

A STUDY ON STATUS OF EMPLOYABILITY SKILLS AMONG FRESH ENGINEERS IN CHHATTISGARH

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ABSTRACT

Graduates in engineering branch need several skills required for employment and continue with the organization. Various skills for employment needed and identified are communication/ technical/ numeracy/ teamwork/ creating thinking/ problem solving. Fresh engineers lack in these skills, as verified by employers. This paper attempts to know the condition of these skills in fresh engineers coming out from Chhattisgarh's engineering colleges. The subject was chosen as the sample to know the status where the HR-Manager/ Team Leader of various organizations operational in Chhattisgarh state. A close-ended questionnaire is prepared and used to know about the condition of these skills in fresh engineers. The questionnaire was filled by HR staff of organization in Chhattisgarh. Nine (9) skills so identified are the constructs for this study and under each construct, four questions were asked, the answer of which tells about the presence or absence of these skills. Questions were to answer in 5 point Likert scale, i.e. strongly agree, agree, neutral, disagree and strongly disagree. Later, the mean value of all the four questions is calculated and opinion is created for each skill separately. To test the reliability of data, Cronbach's alpha is also calculated for each construct. The outcome of this study shows that organizations are not satisfied with fresh engineers due to their skills. The study identifies these skills through literature review and later found that fresh engineers are lacking in these skills.

KEYWORDS: Graduates, Fresh Engineers, Employability Skills, Employment

INTRODUCTION

Fresh engineers must have several skills which will provide them employment and later will support them to continue their job. Further, who is responsible for inculcating these skills in fresh engineers? Harvey (2002) presented this model which answers the second question.



Figure 1

The model put forward that higher education institutions are responsible for generating employability skills in graduates which in turn make engineers employable. A recent study showed that the fresh engineers are not getting employment and if getting them in another field or with a low salary. What can be the reason? The previous study verified that fresh engineers lack these skills and source of information are the employers who provide employment to these fresh engineers.

Employability and Employment

Employability means “work readiness”. Hillage and Pollard (1998) described employability as that ability which helps to gain first employment, maintain the same and find new employment if needed. [1]. Yorke (2003) defined employability as a group of skills that makes fresh engineers obtain employment. [2]. As per **Wikipedia** and **About.com**, employment refers to the employee giving his services in the employer’s firm to achieve firm’s goals and getting compensation in return. [4] [3].

Need of the Study

The situation of employment in India is poor because fresh engineers are lacking skills required for employment and so are unemployable. As for the condition of fresh engineers’ employability skills is concerned, no specific study is yet conducted. To improve the condition of fresh engineers w.r.t. employment data on employability skills is needed and thus this study has been conducted.

LITERATURE REVIEW

Several studies verified that substantial unemployment exists in India among fresh engineers and this is because of lacking in employability skills. Research also suggested various employability skills fresh engineers should possess.

Employment

Table 1

Career Builder. 2013:	49% Engineers and 70% Architectures can't be Hired due to Lack of Specific Job skills. [5]
Somalingam and Shanthakumari. 2013:	Engineering graduates in India are under-employed and inadequately compensated due to shortage of employability skills. [6]
Gurucharan Singh. 2014:	Only 25% fresh engineering graduates in India are employable. [7]
Aey Cee. 2015:	64% employers are not satisfied with fresh engineering graduate skills in India. [8]
Arjun Jagadeesh. 2014:	40% search for a job for a year while 22% try till two years to have a job [9].
CareerBuilder. 2015:	Students lack 50 % on interpersonal skills, 60%- problem solving, 56%- creative thinking, 53%- team work, 49%- leadership, 47%- oral communication, 45%- research & analysis, 39%- project management, 38%- written communication, 23%- computer & technical skills, and 20%- mathematics skills. [10]
Devika Singh. 2016:	Previous 5 years 80% of total fresh engineers per year in India are not employable due to being deficient in basic skills [11].

Employability Skills

Following are the few employability skills presented below as suggested by the researchers.

Table 2

Anderson and Mitchell (2006):	Communication Skills and Team Working [12].
Pauw et al. (2006):	Communication/ presentations/ creative thinking skills [13].
Martin et al. (2008):	Communication/ team-working/ problem-solving/ numeracy/ IT skills [14].
CBI- UK (2009):	Positive attitude/ team working/ problem solving, communication/ application of numeracy/ application of information technology [15].
Zaharim et al. (2009):].	Communication/ problem solving and interpersonal skills [16].
and Saeki (2011):	Teamwork/ problem solving/ communication/ technical/ computer knowledge/ application of mathematics etc [17].
Ismail (2011):	Analytical thinking, communication and computer skills [18].
Lowden (2011):	Team-working communication/ leadership/ critical thinking/ problem solving & managerial abilities [19].
Natarajan (2012):	Domain knowledge/ Quantitative aptitude/ Analytical/ Logical & critical thinking/ Communication/ Team building skills/ Listening/ Presentation skills [20]
Chitra (2013):	Teamwork, willingness to learn, communication etc [21].
Higher Education Review (2014):	Communication/ Problem solving/ team working/ Computer/ Technical Literacy [8].
Mishra (2016):	Communication, Personal presentation/ technical etc [22].

Objective of the Study and its Respective Questions

Objectives provide a suitable direction to the Research and tell about what and from where data need to be collected.

The objective here is to recognize the opinion of HR-Manager/ Team Leader of firms in Chhattisgarh towards Fresh Engineers (FEs) employability skills possession statement-wise. With each objective, there are four respective questions, answers of which suggest the presence or absence of that particular employability skill.

Objective 1: To identify the perception of HR-Manager/ Team Leader of organizations in Chhattisgarh towards FEs Communication Skills (CS).

- FEGs put substantial content in their communication (CS1)
- The contents are relevant to topic/ theme/ subject (CS2)
- The contents are in flow (CS3)

- Communication contains correct usage of words & grammar (CS4)

Objective 2: To identify the perception of HR-Manager/ Team Leader of organizations in Chhattisgarh towards FEs Personal Presentation Skills (PPS).

- FEs shows correct body language (PPS1)
- FEs maintains eye contact (PPS2)
- FEs do voice modulation (PPS3)
- FEs involves in interaction (PPS4)

Objective 3: To identify the perception of HR-Manager/ Team Leader of organizations in Chhattisgarh towards FEs Teamwork (TS).

- FEs know their team members (TS1)
- FEs know their team member's strength and weakness (TS2)
- FEs assess and solve the problem in a team (TS3)
- FEs share information and accept others views (TS4)

Objective 4: To identify the perception of HR-Manager/ Team Leader of organizations in Chhattisgarh towards FEs Technical Knowledge and Skills (TKS).

- FEs know the fundamental concepts, principles, codes and standards etc (TKS1)
- FEs understands general graphs and figures (TKS2)
- FEs know and understand general instruments and gadgets (TKS3)
- FEs know the practical application of fundamental concepts, principles etc (TKS4)

Objective 5: To identify the perception of HR-Manager/ Team Leader of organizations in Chhattisgarh towards FEs Numeracy Application Skills (NAS).

- FEs heard/studied the formulas, theorems, standards and methods
- FEs understands the formulas, theorems, standards and methods
- FEs understands what needs to be measured and calculated
- FEs know the practical application of formulas and standards

Objective 6: To identify the perception of HR-Manager/ Team Leader of organizations in Chhattisgarh towards FEs Computer Proficiency (CP).

- FEs are aware with computer system and its working with devices like printer, scanner, projectors etc (CP1)
- FEs are well versed with application software like MS- Word, Excel, PowerPoint etc (CP2)

- FEs are able on file management (CP3)
- FEs know general computer settings and its adjustments (CP4)

Objective 7: To identify the perception of HR-Manager/ Team Leader of organizations in Chhattisgarh towards FEs Information Technology Skills (ITS).

- FEs know about various search engines (ITS1)
- FEs can locate, retrieve and organization relevant data and information (ITS2)
- FEs can use internet with other utility software (ITS3)
- FEs know about email and its uses (ITS4)

Objective 8: To identify the perception of HR-Manager/ Team Leader of organizations in Chhattisgarh towards FEs Logical Thinking Skills (LTS).

- FEs assess situations and identify problems (LTS1)
- FEs identify root cause of the problem (LTS2)
- FEs interpret results of any situation (LTS3)
- FEs apply systematic approach to solve problems (based on facts) (LTS4)

Objective 9: To identify the perception of HR-Manager/ Team Leader of organizations in Chhattisgarh towards FEs Problem-Solving Skills (PSS).

- FEs draw solutions through concepts and principles (PSS1)
- FEs put forward a range of solution as per situation (PSS2)
- FEs choose solutions from various alternatives (PSS3)
- FEs evaluate solutions to make recommendation or decision (PSS4)

RESEARCH METHODOLOGY

In the present study the suitable research design is the descriptive research design. Team Leader and HR-Manager at the organizations (which provide job to the fresh engineering graduates) located in Chhattisgarh constitute population for this study.

In this study total nine statements, or say objectives are prepared and under each statement there are four questions and collectively answers of these will give an idea regarding respective statements. The questions were identified from the literature review as presented by the authors.

Final validate responses were limited to 100 and to have responses samples were drawn by convenient sampling. The close-ended questionnaire with five points forced scale was used to collect the responses. The scale having five choices as always = 5, frequently = 4, somewhat = 3, rarely = 2 and never = 1. The objectives and their respective questions are given in the upper segment.

For reliability of data, cronbach's alpha value is calculated. Later, to form the opinion for each statement, mean values are calculated.

RESULTS AND DISCUSSIONS

For any research to be good, data need to be reliable. To test the reliability, Cronbach's alpha for each set of responses was calculated using SPSS. All set of data passed the test for reliability. Statement wise data is provided below in a percentage.

Later, a mean value of the set of four questions under each objective is calculated. The calculated mean value confirms the opinion of HR Manager/ Team Leader as agreed or disagreed.

One by one statement wise analyses are presented below:

Objective 1: Statement 1- Fresh Engineering Graduates are **good** in their Communication Skills

CS	Reliability Statistics	Cronbach's Alpha	.867	N of Items	4
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As per various authors, reliability coefficient value of 0.70 and greater is taken as reliable. The value here is 0.867 which means data is reliable. The mean values of four questions of the first statement of total 100 respondents as calculated through SPSS are provided below:

Table 3

	Mean	N
CS1	2.8412	100
CS2	4.1857	100
CS3	4.1827	100
CS4	4.1779	100
Overall	2.87	100

*CS1, CS2, CS3 and CS4 are the questions under objective 1/ statement 1.

Zaidatol & Bagheri (2009) highlighted with respect to the mean value in five-point Likert scale with options strongly agree= 5, agree= 4, neutral= 3, disagree= 2 and strongly disagree= 1 that when it is under 3.39 then the value is considered to be low, between 3.40 to 3.79 a moderate value and if more that 3.8 then its high [23]. This criterion is also used by Wogari (2016) in his similar study [24]. In the above case, the overall mean value is **2.87** which is lower than 3.39 thus can be said to be low. This means overall response is disagreeing with the statement that Fresh Engineering Graduates are **good** in their Communication Skills.

Objective 2: Statement 2- Fresh Engineering Graduates are **good** in their Personal Presentation Skills

PPS	Reliability Statistics	Cronbach's Alpha	.854	N of Items	4
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The reliability coefficient value here is 0.854 which means data is reliable. The mean values of the four questions of the first statement of the total 100 respondents as calculated through SPSS are provided below:

Table 4

	Mean	N
PPS1	3.1122	100
PPS2	3.0984	100
PPS3	3.0887	100
PPS4	3.065	100
Overall	3.09	100

*PPS1, PPS2, PPS3 and PPS4 are the questions under objective 2/ statement 2.

In above case, the overall mean value is 3.09 which is lower than 3.39 thus can be said to be low. This means overall response is disagreeing to the statement that Fresh Engineering Graduates are **good** in their Problem-Solving Skills.

Objective 3: Statement 3- Fresh Engineering Graduates are **good** in their Teamwork Skills

TS	Reliability Statistics	Cronbach's Alpha	.841	N of Items	4
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The reliability coefficient value here is 0.841 which means data is reliable. The mean values of four questions of the first statement of total 100 respondents as calculated through SPSS are provided below:

Table 5

	Mean	N
TS1	3.2141	100
TS2	3.2141	100
TS3	3.2141	100
TS4	3.2121	100
Overall	3.21	100

*TS1, TS2, TS3 and TS4 are the questions under objective 3/ statement 3.

In above case, the overall mean value is 3.21 which is lower than 3.39 thus can be said to be low. This means overall response is disagreeing to the statement that Fresh Engineering Graduates are **good** in their Teamwork Skills.

Objective 4: Statement 4: Fresh Engineering Graduates are **good** in their Technical Knowledge and Skills

TKS	Reliability Statistics	Cronbach's Alpha	.925	N of Items	4
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The reliability coefficient value here is 0.925 which means data is reliable. The mean values of the four questions of the first statement of total 100 respondents as calculated through SPSS are provided below:

Table 6

	Mean	N
TKS1	2.2189	100
TKS2	2.2189	100
TKS3	2.2067	100
TKS4	2.2067	100
Overall	2.21	100

*TKS1, TKS2, TKS3 and TKS4 are the questions under objective 4/ statement 4.

In the above case, the overall mean value is **2.21** which is lower than 3.39 thus can be said to be low. This means overall response is disagreeing with the statement that Fresh Engineering Graduates are **good** in their Technical Knowledge and Skills.

Objective 5: Statement 5: Fresh Engineering Graduates are **good** in their Numeracy Application Skills

NAS	Reliability Statistics	Cronbach's Alpha	.911	N of Items	4
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The reliability coefficient value here is 0.911 which means data is reliable. The mean values of the four questions of the first statement of total 100 respondents as calculated through SPSS are provided below:

Table 7

	Mean	N
NAP1	2.4652	100
NAP2	2.4557	100
NAP3	2.4539	100
NAP4	2.4434	100
Overall	2.45	100

*NAS1, NAS2, NAS3 and NAS4 are the questions under objective 5/ statement 5.

In the above case, the overall mean value is **2.45** which is lower than 3.39 thus can be said to be low. This means overall response is disagreeing to the statement that Fresh Engineering Graduates are **good** in their Numeracy Application Skills.

Objective 6: Statement 6: Fresh Engineering Graduates are **good** in their Computer Proficiency

CP	Reliability Statistics	Cronbach's Alpha	.853	N of Items	4
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The reliability coefficient value here is 0.853 which means data is reliable. The mean values of the four questions of the first statement of total 100 respondents as calculated through SPSS are provided below:

Table 8

	Mean	N
CP1	3.1521	100
CP2	3.1453	100
CP3	3.1471	100
CP4	3.1334	100
Overall	3.14	100

*CP1, CP2, CP3 and CP4 are the questions under objective 6/ statement 6.

In the above case, the overall mean value is **3.14** which is lower than 3.39 thus can be said to be low. This means overall response is disagreeing with the statement that Fresh Engineering Graduates are **good** in their Computer Proficiency.

Objective 7: **Statement 7-** Fresh Engineering Graduates are **good** in their Information Technology Skills

ITS	Reliability Statistics	Cronbach's Alpha	.784	N of Items	4
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The reliability coefficient value here is 0.784 which means data is reliable. The mean values of the four questions of the first statement of total 100 respondents as calculated through SPSS are provided below:

Table 9

	Mean	N
ITS1	3.3715	100
ITS2	3.3661	100
ITS3	3.3661	100
ITS4	3.3554	100
Overall	3.36	100

*ITS1, ITS2, ITS3 and ITS4 are the questions under objective 7/ statement 7.

In the above case, the overall mean value is **3.36** which is lower than 3.39 thus can be said to be low. This means overall response is disagreeing with the statement that Fresh Engineering Graduates are **good** in their Information Technology Skills.

Objective 8: **Statement 8:** Fresh Engineering Graduates are **good** in their Logical Thinking Skills

LTS	Reliability Statistics	Cronbach's Alpha	.923	N of Items	4
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The reliability coefficient value here is 0.923 which means data is reliable. The mean values of the four questions of the first statement of total 100 respondents are provided below:

Table 10

	Mean	N
LTS 1	2.2813	100
LTS 2	2.2813	100
LTS 3	2.2725	100
LTS 4	2.2646	100
Overall	2.27	100

*LTS1, LTS2, LTS3 and LTS4 are the questions under objective 8/ statement 8.

In the above case, the overall mean value is **2.27** which is lower than 3.39 thus can be said to be low. This means overall response is disagreeing to the statement that Fresh Engineering Graduates are **good** in their Logical Thinking Skills.

Objective 9: **Statement 9-** Fresh Engineering Graduates are **good** in their Problem-Solving Skills

PSS	Reliability Statistics	Cronbach's Alpha	.904	N of Items	4
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The reliability coefficient value here is 0.904 which means data is reliable. The mean values of the four questions of the first statement of total 100 respondents are provided below:

Table 11

	Mean	N
PSS 1	2.6968	100
PSS 2	2.6831	100
PSS 3	2.6322	100
PSS 4	2.6112	100
Overall	2.66	100

*PSS1, PSS2, PSS3 and PSS4 are the questions under objective 9/ statement 9.

In above case, the overall mean value is **2.66** which is lower than 3.39 thus can be said to be low. This means overall response is disagreeing with the statement that Fresh Engineering Graduates are **good** in their Problem-Solving Skills.

CONCLUSIONS

This study was an effort to find the status of skill present in fresh engineering graduates and that required by the industry. The subjects were HR-Manager/ Team Leader from whom responses were taken through a questionnaire. The data so collected were analyzed by first by calculating a mean value for each question of 100 respondents and later the average mean value of four questions under each statement. The opinion of the respondents about FEs on several employability skills is notably distant from anticipated. Graduates are most poor in technical knowledge & skills, logical thinking skills, and numeracy application skills. Regarding problem-solving skills, communication skills, personal presentation skills, they are better than above skills but still poor. Further, computer proficiency, teamwork skills and information technology skills condition are better than other skills mentioned above but still poor.

The study assisted in knowing about the skills in students and the skill level needed by the employers.

Thus, it suggests that the lack of these skills may be leading to un-employability among the fresh engineering graduates resulting into unemployment.

Future

The respondents in this study were not divided as per industry. The skills required to vary with the type of industry so the future study can be done industry-wise so that better idea can be put forward. Again, the study can be made engineering stream-wise like electrical, electronics, etc. as the skills requirement varies with the stream. Moreover, a study can be conducted to know the reason(s) for these poor employability skills in fresh engineering graduates.

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