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Aligning HR Innovation with Industry Strategies: Enhancing Technical Graduate Employability through Industry-Institute Engagement Practices

Keerthi H K [*1] and Shashikumar R [†2]

[1]Assistant Professor, Nitte Meenakshi Institute of Technology, Bangalore, India
[2]Assistant Professor, Government First Grade College, Yelahanka, Bangalore, India

Abstract

This study aims to investigate the strategic approaches utilized by industries to enhance the employability of graduates through industry-institute engagement practices, seeking to understand the effectiveness of these strategies in addressing the increasing demand for skilled technical graduates with high competitiveness and employability skills. Employing a cross-sectional research design, the study was conducted in the Peenya Industrial area from December 2022 to March 2023, focusing on its high concentration of engineering industries. A quantitative approach was used to survey 120 executives from Peenya involved in recruiting engineering graduates, utilizing a structured questionnaire to assess strategies like placement cell activities, social media use, and entrepreneurial training. Data analysis involved descriptive statistics and ANOVA.

Results indicates that placement cell activities are the most employed strategy (63.3%), followed by social media (21.7%) and college databases (11.7%), with entrepreneurial training and Centers of Excellence being less utilized. While age did not significantly affect perceptions, firm size did, particularly regarding entrepreneurial training effectiveness. The study highlights the increasing demand for skilled technical graduates and the challenges in ensuring their readiness for employment, emphasizing the predominant use of placement cell activities, social media, and college databases in recruiting engineering graduates. It underscores the need for aligning HR innovation with industry strategies and collaborative efforts to enhance technical graduate employability.

Keywords: Industries. Employability. Technical graduates. Strategic approaches. Industry Institute Engagement. Effectiveness. Skilled technical graduates. Competitiveness. Employability skills.

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1 Introduction

Technical education plays a pivotal role in India's overall development, with a growing demand for skilled manpower and the importance of collaboration between industry and educational institutions. This collaboration is crucial for the nation's advancement in key areas that form the pillars of the Knowledge Index. To elevate India's standing in the global knowledge index, there

*Email: Keerthi.hkrishna@gmail.com
†Email: brshashi.gowda@gmail.com

is a pressing need for well-qualified technical personnel. Such manpower can be nurtured through close collaboration between industry and higher education institutions, fostering innovation and research.

Globalization has brought about significant changes in the Indian economy, including technological advancements and shifts in trading practices, impacting businesses. Consequently, industries have increasingly relied on academia for support. However, there is a growing concern about the rising number of unskilled and unemployed youth due to the current education system's inadequacies (Mittal & Raghuvaran, 2021). To address this issue, there is a need for government and educational institutions to formulate policies focusing on industry-academia partnerships. Higher education institutions can take proactive measures such as collaborating on research and development initiatives with industry, establishing memoranda of understanding (MOUs) for additional courses, providing on-the-job training, and implementing a Performance-Based Appraisal System (PBAS) for faculty based on industry engagement (Gandhi, 2014).

Educational institutions serve as the primary source of human resources for industries, with numerous technical institutions in India supplying manpower to various sectors. Technical education is considered a key area in India's development, given the rapid changes in business needs and the technological landscape, which require specific skill sets for organizational adaptation (Jain et al., 2023). However, aligning industry demands with academic training is crucial for better employment prospects. This alignment can be achieved through continuous and robust interaction between industry and institutes. Research on Industry-Institute Collaboration (IIC) in India is still in its early stages, as noted by Ananthanarayanan, Chellamuthu, and Gnanappa's (2014).

Effective collaboration between industry and institutes can be realized through various forms, such as general collaboration, academic-level collaboration, institutional support collaboration, service-type collaboration, cooperative-type collaboration, and student-level collaboration. Social media usage also plays a role in employment practices, with job search boards, connections/groups, and privacy emerging as key themes identified in a study by (Mittal2023; Brittne, 2021).

Studies conducted in India underscore the importance of industry-institute engagement in graduate employment. Revana, Ramakrishna, and Madhav's (2014) highlight the increasing relevance of Industry Institute Interaction, suggesting various methods such as industrial visits, mini projects, internships, major projects, placements, and apprenticeships. Such interactions benefit both industry and academic institutes by sharing best practices, advancements in technology, and improving teaching and learning practices through industrial exposure (Okr glicka, Mittal, & Navickas, 2023; Padma & Sridhar, 2015).

This study aims to bridge the gap between industry and institutes to enhance employment opportunities. The study examines the strategic approaches that industries use to improve the employability of engineering graduates through engagement with institutes, taking into account the impact of firm size and respondent age. The hypothesis posits that various strategies adopted by industries significantly differ, and demographic variables significantly influence them.

2 Materials and Methods

2.1 Sample

A total of 120 respondents from the Peenya Industrial area in Bengaluru were randomly selected. These respondents were high-level executives actively engaged in the recruitment of engineering graduates.

2.2 Tool Developed and Administered

A structured inventory was created to evaluate the strategies employed by industries in hiring engineering graduates through different industry-institute engagement practices. Initially, a broad array of strategies was compiled, and the inventory's validity was evaluated by experts in commerce, business management, human resource management, and statistical consultants. After validation, 18 strategies commonly used by industries were retained and categorized into five major strategic drives: use of social media, entrepreneurial training, use of college databases, placement cell activities, and centers of excellence and corporate research chairs. Respondents were required to read each strategy and choose one of the options provided on a 5-point Likert scale: "All the time," "most of the time," "sometime," "Once in a while," and "never". The table below presents the details of the tool, including the different strategic drivers, number of statements, and reliability indices (obtained through Cronbach's alpha).

Table 1. Reliability statistics for Strategic Drives

Strategic Drives	No. of Statements	Cronbach's Alpha
Centre of Excellence and Corporate Chairs	2	0.834
Placement cell activities	7	0.882
Entrepreneurial training	3	0.835
Use of college databases	3	0.821
Use of social media	3	0.830
Total	18	0.955

Source: Author's Compilation

For the statements concerning individual strategic drivers, the reliability coefficients calculated using Cronbach's alpha method were notably high, ranging from 0.821 to 0.882. The overall reliability coefficient for all the statements was 0.955, indicating that the tool used in the study to assess the strategic drives by industries through industry-institutional interaction was highly reliable (see table 1.

2.3 Procedure

Using random sampling technique 120 respondents were selected from Peenya Industrial area of Bengaluru. They were required to have at least 6 months of industry experience and involvement in regular recruitment activities. The respondents were informed about the confidentiality of their responses. They were then given a questionnaire regarding the strategic approaches used by industries to hire engineering graduates through industry-institute engagement practices. To prevent any unforeseen errors, the survey instrument was pre-tested.

2.4 Statistical Analysis

Both descriptive and inferential statistics were employed in the study. There was application of descriptive statistics, such as mean, standard deviation, percentage, and rankings. Scheffe's post hoc test and one-way ANOVA were used. The significance of mean variations between respondents in different age groups and company sizes with respect to industry-institute engagement practices' techniques for hiring engineering graduates was assessed using a one-way ANOVA. When there was a significant F value, Scheffe's post hoc test was employed for multiple comparisons of mean values. For data analysis, SPSS version 20 for Windows was used.

3 Results and Discussion

3.1 Ranking of Strategic Drivers

Table 2. Descriptive statistics and rankings for various strategies employed by the industries

Strategic Drive	Mean	S.D.	Percent (%)	Rank
Centre of Excellence and Corporate Res. Chairs	7.06	1.92	70.6	5
Use of college databases	11.31	2.24	75.4	3
Placement cell activities	26.95	4.87	77.00	1
Entrepreneurial training	10.95	2.65	73.00	4
Use of social media	11.50	2.48	76.67	2

Source: Author's Compilation

The findings show that "Placement cell activities" were rated the highest among the strategies utilized by industries for recruiting engineering graduates through industry-institute engagement practices (see Table 2). This was followed by the use of social media and college databases. In contrast, entrepreneurial training and the use of Centre of Excellence and Corporate Research Chairs were ranked the lowest. These findings suggest that activities such as companies meeting students formally during placement talks, senior leaders delivering presentations to students, and companies participating in job fairs were highly valued strategies. Conversely, activities such as setting up company-sponsored research chairs and providing career or internship opportunities based on students' knowledge and skills were ranked the lowest.

The results of the one-way ANOVA indicated that there were no significant mean differences between respondents of different age groups in their scores for all the strategies used by industries to hire technical graduates through various III practices. The F values for mean differences for the strategies - Use of social media (F=2.061; p=.109), Entrepreneurial training (F=1.976; p=.121), Use of college databases (F=1.006; p=.393), Placement cell activities (F=1.676; p=.176), and Centre of Excellence and Corporate Research Chairs (F=1.834; p=.145) - were all non-significant (see table 3). This confirms that respondents' age group did not significantly influence their scores for all the strategies used by industries to recruit engineering graduates through various industry-institute engagement practices.

3.2 Mean scores for strategies employed by industries

The firm or organization size is significantly influenced only one strategy, "Entrepreneurial training," with a significant F value of 3.068 at the 0.019 level. The mean values indicate that firms with a size of 101-150 had the highest score of 13.67, while those with a size of 51-100 had the lowest score of 9.80, with others falling in between. This pattern was further validated by Scheffe's post hoc test. However, the F values for mean differences for the strategy "Use of social media" (F=1.718; p=.151), Use of college databases (F=1.628; p=.172), Placement cell activities (F=1.027; p=.396), and Centre of Excellence and Corporate Research Chairs (F=1.557; p=.191) - were all non-significant (see table 4). This confirms that, in hiring technical graduates, the size of the organization or firms does not significantly influence their scores for all the strategies employed by the industries through various industry-institute engagement practices.

Table 3. Mean scores for the strategies used by industries to hire engineering graduates through industry-institute engagement practices

Strategies	Age groups (years)	Mean	S.D.	F-value	P-value
Centre of Excellence and Corporate Research Chairs	18-25	6.94	2.93	1.834	0.145
	26-35	7.14	1.64		
	36-45	8.67	2.31		
	46-55	6.00	1.89		
Use of college databases	18-25	11.41	3.02	1.006	0.393
	26-35	11.28	2.09		
	36-45	13.33	2.89		
	46-55	10.80	1.81		
Placement cell activities	18-25	28.12	6.02	1.676	0.176
	26-35	26.79	4.60		
	36-45	31.33	6.35		
	46-55	25.10	4.28		
Entrepreneurial training	18-25	10.24	4.13	1.976	0.121
	26-35	11.16	2.25		
	36-45	13.00	3.46		
	46-55	9.70	2.31		
Use of social media	18-25	11.00	3.54	2.061	0.109
	26-35	11.69	2.17		
	36-45	13.33	2.89		
	46-55	10.10	2.60		

Source: Author's Compilation

3.3 Findings

- The usage of social media and college databases was placed second among the tactics employed by companies to hire technical graduates through industry-institute interaction techniques, with placement cell activities ranked in the top.
- "Entrepreneurial training" and the use of "Centre of Excellence and Corporate Research Chairs" ranked lowest in the strategies adopted by Industry-Institution engagement practices.
- The age of the respondents did not significantly influence their scores for all the strategies employed by industries in hiring engineering graduates through various industry-institute engagement practices.
- The size of the firm had a significant influence over only one strategy, "Entrepreneurial training." Firms with a size of 101-150 had the highest score of 13.67, while those with a size of 51-100 had the lowest score of 9.80, with others falling in between.

These findings underscore the importance of industry-institute engagement practices in employing engineering graduates. Such interactions help students understand workplace expectations, the job application process, industry roles, operations, internships, networking opportunities, and potential jobs. The participation of both academics and industry professionals allows for an understanding of the transition from study to work. Students can identify skill gaps and seek training to upgrade their skills. As the next generation of college students prepares for higher education, institutions are facing budget cuts and pressure to increase fiscal efficiencies

and graduation rates. There is a growing emphasis on improving methods for attracting and retaining students (Schwieger & Ladwig, 2018).

The concept of employability has become a key focus of higher education strategies in numerous countries, aiming to equip students for the workforce. Responses to this concept vary widely from country to country and university to university, depending on their historical, political, and economic contexts. However, there has been limited research on these variations. Further investigation is necessary to understand the patterns of universities' approaches to graduate employment. Saito and Pham's (2021) used comparative institutional analysis as a framework to discuss differences in practices between Australian and Japanese universities in preparing students for employment. Australian universities have largely embraced a 'potential maximization mode,' concentrating on imparting technical knowledge and professional skills to enhance employability.

In contrast, Japanese universities have predominantly adopted a 'results maximization mode,' emphasizing the role of universities and academics in facilitating direct connections between students and industries or creating mentoring opportunities for students Employability is a shared responsibility among training institutions, current employees, potential employees, and employers. Institutes can collaborate with industries to provide hands-on training for students, helping them and faculty develop skills. This allows students to gain work experience and engage in experiential learning, leading to greater satisfaction and happiness. Such interactions improve employability, and faculty benefit from industry exposure through Industry-Institute Interaction. Faculty should engage with industry to enhance students' skills. Industry-Institute Interaction should be expanded to higher levels (Anilkumar et al., 2015). Smith's (2010) argues that maintaining employability is crucial in the twenty-first century due to job market turbulence and unpredictability. There are three mechanisms that can enhance employability: identity work, training and networking, and working in unpaid or low-paid positions. Understanding how employability-enhancing activities relate to actual employment is essential. The Employee-Educator-Employability-Employer (4E) framework provides insights into understanding roles in the labor market and working collectively to enhance employability. A detailed breakdown and taxonomy of skills and attributes required to promote employability, focusing on both future and existing employees, and studying systems, processes, and policies used in employability can create a conducive environment for all (Pheko & Molefhe, 2017).

Table 4. Mean scores for strategies employed by industries to recruit technical graduates through industry-institute engagement

Strategies	Size of the firm	Mean	S.D.	F-value	P-value
Centre of Excellence and Corporate Research Chairs	<50	6.65	2.04	1.557	0.191
	51-100	6.00	2.83		
	101-150	9.00	1.73		
	151-200	7.29	1.44		
	>200	7.15	1.87		
Placement cell activities	<50	26.92	4.08	1.027	0.396
	51-100	24.60	7.80		
	101-150	31.67	5.77		
	151-200	26.50	3.82		
	>200	27.01	5.05		
Entrepreneurial training	<50	10.38	2.47	3.068	0.019
	51-100	8.00	5.52		
	101-150	13.67	2.31		
	151-200	11.50	1.61		
	>200	11.14	2.49		
Use of college databases	<50	11.15	2.03	1.628	0.172
	51-100	9.80	3.90		
	101-150	13.67	2.31		
	151-200	10.93	1.98		
	>200	11.44	2.19		
Use of social media	<50	11.27	2.38	1.718	0.151
	51-100	9.40	4.67		
	101-150	13.67	2.31		
	151-200	11.21	1.89		
	>200	11.69	2.40		

Note: Mean values with different superscripts are significantly different from each other, as indicated by Scheffe's post hoc test (alpha = 0.05).

Source: Author's compilation

4 Conclusion

It is suggested that the higher education system in India should transition from an approach of 'education for the sake of education' to one focused on 'education for employment,' emphasizing "sustainable employability skills," reskilling, and upskilling. A significant number of graduates in India require training in skill development, as the knowledge base among graduates is low. The industry is experiencing rapid changes due to increasing automation, leading to shifting needs. Employability skills vary between students from Tier I and Tier II institutes. Factors such as gender and location also influence employability. Efforts have been made in India to establish linkages between academia and industry, with promising initial results. Programs need to be carefully planned and organized, with effective monitoring and realistic scheduling. The responsibilities of both partners need to be clearly defined, and there should be open communication between them. The involvement of placement cells and the use of databases in academia should be emphasized more to enhance the employability of engineering graduates in various sectors.

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