EMPLOYABILITY OF ENGINEERS STATE WISE

ASPIRING MINDS, INDIA'S LEADING EMPLOYABILITY SOLUTIONS COMPANY

Highlights

- Tamil Nadu, Andhra Pradesh lag behind in average quality of talent
- States focusing on numbers and not quality, reveals the report
- In metros, Delhi again has the best engineers followed by Kolkata and Bangalore

SUMMARY

India is a diverse country and the diversity extends to the engineering graduates across states. The States Employability report explores the sectoral employability of students from every state.

Technical education in India has scaled over the last decade boasting of 1000s of engineering colleges spread across the length and breadth of the country producing over half a million engineering graduates annually.

Aspiring Minds study is based on AMCAT – India's Largest Employability Test results of over 120,000 Engineers across the country. AMCAT being the leading measure of employability is able to accurately predict the employability of Engineers in various technical roles including IT services, IT Product, KPOs, BPOs, technical support, etc.

The study show the drop in percentage of employability of engineers across different states for diffent sectors. Aspiring Minds Research cell has done advanced statistical studies to uncover the core reasons for the dramatic variation in the quality of talent being produced.

IT Services
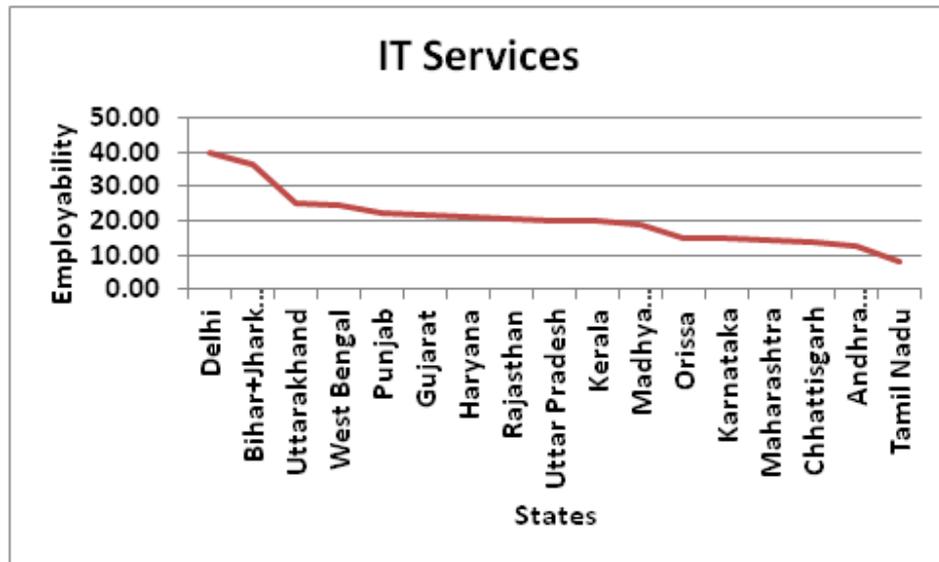
Figure 1: Employability in IT Services across States & UTs.

* Certain states with low sample size left out of study.

It is observed that employability in IT services companies is highest in North, followed by East, then West and then South. Delhi and Bihar-Jharkhand emerge as states with the largest percent employability. (See Figure 1) Delhi with its select colleges has emerged as an education hub with high standards of education and attracting the best minds from across the country.

In India, there is a concentration of engineering colleges in a few states. The report looked at the ranking of states considered as 'engineering hubs' by employability in IT Services sector. It is observed that states with more Government colleges as compared to Private colleges fare better on employability.

Employability Rank	Engineering Hubs
1	Uttar Pradesh
2	Karnataka
3	Maharashtra
4	Andhra Pradesh
5	Tamil Nadu

Variations in Employability across states: Exploring the reasons

Aspiring Minds Research Cell looked into establishing the factors which could explain the dramatics variations in Employability across states. They considered the impact of state population, size of state, number of colleges, gender spread, etc as possible explanation for the same.

Hypothesis: Impact of number of colleges on quality of education

We hypothesize that just the sheer number of engineering colleges in a state influences the percent employability of students in the state. Wherein the number of engineering schools are lower in number, the percent employability is higher and vice-versa. To check this hypothesis we analyzed the relation between the percent employability vs. the number of engineering colleges in each state.
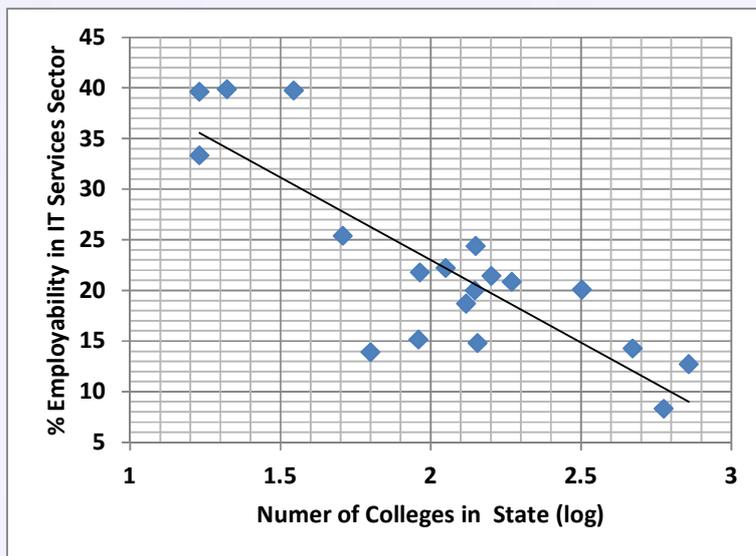
Interestingly a very high correlation of -0.834 was found between percent IT services employability and the logarithm of the number of colleges in the state. This means that the employability falls logarithmically with the increase of number of colleges in the state. Interestingly, the result is not improved by normalizing the count by population or size of the state.

Probably, other variables such as literacy levels, status of education, per capita income, etc. may be useful to get further insight. The simplicity of the result is indeed intriguing and shows how adding more engineering colleges led to a logarithmic fall in the percent of employable engineers. A scatter plot between employability percent and logarithm of number of colleges is shown in the above figure . If we remove the two outliers, the correlation becomes 0.91.

Conclusion

The employability percent decreases with increase in the number of engineering colleges in a particular state, clearly establishing that opening more engineering colleges shall not solve the problem of quality

of engineers in the country. It is required that rather than opening more engineering colleges, the state needs to concentrate on improving education standards of current engineerinc colleges.

Secondly, even though the number of colleges is a major factor in guiding employability in a particular state, it does not explain it completely. For instance, even though Tamil Nadu has lower number of engineering colleges (~600) as compared to Andhra Pradesh (~750), it has a lower employability percentage (8.33 as compared to 12.73). Similarly Delhi has more colleges than Bihar, but a higher employability. Employability for a state is a complex interplay due to several socio-economic and developmental factors. What is required is a greater thrust on improving the quality of engineering education.

IT Product
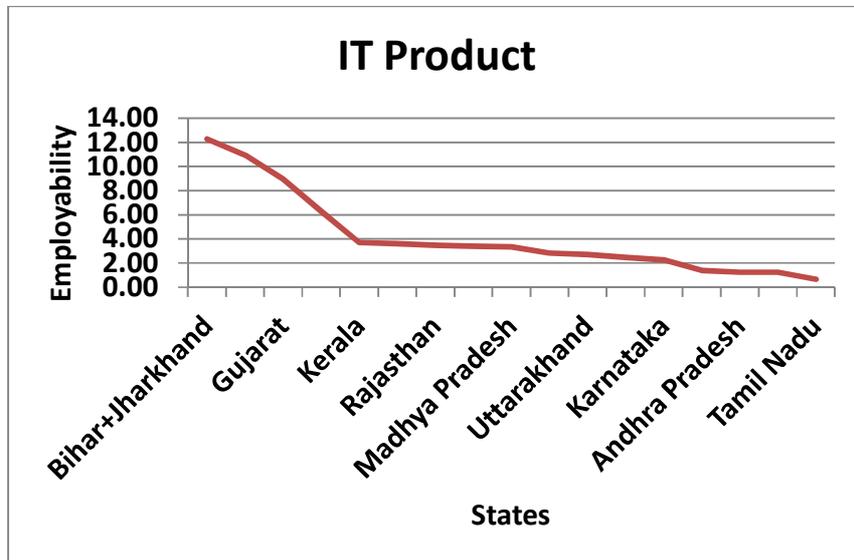
Figure 3: Employability in IT Product Companies across States & UTs

With respect to IT product companies (See Figure 3), it may be noted that the trends are different. Whereas IT services' employability is mainly a function of English and cognitive skills, the skills in computer programming and algorithms also become necessary for IT Product companies. Because of this, the education in college has an equal, if not more impact on IT product employability as compared to impact of quality of students when they join the college. This is also evident with the fact that the correlation to log of number of students falls to -0.72 from -0.83 in case of IT services' companies. The number of colleges is a suitable proxy for intake quality.

Three states, i.e. Uttarakhand, Kerala and Chhattisgarh show largely different ranks with respect to employability in IT services and IT product companies. Whereas Kerala and Chhattisgarh better their position with regard to IT Product employability, Uttarakhand climbs down. This is indicative of better education within colleges in Kerala and Chhattisgarh.
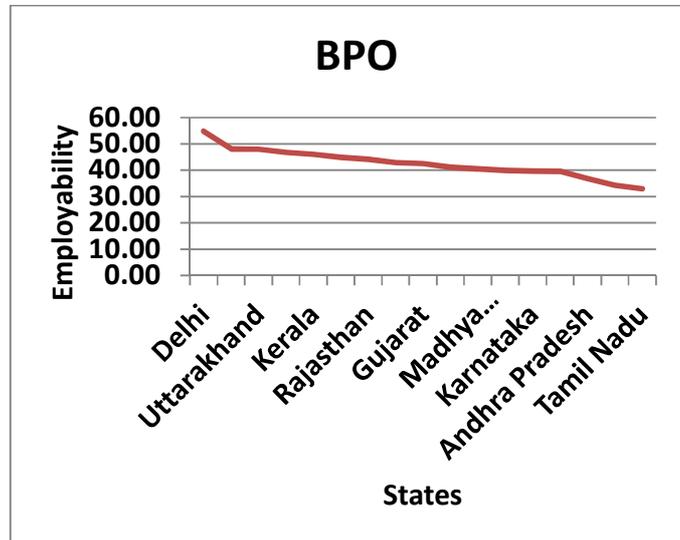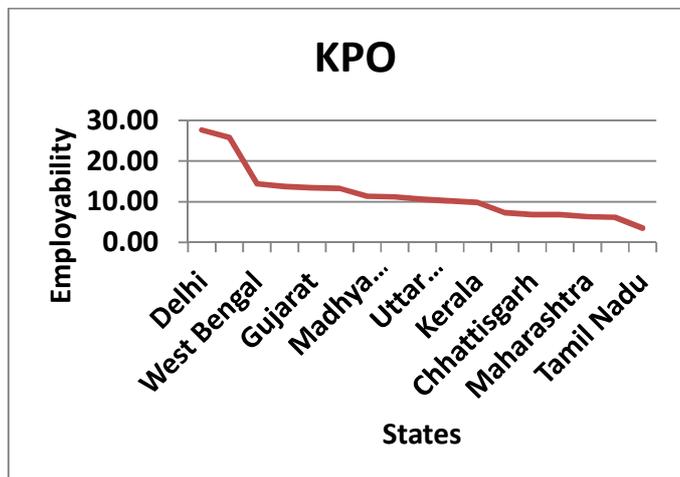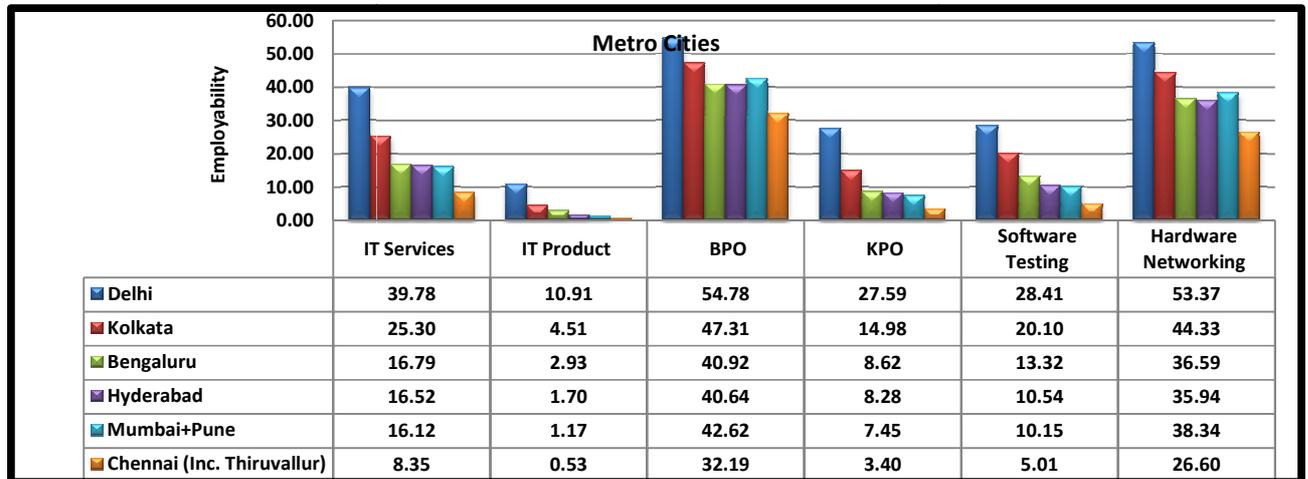
Figure 4: Employability in BPOs across States & UTs

Figure 5: Employability in KPO Companies across States & UTs

Key Cities

	IT Services	IT Product	BPO	KPO	Software Testing	Hardware Networking
Delhi	39.78	10.91	54.78	27.59	28.41	53.37
Kolkata	25.30	4.51	47.31	14.98	20.10	44.33
Bengaluru	16.79	2.93	40.92	8.62	13.32	36.59
Hyderabad	16.52	1.70	40.64	8.28	10.54	35.94
Mumbai+Pune	16.12	1.17	42.62	7.45	10.15	38.34
Chennai (Inc. Thiruvallur)	8.35	0.53	32.19	3.40	5.01	26.60

Figure 6: Employability across Metro Cities

We compared employability across colleges within major metros in the country (see Figure 6). We found similar trends to those with regard to employability in states. Delhi (north) shows highest employability percent followed by Kolkata (East), cities in the West and the lowest employability figures were observed in colleges in Southern cities. The skew in employability is quite high, for instance, the IT product employability in Delhi in as high as 1 in every 9 candidates and as low as 1 in every 200 in Chennai. Even though Bengaluru has similar IT Services' employability as compared to other Southern and Western cities, it shows much higher employability for IT product companies. This indicates that candidates in Bengaluru do much better at computer programming and algorithms even though they show similar English and cognitive skills. This could be better exposure to computer programming either at home, schools or college.

The reason for this skew in employability is explained again by the trend in number of colleges in each of these cities (See Table 1). The proliferation of engineering colleges in South India and West has brought down the employability figures. There are way lesser engineering colleges both in Delhi and Kolkata. This is in spite of the fact that the population of Delhi is much more than Southern cities and comparable to that of Mumbai.

City	Number of Engineering Colleges	Population
Bangalore	78	5,438,065
Chennai (inc.Thiruvallur)	84	4,616,639
Delhi	35	12,565,901
Hyderabad	86	4,068,611
Kolkata	54	5,138,208
Mumbai and Pune	145	17,277,214

Table 1: No. of Colleges in Metro Cities

METHODOLOGY

In this second edition of 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 120,000 technical graduates engineering and MCA students (in final year) across the country.

AMCAT - India's largest Employability Test was conducted in more than 20 states under proctored environment. AMCAT covers all objective parameters for adjudging employability in the IT/ITeS sector including English Communication, Quantitative skills, problem-solving skills and Computer Science and Programming skills. Employability figures are based on actual hiring benchmarks on AMCAT scores set by multiple companies in IT/ITeS related sectors. Since the study is based on a standardized aptitude and skill test, not only does it find the employability quotient, but also helps investigate skills that are deficient in particular group of candidates with regard to different sectors.

ABOUT ASPIRING MINDS

Aspiring Minds is India's leading employability solutions company, headquartered in Gurgaon. The state of the art assessment tools developed by Aspiring Minds have been used across industry verticals to help recruit the right people, develop profile-wise employability benchmarks and assess workforce health.

Aspiring Minds' intelligent adaptive assessments span across Language, Cognitive skills, Domain knowledge and Personality. A strong in-house research and development team with alumni from IITs and MIT form the development back bone of the patent pending assessment tools. AMCAT® - the flagship product is India's Largest Employability Test. Conducted across the country throughout the year, tens of thousands of candidates secure their dream jobs every year through AMCAT.

The management from IITs and IIMs, more than 135 full-time employees, and a pan-India operational presence have helped leading corporations across industry verticals improve their recruitment process efficiency and the quality of talent being acquired. Aspiring Minds products and solutions have been adopted by leading corporates including HCL, Genpact, Accenture, L&T Finance, Keane, Mphasis, Ericsson, Sapient, John Deere, Tavant, Tally, among others.

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