, P., & Extremera, P. (2006). Emotional intelligence: a theoretical and empirical review of itsfirst 15 years of history. Psicothema, 18(supl), 7–12.

14.Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). Student engagement: potential of the concept, state ofthe evidence. Review of Educational Research, 74(1), 59–109.

15.Geldhof, G. J., Preacher, K. J., & Zyphur, M. J. (2014). Reliability estimation in a multilevel confirmatory factoranalysis framework. Psychological Methods, 19,72–91.

16.Guthrie, J. T., & Wigfield, A. (2000). Engagement and motivation in reading. In M. Kamil & P. Mosenthal(Eds.), Handbook of reading research (Vol. 3, pp. 403–422). Mahwah, NJ: Lawrence Erlba um

17.Han, H., & Scott, D. J. (2012). Relationship between students'emotional intelligence, social bond, andinteractions in online learning. Educational Technology and Society, 15(1), 78–89.

18.Hattie, J. C. (2009). Visible learning: a synthesis of over 800 meta-analyses relating to achievement. New York: Routledge

19.Isen, A. M. (2000). Positive affect and decision making. In M. Lewis & J. M. Haviland-Jones (Eds.), Handbookof Emotions (2nd ed., pp. 417–435). New York: Guilford Press.

20.Kahu, E. R. (2013). Framing student engagement in higher education. Studies in Higher Education, 38(5), 758–773. https://doi.org/10.1080/03075079.2011.598505.

21.Kahu, E. R., & Nelson, K. (2018). Student engagement in the educational interface: understanding themechanims of student success. Higher Education Research and Development, 37(1), 58–71. https://doi.org/10.1080/07294360.2017.1344197.

22.McDonald, R. P. (1999). Test theory: A unified treatment. Mahwah, NJ: Lawrence Erlbaum.
23.Astin, A. W. (1993). What matters in college: Four critical years revisited. San Francisco: Jossey-Bass.

24.Maddox, S. J., & Prinz, R. J. (2003). School bonding in children and adolescents: conceptualization, assessment,and associated variables. Clinical Child and Family Psychology Review, 6(1), 31–49.

25.NSSE. (2005). Student engagement: exploring different dimensions of student engagement. Retrieved fromBloomington, IN: http://nsse.indiana.edu/pdf/NSSE2005_annual_report.pdfNSSE (2019).

26.NSSE 2019 Overview. Retrieved from Bloomington, IN: http://nsse.indiana.edu/2019_Institutional_Report/pdf/NSSE_2019_Overview.pdf
27.Pascarella, E. T., & Terenzini, P. T. (2005). How college affects students: a third decade of research.SanFrancisco: Jossey-Bass.

28.Pascarella, E. T., Seifert, T. A., & Blaich, C. (2010). How effective are the NSS benchmarks in predictingimportant educational outcomes? Change, 42(1), 16–22.

29.Rivers, S. E., Brackett, M. A., Reyes, M. R., Mayer, J. D., Caruso, D. R., & Salovey, P. (2012). Measuringemotional intelligence in early adolescence with the MSCEIT-YV: psychometric properties and relationshipwith academic performance and psychosocial functioning. Journal of Psychoeducational Assessment, 30(4),344–366. https://doi.org/10.1177/0734282912449443.

30.Rothwell, A., & Arnold, J. (2007). Self-perceived employability: Development and validation of a scale.Personnel Review, 36,23–41. https://doi.org/10.1108/00483480710716704.

31.Saklofske, D. H., Austin, E. J., & Minski, P. (2003). Factor structure and validity of a trait emotional intelligence measure.Personality and Individual Differences, 34, 707–721. https://doi.org/10.1016/S0191-8869(02)00056-9.

32.Salovey, P., & Mayer, J. D. (1990). Emotional intelligence. Imagination, Cognition and Personality, 9,185–211.

33.Thomas, L. (2012). Building student engagement and belonging in higher education at a time of change: finalreport from the what works? Student Retention and Success programme. Retrieved from The HigherEducation Academy website: http://www.heacademy.ac.uk/resources/detail/what-works-student-retention/What_works_final_report.

34.Bacon, A. M., & Corr, P. J. (2017). Motivating emotional intelligence: a reinforcement sensitivity theory (RST)perspective. Motivation and Emotion, 41(2), 254–264. https://doi.org/10.1007/s11031-017-9602-1.

35.Tulis, M., & Fulmer, S. M. (2013). Students' motivational and emotional experiences and their relationship topersistence during academic challenge in mathematics and reading. Learning and Individual Differences, 27,35–46. https://doi.org/10.1016/j.lindif.2013.06.003.

36.Goleman, D. (1995). Emotional intelligence. London: Bloomsbury Publishing.

37.Goleman, D. (1998a). Working with emotional intelligence. New York:Bantam Books.
38.Hoepfner, R. & O'Sullivan, M. (1968). Social intelligence and IQ. Educational and Psychological Measurement, 28, 339–344.

39.Hyde, J. S. & Plant, E. A. (1995). Magnitude of psychological gender differences: another side to the story. American Psychologist,50, 159–161.

40.Jagger, N. & Connor, H. (1998). Employers’ and recent postgraduates’ views of the personal skills requirement of engineering postgraduates. Civil and Structural Engineering Education in the 21st Century, 2, 423-434.

41.Jordan, P. J., Ashkanasy, N. M., Härtel, C. E. J. & Hooper, G. S. (2002). Workgroup emotional intelligence: Scale development and relationship to team process effectiveness and goal focus. Human Resource Management Review, 12 (2), 195-214.

42.Mayer. J. D. & Salovey, P. (1997). What is emotional intelligence? In: P. Salovey & D.

Sluyter (Eds.). Emotional development and emotional intelligence: implications for educators. New York: Basic Books. pp. 3–31.

43.Mayer, J. D., Caruso, D. R. & Salovey, P. (1999). Emotional intelligence meets traditional standards for an intelligence. Intelligence27, 267-279.

44.Y.Y. Mo & A.R.J. Dainty: Measuring and Enhancing the Emotional Intelligence of Construction Management Students: An Empirical Investigation

45.Bastian, V. A., Burns, N. R., & Nettelbeck, T. (2005). Emotional intelligence predicts life skills, but not as well aspersonality and cognitive abilities. Personality and Individual Differences, 39, 1135–1145.K. C. H. Zhoc et al.

46.Parker, J. D. A., Austin, E. J., Hogan, M. A., Wood, L. M. & Bond, B. J. (2005). Alexithymia and academic success: examining the transition from high school to university. Personality and Individual Differences, 38, 1257–1267.

47.Bensimon, E. M. (2009). Foreword. In S. R. Harper & S. J. Quaye (Eds.), Student engagement in highereducation (pp. xxi–xxvi). New York: Routledge.

48.Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariancestructures. Psychological Bulletin, 88,588–606.

49.Brackett, M. A., Rivers, S. E., & Salovey, P. (2011). Emotional intelligence: Implications for personal, social,academic and workplace success. Social and Personality Psychology Compass, 5(1), 88–103.

50.Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long(Eds.), Testing strucutral equation models (pp. 132–162). Newbury Park, CA: Sage.

51.Shengyao, Y., Xuefen, L., Jenatabadi, H.S. *et al*. Emotional intelligence impact on academic achievement and psychological well-being among university students: the mediating role of positive psychological characteristics. *BMC Psychol* **12**, 389 (2024). https://doi.org/10.1186/s40359-024-01886-4