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A Study on Dynamics of Graduate Employability: Special Reference to Engineering Graduates

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ABSTRACT
Researchers have carried out this study to understand all factors that affect the employability of undergraduate students of South Gujarat. In this study, qualitative as well as quantitative methodologies have been adopted. The paper will highlight various factors that affect the employability of undergraduates.
Literatures related to the employability of undergraduates have been reviewed to identify the factors affecting graduates' employability. Study has been carried out in two phases. During first phase, whether these factors could be combined into five categories; and during second phase, importance of each affecting factors have been verified as per employers' perspective. For phase one, interview method has been adopted and questionnaire method has been adopted for phase two.
Findings of both, qualitative and quantitative phases said that all affected factors can be categories into five composite categories. One more finding suggested that, employers give highest importance to soft skill rather than reputation of institute while recruiting new graduates.
The study also suggests that, educational institute should concentrate on pedagogy, curriculum and co-curricular activities through which students' soft-skills and problem-solving skills can be developed.
KEY WORDS: Employability, Undergraduate, Soft skills, Problem solving skills, Experience, Functional skills, Institute reputation, Employment.

I. INTRODUCTION

Our country is facing the problem of shortage of skills and that is the main obstacle for the economic development of any nation. Many engineering based manufacturing and service organizations are complaining that, they are not getting industry ready engineering graduates and they cannot afford long duration training or internship programs for newly recruited engineers, in terms of both- the direct and indirect cost. On the other hand, engineering colleges are not able to maintain the quality/ standards of engineering education and due to this even after availability of more numbers of engineering Institutes, industries are not getting engineering graduates as per their requirement.

As we know, before 2005 many students of Gujarat State had to go outside Gujarat for acquiring engineering education on account of limited seats at the engineering institutes available in Gujarat. After 2005, State Government had decided to open more engineering colleges in Gujarat. However, only the number of engineering colleges increased, the quality of education herein did not necessarily improve. Enhancing technical knowledge and skills through a better class room experience and through very good practical exposure, be it in the laboratories within the college or in industry, and also the development of soft skills, is the need of the hour, if these graduate have to be found employable. For this, a three pronged approach is very crucial – the institutes must provide the required teaching – learning experience, the industry must mentor the engineering students from the business and market perspective, and the students have to work hard and smart with a growth vision in mind. The first step in this direction is that all three stakeholders empathies with this need and express their desire to work together towards the said cause. Through this paper, the researchers have tried to know the perception of engineering students regarding their employability and have suggested measures to be taken for enhancing employability skills.

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II. LITERATURE REVIEW

Institutions and industries together so needs of industries can be satisfied should prepare engineering curriculum. Experienced people from industry should be there in institutions as a teacher so students will get the actual exposure and accordingly we can mould them in a proper manner. "Current scenario of students studying in technical institutes and their employability"; Dr. C. M. Jadhao (2016).

Responsiveness, problem solving ability, strategic vision, farsightedness, coordinating ability and being able to attend/address large group of society are the attributes that make individual competent and socially capable. Education and employability: linkages and leakages"; Dr. Kruti Chhava (2016).

Domain knowledge is an important aspect for employability and graduates strongly believe that interaction between industry and academia is helping in enhancing their employability. "A study on the industries demand from students graduating in engineering courses in India- Banglore"; Murali S. and Dr. Y. Rajaram (2015).

Importance has shifted from acquiring knowledge and learning to passing the examinations and score good marks. "A research on availability of industry ready technical graduates of Mumbai and Pune region"; Keerthi Menon (2014).

Converting young citizens of India into engineering graduates is not only the responsibility of engineering institutions but to make them employable is also the foremost requirement of the society and responsibility of engineering institutions. "Testing and exploring graduate employability skills and competence"; A. Somalingami and R. Shanthakumari (2013).

From the study of Indian market, it is noted that critical thinking, leadership skills, positive attitude, communication skills, dedication, time management, commitment, honesty, flexibility and adaptability are required for employability. "Skills for employability: South Asia"; Dr. Arti Srivastava and Mona Khare (2012).

As per Key to employability model, career oriented learning, emotional intelligence, knowledge of engineering subjects, skills required in day-to-day use and experience are required to enhance employability. "The success mantra for employability: constructing a robust system for graduates employability"; Lorraine Dacre Poll and Peter Sewell (2007).

Emotional self-efficacy (ESE) is majorly related to employability. Engineering graduates with higher emotional self-efficacy perceive themselves more employable. "Emotional self-efficacy (ESE), graduates' ability to become employable and to satisfy one's career development path: measuring the connections"; Lorraine D. Pool and Pamela Q. (2013).

Through above literatures, researcher has identified five main categories of employability skills i.e.

Soft Skills e.g. leadership skills, positive attitude, communication skills, dedication, time management, commitment, honesty, flexibility and adaptability, self-discipline, being organized, taking initiative and responsibility, etc.

Problem Solving Skills e.g. analytical and creative skills which comprise of using generic or transient methods, in an arranged manner, for finding results to problems and decision-making.

Functional Skills e.g. Domain knowledge, the knowledge which students gain in his/ her own field of specialization.

ExperiencePractical contact with and observation of facts or events, regarding which student has learned during his/ her course of education.

Academic Reputation Academic reputation was generally **defined** by these higher education leaders as the overall impression of excellence or quality created by a number of factors.

III. RESEARCH METHODOLOGY

Phase I: Qualitative Method

In this method researchers have conducted one-to-one interviews of Practitioners. Table 1 presents individual profiles of the participants. Researchers have used structured, open-ended questions. Majority of questions focused on the identification of employability factors for new graduates. Participants have also responded to questions about their professional background and hiring experiences.

All interviews were digitally recorded for proper analysis of information received.

During the first phase, the researchers have identified total major themes. After that researchers have consolidated these themes into five major composite themes. After that researches have compared this with factors identified during literature review. Table 2 represents this comparison.

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Practitioner Interviewees

Participant	Title	Sector of Industry
Participant 1	Manager, Maintenance	Basic Metal Production
Participant 2	Assistant Manager, Quality Control	Chemical
Participant 3	Deputy Manager, Production	Financial Services
Participant 4	Senior Manager, Sales	Health Services
Participant 5	General Manager	Oil and Gas Production
Participant 6	Senior Executive, Human Resource	Commerce
Participant 7	Manger, Talent Acquisition	Construction
Participant 8	Manager, Operations	Shipping and Port
Participant 9	President	Health Services
Participant 10	Business Analyst	Oil and Gas Production
Participant 11	Manager, Quality Assurance	Transport equipment manufacturing
Participant 12	Project Manager	Oil and Gas Production
Participant 13	Assistant Manager, Instrument Maintenance	Commerce
Participant 14	Chief Executive Officer	Construction
Participant 15	Vice President	Shipping and Port
Participant 16	Chief Engineer	Health Services
Participant 17	Executive Engineer	Oil and Gas Production
Participant 18	Assistant Engineer	Basic Metal Production
Participant 19	Chief Financial Officer	Chemical
Participant 20	Managing Director	Financial Services
Participant 21	Divisional Manager	Health Services
Participant 22	Manager, Human Resource	Oil and Gas Production
Participant 23	Manager, Accounts	Commerce
Participant 24	Chairman	Construction
Participant 25	Deputy Executive Engineer	Shipping and Port
Participant 26	Manager, Personnel	Oil and Gas Production
Participant 27	Manager, Career Development	Basic Metal Production
Participant 28	Senior Executive	Chemical
Participant 29	Superintending Engineer	Financial Services
Participant 30	Director	Health Services

Table 1

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Employability factors composite categories

Factor	Literature Support	Interview Support	Scope
Soft skills	Lievens and Sackett (2012), Rynes et. al. (1997)	28/30	Associated literatures as well as interviewees have identified importance of soft skills. Interviewees cited, soft skills as a dominant characteristic.
Problem solving Skills	Reid and Anderson (2012), Kilgour and Koslow (2009)	25/30	As per interviewees, Problem Solving is also an important element for employability.
Functional skills	Huang and Lin (2011), Laker and Powell (2011), Smith et.al. (2008), Longest (1973), Pang and To Ming (2005)	28/30	Job specific competencies are also a matter of concern as per interviewees.
Experience	Callanan and Benzing (2004), Gabrisand Mitchell (1989)	19/30	Experience includes internship, study related training during education etc.
Academic Reputation	Alessandri et. al. (2007)	19/30	As per interviewees, program reputation is more important than academic reputation.

Table 2 Employability factors composite categories

Phase II: Quantitative Method

In phase II, researchers have expanded the findings of phase I by empirically examining the relative importance of these factors among practitioners. The target population for this empirical study was employers who have direct influence on hiring decisions pertaining to new graduates. The final sample consisted of 115 employers.

To examine the relationship amongst the individual factors, researcher had started by conducting an exploratory factor analysis (EFA) using principal components extraction. The result of the EFA provided preliminary support for the proposed five composite categories. To test the internal consistency of each category, we conducted a Cronbach's α reliability test. The result of the Cronbach's α's ranged from 0.51 to 0.79.

Data Analysis

Table 3 provides a summary of the results from the EFA while Table 4 illustrates the inter-correlations between the composite categories. Table 5 presents the category-level ranking.

Proposed new graduate employability categories factor loadings and Conbach's*α*

Category	Factor Loading
Soft skills (Cronbach's α=0.79)	**Eigen Value = 2.73**
Written communication skills	0.64
Verbal communication skills	0.81
Listening skills	0.68
Professionalism	0.79
Interpersonal skills	0.77
Problem solving skils(Cronbach'sα=0.67)	**Eigen Value = 2.04**
Critical thinking skills	0.72
Creative thinking skills	0.83
Leadership skills	0.70
Adaptability	0.57
Functional skils (Cronbach's α=0.68)	**Eigen Value = 1.87**
Job specific competence	0.73
Job specific technical skills	0.75
Knowledge of software	0.78
Experience (Cronbach's α=0.51)	**Eigen Value = 1.44**
Work experience	0.81

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Professional confidence	0.71
Academic Reputation(Cronbach's α=0.76)	**Eigen Value = 2.04**
Academic performance	0.67
Institutional reputation	0.89
Programme reputation	0.90

Table 3

Proposed new graduate employability categories intercorrelations

Category	Soft skills	Academic reputation	Functional skills	Problem Solving Skills
Soft skills	1.00			
Academic reputation	0.43	1.00		
Functional skills	ns	0.24	1.00	
Problem solving skills	0.42	0.27	ns	1.00
Experience	0.28	ns	ns	0.38
Note: All correlations are significant at the 0.05 level (two-tailed)				

Table 4

Mean ranking category level

Category	Mean	Standard Deviation
Soft skills	6.28	0.64
Academic reputation	5.80	0.73
Functional skills	5.35	0.86
Problem solving skills	4.88	1.07
Experience	4.36	1.04

Table 5

IV. CONCLUSION

Based on the qualitative and quantitative study that included interview data from 30 employers and quantitative data from additional 115 employers, researchers have demonstrate that employability factors can be clustered into five high order composite categories. Researchers have also explored the relative importance of these categories, and found that, when hiring new graduates, employers place the highest importance on soft skills and the lowest importance on academic reputation. After referring and understanding this study in a good manner, university can design curricula based on the development of key skills that employers desire.

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