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Employability of Engineering Students -A Study on The Cognizance of The Students and Their Prospective Employers

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Abstract

Purpose of this paper is to study the perception of Employers as well as employees towards employability skills required for Entry level engineering graduates in multinational software companies. It is an exploratory study. The study revealed that there is significant difference between the perception of students and their employers. It is this disparity makes the students unemployable. Literature and research about the employability skills of Indian engineers are rare in nature.

***Keywords**: Employability, engineering graduates, employers, perception.*

1. Intoroduction

Skill development and entrepreneurship efforts across the country have been highly fragmented so far. As opposed to developed countries, where the percentage of skilled workforce is between 60% and 90% of the total workforce, India records an abysmal 4.69% of workforce with formal vocational skills. There is a need for speedy reorganization of the ecosystem of skill development and entrepreneurship promotion in the country to suit the needs of the industry and enable decent quality of life to its population.

Recognizing the need and urgency of quickly coordinating the efforts of all concerned stakeholders in the field of Skill Development and Entrepreneurship, according to the needs of the Industry, Government of India notified the formation of the Department of Skill Development and Entrepreneurship on 31st July, 2014. The department was subsequently upgraded to a full fledged Ministry of Skill Development and Entrepreneurship on 9th Nov, 2014. As per the opinion of several stakeholders including several states AICTE should championing the cause of better education rather than more number of engineering colleges. Colleges are now showing deep interest in employability improvement and are adopting the idea of employability assessment from the first year onward to identify gaps and fill them.

2. Employability vs. Employment

Despite of a good percentage of engineers being employable, only a fraction of the lot is actually employed. Our last two editions of National Employability Report have successfully thrown light on the abyss between employability and employment of engineers. On similar lines, we have analyzed this variance for the 2015 batch of engineers who had taken AMCAT during their final year.

The analysis has been done on a sample of 27,000 engineering students across India with a good mix of engineers from different tiers of colleges, tiers of cities, metros/non-metros, engineering disciplines and other demographic schisms. A questionnaire pivoted around parameters affecting

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employment outcomes of engineers was designed and rolled out to this sample during May-June'15, at a time when bulk of entry-level employment had taken place.

A significant part of this analysis revolves around examining the percentage of engineers at various stages of the selection process beginning from getting an interview opportunity to finally getting the job in-hand. We thereafter study the gaps across the stages and try to see them across the prism of demographics like branch of study, gender, tier of college and tier of city of the candidate.

2.1 Employability vs. Employment Outcome

	Employable	Got an Interview Opportunity	Reached Final Round	Employed	Avg Salary (INR '000)
Engineers	19.11%	72.64%	51.66%	19.91%	313

Observation:

- A total of 19.91% engineers get employed despite of only 19.11 % engineers being employable.
- About 27% of the engineers did not even get an interview opportunity and this figure increases for the percentage of engineers who could make it to the final round.

2.2 By Branch of Study

Branch of study	*Employable*	Got an Interview Opportunity	Reached Final Round	Employed	Avg Salary (INR '000)
Computer/IT	*18.37%*	75.27%	53.83%	22.38%	308
Circuit Branches	*19.53%*	71.83%	51.03%	18.35%	308
Core Engineering	*20%*	67.86%	47.62%	17.26%	341

Observation:

- The employability of engineers from all branches is similar and so is the corresponding average salary for the three branches. The slight increase towards the higher side in employable and average salary figures for Core Engineering branch might be a function of a lesser sample size (relative to sample size for the other two branches).
- Despite similar employability of engineers from all the branches, computer/IT engineers get hired the most.
- The percentage of engineers getting an interview opportunity, reaching the finalound and finaly being employed is the highest for engineers from Computers/IT background, followed by Circuit branches.

2.3 By Gender

Gender	*Employable*	Got an Interview Opportunity	Reached Final Round	Employed	Avg Salary (INR '000)
Male	18.74%	71.02%	51.17%	20.00%	318
Female	19.97%	76.40%	51.17%	19.69%	303

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Observation:

- Males and females are equally employable and have similar employed percentages though the hiring practices seem to be skewed in favor of females as the percentage of females getting an interview opportunity and reaching the final round is more than that for males.
- The average salary figures for males are slightly better than those calculated for females. This trend is in-line with last year's analysis.

3. Objectives of the Study

This paper is focusing on the Employability skills of engineering graduates in India. The aim of the paper is to identify the skill gap of engineering graduates who wish to join in Software Industry. The paper was developed based on the data collected for the pilot study of the research in which the author is engaged. To conduct this study the author has used major models of employability framework developed by countries like Australia (Hillage J, 1999)Japan (Nguyen Danh Nguyen, 2005) Malaysia (Azami zaharim, 2009)and the framework developed by World Bank (Andreas Blom, 2011).

The following are the objectives of the study

- To critically identify the perception of employers towards engineering employability skills.
- To Identify the perception of the engineering graduates towards employability skills
- To Identify the gap between the perception of students and professionals.
- To Identify whether gender and work experience affects the employability skills of graduates.

4. Review of Literature

Padmini.I (2012) in her study entitled "EDUCATION VS EMPLOYABILITY- THE NEED TO BRIDGE THE SKILL GAP AMONG THE ENGINEERING AND MANAGEMENT GRADUATES IN ANDHRA PRADESH" had studied that the HR in term of quality and quantity are India's biggest assets, to gear up education system through various innovative and initiatives.

Varwandkar Ajit (2013)12 in his study entitled "FACTORS IMPACTING EMPLOYABILITY SKILLS OF ENGINEERS" concluded that, the means of the variables domain knowledge, empathy, communication skills & managerial ability have significant impact on the employability of engineering graduates. However the independent variable 'Motivation' has not been observed to have made any significant impact on the employability of engineering graduates.

Chithra. R (2013)15 had conducted study on "EMPLOYABILITY SKILLS -A STUDY ON THE PERCEPTION OF THE ENGINEERING STUDENTS AND THEIR PROSPECTIVE EMPLOYERS". The study reveals that there is significant difference between the perception of students and their employers. The study concluded that, the students with work experience have better awareness of the employability skills than the students with no work experience. Enhancing the skills and application of knowledge through specific training will enable the workers to perform their jobs in the best possible manner and that is the need of the hour.

Aspiring Minds (2016) did the large scale study of employability of engineers in 2014. They

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had found that only 18.43% of engineers were employable for the software services sector, 3.21% for software products and 39.84% for a non-functional role such as Business Process Outsourcing. Unfortunately, they see no massive progress in these numbers. These numbers as of today i.e 2016 stand at: 17.91%, 3.67% and 40.57% respectively for IT Services, IT Products and Business Process Outsourcing. This is despite the fact that the number of engineering seats have not increased in the past year.

Since most of the studies focus on the perception of employers, the author has given due importance to graduate's perception and attribute. In this study, factors like gender and work experience have taken into consideration.

5. Research Design

It is an exploratory study. The author has developed two questionnaires referring various skill framework and have identified 25 skill set as skill inventory. The skill set was classified according to the model developed by World Bank for the study of employability skills of engineering graduates in India. (Andreas Blom, 2011).There were 240 students participated in the survey. All the students were in the final year of their graduate and post graduate engineering studies. The Response rate for the graduate students was 75% (180/240).The author also has conducted a study to know the perception of the employers towards employability skills. 130 professionals were identified as employers and of that 70 people were participated in the survey. Response rate was 54 % (70/130) in the case of employers. Structured cluster sampling and snow bowl sampling were used for the study.

The area of study is Baddi, Barotiwala and Nalagarh and professional colleges/universities located within sphere of 75 km.

***6.* Data Analysis & Interpretation:**

6.1 Demographic statistics of Employers

There were 70 professionals responded to the survey. Demographic details of the professionals are as follows.

6.1.1 Demographic statistics (Employer size)

Table 1:-Classification of Employers Based on the size of the Employers.

Employer size	Number	Percentage
Large (10000 and above)	10	14.29
Medium(5000-10000)	20	28.57
Small(100-5000)	40	57.14
Total	70	100

It was found that majority of the respondents were from Small (57.14%), and medium (28.57%) organizations. Rest of the (14.29%) participants was from large organizations.

6.1.2 Work experience (Gender-wise)

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Table 2: Work Experience of the employers (Gender- wise).

Work Experience	Male	Female	Total	Percentage
3<5	8	16	24	34.29
5<8	12	18	30	42.86
8<10	4	6	10	14.28
10 years & Above	6	0	6	8.87
Total	30	40	70	100

The author has selected software professionals and human resource personnel with more than 3 years of work experience in software companies. It was found that 8.87% professionals were having experience of 10years & above, around (42.86%) of the candidates were having 6< 8 years of work experience.

6.2 Descriptive statistics of the students are as follows:-

6.2.1 Demographic statistics of the Graduates (Age and Gender)

Table 3: Graduates Age & Gender

Age	Male	Female	Total	Total (%)
21	26	48	74	41.11
22	18	12	30	16.67
23	20	24	44	24.44
24	4	6	10	5.56
25	4	4	8	4.44
26	2	6	8	4.44
27	2	0	2	1.11
28	4	0	4	2.22
Total	80	100	180	100

It was evident from analysis that majority (82.2%) of the respondents were in the 20-22 year age group. There were 40 male respondents and 50 female respondents participated in the survey. (14.44%) of the respondents were in 23-25 years category and rest (3.33%) of the candidates were in 26-27years age group.

6.2.2 **Demographic statistics of the Graduates (Classification on the Basis of Medium of Education & Gender)**

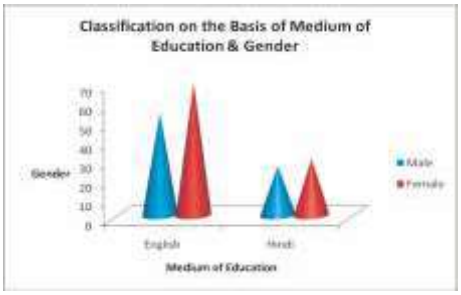

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Fig 1: Classification on the Basis of Med of Education & Gender

It was evident from analysis that majority (68.89%) of the candidates completed their schooling in English medium and (31%) of the candidates finished their schooling in their respective mother tongue. (67%) of the male graduate students and (70%) of the female graduate students did their schooling in English medium. Male graduates and female graduates who had completed their schooling in their respective mother tongue were (32.50%) and (42%) respectively.

6.2.3 Demographic Statistics (Educational qualification)- Classification on the Basis of Educational Qualification & Gender

Table 4- Educational Qualifications

Education	Male	Female	Total	Percentage
B.E	48	42	90	50
B.Tech.	18	44	62	34.44
M.E.	13	2	15	8.33
M.Tech.	1	12	13	7.22
Total	80	100	180	100

It was evident from analusis that maximum number of the respondents were pursuing for their final year Bachelor of Engineering (BE) degree (50%) and Bachelor of Technology (B Tech) degree (34.44%), followed by Post graduate students (15.56%).

6.2.4 Demographic statistics (Work experience-Gender wise)-Classification on the Basis of Work Experience & Gender

From the following Fig No 2, it was evident that majority of the respondents have no previous work experience. This gave a better picture of the perception of newly graduates' towards employability skills. Figure 2 represents demographic statistics of graduate students. Out of the 80 male respondents only 16 (20%) students had work experience. In the case of female respondents Only 12 (12%) respondents had work experience

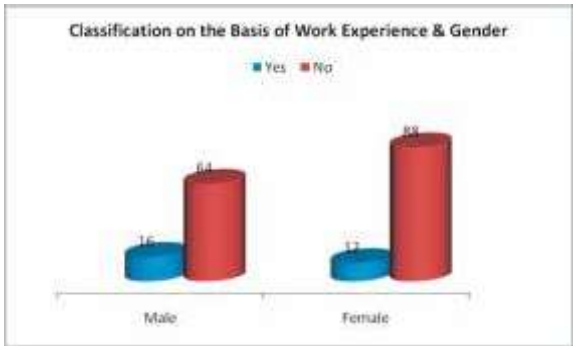

Figure 2: Classification on the basis of Work Experience and Gender

6.2.5 Top 10 Employability skills according to Employer and Graduate students

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Table -5- Top 10 Employablity Skills Employers Vs Students

Employer			Students		
Skills	Mean	S.D.	Skills	Mean	S.D.
Reliability	9.74	1.76	Basic Computer Skills	9.56	1.38
Integrity	8.9	1.86	Technical Skills	9.5	1.32
Practical Knowledge	8.8	1.9	Use of Modern Tools	9.46	1.32
Communication	8.82	1.86	Communication	9.42	1.28
Teamwork	8.7	1.76	Advanced Computer Skills	9.3	1.18
Willingness to Learn	8.52	1.36	System Design	8.8	1.42
Selfdiscipline	8.52	1.58	Responsibility	8.4	1.34
Entrepreneurship	8.44	1.72	Discipline	8.22	1.38
Flexible	8.3	1.8	Creativity	8.2	1.36
Understanding	8.28	1.92	Application of knowledge	8.2	1.54

It was evident from above analysis that employers gave due importance to behavioural skills whereas students gave importance to technical skills. Top ranked skills like reliability, integrity, practical knowledge were not in the top ranks of students' rating. This difference in the perception points out the need for creating awareness among the students about engineering employability skills.

Conclusion

The study shows that there is a strong need for awareness among the Indian graduates to know the employability skills required by the global talent market. The graduates cannot be blamed for the reason, rather academic institutions providing higher education will have to take the responsibility and update the curriculum at regular interval to cater the needs of the industry. Further, there should be long and sustainable plan to train our young graduates to raise their bar to attain jobs in the global talent market. It is essential to increase the industry-academia contact so that induxtry expectations can be met with. In nowadays competitive era besides earning the basic professional degree, the students should attain practical knowledge by working on live projects and doing additional certification programmes. This will assure regular supply of talent to the global talent workforce. The research shows that the students with work experience have better awareness of the employability skills than the students with no work experience. Enhancing the skills and application of knowledge through specific training will enable the workers to perform their jobs in the best possible manner and that is the need of the hour.

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