

# Employability Among Engineering Students In Their Core Areas

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**Abstract-** my study is on employability among engineering students need for the study is to know how many engineering students are employed in their core areas. And to know what are the factors effecting the employability.

## I. INTRODUCTION

Education in its general sense is a form of learning in which the knowledge, skills, and habits of a group of people are transferred from one generation to the next through teaching, training, or research. It frequently takes place under the guidance of others or may also be autodidactic. Any experience that has a formative effect on the way one thinks, feels, or acts may be considered educational. It is really a means to discover new things which we don't know about and increase our knowledge. Education is also regarded as one that contributes to social, political and cultural and economic transformation of a country. The social sector of a country, namely, health, rural development, education and employment generation has assumed great significance in the new economic regime. The prosperity of any nation is intrinsically linked to its human resources. Human capital is one of the most important assets of a country and a key determinant of a nation's economic performance. An increase in the human development index would lead to high levels of economic growth of the country. Adam Smith (1776) pointed out that a "man educated at the expense of much labour and time may be compared to one of those expensive machines" (Smith) and other classical economists observed that expenditure on education could be regarded as a form of investments that promised future benefits. The strength of a nation is dependent on its intellectual and skillful citizens. It can be observed that education is an essential tool for achieving sustainability. Only a quality future human capital can envision development of its nation to meet the needs of the present without compromising the ability of future generations to meet their own need

According to the recent employability survey 2019, a shocking series of revelations is finding that 80% of engineers are not fit for any job in knowledge, economy, and 2.5% only of them possess technical skills in Artificial Intelligence that industry requires.

Fresh graduates are becoming more employable and job-readiness among engineering students is improving finds a survey by the All India Council for Technical Education, the confederation of Indian industry, the UN development programme and HR consulting firms. The results challenge the perception that poor employability is affecting the hiring markets in India.

The survey shows that most of the core higher education domains are showing more improvements in graduate employability.

AICTE said that this year, employability score has taken a big leap as compared to last year. Among states, Delhi was on top with nearly 75% of its graduates being termed as employable. Other than the capital city, Karnataka, Maharashtra, Kerala, Punjab, Tamil Nadu are the top states in terms of graduate employability.

Survey conducted jointly by Confederation of Indian Industries (CII), All India Council of Technical Education (AICTE), united Nations Development program, leading human resource consultancy people strong and skill assessment firm said that this year, employability score has taken a big leap as compared to last year.

Employability growth is 33.95% in year 2014, 38.12% in year 2015, 45.6% in year 2018. Delhi was on top with nearly 75% of its graduates being termed as employable. New Delhi, Bangalore, Mumbai, Hyderabad, Chennai are the top states in terms of graduate employability.

Fresh graduates often termed largely unemployable, were found to have 52% employability. Only 3.84% of engineers in the country have the technical, cognitive, linguistic skills required for software related jobs in startups.

Out of 150000 engineering students, only 7% suitable for core engineering jobs. 97% of graduating engineers want jobs either in software and core engineering. Only 3% have suitable skills to be employed. 7% students handle core engineering jobs.

## II. LITERATURE REVIEW

The review of literature clearly highlighted the presence of several main theoretical frameworks that attempts to identify the concept of employability of university graduates and its underlying factors. Among the many frameworks, the study done by Hillage & Pollard (1998) can be considered pioneering since for the first time it summarized all previous and existing ideas about employability. Accordingly employability has four main elements namely; assets, deployment, presentation, and contexts. Even though Hillage and Pollard (1998) employability model was instrumental in summarizing the ideas about employability, it did not explain the underlying factors of employability or their associations.

Many subsequent studies were conducted based on “employability skills” which are underlying skills factors that lead to graduate employability and, the theoretical framework presented by Cotton (1993) identifies a collection of basic, higher order and effective employability skills required by employers. The “employability skills model” has been the focus for many subsequent studies due to its simplicity and practicality.

According to Cotton’s model employability skills were categorized into three types: basic skills, higher order thinking skills, affective skills and traits. Skills model is considered by many as one of the earliest models of employability, which is based on the notion that employability depends on the skill levels of the individual, without any mention of other factors such as attitude, behavior.

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Academic interest in employability has been extensive during the period examined and our study appears to suggest that interest has grown across the period studied. Academics are wrestling with the nature of employability, its political implications, different models for delivering it and the relative efficiency of each of them. The literature has been drawn from a wide range of different disciplines, there is not much evidence that an inter-disciplinary conversation is being conducted. Much of the work on employability is being conducted within disciplinary silos. This leads inevitably to duplication and missed opportunities to build on findings elsewhere. This literature believe that the HEA can play an important role in improving inter-disciplinary dialogue on employability and hope that this literature review can play a role in this.

Employability is central to the strategic direction of the Department for Education and Employment (DfEE), (now the Department for Education and skills – DfES), (Hillage & Pollard, 1998). Government policy to enhance the employability of graduates is part of a wider strategy to extend the skills base in the UK (Coopers & Lybrand, 1998). This interest in employability is associated with human capital theories of innovation and economic performance. Growth in the stock of human capital is essential for economic growth, and hence the government’s agenda is driven by the desire to stem the ‘productivity shortfall’.

## III. RESEARCH METHODOLOGY

Statement of Research objective:

1. To find how many students are getting employment in their core area.
2. To find reasons for how many students are not getting employment in their core area.
3. To find which stream is getting more employability majorly placed in to core area.

#### Hypothesis:

- a. H01: There is no significant difference between scores of various employability skills among engineering students
- b. H11: There is significant difference between scores of various employability skills among engineering students.
- c. H02: There is no significant difference between expected and actual levels of employability skills perceived among Engineering students
- d. H12: There is significant difference between expected and actual levels of employability skills perceived among engineering students
- e. H03: There is no association between City and the initiatives taken by institutes to enhance the employability of students
- f. H13: There is association between City and the initiatives taken by institutes to enhance the employability of students.

#### Research methodology:

The study concentrated on information collected from Secondary sources.

#### Data Description:

#### Secondary Data:

Secondary data was collected from different news journals in order to understand the views of corporate recruiters on the quality of Engineers being graduated. Also information on Engineering Syllabi, the curriculum pattern and AICTE (the Governing Body of Technical Institutes in India) policy pertaining to Engineering studies was collected from their respective websites. A detailed literature review was conducted from all the available material.

The different secondary sources are:

1. Journals
2. Newspaper
3. Aspiring minds journals
4. National employability report
5. Articles

Secondary data is a type of data that has already published in books, newspapers, magazines, journals, online etc. There is an abundance of data available in these sources about the research area in business studies, almost regardless of the nature of the research area.

Therefore, application of appropriate set of criteria to select secondary data to be used in study plays an important role in terms of increasing the levels of research validity and reliability.

These criteria includes but not limited date of publication, credential of the author reliability of the source, quality of discussions, depth of analysis, the extent of contribution of the text to the development of research area etc.

In the National Employability Study by Aspiring Minds, this excerpt probes in to the employability by states. The study is based on AMCAT scores of more than 120000 technical graduates engineering students across the country. India's largest Employability test was conducted in more than 20 states under proctored environment.

Employability skills plays an important role for every engineering students. Employability skills are a set of skills and behaviours that are necessary for every job. Employability skills are sometimes called soft skills, foundational skills, work-readiness skills, or job-readiness skills. Employability skills are:

- communicate with co-workers
- solve problems
- understand your role within the team
- make responsible choices, and
- take charge of your own career

Personal qualities, habits, and attitudes influence to interact with others. Employers value employability skills because they are linked to get along with co-workers and customers, job performance, career success.

Overall, the improvement in employability factor will have 3 impacts:

1. Competitiveness of graduates improve.
2. More quality employment will be demanded.
3. Industries.

The National Employability Report has become India's most authoritative audit of engineering education, providing a comprehensive data-based understanding of the higher education and employment ecosystem.

This report conforms to the highest standards of scientific research methods and analysis.

Aspiring Minds is a global job skills credentialing leader set up with a vision to create a merit driven talent ecosystem and enable efficient job skills matching by crafting credible and intelligent assessments.

The data is collected from the article Economic times, India Today, business today.

**IV. DATA ANALYSIS**

The data was classified and tabulated on the basis of demographic factor. we have chosen the data of five years (2014-2018) of different metro cities to find how many are getting employability in their core area.

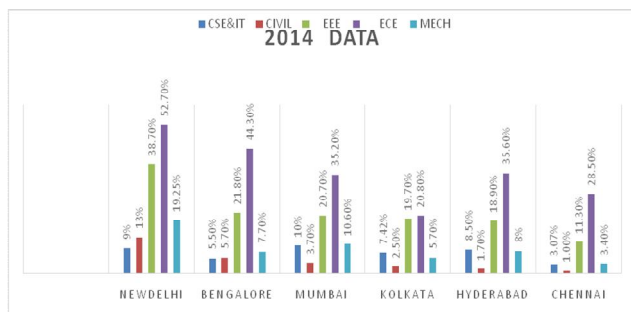
1. To find how many engineering students are getting employment in their core area.

A) Employability percentage of engineering graduates in different core area in the year 2014

**2014 DATA**

METRO CITIES	CSE&IT	CIVIL	EEE	ECE	MECH
NEWDELHI	9%	13%	38.70%	52.70%	19.25%
BENGALORE	5.50%	5.70%	21.80%	44.30%	7.70%
MUMBAI	10%	3.70%	20.70%	35.20%	10.60%
KOLKATA	7.42%	2.50%	19.70%	20.80%	5.70%
HYDERABAD	8.50%	1.70%	18.90%	35.60%	8%
CHENNAI	3.07%	1.00%	11.30%	28.50%	3.40%

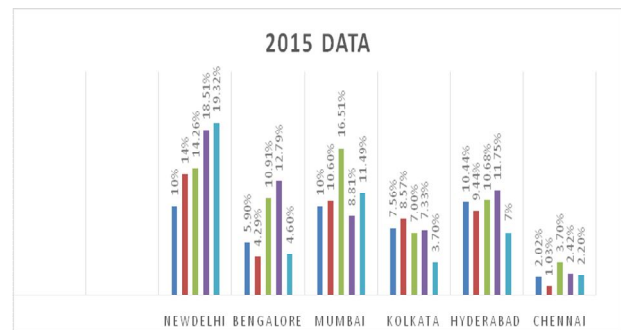
The study on employability across metros reveals higher employability in Delhi and Bangalore with employability for the ECE role as higher followed by other cities like Mumbai, Kolkata, Hyderabad, Chennai. The lowest employability figures across roles are observed in Hyderabad with employability for the mechanical as low as 8%



B) Employability percentage of engineering graduates in different core area in the year 2015

METRO CITIES	CSE&IT	CIVIL	EEE	ECE	MECH
NEWDELHI	10%	14%	14.26%	18.51%	19.32%
BENGALORE	5.90%	4.29%	10.91%	12.79%	4.60%
MUMBAI	10%	10.60%	16.51%	8.81%	11.49%
KOLKATA	7.56%	8.57%	7.00%	7.33%	3.70%
HYDERABAD	10.44%	9.44%	10.68%	11.75%	7%
CHENNAI	2.02%	1.03%	3.70%	2.42%	2.20%

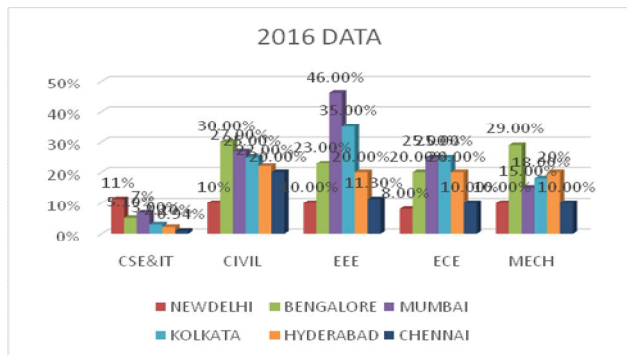
The study on employability across metros reveals higher employability in Delhi with employability for the ECE and Mechanical role as higher followed by other cities like Bangalore, Mumbai, Kolkata, Hyderabad, and Chennai. The lowest employability figures across roles are observed in Chennai with employability for the CIVIL as low as 1.03%.



C) Employability percentage of engineering graduates in different core area in the year 2016

METRO CITIES	CSE&IT	CIVIL	EEE	ECE	MECH
NEWDELHI	11%	10%	10.00%	8.00%	10.00%
BENGALORE	5.10%	30.00%	23.00%	20.00%	29.00%
MUMBAI	7%	27.00%	46.00%	25.00%	15.00%
KOLKATA	3.00%	25.00%	35.00%	25.00%	18.00%
HYDERABAD	2.20%	22.00%	20.00%	20.00%	20%
CHENNAI	0.94%	20.00%	11.30%	10.00%	10.00%

The study on employability across metros reveals higher employability in Mumbai and Kolkata with employability for the EEE role as higher followed by other cities like New Delhi, Bangalore, Hyderabad, and Chennai. The lowest employability figures across roles are observed in Chennai with employability for the CSE/IT as low as 0.94%.

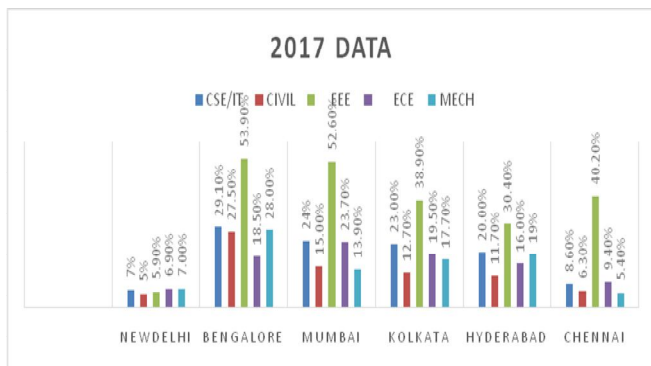


D) Employability percentage of engineering graduates in different core area in the year 2017

2017 DATA

METRO CITIES	CSE&IT	CIVIL	EEE	ECE	MECH
NEWDELHI	7%	5%	5.90%	6.90%	7.00%
BANGALORE	29.10%	27.50%	53.90%	18.50%	28.00%
MUMBAI	24%	15.00%	52.60%	23.70%	13.90%
KOLKATA	23.00%	12.70%	38.90%	19.50%	17.70%
HYDERABAD	20.00%	11.70%	30.40%	16.00%	19%
CHENNAI	8.60%	6.30%	40.20%	9.40%	5.40%

The study on employability across metros reveals higher employability in Bangalore with employability for the EEE role as higher followed by other cities like New Delhi, Mumbai, Hyderabad, and Chennai. The lowest employability figures across roles are observed in New Delhi with employability for the CIVIL as low as 5.0%.

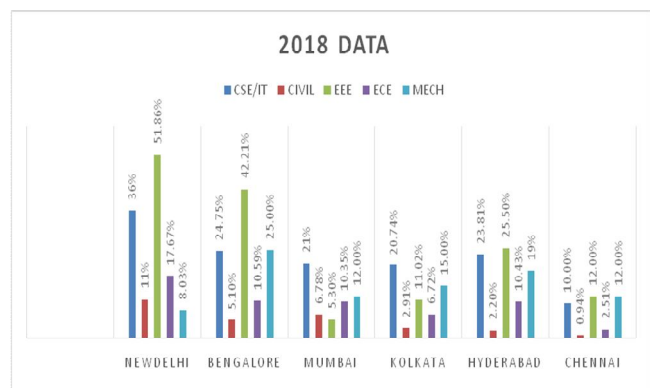


E) Employability percentage of engineering graduates in different core area in the year 2018

2018 DATA

METRO CITIES	CSE&IT	CIVIL	EEE	ECE	MECH
NEWDELHI	36%	11%	51.86%	17.67%	8.03%
BANGALORE	24.75%	5.10%	42.21%	10.59%	25.00%
MUMBAI	21%	6.78%	5.30%	10.35%	12.00%
KOLKATA	20.74%	2.91%	11.02%	6.72%	15.00%
HYDERABAD	23.81%	2.20%	25.50%	10.43%	19%
CHENNAI	10.00%	0.94%	12.00%	2.51%	12.00%

The study on employability across metros reveals higher employability in New Delhi with employability for the EEE role as higher followed by other cities like Bangalore, Mumbai, Hyderabad, and Chennai. The lowest employability figures across roles are observed in Chennai with employability for the CIVIL as low as 0.94%.



2. Reasons for not getting employability in their core area:

1. Syllabus is not updated regularly.
2. Lack of Quality Teachers.
3. Lack of Innovation and Research.
4. Faculty education system
5. Lack of skill-based education.
6. Importance of college name.
7. Ease of permission from state governments.
8. IT employability
9. Lack of proper English skills
10. Disregard of essential soft skills.
11. Lacking new age technological skills.
12. Lack of industry exposure.
13. Lack of technical, cognitive skills.
14. Lack of counselling the students in finding the jobs.
15. Lack of technical knowledge.

3. Which stream is getting more employability majorly placed in to core the area?

62% engineers want to work in a large company Highlights According to a latest study, majority of engineers opt for a job with a large company while a small but appreciable set of engineers opt to join a start-up Elections 2019 The Aspiring Minds' National Employability Report (NER) 2019 on engineers revealed some interesting data about the increasing skill gap and career aspirations of India's engineers.

The report's findings are based on data collected from 1,70,000 students from across 750 plus colleges in India. Preference of jobs According to the report, the aspiration of engineers to work for a large company has decreased by 15 per cent. While 62 per cent (men and women) wanted to work for a big/large company, only 8 per cent were interested in joining a start-up (newly established company with less than 30 employees).

Thirty per cent students were keen on starting their careers with an SME (company with less than 100 employees). The report noted that the number in favor of start-ups has increased from last year. "Given this evident trend and the rapidly blooming start-up ecosystem in the country, the aspirations of engineers to work for start-up is bound to increase," Irrespective of the branch of study, maximum engineers opted for a job with a large company while a small but appreciable set of engineers sought jobs with a start-up. Students from lower tier institutions are less interested to work in larger companies. "This is mostly because they believe that while getting a job in a large company would be difficult, the probability to get the job at an SME is fairly high," the study noted. At the same time, students from tier 2 college students showed minimum inclination towards start-up jobs.

More than 46 per cent of engineers sought core engineering jobs followed by software jobs (44 per cent). Despite the mushrooming job opportunities in managerial roles like technical sales, marketing and content development, and engineers do not seem to prefer these jobs as yet, the survey revealed. Students with computer/IT (Information Technology) background were mostly interested in software jobs while students with core engineering branches equally preferred software and core engineering jobs. Students from circuit branches are more inclined towards core engineering jobs, the report pointed. More females aspired to work in managerial roles as compared to males. Males reported to be more inclined towards software developer roles, while more females sought core engineering roles. Salary expectations According to the report, core branch engineers aspire for a higher salary than other engineers.

## V. FINDINGS

1. Engineering education is mainly theory-based. Only 40% of students perform internships while only 36% undertake projects beyond their required coursework.
2. They have little industry exposure. Only 47% of students attend industry talks. Sixty percent of faculty do not discuss how engineering concepts apply to industry.
3. Lack of counselling and direction is the key hurdle for students in finding jobs.
4. Lack of adequate domain knowledge key reason for low employability in core job roles in both software and non-software domains.
5. Only 3.84% folks employable for start-ups software engineering jobs.
6. Engineers score very low in next-generation technological skills (i.e., data engineering, data science, AI and wireless).

## VI. SUGGESTIONS

1. All engineering colleges should improve their teaching methodology and technical standard as required for present jobs.
2. CRT classes should be conducted regularly.
3. Colleges should not focus in pass percentage, college should also responsible for student all round development.
4. Many students having all job qualifications but they are not overcoming interviews so colleges should give interview practical classes to all students before they are going to attend interviews.
5. Government should encourage many more employment generation schemes like skill India.
6. Many engineering students are from rural areas, government should take some initiative programs during +2.
7. Students should develop their own chain link for approaching different companies for attending interviews.
8. Government should also release some technical job notifications.

## VII. CONCLUSION

Human resources, in terms of quality and quantity, are India's biggest assets. A favorable demographic structure (with about 50 percent of the population below 25 years of age) adds to this advantage. However, to capitalize fully on this opportunity and not face the possibility of a skills-shortage, it is essential to gear up the education system through innovative initiatives. The two greatest concerns of employers today are finding good workers and training them.

The difference between the skills needed on the job and those possessed by applicants, sometimes called the skills-gap, is of real concern to human resource managers and business owners looking to hire competent employees.

While employers would prefer to hire people who are trained and ready to go to work, they are usually not willing to provide the specialized, job-specific training necessary for those lacking such skills. Finding workers who have employability or job readiness skills that help them fit into and remain in the work environment is a real problem.

The term employability “signals a connection to the world of work that is dynamic and long-term in nature” The present research work has made an attempt to address the employability dearth among the engineering students. The study conducted reveals that employability skills like personal attributes; decision making skills are not influenced by the grade or level of the educational institute. Perhaps these are the skills developed the student on his own through the situations one encounter and experience he gain out of it.

On the other hand the study highlights that some skills like technical know- how and high order skills are majorly developed through academics towards which the educational institutes have a major role to play.

At the institute level the study reveals that most of the academicians are not satisfied with the engineering curriculum since they believe it is not at par with the industry needs. However they are also of the opinion that understanding of the fundamentals is more important since without a strong knowledge foundation the new methodologies of the industry cannot be adopted easily.