
DEVELOPMENT OF EMPLOYABILITY INDICES FOR ENGINEERING STUDENTS

**DR. S.A.VASANTHA KUMAR, ANIRUDH S KALLYA, SHIVAPRASAD C,
VAISHNAVI B M, VIKAS N**

Abstract: More than 70 percent of engineering graduates are not employable as per India informatics. Employability refers to graduates' achievements and their potential to obtain a graduate job. This paper reports on a study that taps into a timely topic in order to determine the employability indices of engineering students. A scale was developed to measure three constructs of employability namely, self-esteem, self-efficacy and self-confidence. For a pilot sample of 75 students at 5% significance level and 9% error rate, the sample size calculated was 610. The reliability of the instrument used was established by determining the Cronbach alpha coefficient as 0.87. For a final survey on 611 students at Dayananda Sagar College of Engineering, Bangalore, employability indices were developed and classified. The demographic profiles of students chosen were gender, educational background, family income and aggregate marks. Using chi-square tests of cross table relationships, the influence of demographics on employability indices were examined. It was observed that except gender all other demographics do influence employability. This study enabled to identify the reasons for poor employability among engineering students and prescribe suitable suggestions to improve them.

Keywords: Employability, self-confidence, self-esteem, self-efficacy, engineering students.

Introduction: More than 70 percent of engineering graduates are not employable as per India informatics. Dr. APJ Abdul Kalam has rightly said that India does not have the problem of unemployment but has that of unemployability. The graduates lack other skills besides the academic or technical skills. Employability skills are central to gaining and keeping employment as well as career progression. The relationship between higher education and the economy is longstanding. Employers generally see a graduate's achievements related to the subject discipline as necessary but not sufficient for them to be recruited. In some employment contexts, the actual subject discipline may be relatively unimportant. Achievements outside the boundaries of the discipline (such as the possession of so-called 'soft skills') are generally considered to be important in the recruitment of graduates.

'Employability' refers to a graduate's achievements and his/her potential to obtain a 'graduate job', and should not be confused with the actual acquisition of a 'graduate job' (which is subject to influences in the environment, a major influence being the state of the economy). Employability derives from complex learning, and is a concept of wider range than those of 'core' and 'key' skills. The 'transferability' of skills is often too easily assumed. There is some evidence to suggest that references to employability make the implicit assumption that graduates are young people. The risk is of not considering employability in respect of older graduates, who have the potential to bring a more extensive life-experience to bear. Employability is not merely an attribute of the new graduate. It needs to be continuously refreshed throughout a

person's working life.

Review of Literature: A particularly articulate definition of employability is by Dr. Peter Hawkins (1999) "To be employed is to be at risk, to be employable is to be secure." This suggests that in a dynamic and increasingly competitive economic environment, business organizations are becoming progressively more focused on what they require as human capital – being employed alone is not sufficient, one must be employable (or effective) throughout one's career. "In 1900, Joseph Chamberlain founded the University of Birmingham to create a new model for higher education and to produce the minds that would shape the modern industrial world. Today, the University of Birmingham endeavors to enable and inspire students to develop their potential, grow intellectually, gain skills, understanding and attributes, that will empower them on to make an impact on society of benefit to themselves, the community and the economy, locally, nationally and internationally".

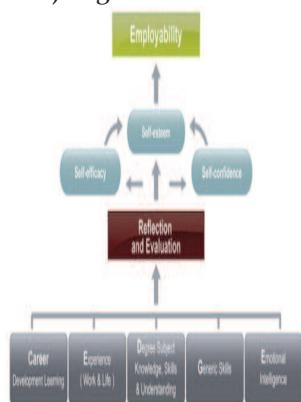
There are many definitions of what it is to be 'employable' and views on the processes that develop this attribute. Knight and Yorke (2004, reissued 2006) summarize five meanings of the term 'employability' which cover a spectrum including 'getting a graduate job' and a 'product of skilful career planning and interview technique'. A relevant definition of employability is: 'a set of achievements – skills, understandings and personal attributes - that make graduates more likely to gain employment and be successful in their chosen occupations, which benefits themselves, the workforce, the community and the economy.'

The skills and other qualities that enhance an individual's employability are, in many cases, those that also facilitate learning and the application of subject knowledge. The ability to analyze data, to solve complex problems and to communicate outcomes effectively are commonly applied in both academic and employment processes. This relationship between learning and employability is made explicit in the Skills and attributes maps that most of the Subject Centers have developed as part of their Student Employability Profile (SEP). These Maps list the key behavioral indicators or criteria identified within the subject benchmark statements. These are then cross-referenced with the competencies outlined by the members of the CIHE Employers' Forum. A Map has been developed, for the majority of the disciplines and reference should be made to these via the individual Subject Centre websites.

The questions of "Are you thinking about looking for a job? Have you been improving your reading, writing and math skills to find work?" are answered in this manual. In this manual, a case example has been given about Jerry, Erica and Keith who have been upgrading their skills at the Centre for Upgrading and Employability Skills (CUES). These three students have been improving their reading, writing and math skills. Later they felt like they are ready to find work. The manual also talks about Jerry, Erica and Keith as they prepare for employment and then demonstrate how they use their skills on the job. This manual will teach some new skills and reviewing skills you already know about. People who have finished the modules in this manual will be closer to enjoying *Employability Success!*

What is Employability?

Employability is the ability to enthrall employers with undisputable capabilities to optimize personal development and job growth.



Purpose of the study: Effective deployment of

human capital has clearly been recognized as a key contributor for organizational effectiveness. The speed with which changes are taking place in the economic environment is forcing organizations to be very flexible and responsive. Hence, there is pressure to staff organizations with knowledge workers who are able to think, feel and behave effectively in support of the shared mission of the organization. Higher education institutions, in becoming more demand-driven, are attempting to respond by revising the curriculum and catering for the employability needs of the labor market, and more recently the global labor market. However, there is a widening gap between output of higher education institutions and the input demands of corporations.

How do Companies Make Selection Decisions?

Companies are continuously making decisions on selection to fill critical positions at various levels of the organization and the key concern is employability, i.e. whether the selection decision provides potential returns on investment. The objective of effective organizations is to achieve superior performance. The significant organizations of our economic environment are seeking to identify and hire people who have the potential to produce extra-ordinary results –and they want people who are at the top end of the employability scale. This conception of employability seems to suggest that employability is a scale with features for distinguishing people capabilities from low (ability to perform routines) to ability to lead complex teams, distributed across different industries and geographies.

Each year thousands of young people go on work experience. It is a great chance to learn about the world of work and the vast majority thoroughly enjoys their time. The objectives are that students should learn:

- For work, developing skills for future enterprise and employability
- About work, acquiring knowledge and understanding of work and enterprise
- Through work, by having the chance to learn from direct experience of work.

Methodology: Employability is made of three constructs: Self Confidence, Self-efficacy and Self Esteem.

Indicators of self-confidence being: Presentation, Body language, Remaining calm when being criticized, Hyperactivity, Assertiveness, Communication Skills.

Indicators of self-efficacy being: Experience, Modeling, Social persuasion, Motivation.

Indicators of self-esteem being: Ability to stand aside, Comfortable in social conditions, Competitiveness,

Pull out control and confidence from within, showing gratefulness. A scale was developed to measure three constructs of employability self-esteem, self-efficacy and self-confidence. The 35 statements of indicators for above constructs were individually, rated on a scale of 1-5.

For a pilot sample of 75 students at 5% significance level and 9% error rate, the sample size calculated was 610. The reliability of the instrument used was establishing by determining the Cronbach alpha coefficient as 0.87. For a final survey on 611 students at Dayananda Sagar College of Engineering, Bangalore, employability indices were developed using a relation Index of a variable

$X = (X - \text{Min}X) / (\text{Max}X - \text{Min}X)$ expressed as a percentage. Students with poor, medium and high employability indices (overall and construct wise) were classified as follows:

Indices Range	Number Of Students	Percent
0 - 50	32	5.2
51- 75	155	25.4
76 - 100	424	69.4

The demographic profiles of students chosen were gender, educational background, family income and aggregate marks. Using chi-square tests of cross table relationships in MS Excel Solver, the influence of demographics on employability indices were examined.

Demogr	Chi-Sq	P-Value	Variables
Gender	0.2141	0.6435	Independent
Marks	6.76	0.034	Related
PUC/DIP	17.98	0.00	Related
Income	6.91	0.031	Related

Summary of results: For the final survey on 611 students, Reliability alpha value was 0.89, which is reasonably good. By testing the various hypotheses the following results have been obtained:

Gender does not influence the employability index. All the three parameters that we considered are

independent in the determination of the employability index as when considered in terms of gender. Aggregate marks influence the employability index. The self confidence parameter will influence the employability index, whereas the other two are non-influential. Background of the student influences the employability index. All parameters are found to be influential in the determination of the employability index.

Family income of the students influences the employability index. All the parameters are found to be influential in the determination of the employability index.

Conclusion: From the survey it was found that: Gender does not influence the employability, Girls and boys are equally employable. Aggregate marks influence the employability. Students having high marks are more confident and hence aggregate marks contribute for higher employability. Background of the student influences the employability. The PU students have higher employability index compared to the diploma students because the PU students will have the good foundation of basic science .Income of the students influence the employability. Higher income students have higher employability index compared to the lower income students, because higher income students have good foundation, financial security and hence their confidence will be high. Thus the hypothesis holds true.

From the knowledge gained from the study, the recommendations are that special trainings should be provided to the diploma students. Institutions should operate with the assumption that there is no significant difference between male and female students.. Proper training should be given to the students with low employability index. From the study the aggregate marks boosts only the confidence of the students not the efficacy or esteem, management should note that marks is just an entry criteria. They should not decide employability of the student based on marks. We would suggest a tool to measure employability of the students (Employability indices database for students).

References:

1. Abdul Farouk Ahmed, the Employability of Graduates in Competitive Organizations, Business Intelligence Journal, August 2009, Vol.2 No.2
2. Md Yusof Abu Bakar, Rohana Jani, Yong Zulina Zubairi, An Overview of Graduate Employability of Recent Graduates, July 2009
3. Crandal, R., The measurement of self-esteem and related constructs, (1973).
4. Crandell R (1973) J.P. Robinson & P.R. Shaver (Eds), Measures of social psychological attitudes. Revised edition. Ann Arbor: ISR. pp. 80-82
5. Wylie, R. C., The self-concept. Revised edition. Lincoln, NE University of Nebraska Press. (1974)

Professor, IEM, DSCE, Bangalore-78, savkumar@gmail.com
Anirudh S Kallya, Shivaprasad C, Vaishnavi B M, Vikas N, graduated students of IEM, DSCE