CHAPTER 69

Factors Affecting Employability of Technical Graduates in Indian Construction Industry

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ABSTRACT

This study examines the most important determinants shaping employability among civil engineering graduates in India's construction industry based on the Relative Importance Index (RII) approach. The data was gathered via an online survey and interviews, generating both quantitative and qualitative information. The analysis selected the top five factors that contribute most to employability: Communication Skills (RII: 0.751), Willingness to Learn (RII: 0.751), Teamwork Skills (RII: 0.751), Personal Integrity (RII: 0.744), and Interpersonal Skills (RII: 0.743). These selected factors indicate a balanced concentration on technical and soft skills, emphasizing the need for holistic competency development. Communication skills were the most essential, indicating the need for graduates to be able to articulate ideas. Willingness to learn and teamwork ability were also critical, reflecting the emphasis on flexibility and collaboration. Personal integrity and interpersonal ability were also high priorities, showing the significance of ethical conduct and relational ability. The results add to knowledge of employability dynamics, offering insights for curriculum development and professional growth.

Keywords: Employability; Technical graduates; Construction industry; Skill gap; Industry-academia collaboration.

1.0 Introduction

Employability is a critical factor in ensuring career longevity and success, particularly in a rapidly evolving job market influenced by technological advancements and shifting economic conditions. For technical graduates, employability encompasses not only the ability to secure initial employment but also the adaptability to meet changing industry demands. In the context of the Indian construction industry, which is a significant contributor to the nation's GDP and employment, the employability of technical graduates is increasingly vital. However, a persistent gap exists between the skills imparted by educational institutions and the practical, technical, and soft skills required by the industry.

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The Indian construction sector is undergoing a transformation, driven by advancements such as Building Information Modelling (BIM), automation, and sustainable practices. These changes have heightened the demand for technically sound professionals who are adept at using modern tools and technologies. Despite this demand, technical graduates often lack the practical experience, exposure to cutting-edge technologies, and essential soft skills needed to thrive in the industry. This mismatch between industry requirements and academic preparation underscores the need for a comprehensive study to identify and address the factors affecting the employability of technical graduates. This research aims to explore the key determinants influencing the employability of technical graduates in the Indian construction industry. By analyzing the gaps in skills and competencies, the study seeks to provide actionable insights for educational institutions, policymakers, and industry stakeholders. The findings will contribute to the development of a more aligned and responsive educational framework, ensuring that graduates are well-equipped to meet the evolving demands of the construction sector and contribute to its sustainable growth.

1.1 Objectives

- Identify the key factors influencing the employability of students.
- Empirically validate the identified factors in the Indian construction sector.

2.0 Literature Review

Skills and attributes expected by employer worldwide: Employability has garnered significant global attention, particularly in the context of a competitive and globalized job market. Numerous studies have identified the skills and attributes employers seek in graduates and professionals, with the construction industry being no exception. While extensive research has been conducted in regions like South Africa, there is a notable scarcity of studies in the Indian context, especially within the construction sector. In India, studies such as (Rajput *et al.,* 2022) have identified eight critical factors influencing the employability of civil engineering graduates: site administration, business development, managerial, design management, procurement and material management, risk management, planning and scheduling, and ethics and professionalism. These skills highlight the need for a blend of technical expertise and soft skills like communication and leadership. Similarly, (Valli *et al.,* 2019) emphasized generic employability skills such as communication, problem-solving, and interpersonal skills, which are essential for engineering graduates in the global labor market. (Krishna *et al.,* 2021) highlighted the role of internships in enhancing employability, as they provide hands-on experience and bridge the gap between theoretical knowledge and industry requirements. (Chinnan *et al.,* 2019) further underscored the importance of aligning academic curricula with industry needs, particularly in areas like Building Information Modelling (BIM), which, despite slow adoption in India, equips students with critical skills for modern construction projects.

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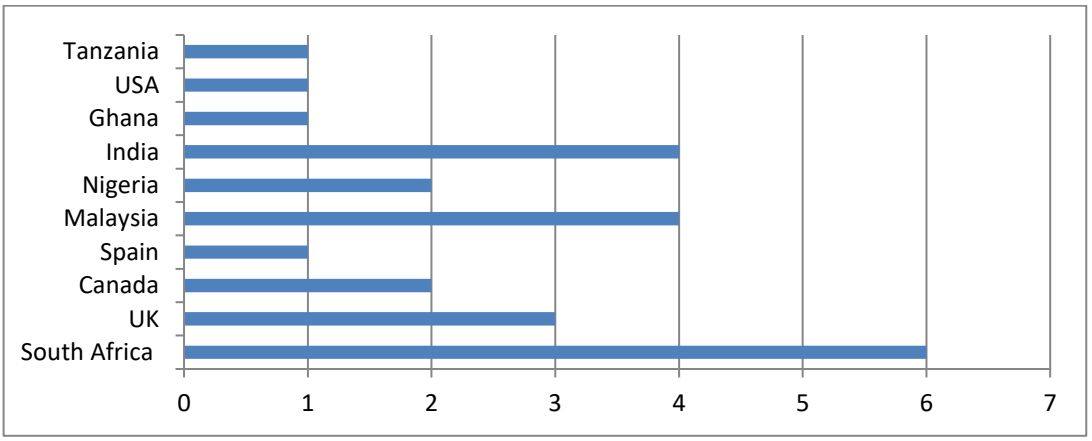
Figure 1: No. of Studies Done Globally



Source: Compiled by author

Internationally, studies such as (Miller *et al.,* 2005) have emphasized the importance of communication skills, which are crucial for teamwork, project management, and client interactions. (Arain *et al.,* 2010) identified construction competence, project management, leadership, and communication as key competencies for construction graduates, while (Devaney *et al.,* 2012) highlighted the role of personal attributes and labor market conditions in determining employability. (Machi *et al.,* 2013) identified intrinsic barriers such as reluctance to relocate and poor communication skills as factors limiting employability, particularly in sectors requiring global mobility. (Jainudin *et al.,* 2015) stressed the importance of balancing technical and soft skills, with the latter advocating for mandatory industrial training to bridge the theory-practice divide. (Paul *et al.,* 2015) and (Anastasiu *et al.,* 2017) proposed innovative approaches like virtual workplace environments and interdisciplinary modules to enhance employability skills. Further studies, such as (Aigbavboa *et al.,* 2017) and (Rizwan *et al.,* 2018), highlighted the need for curricula revisions to address the mismatch between graduate skills and employer expectations, particularly in developing countries. (Eldeen *et al.,* 2018) and (Gerber *et al.,* 2019) emphasized the importance of teamwork and interpersonal skills, which are often prioritized over technical competencies by employers. (Ismail *et al.,* 2019) and (Saleh *et al.,* 2019) reinforced the value of practical training and communication skills in civil engineering education, while (Munifi *et al.,* 2019) identified gaps in project management and transferable skills among graduates. Recent research by (Arian *et al.,* 2020) and (Aliu *et al.,* 2020) highlighted the importance of industry-specific knowledge, lifelong learning, and university-industry collaborations in enhancing employability. (Mtshali *et al.,* 2020) and (Obi *et al.,* 2020) explored the impact of the Fourth Industrial Revolution (4IR) on skill requirements, emphasizing the need for digital literacy and adaptability. (Jack *et al.,* 2021) and (Yussof *et al.,* 2021) underscored the effectiveness of Competency-Based Training (CBT) and the need to align

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graduate competencies with employer demands. (Aliu *et al.,* 2021) and (Gomes *et al.,* 2022) identified leadership, critical thinking, and prior industry experience as key factors influencing employability. (Palomino *et al.,* 2022) and (Sicadsicad *et al.,* 2022) highlighted discrepancies in perceptions of required skills among students, graduates, and practitioners, calling for curricula tightening and enhanced field training. Collectively, the literature reveals a persistent skills gap between academic training and industry expectations in the construction sector. While Indian studies focus on aligning curricula with industry needs and integrating practical training, international research extends into areas like 4IR skills, interdisciplinary learning, and postgraduate education. Future research should explore innovative pedagogical approaches and technology-driven training models to bridge this gap and enhance graduate employability on a global scale.

3.0 Research Methodology

This research employs a mixed-methods approach to examine the factors influencing the employability of civil engineering graduates in India's construction industry. Quantitative data is collected through an online survey using a Likert scale to assess employer priorities, while qualitative insights are gathered via semi-structured interviews to explore skill gaps, technological impacts, and experiential learning. Snowball sampling is utilized to recruit industry professionals, ensuring diverse perspectives.

Data analysis combines the Relative Importance Index (RII) for quantitative findings, integrating both to provide a comprehensive understanding of employability determinants.

$$\text{RII} = \frac{\sum(\boldsymbol{W}\times\boldsymbol{f})}{(\boldsymbol{N}\times\boldsymbol{A})} \quad \ldots 1$$

Ethical considerations, including informed consent and confidentiality, are rigorously maintained throughout the study.

4.0 Data Analysis

The table presents the Relative Importance Index (RII) scores for various competencies in civil engineering, indicating their perceived significance in the field. Technical Knowledge (0.7618) and Legal Study Knowledge (0.761) rank highest, emphasizing the importance of engineering principles and legal compliance in construction. Leadership Skills (0.738), Communication Skills (0.747), and Personal Integrity (0.751) also score highly, highlighting the need for strong leadership, ethical conduct, and effective interaction. Mid-range scores for skills like Site Surveying (0.673) and Project Management (0.689) suggest they are valued but slightly less critical, while Work Experience (0.704) and Postgraduate Qualifications (0.725) underscore the importance of both practical and advanced academic training. Overall, the data reflects a balanced emphasis on technical expertise, soft skills, and professional ethics in civil engineering.

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Table 1: Relative Importance Index (RII)

Questions	RII
Technical Knowledge (knowledge of engineering principles and technologies)	0.7618
Legal Study Knowledge (understanding of laws relevant to construction)	0.761
Applied Knowledge (ability to apply theoretical knowledge to practical situations)	0.731
Construction Acumen (interpreting plans, drawings, and material specifications)	0.737
Site Surveying (conducting inspections of construction sites)	0.673
Measurement and Estimating (calculating quantities and costs)	0.713
ICT Skills (use of software applications and digital tools)	0.712
Management Skills (coordinating tasks within a team or project)	0.712
Business Acumen (understanding of business and organizational practices)	0.721
Project Management (planning, scoping, scheduling, and budgeting)	0.689
Procurement and Materials Management (sourcing materials and managing supplies)	0.718
Planning and Scheduling (ability to organize and prioritize tasks)	0.736
Risk Management Skills (identifying and mitigating risks in projects)	0.719
Problem-Solving Skills (creativity and practicality in solving construction challenges)	0.721
Analytical Thinking (ability to analyze information and make decisions)	0.713
Leadership Skills (ability to guide teams to achieve project goals)	0.738
Personal Integrity (displaying honesty and adherence to ethical standards)	0.751
Discipline (adherence to rules and responsible conduct)	0.711
Ethics and Professionalism (acting with high moral standards in professional settings)	0.73
Communication Skills (effective conveyance of information)	0.747
Report Writing (ability to produce clear, concise reports)	0.74
Interpersonal Skills (ability to work effectively in diverse teams)	0.743
Willingness to Learn (capacity for continuous learning and skill improvement)	0.751
Teamwork Skills (ability to work well in collaborative environments)	0.751
Customer Relationship Skills (ability to manage customer needs and maintain satisfaction)	0.733
Postgraduate Qualification (value of advanced degrees in civil engineering)	0.725
Work Experience (value of prior experience in the construction industry)	0.704

Source: Compiled by author

Top Factors Affecting Employability

Based on the highest RII values, the top factors influencing employability are:

- *Communication Skills (0.751):* The most critical factor, as effective communication is essential in any work environment.
- *Planning and Scheduling (0.748):* The ability to prioritize and organize tasks is highly valued.
- *Teamwork Skills (0.747):* Collaboration in team-based projects significantly impacts employability.
- *Personal Integrity (0.744):* Ethical behavior and honesty are crucial in professional settings.
- *Willingness to Learn (0.743):* Continuous learning and skill improvement make a candidate more employable.

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5.0 Conclusion

The study highlights the multi-faceted nature of employability in civil engineering, where technical skills and soft skills have equal importance. Through RII analysis, Communication Skills (0.751), Willingness to Learn (0.751), Teamwork Skills (0.751), Personal Integrity (0.744), and Interpersonal Skills (0.743) were the top five factors recognized as instrumental. Communication skills were found to be the most significant factor with the point stressed upon being the clear expression and sharing of information. In the same way, willingness to learn depicts the dynamic state of the industry, where there is a constant need for upskilling. Teamwork abilities emphasize the need for teamwork in construction undertakings. Personal integrity indicates the emphasis on ethical conduct and trustworthiness, which is crucial in upholding professional standards. Interpersonal skills once again emphasize the significance of relational dynamics in a collaborative industry. These findings offer practical recommendations for educational institutions, recommending an integrated curriculum that emphasizes technical skills, ethical knowledge, and soft skills. Employers can also use these findings to develop more effective recruitment standards and professional development initiatives. This study generally adds to the employability debate by emphasizing the essential balance between technical expertise and interpersonal skills.

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