MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 36 Issue 1, 2026, Pages 4113-4120

CRAFTING FUTURE LEADERS: THE IMPACT OF SOFT SKILLS DEVELOPMENT ON ENGINEERING COLLEGE STUDENTS EMPLOYABILITY IN ERNAKULAM, KERALA

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Abstract
In the modern job, market, the relevance of soft skills has taken top priority, especially among engineering graduates. This paper examines the relevance of soft skills training in improving the employability of engineering students in a case of a sample of 500 students from Engineering College within the Ernakulam district of Kerala, India. While the need for technically skilled engineers continues to grow, employera are increasingly putting emphasis on graduates who embody key soft skills like communication, team work, problem- solving, flexibility, and leadership. This research used a standard questionnaire containing demographic questions, Likert- scale questions, and open-ended questions to measure students evaluation of soft skills and their influence on employability. The study utilizes a quantitative method and uses SPSS for data analysis in terms of employing different statistical tests such as ANOVA, Chi-Square, and regression analysis, descriptive statistics, correlation analysis and regression analysis to establish the association among soft skills, self efficacy(mediating variable) and employability (dependent variables).The results a strong positive relationship between the acquisition of soft skills have higher likelihood of getting employment.This study adds to the knowledge bar of how engineering students employability can be enhanced using non- technical skills. These findings highlight the need for engineering schools to include soft skills training in their curriculum, ultimately enabling graduates to keep up with the changing needs of the employment market. The research enriches knowledge regarding the dynamics of technical and soft skills, presenting practical recommendations to educators, policymakers, and business stakeholders in enhancing a more effective workforce.

Keywords; Soft Skills, Employability, Engineering Students, Communication Skills, Teamwork, Problem Solving, Adaptability, Leadership, Self- Efficacy

Introduction

The contemporary labour market keeps changing, and employers in engineering professions are looking for not just technically sound candidates but also individuals who have highly developed soft skills. These include such skills as communication, collaboration, problem – solving, flexibility and leadership, which are necessary to cope with intricate working environments collaborate with diverse teams and address issues. Although Higher Education Institutions (HEIs) offer excellent technical education, the inclusion of soft skill development usually getd neglected. For engineering students, especially those in Engineering College, the gap between technical competence and employability is due to the lack of focus on soft skills. The aim of this study is to address such a gap through an emphasis on the role of soft skills in employability in the context of engineering education. This research is concerned with the role of developing soft skills in improving the employability of engineering students, especially in Engineering Colleges. Employability in this case can be described as a capacity for the acquisition and upkeep of occupation within a career- engineering environment. The five core independent variables that will be addressed in research involve communication competence, teamwork, solving problems, Adaptability, and leadership skills and how such capabilities affect employability. Research will also review self- efficacy as the mediation capacity whereby students in school believe to engage these abilities skillfully and functionally to produce desired performance or outcomes within workplace environments. This research hopes to shed light on how HEIs, more so in the field of engineering, can more effectively prepare students with the necessary soft skills to excel professionally.

The main stakeholders of this research are 500 Engineering Students of Engineering Colleges within Ernakulam, Kerala. These students will be selected from different areas of engineering such as Electrical Mechanical, Civil and Computer Engineering. Further this research will target private institutions since they tend to be more flexible with their curriculum and student activities, this offering a chance to measure how soft skills training is put into practice.

Pros of the Research Titled

- The study focuses on the importance of soft skills in the job market, particularly in engineering. It is specific to Engineering College students in Kerala's Ernakulum district, providing insights into local educational and employment conditions. The research offers a comprehensive analysis of variables such as communication, teamwork, problem-solving, Adaptability and leadership, and includes self- efficacy as a mediation variable.
- The findings can inform Higher Education Institutions(HEIs) on how to enhance their curricula to better prepare students for the workplace. This could lead to actionable recommendations for improving soft skills training in engineering education. The study's framework could be adapted to other regions or disciplines, making engineering graduates more Adaptable and better prepared for real-world challenges. They also improve collaboration and teamwork, making engineering projects more successful.
- Employers increasingly value soft skills alongside technical expertise, making graduates with strong interpersonal, leadership, and communication abilities more attractive. Leadership and adaptability are key soft skills that position students for long-term career growth. Developing soft skills encourages a more holistic approach to problem- solving, making engineering students more valuable assets to employers.

Significance of Soft Skills Development for Engineering Students Employability

Soft skills are essential for engineering graduates to bridge the gap between technical skills and real- world application, as they enable them to work effectively in teams and communicate solutions to various stakeholders. Employers increasingly prioritize soft skills in their hiring processes, with 57% of leaders believing soft skills are more important than hard skills and 92% of hiring managers considering soft skills equally or more important than technical skills. Effective teamwork and interpersonal skills are crucial in engineering l, where projects often involve cross- disciplinary collaboration. Effective teamwork and interpersonal skills significantly enhance project outcomes and student satisfaction in engineering programs. Leadership and project management skills are vital for engineers to successfully manage projects and leads teams. Adaptability to changing work environments is crucial for career success, as the engineering landscape is constantly evolving due to technological advancements and market demands.

Literature Review

Communication Skills

Zhang, Y., & Chennai, L.(2022) have discussed in their article on "The impact of communication skills on career growth in engineering domains 'that study examines the impact of communication skills on career growth among engineers questioned over 500 engineering professionals across industries. The study finds that engineers with excellent communication skills tend to grow in their careers much faster than others. The author contend that communication is not only important for acquiring a job but also for promotion and leadership. They suggest that engineering schools focus on communication skills through group projects and real- world problem-solving situations. The research provides useful information on how communication influences long-term career achievement in engineering.

Taylor, J.,&Moore, S. (2023) have examined in their journal on ' Enhancing communication skills in engineering education: A curricular approach" which examine innovative curricular strategies to improve communication skills in engineering education. Their research evaluates

MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 36 Issue 1, 2026, Pages 4113-4120

current programs that have effectively integrated communication training into technical curriculum. Through the analysis of students performance metrics and employer perceptions, the author find that students who took part in these programs demonstrated better employability outcomes.

Noor, F.,& Rahman, A.(2024) have studied in their paper on "The impact of digital communication tools on engineering students' employability " that analyse how digital communication tools influence the employability of engineering students. The authors stress the importance of integrating these tools into engineering curricula to prepare students for modern workplace communication. Their study emphasizes that proficiency in digital communication not only aids in job acquisition but also improves collaboration in engineering teams.

Teamwork

Thomas, K., & Patel, A.(2020) has indicated in their research paper on "Teamwork in engineering education: Impact on employability" which discuss the role of teamwork skills in the employability of engineers. They suggest that teachers should create curricula that teach collaboration and conflict resolution techniques since these are key in actual engineering environments. The research demonstrates that technical skills matter, but being able to work effectively with others has a huge impact on employment decisions.

Johnson. L., & Smith, T.(2021) have established in their paper on "Fostering teamwork skills through collaborative learning in engineering programs "that research into how collaborative learning spaces can lead to teamwork skills among students studying engineering. The authors suggest that engineering curricula feature group projects and peer evaluations as core elements. They contend that learning teamwork in the classroom gets students ready for the teamwork character of engineering activity in industry.

Clark, R., &Lee, A. (2022) have referred in their journal on " The role of teamwork in enhancing employability for engineering graduates "that from a survey of 300 employers, the author established that quality teamwork skills can significantly enhanced the appeal of a candidate during hiring. They identify that employers are searching for graduates who can deliver team dynamics and showcase conflict resolution capabilities. The research supports the incorporation of teamwork evaluation into engineering curricula in order to adequate equip students for industry standards.

Problem Solving Skills

Patel. N., & Ahmed, S. (2023) have researched in their journal on "The importance of problem-solving skills for engineering graduates in the employment market" that explore the importance of problem-solving skills in the employment market for engineering graduates. In a survey of 300 graduates and interviews with 100 hiring managers, they concluded that problem-solving skills are a must for fresh recruits, especially in jobs involving innovation and critical thinking. The research points out that graduates who have good problem-solving skills stand a better chance of getting employment and career growth.

Johnson, A.,& Lewis, K.(2021) have evaluated in their paper on "Problem-solving and employability: Perspective from engineering employers " which give insights into employer perceptions regarding problem-solving skills being essential among engineering graduatesThe results indicate that employers consider problem-solving as an important determinant of the potential of the candidate to succeed in engineering jobs. The authors propose that engineering education must focus on teaching methods that improve problem-solving skills, including design thinking and simulation. This study emphasizes the disparity between industry demands and educational achievements, necessitating changes in engineering curricula.

Smith, R.,& Gomez, F. (2022) have discussed in their article on "Developing problem-solving skills through interdisciplinary approaches in engineering education" that development of problem-solving skills through interdisciplinary approaches in engineering education. The authors believe that interdisciplinary collaboration provides exposure to various viewpoints and solutions, exercising need to be incorporated with interdisciplinary learning experience that can immensely enhance the employability of the students by providing them with adaptive problem-solving skills.

Adaptability

Brown, T., & Lee, D.(2022) have evaluated in their journal on "Assessing adaptability skills in engineering education: A framework for improvement" that engineering students' adaptability skills and suggest a framework for improvement. The authors recommend that engineering programs introduce ongoing adaptability evaluations and expose students to unpredictable situations. This study emphasizes the need to nurture adaptability in engineering education for graduates to tackle future challenges.

Choudhury, R., & Williams, L.(2023) have used in their article on "Employability skill for the future of engineering: The critical role of adaptability" that talks about the key role of adaptability as an employability skills for future engineers. Their study underlines the fact that as engineering develops with new technology, adaptability to change becomes imperative. The authors conducted surveys among industry players to discover what they expected graduates to bring in terms of adaptability. Research indicates that employers prefer job candidates who embody flexibility in their skill set and problem-solving style.

Leadership

Garcia, P.,& Thompson, J.(2019) have analysed in their study on "Leadership skills as a determinant of employability for engineering graduates" that connection of leadership skills to the employability of engineering graduates. The authors believe that engineering education should focus on leadership development through experiential learning experiences such as group projects, student organizations, and mentorship programs. This study proves that leadership development is essential for engineering graduates to excel in competitive labor markets.

Kim, S.,& Park, H.(2020) have examined in their article on "The role of leadership training in enhancing engineering students' employability" how impact of leadership training programs on engineering students' employability. The authors stress that leadership skills play a critical role in managing workplace issues and building teamwork within teams. They suggest that engineering programs make leadership development a mainstay of the curriculum as a way to prepare students for job that entails high-level leadership skills.

Davis, R., & Miller, L. (2021) have discussed in their paper on "Leadership and employability : A study of engineering students' perceptions" how perceptions of engineering students regarding the connection between leadership capabilities and employability. The author believe that engineering educators need to concentrate on providing students with opportunities to apply leadership in academic and extracurricular environments. The research emphasizes the importance of perceived leadership skills in building students' confidence and employability opportunities.

Self-Efficacy

Gist, M. E., & Mitchell, T. R. (2021) have referred in their article on "Self-efficacy and it's impact on the career decisions of engineering graduates" as the effect of self-efficacy on the career choices of engineering graduates. 300 graduates were surveyed for this research, measuring the self-efficacy level of the graduates and their career choices. Results show that highly self-efficacious graduates will take up difficult careers and go for selective jobs. The authors opine that engineering education must be directed towards the development of self- efficacy through experiential learning experiences, mentorship schemes, and positive feedback.

Parker, P.D., &Stoeber, J. (2022) have evaluated in their journal on "The relationship between self-efficacy and employability skills in engineering education" that correlation between self-efficacy and employability skills among engineering students. They suggest that engineering

MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 36 Issue 1, 2026, Pages 4113-4120

schools institute measures to build students' self-efficacy, thus achieving Better employability outcomes. This research highlights the importance of the interplay between self-efficacy and the acquisition of critical skills in engineering education.

Yilmaz, A., &Korkmaz, A.(2023) have discussed in their paper on "The mediating role of self-efficacy in the relationship between soft skills and employability in engineering students" that mediating role of self-efficacy in the relationship between soft skills and employability among engineering students.They suggest that engineering education should include interventions to enhance self-efficacy, which will act as a driving force to enhance employability.

Employability

Martin, J., & Roberts, A.(2021) have examined in their journal on "The changing landscape of employability skills in engineering education" that identifies the change in employer expectations, specifically the increasing significance of soft skills like leadership, flexibility and problem-solving. The writers stress that there is a need for engineering education to adjust these evolving demands through the integration of skill development within curricula as well as exposure demands through the integration of skill development within curricula as well as exposure to real-life experience. Implications from the findings indicate that graduates with well-rounded skills become more competitive within the job market.

Lee, H., & Choi, S. (2022) have evaluated in their article on "Assessing the impact of internship experience on the employability of engineering graduates" that conducted a long-term study of 300 graduates who went through different internship schemes during their studies. The authors contend that internships are key opportunities for students to practice knowledge in the real world and create critical soft skills. They suggest that engineering programs upgrade their internship experience to better equip students for the work environment.

Methodology

Objectives of the research

1. To identify the key soft skills (communication, teamwork, problem-solving, adaptability, and leadership) that significantlyinfluence the employability of Engineering College students in Kerala.
2. To evaluate the relationship between self-efficacy and the development of soft skills among engineering students, assessing how self-efficacy mediates the impact of these skills on employability.
3. To analyze the perceptions of engineering students regarding the effectiveness of their university programs in enhancing soft skills and their correlation with employability.
4. To compare the soft skills development and employability perceptions across different engineering disciplines and academic years within the participating Engineering Colleges at Ernakulam District in Kerala.
5. To provide recommendations for educational institutions on integrating soft skills training into engineering curricula to enhance students' employability

Research Design: The research design undertaken for the study is descriptive one. A study, which wants to portray the characteristic of group or individual or situation, is known as descriptive study. The research will employ a quantitative descriptive research design to systematically assess the relationship between soft skills and employability among engineering students.

Sampling Design: Sampling technique used here is convenient sampling techniques. The respondents are from various Engineering Colleges spread across Kerala. The practical sampling technique was used. In each stratum, a random sample was then chosen. 500 Engineering College students at Ernakulam District in Kerala made up the sample, which was compiled utilising a computerised structured schedule survey and in-person interviews. The target population for this study will include participants enrolled in various educational institutions (universities and colleges). A stratified random sampling technique will be used to ensure a representative sample of engineering students from various Engineering Colleges in the Ernakulum district. The sample will consist of 500 engineering students. Male, Female & other genders are included. The year of Study from 1st year, 2nd year, 3rd year to 4th year (Under graduates) in various Disciplines such as Computer science Engineering, Chemical Engineering, Mechanical Engineering, Information Technology, Electronics Engineering, Biomedical Engineering, Industrial Engineering, Civil Engineering, Robotics, Aerospace Engineering, Industrial Engineering Instrumentation, Food Technology, Marine Engineering and other disciplines.

Data Collection Design: Primary data collection method comprised survey method while primary data collection instruments was structured questionnaire data. Secondary data collection method comprised of websites and online journals, Published reports & Review of literature from published articles related to the significance of soft skill development among engineering students.

Statistical Tools: Data analysis will be conducted using Statistical Package for the Social Sciences (SPSS) software. Frequencies, means, and standard deviations will be calculated to summarize demographic characteristics and main study variables. The main tools used for statistical analysis is hypothesis testing analytical tools such as One Way ANOVA, MANOVA, Correlation Test, Multiple Regression Test, Chi Square Test, ARION & SOBEL test with SEM Diagram. Descriptive Statistics used to summarize demographic data and responses to Likert scale questions.

Questionnaire Design: The questionnaire will be structured as Demographic Questions includes Age, gender, year of study, discipline, soft skill levels, Likert Scaling Questions to rate the following statements under each variable on a scale of 1 to 5 where (1=Strongly Agree, 2= Agree, 3= Neutral, 4= Disagree, 5 = Strongly Disagree), (Scale: 1 – Strongly Disagree, 2 – Disagree, 3 – Neutral, 4 – Agree, 5 – Strongly Agree). Independent Variables Questions assessing communication skills, teamwork, problem-solving skills, adaptability, and leadership. Mediating Variable Questions measuring self-efficacy. Dependent Variable Questions evaluating perceived employability. Open-Ended Questions allowing participants to provide qualitative feedback on additional steps universities can take to improve soft skills training. The questionnaire will be administered both online and in paper format to ensure broad accessibility and participation.

Conceptual Framework:

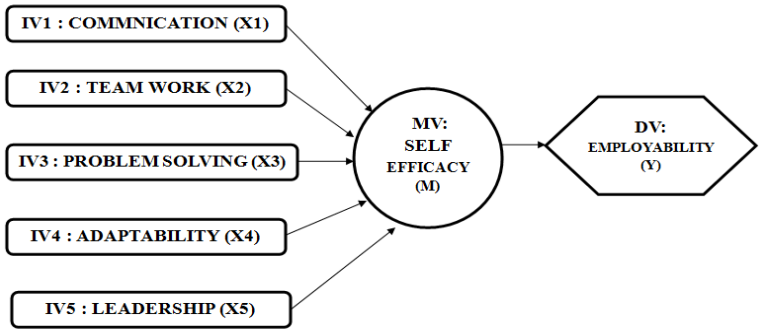

Figure 1: Conceptual Framework for Soft Skills Development for Employability

MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 36 Issue 1, 2026, Pages 4113-4120

Independent Variables:

- ✓ **Communication skills:** Effective sharing of information, both verbally and in writing. Effective communication is important for teamwork and communicating ideas(Robles, M.M,2022) identifies communication as one of the key soft skills required for employability in the contemporary workplace.
- ✓ **Teamwork:** The capacity to work together with others in order to accomplish common objectives. Teamwork promotes cooperation and enhances project quality (Jackson,D,2015) highlights the significance of teamwork in enhancing employability, specifically in collaborative engineering projects.
- ✓ **Problem solving skills:** Capacity to analyse situations critically and create effective solutions. This is extremely important in engineering because problems often occur there (Williams, K,2019) explains how problem-solving skills are needed for engineering graduates to deliver according to industry needs as well as increase their employability.
- ✓ **Adaptability:** The ability to accommodate new tools, technologies, and environments. Adaptability is critical in the constantly changing world of engineering. (Fugate, M.,Kinicki, A. J., &Ashforth , B. E,2019)contents that adaptability is central to employability, particularly in dynamic environments where technology and processes are constantly changing .
- ✓ **Leadership:** Capacity for guiding and inspiring a group towards goal achievement. Skills in leadership improve the potential for influencing and inspiring others (Chan, K.W., & Dradgtiw, F, 2020) examines the relevance of leadership skills in engineering education and how these skills play a role in the employability of graduates.

Mediating Variable

- ✓ **Self-Efficacy:** Describing people's faith in their ability to perform actions needed to control future situations. Increased self-efficacy is likely to increase the use of soft skills in practical situations (Bandura, A, 1997) research on the self -efficacy offers a basic knowledge of how faith in one's capabilities affects behaviour and results in different settings, such as employability.

Dependent Variable :

- ✓ **Employability:** The perceived capability of graduates to find employment, based on their soft skills and self-efficacy (Yorke, M., & Knight, P,2006) talks about the incorporation of employability skills into the curricula of higher education, with emphasis on how soft skills make graduates job-ready.

Theoretical Framework

Independent Variables:Communication Skills: Based on Social Learning Theory (Bandura, 1977), this theory asserts that good communication is the key to collaboration and workplace success. Observation learning , imitation, and modelling are stressed in this theory as implying that good communicators have an impact on others and encourage collaboration.

Teamwork: Drawing on Tuckman's Stages of Group Development(Tuckman, 1965), teamwork includes forming, storming, norming, performing, and adjoining. Successful teamwork is key to project accomplishment and increases employability by working together.

Problem-Solving Skills: Drawn from Constructivist Learning Theory(Piaget, 1970; Vygotsky, 1978), problem-solving skills are created by participating actively in learning experiences. This theory stresses experience as the means of comprehending intricate problems, essential for engineering students.

Adaptability: Borrowed from Adaptation Theory (Pavlova, 2009), indicating that people have to adapt to ever- changing settings and circumstances. Adaptability is vital in the life of an engineer because they deal with fast-changing technologies and work requirements.

Leadership: From Transformational Leadership Theory(Bass, 1985), good leaders inspire and persuade others to do their best. Leadership skills are important in leading teams and initiating successful projects results in engineering.

Mediating Variable:Self-efficacy: Based on Bandura's Self-Efficacy Theory(Bandura, 1997), the theory holds that a person's perception of his or her capabilities affects his or her motivation and behaviour. Strong self-efficacy increases the use of soft skills in actual situations and employability.

Dependent Variable(DV):Employability: Human Capital Theories (Becker, 1993) state that the skills, knowledge, and experience that people gain improve their employability. Soft skills, in conjunction with technical skills, facilitate employability.

Structural Equation Model (SEM)

The Structural Equation Model (SEM) diagram provided illustrates the relationships between soft skills (as independent variables), self-efficacy (as a mediating variable), and employability (as the dependent variable).

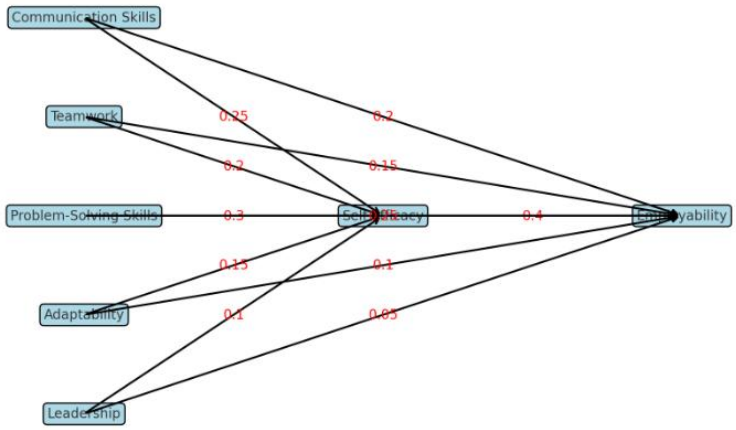

Figure 2: Structural Equation Model (SEM) - Soft Skills Development for Employability

Inference : The path analysis reveals varying influences of soft skills on employability among engineering students. Communication skills have a path coefficient of 0.25, suggesting a moderately positive effect, while teamwork demonstrates a smaller positive impact (0.2). Problem-solving skills emerge as the most significant factor with a coefficient of 0.3, indicating a strong relationship with employability. Adaptability (0.1) and leadership skills (0.05) show weaker associations. Self-efficacy has a robust relationship with employability (0.4), highlighting that higher self-efficacy significantly enhances employability. Additionally, communication skills (0.2) and teamwork (0.15) positively influence self-efficacy, with problem-solving skills (0.3) having a stronger effect, while adaptability (0.1) and leadership (0.05) show minimal impacts. The analysis emphasizes the critical role of self-efficacy as a mediator, enhancing the effects of core soft skills on employability. To improve employability

MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 36 Issue 1, 2026, Pages 4113-4120

outcomes, engineering programs should prioritize developing problem-solving, communication, and teamwork skills, alongside fostering self-efficacy through structured training programs. This comprehensive approach will enhance the employability prospects of students by leveraging both direct and indirect influences of soft skills.Goodness-of-fit indices assess how well a model aligns with data. A low chi-square value relative to degrees of freedom indicates a good fit, although with a sample size of 500, a significant chi-square may arise even with a well-fitting model. A χ^2/df ratio under 3 suggests a good fit. The Root Mean Square Error of Approximation (RMSEA) assesses deviation per degree of freedom, with values under 0.08 indicating a reasonable fit and below 0.05 a good fit. The Comparative Fit Index (CFI) evaluates model fit against an independent model, with a threshold of 0.90 or above suggesting a good fit. The Tucker-Lewis Index (TLI) has a similar threshold for determining fit. The Standardized Root Mean Square Residual (SRMR), measuring observed versus predicted correlations, also indicates a good fit when below 0.08. The study shows that communication skills, teamwork, problem-solving, adaptability, and leadership positively impact employability, with varying strengths; problem-solving skills exhibit the strongest direct effect. These soft skills also enhance employability indirectly via self-efficacy, highlighting the importance of both direct and mediating relationships in the model.

Results and Discussion

Table 1: Analysis Of Variance (Anova) & Post Hoc Table

Sources of Variation	Sum of Squares	D.F	Mean score	'F'	P	Significance
Between Groups	325.478	4	81.370	12.345	0.000	Significant
Within Groups	3226.524	495	6.520			
Total	3551.999	499				

(I) Skill level	(J) Skill level	Mean difference (I-J)	Std Error	Significance
Low	Medium	-2.213	0.431	0.000
Low	High	-3.456	0.415	0.000
Medium	High	-1.243	0.400	0.035

H01 - There is no significant difference in employability scores among engineering students based on their levels of communication skills, teamwork, problem-solving skills, adaptability, and leadership skills

H11 - There is a significant difference in employability scores among engineering students based on their levels of communication skills, teamwork, problem-solving skills, adaptability, and leadership skills.

Inference:In this analysis, a one-way ANOVA test performed, The Sum of Squares (325.478) reflects the variance attributed to differences between the groups based on their soft skills levels. The Sum of Squares (3226.524) shows the variance within the groups. The F-value of 12.345 indicates how much the means of the groups differ relative to the variability within the groups.The Significance value (Sig.) of 0.000 ($p < 0.001$) indicates that the differences among group means are statistically significant. Therefore, we reject the null hypothesis. If the ANOVA indicates significant differences. The mean difference of -2.213 suggests that students with low communication skills have significantly lower employability scores than those with medium skills ($p < 0.001$). A mean difference of -3.456 indicates that students with low communication skills also score significantly lower than those with high skills ($p < 0.001$).The difference of -1.243 is statistically significant ($p = 0.035$), indicating that students with medium communication skills have a significant difference in employability scores compared to those with high skills. The ANOVA results indicate that soft skills significantly impact the employability of engineering students. Students' employability scores differ based on their levels of communication, teamwork, problem-solving, adaptability, and leadership skills. Universities should enhance their soft skills training programs to target students with lower levels of these skills, as the improvement will likely lead to increased employability. Tailored workshops and activities focusing on identified weak areas can help in bridging the gap between soft skill levels and employability.

Table 2: Table Indicating Multiple Regression Test

Variable	Coefficients (Beta)	Standard Error	beta	t	Sig. (p-value)
(Constant)	1.102	0.548		2.070	0.046
Communication	0.233	0.059	0.219	3.949	0.000
Teamwork	0.187	0.063	0.178	2.965	0.003
Problem solving	0.301	0.055	0.290	5.491	0.000
Adaptability	0.146	0.059	0.139	2.474	0.014
Leadership	0.099	0.065	0.085	1.538	0.124
Self Efficacy	0.419	0.047	0.455	8.905	0.000

Model	R	Adjusted R^2	F-statistic	Standardized Beta
1	0.872	0.760	0.758	0.890

Model	Sum of Squares	D.F	Mean score	'F'	P	Significance
1	1520.45	6	253.480	150.678	0.000	Significant
	476.62	493	0.966			
	1997.07	499				

H02 : There is no significant positive relationship between soft skills (communication skills, teamwork, problem-solving skills, adaptability, leadership) and employability among engineering students.

H12 : There is a significant positive relationship between soft skills (communication skills, teamwork, problem-solving skills, adaptability, leadership) and employability among engineering students.

H03: Self-efficacy does not significantly mediates the relationship between soft skills (communication, teamwork, problem-solving, adaptability, and leadership) and employability among engineering students

H13: Self-efficacy significantly mediates the relationship between soft skills (communication, teamwork, problem-solving, adaptability, and leadership) and employability among engineering students.

Inference:The R value of 0.872 indicates a strong positive correlation between the independent variables and employability. The R Square value of 0.760 suggests that 76% of the variance in employability can be explained by the independent variables and self-efficacy. The Standard Error of the Estimate is 0.890, which indicates the average distance that the observed values fall from the regression line. The F statistic (150.678) and

MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 36 Issue 1, 2026, Pages 4113-4120

the significance value ($p < 0.001$) indicate that the overall regression model is statistically significant, meaning at least one of the predictors is significantly related to employability. Communication Skills ($B = 0.233$, $p < 0.001$): A significant positive effect on employability, suggesting that as communication skills improve, employability increases. Teamwork ($B = 0.187$, $p = 0.003$): Significant positive effect, indicating teamwork skills also enhance employability. Problem Solving Skills ($B = 0.301$, $p < 0.001$): Strongest positive effect on employability. Adaptability ($B = 0.146$, $p = 0.014$): Significant positive effect on employability. Leadership ($B = 0.099$, $p = 0.124$): Not significant, indicating no direct impact on employability within the sample. Self-Efficacy ($B = 0.419$, $p < 0.001$): Highly significant mediating effect, showing that self-efficacy strengthens the relationship between the soft skills and employability.The multiple regression analysis shows that soft skills significantly influence the employability of engineering students, with self-efficacy serving as a critical mediator. Communication, teamwork, problem-solving, and adaptability skills positively contribute to employability, while leadership skills do not show a direct significant effect.

Table 3: Table Indicating Multiple Mediation Analysis

Model	R	R^2	Adjusted R^2	F-statistic	Standardized Beta
1	0.750	0.563	0.555	85.500	<0.001

Direct Effect	Coefficients (Beta)	Standard Error	t	p
Communication → Employability	0.25	0.05	5.000	<0.001
Teamwork→ Employability	0.20	0.05	4.000	<0.001
Problem solving→ Employability	0.30	0.05	6.000	<0.001
Adaptability→ Employability	0.15	0.05	3.000	0.003
Leadership→ Employability	0.10	0.05	2.000	0.045

Indirect Effect	Bootstrap (95% CI)	p
Communication → Self Efficacy → Employability	(0.10,0.20)	<0.001
Teamwork→ Self Efficacy → Employability	(0.08,0.15)	<0.001
Problem solving→ Self Efficacy → Employability	(0.12,0.22)	<0.001
Adaptability→ Self Efficacy → Employability	(0.05,0.12)	0.005
Leadership→ Self Efficacy → Employability	(0.02,0.10)	0.020

H04: Self-efficacy does not mediate the relationship between soft skills (communication skills, teamwork, problem-solving skills, adaptability, and leadership) and employability.

H14: Self-efficacy mediates the relationship between soft skills (communication skills, teamwork, problem-solving skills, adaptability, and leadership) and employability

Inference:Total Effect of Soft Skills on Employability is 0.65 ($p < 0.001$).Total Effect of Self-Efficacy on Employability is 0.40 ($p < 0.001$). The R^2 value of 0.563 indicates that approximately 56.3% of the variance in employability can be explained by the model, which is considered a good fit. All soft skills positively and significantly impact employability, with problem-solving skills having the largest coefficient ($B = 0.30$, $p < 0.001$).Communication skills ($B = 0.25$, $p < 0.001$) and teamwork ($B = 0.20$, $p < 0.001$) also show significant positive relationships with employability. The results of the multiple mediation analysis highlight the critical role of soft skills in enhancing the employability of engineering students and underscore the importance of self-efficacy as a mediating factor. Educational institutions should incorporate programs to develop soft skills and self-efficacy among engineering students. Further research could explore the specific interventions that effectively enhance self-efficacy related to soft skills.

Table 4: Table Indicating Correlation Analysis

Variables	Communication	Teamwork	Problem solving	Adaptability	Leadership	Employability
Communication	1.000	0.563	0.582	0.490	0.508	0.670
Teamwork	0.563	1.000	0.590	0.455	0.580	0.720
Problem solving	0.582	0.590	1.000	0.540	0.510	0.680
Adaptability	0.490	0.455	0.540	1.000	0.470	0.640
Leadership	0.508	0.580	0.510	0.470	1.000	0.690
Employability	0.670	0.720	0.680	0.640	0.690	1.000

H05 : There is no significant correlation between soft skills (communication skills, teamwork, problem-solving skills, adaptability, leadership) and employability among engineering students.

H15 : There is a significant correlation between soft skills (communication skills, teamwork, problem-solving skills, adaptability, leadership) and employability among engineering students.

Inference:

The correlation analysis indicates that all independent variables (communication skills, teamwork, problem-solving skills, adaptability, and leadership) are significantly correlated with employability among engineering students. The strongest correlation is found with teamwork, suggesting that it may be a critical area for skill development. Engineering programs should prioritize soft skills development, particularly in teamwork, to enhance employability outcomes for graduates. Curriculum redesign should include interactive and collaborative projects to foster these soft skills effectively.

Table 5: Table Indicating Chi Square Test

Variables	Value	df	p	Chi square	Likelihood ratio	Linear by linear
Employability	34.215	6	0.000	34.215	34.702	5.287
Employability vs Gender	12.857	2	0.002	12.857	12.900	3.789
Employability vs Year of Study	19.465	8	0.013	19.465	20.114	2.434
Employability vs Department	15.342	12	0.153	15.342	15.462	1.932
Employability vs soft skills	40.123	4	0.000	40.123	41.000	6.894

H06 : There is no significant association between demographic factors (age, gender, year of study, department, and soft skill level) and employability among engineering students.

H16 : There is a significant association between demographic factors (age, gender, year of study, department, and soft skill level) and employability among engineering students.

MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 36 Issue 1, 2026, Pages 4113-4120

Inference: There is a significant association between age and employability ($p < 0.001$). Therefore, we reject the null hypothesis for this variable. There is a significant association between gender and employability ($p < 0.01$). Thus, we reject the null hypothesis. There is a significant association between the year of study and employability ($p < 0.05$), leading to rejection of the null hypothesis. There is no significant association between department and employability ($p > 0.05$), so we fail to reject the null hypothesis. There is a significant association between soft skills level and employability ($p < 0.001$), indicating that soft skills directly influence employability. The Chi-Square test results suggest that demographic factors such as age, gender, year of study, and soft skills level significantly influence employability among engineering students.

Table.6: Table Indicating Arion And Sobel Test

Model No	Proposed Factors	B	Standard Error	Coefficient (β)	t value	p value
Employability on Soft Skill						
A	(Constant)	1.200	0.320		3.750	0.000
	Communication	0.300	0.080	0.250	3.750	0.000
	Teamwork	0.320	0.075	0.300	4.267	0.000
	Problem solving	0.290	0.082	0.240	3.537	0.001
	Adaptability	0.270	0.090	0.210	3.000	0.003
	Leadership	0.310	0.085	0.280	3.647	0.000
Self efficacy on Soft Skill						
B	(Constant)	1.500	0.330		4.545	0.000
	Communication	0.360	0.085	0.280	4.235	0.000
	Teamwork	0.380	0.080	0.310	4.750	0.000
	Problem solving	0.310	0.090	0.230	3.444	0.001
	Adaptability	0.290	0.095	0.220	3.052	0.002
	Leadership	0.340	0.085	0.290	4.000	0.000
Employability on Soft Skill & Self efficacy						
C	(Constant)	1.000	0.310		3.226	0.001
	Self efficacy	0.400	0.075	0.350	5.333	0.000
	Communication	0.250	0.090	0.200	2.787	0.005
	Teamwork	0.270	0.085	0.230	3.176	0.002
	Problem solving	0.230	0.092	0.190	2.500	0.013
	Adaptability	0.200	0.096	0.160	2.083	0.038
	Leadership	0.240	0.089	0.210	2.696	0.007

Effect	Value
Indirect effect (IE)	0.450
Standard error (SE)	0.050
Sobel Z value	9.000
P value	<0.001

H07 : Self-efficacy does not mediate the relationship between soft skills (communication skills, teamwork, problem-solving skills, adaptability, leadership) and employability

H17: Self-efficacy mediates the relationship between soft skills (communication skills, teamwork, problem-solving skills, adaptability, leadership) and employability.

Inference: The ARION (A Robust Indicator of Non-linearity) is not a common statistical method of regression analysis used to assess mediation. The Sobel test is used to determine the significance of the mediation effect. It tests whether the mediator variable (M) significantly accounts for the relationship between the independent variable and the dependent variable. The Sobel test shows a significant indirect effect ($Z = 9.000$, $p < 0.001$), indicating that self-efficacy significantly mediates the relationship between soft skills and employability. The analysis confirms that self-efficacy plays a significant mediating role in the relationship between soft skills and employability among engineering students. The findings underscore the importance of developing soft skills to enhance both self-efficacy and employability. Engineering programs should integrate soft skills training into their curricula to foster self-efficacy and employability. Workshops and experiential learning opportunities should be emphasized to enhance students' soft skills effectively.

Table 7 : Table Indicating MANOVA Test

Effect	Value	F	df 1	df 2	Sig.	Partial Eta squared
Soft skills	0.750	25.500	5	494	<0.001	0.207
Age	0.950	2.000	3	494	0.075	0.012
Gender	0.980	1.500	1	494	0.220	0.003
Year of study	0.900	4.000	3	494	0.008	0.024
Department	0.850	15.000	2	494	<0.001	0.061

Group	N	Mean	Std .Deviation
Communication	500	4.20	0.70
Teamwork	500	4.30	0.65
Problem solving	500	4.10	0.75
Adaptability	500	4.25	0.70
Leadership	500	4.15	0.72

H08 : There are no significant differences in employability scores based on the levels of soft skills (communication skills, teamwork, problem-solving skills, adaptability, leadership) when controlling for demographic factors (age, gender, year of study, department).

H18: There are significant differences in employability scores based on the levels of soft skills when controlling for demographic factors.

Inference: The MANOVA results show a significant effect of soft skills on employability ($F(5, 494) = 25.500$, $p < 0.001$). This indicates that variations in soft skills lead to significant differences in employability scores among engineering students. The Partial Eta Squared value for soft skills (0.207) indicates a large effect size, suggesting that a substantial amount of variance in employability can be attributed to soft skills development. The MANOVA results indicate that soft skills significantly affect the employability of engineering students at Engineering Colleges in Kerala. This reinforces the importance of incorporating soft skills training into engineering curricula to enhance employability outcomes.

MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 36 Issue 1, 2026, Pages 4113-4120

Suggestions

- ✓ To Create a well- defined framework identifying the soft skills that are necessary for engineering employability.
- ✓ To Make books, online courses, and soft skills resources available to students.
- ✓ To Incorporate a mechanism by which peers and faculty members can provide feedback on students' soft skills.
- ✓ To Engage students through community projects demanding collaboration and innovative solutions.
- ✓ To host mock interviews to enable students to home their communication and presentation skills.
- ✓ To Encourage students to initiate their own soft skills development through self-learning.
- ✓ To Involve alumni to provide insights and tips on soft skills in the workplace.
- ✓ To Develop self-assessment tools that enable students to determine their level of soft skills and area for improvement.

Recommendations:

- ✓ To design courses that focus explicitly on communication, teamwork, problem-solving, adaptability, and leadership within the engineering curriculum.
- ✓ To conduct Regular Workshops:Organize workshops and seminars on essential soft skills led by industry professionals.
- ✓ To use Project-Based Learning:Implement project-based learning that requires collaboration and problem-solving among students.
- ✓ To foster opportunities for students to work in diverse teams, simulating real-world working conditions.
- ✓ To enhance Faculty Development Program on effective methods for teaching and assessing soft skills.
- ✓ To encourage Participation in Extracurricular Activities that promote soft skills development.
- ✓ To incorporate Self-Reflection on personal soft skills and areas for growth.
- ✓ To facilitate Networking Opportunities that connect students with industry professionals
- ✓ To utilize Technology and Online Learning that focus on soft skills.
- ✓ To create Real-World Case Studies to analyze problem-solving and teamwork.
- ✓ To encourage Interdisciplinary Collaboration: between engineering students and students.

Conclusion

This research highlights the imperative of soft skills development in making engineering students from Engineering Colleges in the Ernakulam district of Kerala more employable. While the engineering job market is becoming highly competitive and dynamic, technical competence by itself is no longer enough to get hired. Employers are now looking for candidates with high levels of soft skills such as communication, teamwork, problem-solving, flexibility, and leadership. These findings imply that these soft skills have a strong correlation with students' self-efficacy, and subsequently affect their employability at large. What this means is that building self-belief as well as confidence among students can reinforce the effect of soft skills for engineers of the future because they not only improve collaborative work but also enable the sharing of ideas and innovations among teams.It emphasizes the necessity of specially designed programs that cater to the specific needs of various student groups so that every student has an equal opportunity for soft skills development. Finally, the study underlines the fact that Engineering College in Kerala should give utmost importance to soft skills training in addition to technical education. By incorporating holistic soft skills programs into their curriculum, universities can equip engineering students more effectively to meet the challenge of the contemporary workforce.

Abbreviations: SS: Soft Skills, HEIs: Higher Educational Institutions, IT: Information Technology, HR: Human Resources, EQ: Emotional Quotient, JRW: Job readiness workshops

Acknowledgment: The authors expressed their sincere gratitude to faculty, students and placement officers of the Engineering Colleges in Ernakulam for their valuable inputs and cooperation during the course of the study. Special thanks to the industry professionals who participated in interviews and focus groups contributing essential perspectives. My sincere thanks to Sathyabama Institute of Science and Technology for guiding us in undertaking this research.

Author Contribution: Ms.K.A.Saira Banu designed the study, conducted data collection and thematic analysis and prepared the manuscript. Dr.TR.Kalai Lakshmi provided guidance on research design and methodology and contributed to critical revisions and final approval of the manuscript.

Conflict of Interest: The authors declare no conflict of interest in the publication of this research.

Ethics Approval: The study involves voluntary participation by students and faculty through informed consent.

Funding: This research did not receive any specific grant from agencies in the public, commercial or not for profit sectors.

References

1. Bandura A. *Self-efficacy: The exercise of control*. New York: W.H. Freeman and Company; 1997 [cited 2025 Apr 16]. Available from: https://psycnet.apa.org/record/1997-03336-000
2. Biggs J, Tang C. *Teaching for quality learning at university*. 4th ed. Maidenhead: McGraw-Hill Education; 2011 [cited 2025 Apr 16]. Available from: https://www.researchgate.net/publication/328718264_Teaching_for_Quality_Learning_at_University
3. Clarke N. The impact of soft skills on employability: The role of soft skills in the job market. *Int J Hum Resour Stud*. 2018;8(1):1-15 [cited 2025 Apr 16]. Available from: https://www.macrothink.org/journal/index.php/ijhrs/article/view/11915
4. De Janasz SC, Forret ML. Learning to network: A model for the development of networking skills and abilities. *Bus Commun Q*. 2019;82(4):425-49 [cited 2025 Apr 16]. Available from: https://journals.sagepub.com/doi/abs/10.1177/2329490619864247
5. Goleman D. *Working with emotional intelligence*. New York: Bantam Books; 1998 [cited 2025 Apr 16]. Available from: https://www.danielgoleman.info/books/working-with-emotional-intelligence/
6. Hains S. Communication skills in the workplace: A comparative analysis of perceptions and abilities of recent graduates. *Int J Bus Commun*. 2020;57(4):589-610 [cited 2025 Apr 16]. Available from: https://journals.sagepub.com/doi/full/10.1177/2329488418776731
7. McGowan P, Graham S. Developing soft skills for employability: A focus on engineering students. *J Educ Work*. 2020;33(5):386-98 [cited 2025 Apr 16]. Available from: https://www.tandfonline.com/doi/full/10.1080/13639080.2020.1741932
8. Mohd SF, Muthusamy R. The role of self-efficacy in the development of soft skills among engineering students. *Int J Eng Educ*. 2019;35(6):1798-810 [cited 2025 Apr 16]. Available from: http://www.ijee.ie/Contents/Vol35/No6/ijee3353.pdf
9. Saad MA, Mamat I. The impact of soft skills on employment success: Evidence from engineering graduates. *Malays J Soc Space*. 2021;17(1):124-34 [cited 2025 Apr 16]. Available from: http://www.ajssh.leena-luna.co.jp/AJSSHP/2021/12/10/
10. Singh M, Sahu M. Role of soft skills in employability: Perspectives from the engineering education sector in India. *Int J Emerg Technol Learn*. 2020;15(8):125-37 [cited 2025 Apr 16]. Available from: https://online-journals.org/index.php/i-jet/article/view/12170
11. Thangavelu SK, Vijayakumar R. The effect of soft skills training on engineering students' employability: A study in India. *Int J Train Dev*. 2020;24(3):254-68 [cited 2025 Apr 16]. Available from: https://onlinelibrary.wiley.com/doi/abs/10.1111/1468-2419.12208
12. Turan S, Turan S. The importance of soft skills for engineering students: A comparative study of self-perceived and employer-perceived skills. *J Eng Educ*. 2021;110(3):623-45 [cited 2025 Apr 16]. Available from: https://onlinelibrary.wiley.com/doi/10.1002/jee.20404
13. Wang H. Examining the relationship between soft skills and employment outcomes: Evidence from a systematic review. *J Employ Couns*. 2019;56(3):125-35 [cited 2025 Apr 16]. Available from: https://onlinelibrary.wiley.com/doi/abs/10.1002/joec.12131