

---

## RELATIONSHIP BETWEEN ACADEMIC VARIABLES AND EMPLOYABILITY QUOTIENT OF ENGINEERING STUDENTS

**Dr.T. Srinivasan**

Deputy Director, DDE  
Annamalai University  
Chidambaram, Tamil Nadu

**Dr.S. Chandrasekar**

Asso. Professor and Director Placements  
Sri Eshwar College of Engineering  
Coimbatore, Tamil Nadu

### Abstract

In today's scenario of higher education, placement is a buzz word. Parents and students prefer colleges and institutions which arrange placement opportunities by conducting campus placement and placement readiness training. Every college and institution tries to maximize their placement ratio. During the last decade, the opportunities for graduates in various sectors have increased tremendously, especially for engineering students. Institutions organize on-campus and off-campus placement and job fair by pooling students from various institutions, wherein companies recruit students in large number. However there are many graduates who are not able to get through the recruitment process and jobs. There is strong association between academic variables like branch of study in engineering programme, type of stay, mode of admission, Board of study, medium of study, total marks in plus two, mathematics marks etc. and employability quotient of the engineering students. Hence in this paper an attempt is made by the authors to analyse the relationship between academic variables and employability quotient of engineering students.

**Keywords:** Branch of study, Type of stay, Mode of admission, Medium of study, Employability.

In recent years India's economic growth has been robust. Indians aspire to make the country a developed society by 2020. For this, establishing a knowledge society is perceived as the foremost national challenge. Knowledge will not only be a driver of the economy but also a source for attaining better quality of life. The nation has found its strength from evidence in the potentials of Indians to keep pace with the high international standards in sciences, technology, industry and entrepreneurship that is being increasingly recognized by the world community. A key factor in attracting foreign investments to India is its competent human resources. These advantages have to be nurtured and enhanced to bring long-term benefits to the country. These expectations cannot be fully realized without a strong and dynamic higher education system.

### Higher Education In India

As per the annual report of UGC, India has more than 500 universities, institutions of higher learning and deemed universities, out of which 130 deemed to be universities, 39 institutions of national importance, 41 central universities, 256 state universities, 60 private universities, five institutions

established under state legislation act and about 31,324 colleges including 213 autonomous colleges. Education System has increased fourteen-fold in terms of the number of universities and thirty three-fold in terms of the number of colleges, in comparison to the number at the time of Independence. Higher education today is no more constrained by geographical boundaries. Innovative forms of translocation and transnational education have become a possibility. Multi campus institutions, franchised institutions, learning centers providing university degree, off campus education, distance learning, internet based distance education, virtual universities merging of part studies to combine into a whole for obtaining national as well as international degrees are only few models as examples. As far as higher education is concerned, an enthused and well-informed student has umpteen choices, for the first time in the history of education, to access for a "global marketplace".

## Technical Education in Tamil Nadu

Tamil Nadu gets its pride from the fact that the first of the engineering institutions to come into being in the country was the Survey School established in 1794 at Madras by the East India Company. Anna University was established on the 4<sup>th</sup> September 1978 as a unitary type technical university by bringing together four institutions namely (1) College of Engineering, Guindy, (2) Alagappa College of Technology, (3) Madras Institute of Technology, Chrompet and (4) School of Architecture and Planning. It has been growing steadily since then and has emerged as a leading technical university in the country. As on today more than 575 engineering colleges are there in Tamil Nadu to cater to the needs of the students aspiring engineering and technology education. Establishment of various industries by Indian and foreign, MNCs have promising employment opportunities for the engineering graduates.

## Status of Technical Level Manpower in Tamil Nadu

The key resource needed for IT is skilled manpower. Tamil Nadu has proved to be a huge source of quality talent. The policy of the State on higher education in the last two decades has enabled the creation of this talent pool<sup>2</sup>. This has resulted in the establishment of numerous educational institutions as follows:

1. NIT, National Institute of Technology - Trichy
2. 21 Universities
3. More than 575 Engineering Colleges
4. More than 172 Medical Colleges
5. More than 250 Polytechnic Colleges
6. More than 600 Industrial Training Institutes
7. More than 70 Teacher Training Colleges
8. More than 507 Arts and Science Colleges
9. More than 323 Polytechnic

**Source:** - Ministry of Human Resource Department

For decades, lack of employment opportunities and underemployment of educated masses have been important issues in Indian labour market. Interestingly, during contemporary times the tide is reversed and industry is not finding 'employable work force'. The term 'employability' has gained currency in the Indian policy circles with politicians and functionaries in the industry airing similar views. Thus, the new analytical category of employability has become an important aspect to be studied and

clarified. Employability is confluence of several skills, abilities, knowledge, competencies and capabilities that enable individuals to get employment and be successful in their professional careers. It helps them individually as well as institutionally. It also dwells at the skill sets, tool sets and mindset that is essential to execute tasks effectively and efficiently. Engineering colleges are mushrooming and the quantity of technical graduates pass out every year from educational institutions has increased. It is reported that employers do not get the applicants with right skill set, mind set and tool set especially in the engineering and construction sectors. Currently there is wide chasm between what the educational institutions are churning out and what the industry expects. Employability skills are the ability of individuals to exhibit their skills to the prospective employers and the ability to execute the tasks thereby achieving organizational goals and objectives. In this paper an attempt is made to analysis the relationship between the employable work force and employability skills.

### **Statement of the Problem**

There is strong association between academic variables like branch of study in engineering programme, type of stay, mode of admission, Board of study, medium of study, total marks in plus two, mathematics marks etc. and employability quotient of the engineering students. For this purpose employability quotient is calculated based on the performance of respondents in aptitude and attitude tests. The scores are converted into Z scores for easy comparison of aptitude and attitude scores. The employability quotient (EQ) based on aptitude scores, attitude scores and combined scores are further analysed based on the educational characteristics, board and medium of study, marks obtained in school by the respondents. The employability quotient is also used as a basis to find out the employability status of the respondents as not employable, employable with training and readily employable. The results of the Z scores for aptitude test and attitudinal skills for each of the socio economic variables are presented. The skill level grouping is also done based on the scores obtained in aptitude and attitude skills. Hence in this paper an attempt is made to analyse the relationship between academic variables and employability quotient of engineering students

### **Sample Size**

Out of 55 engineering college in Coimbatore district regulated by Anna University of Coimbatore, the study has been confined to the final year under graduate engineering students. Colleges which have completed a minimum of three years of educational service are only taken for the study. Out of 55 engineering colleges in Coimbatore district, 22 colleges were selected based on the relative merits of the colleges. The study has been conducted among the 22 colleges where the total numbers of respondents pursuing the chosen six field of study are 9720 and thus they constitute the universe of the study. By making a balance between the limited time available on the one hand and the requirement of a number of observations for a rigorous statistical inferential analysis on the other hand, it has been decided to select a sample of 486. After eliminating the 36 unusable interview schedule, 450 was taken in account.

TABLE 1 - DISTRIBUTION OF SAMPLE RESPONDENTS

Branch of Study	Population	No of Respondents	Percentage
CSC	1990	92	20.5
ECE	2140	99	22.0
EEE	1995	92	20.5
IT	2050	95	21.0
Mechanical	1015	47	10.4
Civil	530	25	5.6
Total	9720	450	100

Source: Computed

## Educational Characteristics at Degree level and Employability Quotient

Educational characteristics such as mode of admission, type of stay, branch of study, aggregate marks in the branch of study plays an important role in determining the employability skills of the respondents. These factors affect the employability status of the respondents during their course of study and at the time of attending for placement. The results of the Z scores for aptitude test and attitude test skills for each of the educational characteristics at degree level are presented in table 2.

**TABLE 2 - EDUCATIONAL CHARACTERISTICS AT  
DEGREE LEVEL AND EMPLOYABILITY QUOTIENT**

Educational Characteristics		EQ-Aptitude Test Scores			EQ-Attitude Test Scores			EQ-Combined Test Scores		
		Mean	S.D	No.	Mean	S.D	No.	Mean	S.D	No.
Branch of Study	CSE	44.36	9.41	92	76.25	4.39	92	60.31	4.99	92
	ECE	44.10	9.75	99	75.17	4.75	99	59.63	5.36	99
	EEE	40.90	10.19	92	76.12	4.91	92	58.51	5.56	92
	IT	41.27	10.15	95	75.85	4.48	95	58.56	6.13	95
	Mech	42.61	11.04	47	75.79	4.64	47	59.20	6.10	47
	Civil	46.40	10.84	25	74.57	3.82	25	60.48	5.61	25
Type of stay	Hosteller	43.30	10.72	231	75.67	4.58	231	59.49	5.94	231
	Day scholar	42.43	9.51	219	75.85	4.63	219	59.14	5.26	219
Education Loan	Yes	42.62	10.30	242	76.26	4.52	242	59.44	5.65	242
	No	43.17	9.98	208	75.18	4.63	208	59.17	5.58	208
Mode of Admission	Government List	42.84	10.59	368	75.96	4.53	368	59.40	5.72	368
	Management Quota	43.04	7.85	82	74.87	4.81	82	58.95	5.14	82
Aggregate Marks in Branch of Study	7 and less	43.15	11.73	44	75.27	5.01	44	59.21	6.66	44
	7-8	41.83	9.54	152	75.09	4.83	152	58.46	5.36	152
	8-9	43.11	9.82	193	76.54	4.33	193	59.82	5.13	193
	9-10	44.54	11.29	61	75.31	4.24	61	59.93	6.67	61

**Source: Computed**

The Table 2 reveals that the EQ in aptitude test is the highest for the respondents of civil branch and the lowest for EEE branch. The EQ in attitude test is found to be the highest for CSE branch and in the combined test the respondents of civil branch fare better. The hostellers have shown high EQ in aptitude test and day scholars in attitude test. The EQ in aptitude test are the highest for respondents

who have not availed education loan and the lowest for those who have availed education loan during their course of study. The performance of the respondents admitted through government list has the highest score of performance in aptitude test than the respondents admitted through the management quota. The EQ in aptitude test are higher for the respondents whose aggregate score is more than 9 in the branch of study.

## Board of Study and Medium of Education in School level and Employability Quotient

Corporate while considering a prospective candidate for recruitment, analyse the candidate starting from school level. They analyse the board and the medium of education undertaken by the respondents in tenth and plus two level. Communication skill is one of the most preferred skills by the corporate. There is a strong belief among the corporate community that respondents who have undergone their education in English medium and CBSE board have high communication skill as compared to other board and medium of education undertaken by respondents in tenth and plus two level. The results of the Z scores for aptitude test and attitude test skills for board of study and medium of education in school level are presented in Table 3

**TABLE 3 - BOARD OF STUDY AND MEDIUM OF EDUCATION IN SCHOOL LEVEL AND EMPLOYABILITY QUOTIENT**

		EQ-Aptitude Test			EQ-Attitude Test			EQ-Combined Test		
		Mean	S.D	No.	Mean	S.D	No.	Mean	S.D	No.
Board of Study in Tenth	State	40.48	9.63	222	75.98	4.58	222	58.23	5.38	222
	Matric	44.90	9.67	196	75.85	4.60	196	60.37	5.40	196
	CBSE	48.69	12.00	22	73.78	4.73	22	61.24	6.68	22
	Anglo Indian	43.56	13.40	10	73.46	3.59	10	58.51	7.99	10
Board of Study in Plus Two	State	42.83	10.16	359	75.94	4.52	359	59.38	5.64	359
	Matric	43.21	10.12	60	74.02	4.86	60	58.61	5.66	60
	DOTE	39.12	8.51	21	77.35	4.14	21	58.23	4.40	21
	CBSE	50.28	10.09	10	76.61	4.41	10	63.45	5.43	10
Medium of Study in Tenth	English	44.27	9.68	325	75.65	4.65	325	59.96	5.43	325
	Tamil	39.26	10.46	125	76.04	4.47	125	57.65	5.75	125
Medium of Study in Plus two	English	44.40	9.60	322	75.57	4.77	322	59.98	5.45	322
	Tamil	39.04	10.49	128	76.25	4.10	128	57.64	5.69	128

Source: Computed

The Table 3 reveals that the EQ in aptitude and combined test are higher for the respondents who have studied in English medium in tenth and plus two. It is also found that the respondents who have studied in tenth and plus two under CBSE board have the highest EQ in aptitude test than those who have studied in other boards. The EQ in attitude is found to be the highest for those who have studied under state board and matriculation. The respondents who have studied in Tamil medium in tenth and plus two are found to have high EQ in attitude test.

From the above table it is found that the board of study and the medium of education at school level have a major influence on the employability level of the respondent. The respondents who have studied under CBSE have shown consistent performance in aptitude, attitude and combined test.

#### **Marks in Mathematics and Aggregate in School level and Employability Quotient**

Analytical ability is one of the most preferred skills by the corporate, because it is a general belief that respondents who have good knowledge of mathematics can excel in programming skills. The corporate expect prospective candidates not only to perform well during the recruitment process but also throughout their work life, for this purpose they expect prospective candidate to have consistency in performance from tenth standard onwards. There is a strong belief among the corporate community that respondents who can consistently perform from school level to degree level shall also consistency performance in work life. For this purpose some IT companies expect consistency score of performance from tenth standard onwards to degree level. The results of the Z scores for aptitude test and attitude test skills based on the marks in mathematics and aggregate in school level are presented in Table 4.

**TABLE 4 - MARKS IN MATHEMATICS AND AGGREGATE IN SCHOOL LEVEL AND EMPLOYABILITY QUOTIENT**

Marks in Mathematics and Aggregate in School level		EQ-Aptitude Test Scores			EQ-Attitude Test Scores			EQ-Combined Test Scores		
		Mean	S.D	No.	Mean	S.D	No.	Mean	S.D	No.
Percentage of marks in Mathematics in Tenth	60% & less	36.28	6.14	13	76.84	2.95	13	56.56	3.78	13
	60-70 %	39.47	10.22	25	75.31	5.20	25	57.39	4.87	25
	70-80 %	42.68	9.56	62	74.91	5.54	62	58.80	5.79	62
	80-90 %	42.43	10.69	104	76.00	4.67	104	59.22	6.09	104
	90-100 %	43.81	10.06	246	75.86	4.31	246	59.83	5.44	246
Percentage of Aggregate marks in Tenth	60% and less	32.43	8.82	9	75.56	4.63	9	53.99	3.99	9
	60-70 %	40.08	7.72	27	75.81	4.75	27	57.94	4.28	27
	70-80 %	41.96	9.46	106	75.48	5.28	106	58.72	5.58	106
	80-90 %	43.78	10.41	210	75.60	4.53	210	59.69	5.64	210
	90-100 %	43.65	10.37	98	76.42	3.88	98	60.04	5.74	98
Percentage of marks in Mathematics in Plus two	60% & less	41.95	12.25	13	74.42	5.80	13	58.19	8.01	13
	60-70 %	41.21	10.71	38	77.36	3.67	38	59.28	5.08	38
	70-80 %	40.34	8.92	105	75.24	5.16	105	57.79	5.11	105
	80-90 %	44.18	9.46	138	75.84	4.18	138	60.01	5.18	138
	90-100 %	43.91	10.90	156	75.77	4.60	156	59.84	6.04	156
Percentage of Aggregate marks in Plus two	60% and less	35.63	5.20	4	77.14	4.75	4	56.39	4.32	4
	60-70 %	39.69	10.76	35	75.67	4.90	35	57.68	6.22	35
	70-80 %	41.63	8.91	111	75.94	4.28	111	58.79	4.92	111
	80-90 %	43.73	9.77	224	75.85	4.84	224	59.79	5.43	224
	90-100 %	44.02	12.20	76	75.19	4.21	76	59.60	6.66	76

Source: Computed

The Table 4 shows that marks in mathematics secured by the respondents in tenth standard and plus two influences the employability quotient. Respondents who have secured more than 90% marks in Mathematics have the highest EQ in aptitude test and the lowest score is among the respondents who have secured 60% marks in mathematics. This result is also reflected in the overall percentage score in tenth board and plus two examinations which reveal that respondents whose aggregate percentage is more than 90% have high score in aptitude test when compared to other groups. The EQ in attitude has not followed the same pattern as in aptitude test. They are not found to have been influenced by the marks obtained in tenth and plus two.

## Conclusion

The employability quotient is calculated based on the performance of respondents in aptitude and attitude tests. The scores are converted into Z scores for easy comparison of aptitude and attitude scores. The employability quotient (EQ) based on aptitude scores, attitude scores and combined scores are further analysed based on the educational characteristics, board of study and medium of study and marks obtained in school by the respondents. The results of the Z scores for aptitude test and attitudinal skills for each of the socio economic variables are presented. The skill level grouping is also done based on the scores obtained in aptitude and attitude skills.

## References:

1. Andrea Duncan. (2010). Engineering your workplace advantage: Personal Development Planning Resources for Undergraduate Engineers. (The Higher Education Academy Engineering Subject Centre, The University of Northampton, England) pp.12-15.
2. Albert P'Rayan & Ramakrishna, Shetty, T. (2008). "Developing Engineering Students' Communication Skills by Reducing their Communication Apprehension", English for Specific Purposes. 4(7):2-5
3. Jane Lees, (2011) The Skills Job-Hunts Engineers must show Graduate Recruiters" National Grid, Oxford shire
4. Macfarlane, D., Dick. A. Roy and Quality Assurance Agency for Higher Education. (2006). Employability: Enhancing Student Employability: Innovative Projects from across the Curriculum, (Gloucester: Quality Assurance Agency for Higher Education).
5. Kamna Solanki, Sandeep Dalai and Vishal Bharti (2009), "Software Engineering Education and Research in India: A Survey", International Journal of Engineering Studies, Vol. I (3)
6. Ramana, PSV (2009), "Qualitative Requirements for Employability", HRM Review, 2(4)
7. Taylor, A. (1998). "Employability skills: from corporate 'wish list' to government policy", Journal of Curriculum Studies., 30(2):143-164.
8. Walther, J. and Radcliffe, DF.(2007). "The competence dilemma in engineering education: moving beyond simple graduate attribute mapping", Australasian Journal of Engineering Educatio., 13(1):41.
9. Zulkifli Mohd Nopiah, Nuryazmin Ahmat Zainuri, Izamarlina Asshaari, Haliza Othman and Shahrum Abdullah. (2009). "Improving generic skills among engineering students through problem based learning in statistics engineering course", European Journal of Scientific Research., 33(2):270-278.
10. [www.annauniv.edu](http://www.annauniv.edu)
11. [www.business.gov.in](http://www.business.gov.in)