Analysis of Factors Determinant Professional Students Employability Skills with Reference to Engineering Education in India

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ABSTRACT

Perception on any issue is largely based on the belief and experience. The fact the institutes/university have largely designed the engineering curriculum addressing only the technical subjects, the young engineering students ignorantly believe and perceive the engineering employability skills is all about technical subjects, without understanding the hard reality of employability skills. The academia has a greater role in changing the perception of engineering students towards their employability skills. There are few study attempted to know how the engineering student perceives about his employability skills. In this regard the institute/universities have to take the responsibilities in shaping up and transform the belief system of engineering students about employability skills. According to this need, the research aims to study the influence of Institution on opinion towards Employability skills of engineering students and to assess the predictor variables of students' satisfaction towards employability skills. The structured questionnaire was used to collect the primary data and convenience sampling technique was adapted. The SEM was used to propose a model for perception of employability skills in engineering institutions.

Keywords: Employability Skills, Institution, student's perception.

1. INTRODUCTION

In this globalised environment the role of engineers today has evolved from an independent, self sufficient and self motivated individual to an interdependent team member of the corporate world. It is therefore no longer adequate for engineering student to graduate with strong technical skills but also need to possess broad range of knowledge and social behavioral skills also known as employability skills. The engineering professions have to deal with 'scientific and technological matters, but increasingly also with economical

and political matters as well as with ethical, societal and environmental aspects . Unfortunately, engineering students from most of the institute/university are ignorantly blissful on what constitutes employability skills and its importance and need. People often confuse between unemployability and unemployment. Unemployability arises when individuals have educational eligibility but lack in capability and suitability to execute a job related activities despite being the availability of employment opportunities. Unemployment is a state where individuals have educational eligibility, capability and suitability but dearth of employment opportunities. The current situation in India is more of unemployability rather than unemployment. It is time for fresh engineering graduates and academia to appreciate and realize the huge gap that exist between fresh engineering graduates who are churned out in mass and the need of global industry. Though the studies reveal that the quality of engineering graduates churned out in mass production from various engineering institutions is questionable, the paper presumes that the technical knowledge is fundamental and its importance cannot be disputed, as this forms the general basis from which engineers work. However, technical knowledge alone does not distinguish the best engineering graduate from the rest. The studies and survey carried out by researchers reveal and highlight graduates' struggle in the work place. It also reveals significant conflict between students' self-perceptions and the extent to which employers believe they are prepared for work. The lack of awareness of engineering students on the employability skills that are required to get employed added to the casual approach by the engineering institutes in administering these life skills have only compounded the problem and perceptions of engineering students towards understanding the need of employability skills. Perception on any issue is largely based on the belief and experience. The fact the institutes/university have largely designed the engineering curriculum addressing only the   technical subjects, the young engineering students ignorantly believe and perceive the engineering employability skills is all about technical subjects, without understanding the hard reality of employability skills. The academia has a greater role in changing the perception of engineering students towards their employability skills.

2. REVIEW OF LITERATURE

Tiwari Anoop Kumar (2012) brings in a different perspective to soft skills, though the paper acknowledges the soft skills, it adds a new dimension called Cognizable soft skills. It opines there are innumerable skills which compliment a hard skill but if they can be quantified in regard of their role and application they are called cognizable soft skills. The author opines that the perception differs from context to context. A field is a soft skill in one area, and is hard skill in another and also the understanding what should be recognised as soft skills varies. It re-iterates communication skill is an important cognizable soft skill and an understanding and command over the English language is a most important determinant of access to higher education, employment possibilities and social opportunities.

Vijaya K.R (2013) compares technical professionals skills through technology versus Practical intelligence. The paper argues though there is a growing awareness that technical skills alone are insufficient for success in companies, resulting in trainers of soft skills using web technology and extensive use of e-learning in classrooms, but warns the positive impact of this use of technology is questionable, since they lack practical intelligence. The paper convinces E-learning technology is eminently suited for

basic technical skills training but sometimes do not meet the needs of future professionals. The paper summarises soft skills have to be learnt through practical intelligence through a trainer that will bring self-awareness, social awareness, communication skills, interpersonal skills, team work, entrepreneur skills and various other skills.

Soumen Mukherjee and Lesile Ramos-Salazar (2014) this study gives a constructive evaluation and analysis of the role of business etiquette for managers in an international arena, in the cross-cultural communication. It submits that in the era of globalization, the influence of culture on business is noticeable and significant. He strongly opines and intends to explore the role of business etiquette in today's organizations across various cultures and to appreciate the values and expectations of different cultures. It re-iterates that inter-cultural communication in global economy provides pragmatic tools about how to define a communication strategy, train people and conduct business talks in order to achieve success.

Sunitha. G (2014) had conducted a study on the importance of etiquettes for a professional and it emphasizes that every employee should know about his behavior and its result.   As the paper brings out various issues relevant to etiquettes, it also covers business etiquettes such as dressing etiquette, resume etiquette, interview etiquette, workplace etiquette, eating etiquette and e-mail etiquette. It re-iterates the way to build positive relationships in the business world is by exercising good etiquette, specifically by exhibiting top-notch communication skills.

3. OBJECTIVES

1. To identify and analyze the inter relationship between factors of employability skills
2. To assess the Influence of Institution towards Employability skills in Engineering Institution
3. To assess the predictor variables of students' satisfaction towards employability skills

4. METHODOLOGY

A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. The sampling type is **convenience sampling** which involves deliberating selection of particular units constituting a sample, which represents the universe. Respondents studying in engineering institutions have expressed their views regarding their present employability skills. Expectations, support given by the institutions and satisfaction level towards employability skills in engineering institutions were discussed. Through the structure questionnaire which consisting of 29 attributes the primary data was collected from 700 engineering students from selected engineering institutions.

4.1. Reliability And Validity Test

Reliability of an instrument refers to the degree of consistency between multiple measurements of variables. It is extent to which an experiment tests or any measuring procedures yield, the same result on repeated attempts. Reliability was estimated through internal consistency method which is applied to measure the consistency among the variables in a summated scale. In the present study, the Cronbach's Alpha co-efficient of reliability was found based on primary data of the present study and the details are as follows:

4.2. Reliability Measures for the Study

Table 5.1

No.		No. of items	Alpha
1.	**Opinion**	**29**	**0.84**
	Basic academic skills	7	0.85
	Self management	5	0.82
	Higher order thinking skills	5	0.91
	Entrepreneurial skills	5	0.83
	Problem solving skills	4	0.86
	Team skills	3	0.84
2.	**Expectation**	**29**	**0.83**
3.	**Support given by the institutions**	**29**	**0.91**
4.	**Satisfaction**	**29**	**0.87**
	Overall reliability of the study	**116**	**0.85**

Source: Primary data

4.3. Validity

The face validity was done by the researcher and the content validity was established by the experts in the field of investigation. Face validity, it appears to measure whatever the author had in mind, namely, what he thought he was measuring. The rationale behind content validity is that to examine the extent to which a measuring instrument provides adequate coverage of the topic under study.

5. ANALYSIS

5.1. Inter Relationship between Factors of Employability Skills

Factors of employability skills are interrelated, the researcher made a valiant attempt to identify the degree of relationship between the factors. To test the relationship between factors of employability skills (Basic Academic skills, Self management, Higher order thinking skills, Entrepreneurial skills, Problem solving skills, Team work) among engineering students, Bi-variate correlation was used to find out the relationships between factors of employability skills.

5.2. BAS- Basic Academic skills, SM- Self management, HOS- Higher order thinking skills, ES- Entrepreneurial skills, PS- Problem solving skills, TW- Team work

All the *r* values in the above table more than 0.001 which found that there is a Positive correlation is between the all factors of the employability skills, Basic Academic skills, Self management, Higher order thinking skills, Entrepreneurial skills, Problem solving skills, Team work. Among the r values the *r* value for Basic academic skills and Entrepreneurial skills is higher ($r = 0.572$), the r value for Problem solving skills and Team work is low ($r = 0.324$).

Table 5.2
Inter correlation between the factors of employability skills

	BAS	SM	HOS	ES	PS	TW
BAS	1					
SM	$r = 0.348^{**}$ $p < .001$	1				
HOS	$r = 0.373^{**}$ $p <. 001$	$r = 0.432^{**}$ $p < .001$	1			
ES	$r = 0.572^{**}$ $p <. 001$	$r = 0.477^{**}$ $p < .001$	$r = 0.477^{**}$ $p < .001$	1		
PS	$r = 0.432^{**}$ $p <. 001$	$r = 0.506^{**}$ $p < .001$	$r = 0.506^{**}$ $p < .001$	$r = 0.547^{**}$ $p < .001$	1	
TW	$r = 0.332^{**}$ $p <. 001$	$r = 0.362^{**}$ $p < .001$	$r = 0.362^{**}$ $p < .001$	$r = 0.452^{**}$ $p < .001$	$r = 0.324^{**}$ $p < .001$	1

** significant at 1% level

5.3. Influence of Institution towards Employability Skills In Engineering Institution

Table 5.3

	Institution	N	Mean	S D	t-value
Basic Academic skills	Universities	388	25.23	3.386	**4.930**</br>**($p < .001$)**
	Engineering Colleges	312	24.05	2.937	
Self management	Universities	388	20.47	2.339	**2.913**</br>**($p = .006$)**
	Engineering Colleges	312	19.30	2.407	
Higher order thinking skills	Universities	388	18.92	2.339	**3.019**</br>**($p < .001$)**
	Engineering Colleges	312	18.02	2.407	
Entrepreneurial skills	Universities	388	18.32	2.812	**0.211**</br>**($p = .833$)**
	Engineering Colleges	312	18.27	2.480	
Problem solving skills	Universities	388	15.56	2.338	**2.951**</br>**($p = .005$)**
	Engineering Colleges	312	14.28	2.032	
Team work	Universities	388	11.82	1.633	**0.468**</br>**($p = .640$)**
	Engineering Colleges	312	11.76	1.606	

** significant at 1% level

H01: There is no significant influence of Institution on opinion towards (*a*) Basic Academic skills (*b*) Self management (*c*) Higher order thinking skills (*d*) Entrepreneurial skills (*e*) Problem solving skills (*f*) Team work in Engineering institutions.

5.4. Basic Academic skills

The obtained 'F' value is 4.930 and it is significant at 1% level. The value indicates that there is significant influence of institution on Basic Academic skills. Further, the mean table 2.0 indicates that the students studying in Universities have scored higher mean value of 25.23 and the lowest mean value was scored by the students studying in Engineering Colleges (24.05). This shows that the students studying in Universities are possessing better Basic Academic skills than the students studying in Engineering Colleges. Therefore, the formulated hypothesis H01(*a*) that "there is no significant influence of institution on Basic Academic skills" is rejected.

5.5. Self management

The obtained 'F' value is 2.913 and it is significant at 1% level. The value indicates that there is significant influence of institution on Self management. Further, the mean table 2.0 indicates that the students studying in Universities have scored higher mean value of 20.47 and the lowest mean value was scored by the students studying in Engineering Colleges (19.30). This shows that the students studying in Universities are possessing better in Self management skills than the students studying in Engineering Colleges. Therefore, the formulated hypothesis H01(*b*) that "there is no significant influence of institution on Self management" is rejected.

5.6. Higher order thinking skills

The obtained 'F' value is 3.019 and it is significant at 1% level. The value indicates that there is significant influence of institution on Higher order thinking skills. Further, the mean table 2.0 indicates that the students studying in Universities have scored higher mean value of 18.92 and the lowest mean value was scored by the students studying in Engineering Colleges (18.02). This shows that the students studying in Universities are possessing better Higher order thinking skills than the students studying in Engineering Colleges. Therefore, the formulated hypothesis H01(*c*) that "there is no significant influence of institution on Higher order thinking skills" is rejected.

5.7. Entrepreneurial skills

The obtained 'F' value is 0.211 and it is not significant at 5% level. The value indicates that there is no significant influence of institution on Entrepreneurial skills. Therefore, the formulated hypothesis H01(*d*) that "there is no significant influence of institution on Entrepreneurial skills" is accepted.

5.8. Problem solving skills

The obtained 'F' value is 2.951 and it is significant at 1% level. The value indicates that there is significant influence of institution on Problem solving skills. Further, the mean table 2.0 indicates that the students studying in Universities have scored higher mean value of 15.56 and the lowest mean value was scored by the students studying in Engineering Colleges (14.28). This shows that the students studying in Universities are possessing better Problem solving skills than the students studying in Engineering Colleges. Therefore, the formulated hypothesis H01(*e*) that "there is no significant influence of institution on Problem solving skills" is rejected.

5.9. Team work

The obtained 'F' value is 0.468 and it is no significant at 5% level. The value indicates that there is no significant influence of institution on Team work. Therefore, the formulated hypothesis H01(*f*) that "there is no significant influence of institution on Team work" is accepted.

5.10. Assessing The Predictor Variables For Students' Satisfaction Towards Employability Skills

Multiple regression analysis was conducted by taking satisfaction towards employability skills as dependent variable and enhancement of Basic academic skills, Higher order thinking skills, Entrepreneurial skills, Problem solving skills, Team work and Support given by the institution towards employability skills are taken as independent variables (shown in the table 5.3)

Table 5.3
Regression analysis for students' satisfaction towards employability skills

Predictor Variables	R^2	Standard Beta	F-statistics	t- value
Basic academic skills		0.422		6.521**
Higher order thinking skills	0.598	0.562		7.965**
Entrepreneurial skills		0.113	84.785**	3.182**
Problem solving skills	Adjusted R^2	0.403		7.627**
Team work		0.104		2.892**
Support given by the institution	0.591	0.519		10.564**

** significant at 1% level

It is observed from the table 5.3, the regression model's F value is 84.785 and it is significant at 1% level. The regression model's coefficient of determination (R^2) is 0.598 (59.8% of variability) and its adjusted R^2 is 0.591, which is a healthy coefficient. One unit increase in enhancement of Basic academic skills improves students' satisfaction towards employability skills by 0.422 units. Improvement of one unit in Higher order thinking skills increases students' satisfaction towards employability skills. This shows that enhancement in Higher order thinking skills is the important reason for students' satisfaction towards employability skills. Enhancement of Entrepreneurial skills, Problem solving skills and Team work serves as significant predictors for students' satisfaction towards employability skills and improves student's satisfaction towards employability skills by 0.113, 0.403 and 0.104 units. Support given by the institutions significantly predicts and improves student's satisfaction towards employability skills by 0.519 units. The regression equation for students' satisfaction towards employability skills is

Students' satisfaction towards employability skills = 6.582 + 0.422 (Basic academic skills)

+ 0.562 (Higher order thinking skills)

+ 0.113 (Entrepreneurial skills)

+ 0.503 (Problem solving skills)

+ 0.104 (Team work)

+ 0.519(Support given by the institution)

Hence enhancement of Basic academic skills, Higher order thinking skills, Entrepreneurial skills, Problem solving skills, Team work and Support given by the institution towards employability skills serves as significant predictors for students' satisfaction towards employability skills.

5.11. Model for Perception Of Employability Skills In Engineering Institutions

A model is fit to ensure the Employability skills of students studying in engineering institutions. In this model factors such as Basic academic skills, Self management, Higher order thinking skills, Entrepreneurial skills, Problem solving skills, Team work, Support given by the institutions and Satisfaction towards employability skills are taken as observed variables (measured through variables and reduced as factors) and Employability skills is taken as unobserved variable. $e1$, $e2$, $e3$, $e4$, $e5$, $e6$, $e7$ and $e8$ are error terms (residuals) for observed variables.

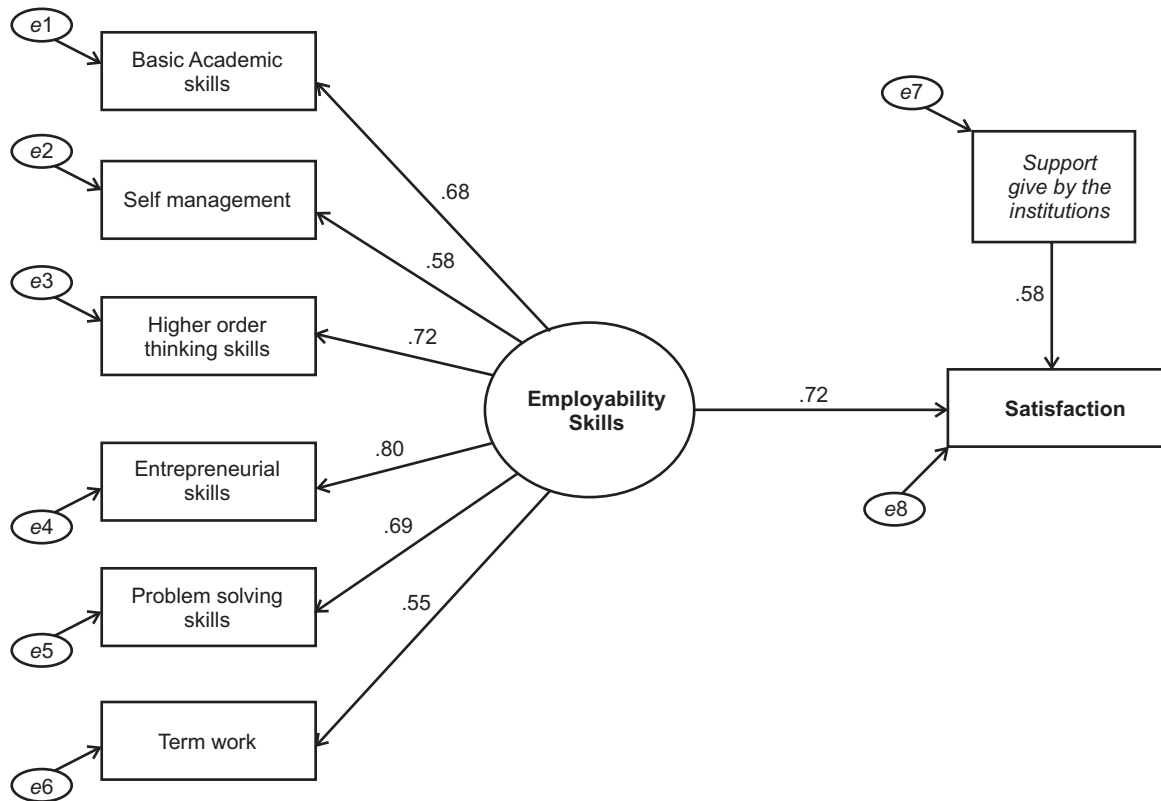**Null Hypothesis H02:** The model fitted for perception of employability skills in engineering institutions is goo

Figure 5.1: Model for perception of employability skills in engineering institutions

5.12. Model fit Summary

The model fit Chi-square $\chi^2 = 2.154$ and the model's *p*-value is 0.141 which is insignificant at 5% level, which shows that the null hypothesis "The model fitted for perception of employability skills in engineering institutions is good" is accepted. The goodness of fit index (GFI) is 0.916 of the model, shows reasonably good fit, and its adjusted goodness of fit (AGFI) is 0.902. The Root Mean Square Error of Approximation (RMSEA) is 0.083, a smaller value indicates better model, and Expected Cross Validation Index (ECVI) is 0.098, which are within the acceptable range indicating a better model fit.

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