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JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

EMPLOYERS' PERSPECTIVES ON THE EMPLOYABILITY SKILLS OF INDIAN ENGINEERING GRADUATES

[1]Pawan Kumar Chand, [2]Frederick Sidney Correa, [3]Vikrant Jaswal and [4]Balbir Mangta

[1] Associate Professor, Department of Management Studies, Sardar Patel University, Mandi-Himachal Pradesh, India.
[2] Research Scholar, Chitkara Business School, Punjab, India.
[3&4] Assistant Professor, Department of Management Studies, Sardar Patel University, Mandi-Himachal Pradesh,India

Abstract: Present study likes to encapsulate the perspectives of the employers and researchers on the existing employability skills of Indian engineering graduates. The study has followed the systematic literature approach and has insight the stakeholders to understand the employability skills of Indian graduates. The study in its diligent effort helps the future researchers to understand ebb and flow of employability in India.

Keywords: Employability Skills, Engineering graduates and Employers

1.INTRODUCTION

India has bolstered the top position for its service sector in the world (Kearney, 2011; Chand, Kumar and Mittal, 2019). Simultaneously, India is also striving hard to reinvigorate the domain of industry and academia relationship in achieving the benchmark for employability of its fresh engineering graduates (Dubey et al., 2017; Singh et al., 2020) It is to connote that majority of Indian engineering graduates are not employable due to dynamic transformational technology change in industry 4.0 concept. An annual employability survey report by Aspiring mind in the year 2019 indicates that about 80% per cent of Indian engineering graduates are unemployable because of inadequate employability skills to address the demand of employers in industry 4.0 which has new job role changes. The present study after a systematic literature survey like to bring insight to all the stakeholders such as employers, academicians, employees, students, job aspirants and researchers. What are those employability skills that satisfied employers? And how such employability can be attained by the job aspirants?

II.EMPLOYABILITY SKILLS

Sreepavani, Kalyan, Prasanna (2020) studied the several engineering institutions/Universities in India to understand the employability skill gap and the authors affirm that India is passing through the state of transformational education. The Indian Apex bodies in education such as UGC and AICTE strive to upgrade the employability skills in Indian engineering graduates. Besides producing the huge number of engineering graduates by the Indian universities, the fresh engineering graduates have a severe crisis of adequate employability skills as per industry demand. The authors discussed the various employability gaps in the Indian education system such as mismatch of supply and demand, poor research efforts, uneven distribution of resources and low quality of teaching and learning process in classrooms. The research papers further recommend the strategies to academia and industry to improve the employability skills of fresh engineering graduates.

Sinha, Jawahar, Ghosh and Mishra (2019) conducted the research study to understand the employer satisfaction towards the competencies of fresh engineering graduates. 284 employers were studied in India. Expectation, perception, disconfirmation beliefs and employer satisfaction were tested to understand the fresh engineering competencies. Mediation impact of disconfirmation belief between expectations and employer satisfaction, expectations and perceptions were examined. The findings show the significant partial mediation effect. Employer satisfactions were discussed about expectancy- disconfirmation theory. Employers have vivid expectations and perceptions about the new entrant. Age shows the significant moderation effect among expectation, perception, disconfirmation beliefs and employer satisfaction. Whereas sex or gender does not affect the relationship in the research study.

Kaushal (2018) interviewed Eight English teachings faculty members from technical institutions in and around Surat, Gujarat, India. They were discussed with the problems they faced in the classroom with fresh engineering graduates students in improving their communication and employability skills for the industry. Teaching teamwork, interpersonal skills, leadership skills, adaptability, business

etiquettes and emotional intelligence are the factors recommended by the teaching faculty for enhancing the employability skills in the fresh engineering graduates.

Ravichandran and Abirami (2017) discussed in their conceptual research paper about the significance of employability skills such as fundamental, technical, interpersonal and critical skills in the selection of engineering students by the employers. Researchers stated that employers identified the skill gaps among the above skills in students. Hence, engineering graduates need to pay attention in learning these skills properly for their employability. Researchers also suggested that future scope of studies on these skills need to be analyzed with statistical technique as ANOVA.

Sood (2017) states that Bangalore in India recognized as Silicon Valley is also known for its technological competencies in the employees of the IT sector. Researchers suggested for selection of employability skills in IT engineering graduates. Traditional companies favour 'generalist' skills, the candidates can accommodate themselves in the environment of different technologies as per the requirement of the projects. Whereas new companies prefer 'expert' skills in engineering graduates for specific technologies and Multinational companies in software like to recruit IT engineering graduates locally from leading IT Institution.

Mishra and Khurana (2017) argued that required employability skills of the IT sector by analyzing theories and models to understand skill gaps that exist between knowledge imparted by academia and the skills requirement of the industry while hiring IT engineering graduates. The findings of study focused on six important employability skills in the IT industry such as technical, cognitive, personal, social, generic and self-perceived skills. The practical implications in the study will be supportive of academician and industrialist in developing employability skills in IT engineering graduates.

Mishra (2016) reported that Parents' perception is to enroll their ward in the institution where better campus placement opportunities exist. 'Employability' expressed for delivering value to work and drawing money for efforts delivered, developing skills and updating abilities for future roles. The researcher discussed various types of employability skills required in the workplace. The study findings after referring various articles, journals, paper and reports recommended that engineering graduates must have good command over demonstrating skills as generic, personal presentation, technical, leadership, self-assessment and goal-setting skills.

Gowsalya and Kumar (2015) examined the employability skills of engineering and MBA students of University in Coimbatore district of Tamilnadu. Researchers reviewed the existing literature of India on employability skills and examined the employability skills in the students such as analytical skill, leadership quality, problem-solving approach, communication, general management and self-understanding. The findings of the study recommend the need for improvement in employability skills of students. Being good in specific employability skill is not sufficient enough. Students need to be multitasking in their skills and must have the ability to meet industry demand.

Maran and Chandra Shekar (2015) affirmed that the role of universities and institutes are important to make the students understand about required employability skills by Industry. But it has been found in the engineering context, universities curriculum in India covers the technical aspects. Perception of students on the reality of employability skills for non-technical and general skills remains untouched. There are very few research studies that focus on the perception of engineering students on employability skills. Researchers conducted the study on perception and satisfaction of students towards employability skills with a structured questionnaire and made the use of convenience sampling and SEM techniques. The findings of the study recommended the universities/institutions to cover soft employability skills aspects in the course curriculum program of engineering graduates.

Kalbande and Handa (2015) found that global companies invest a huge amount of money in India to recruit fresh engineering graduates, but due to non-availability of adequate employability skills in them, they must compromise with their expectations in the selection of candidates. The study investigated the engineering graduates for employability from several regions of India that include rural, semi-urban and urban, analyzed the collected data with statistical techniques such as Chi-square, T-test and logistic regression. Besides this, campus placement drives were conducted to understand the sensitivity of engineering graduates towards employability. Engineering graduates were analyzed also for their aptitude, communication and technical skills. Efforts were made to identify the employability gaps. The findings support the lack of employability skills as per expectations of employers and the study recommends academia to make the changes in following traditional practices in imparting education to fresh engineering graduates.

Badgujar (2015) has put efforts into exploring the mindset of employers towards employability skills in the recruitment of fresh engineering graduates. The results of the study showed that there are certain factors which influence employer and student's mindset for employability such as global recession, economic factor, lack of resources and poor-quality education.

Meshram and Dubey (2015) studied the case study of COEP College of Engineering Pune in the employability of IT engineering graduate. Researchers marked the same model for benchmarking practices to be followed by others in bringing positive change towards employability skills.

Chavan and Surve (2014) conducted comparative research between public and private sector companies' by investigating fourteen variables on employability skills for graduates. Employers from the public and private sector were interviewed for their views on the employability of graduates. Findings of the study show negligible difference exist in expectations of both public and private sector employers.

HariPrasad et al. (2014) conducted a research study titled 'Alarming employability skills deficiency among budding engineering graduates – a study on engineering graduates in Chittor district'. The objective was to find out significant employability skills in FEG. The study evaluated the offered training programs in education as CTEEP (Corporate Training and Employability Skill Empowerment Program) and STEP (Student Training and Empowerment Program). The findings of the study revealed a significant impact of the involvement of peers group and personal experiences. Further, the study recommends the significant role of focus group discussion and professional networking in the employability of graduates must be given weightage.

Wheebox (2014) concerned with bringing improvement in Indian education system (PardaPhash, 2014) state that not even a single university from India made its position in the top 275 best universities of the world as per the report of 'Times Higher Education Survey'. It was reported that 34 % of graduates in India are employable whereas about 60% contribute toGDP.

Aspiring minds (2014) reported a shortage of IT skills in India. Indian graduates were found lacking in English, communication and cognitive skills. The AICTE (All India Council of Technical Education) parent body in India administering the policies program for Engineering Universities and Institution working on it. India will fulfil the world requirement of employability in the IT sector as stated by the Union Minister of Human Resource Development by the year 2020.

Bektaş and Tayauova (2014) discussed the importance of universities and industries in the context of employability. Universities impart knowledge to students hence contribute to the economy and social life. Industries need the multi-skilled and educated workforce which comes from universities. Researchers recommend the need for cooperation between universities and employers of industries to promote sharing of knowledge and graduates must be supported for innovation and creation of new technology.

The National Board of Accreditation (2014) describes the quality parameters for the sustainability of technical education in India. NBA is also a signatory to Washington. Membership to such is recognition to global program and gives assurance in following quality standards in the undergraduate engineering education program at world level. NBA has quality standards for undergraduate engineering courses recognized as 'Graduate attributes for UG engineering programme'. The key standards formulated for engineers are problem-solving techniques, engineering knowledge, knowledge of modern tools, ethics, the conduct of investigation for the complex problem, teamwork and communication, project management and finance.

Varwandkar(2013) conducted a research study titled 'Factors impacting employability skills of engineers'. The objectives were to recognize the significant factors towards employability skills among engineering graduates in Chhattisgarh. The findings of study after using descriptive statistics and regression analysis revealed that the means for variables in the study such as domain knowledge, empathy, communication and managerial skills affect significantly affect the employability of engineering graduates, whereas independent variable 'Motivation' was not found significantly affecting the employability of engineering graduates.

Chithra (2013) discussed the perception of employers from graduate engineers at the entry-level in multinational software companies mentioned in the study titled 'Employability skills -A study on the perception of the engineering students and their prospective employers'. The findings of the study showed a significant difference in the perception of students and employers towards employability. The result of the study confirmed that students with previous experience show good employability skills rather than students with no experience. The researcher suggested that employability skills can be improved in candidates if followed by the specific training program.

Reddy et al., (2013) acknowledged the need for effective communication for engineering graduates. Effective communication was found imperative in analyzing the problems. The paper discussed facets of effective communication skills for engineers as listening, writing, speaking, reading skills and body language. The researchers after interaction with graduated engineering students shared some hurdles faced by them as shyness and inadequate practices in education program, psychological pressure, and lack of exposure to English speaking environment.

Mehra and Virgandham (2013) discussed the need of the hour for specific communication skills needed by the engineers for ensuring employability at the workplace. The study in comparison to global perspectives found fresh engineering graduates in India lacking in communication skills, expression of ideas, cognitive skills, summarizing and writing skills. The study recommends the integration of communication and adaptive skills helps the engineers to learn better English language.

Vijaya (2013) explained about the comparison of learning soft skills from the trainer and practical intelligence such as e-learning classrooms in context to the employability of engineering graduates. The research paper summarized that learning soft skills from trainer would be more beneficial for engineering graduates as it enhanced social awareness, communication skills, interpersonal skills, entrepreneur skills and other skills. The paper affirmed that E-learning technology is getting famous now a day is optimal for learning primary technical skills but do not withstand to address future professional requirements.

Varwandkar and Deshmukh (2013) conducted a research study to identify the factors which affect the employability skills of engineering graduates in Chhattisgarh -India. 75 engineering graduates were selected with incidental non-probabilistic sampling. Selected engineers had an experience of more than 5 years of service. The survey questionnaire was used. Five independent variables were chosen

such as subject knowledge, empathy, communication skills, motivation and managerial competencies to measure their effect on employability skills. All independent variables had shown significant outcomes on employability skills, but the independent variable 'Motivation' was not observed showing its significant effect on employability skill.

Somalingam and Shanthakumari (2013) explored views on engineering graduates and competencies in the research study 'Testing and exploring graduate employability skills and competencies established a strong view on the skills and competencies of engineering graduates.' The findings of the study revealed insight on employability that a large number of engineering graduate in India were facing the problem of unemployment and those who were employed received inadequate compensation for their efforts. Lack of employability skills and competencies is a crucial factor that can be considered for full employment.

Shukla (2012) acknowledged about the employability of graduate engineers in the study titled 'Employability skill among professionals – HR executives in the Indian labour market: a study on engineering graduates of Bhopal'. Attempts were made to distinguish students based on the demographic factor in the context of employability skills. The findings of the study revealed that the University curriculum needs to be redesigned with the concept of more apprenticeship and live industry projects for improving the employability among engineering graduates.

Agata (2012) discussed the process of imparting education to graduate engineers in India. In the study titled 'Engineering education in the context of labour market requirements and expectations - Polish experiences', the researcher explained the challenges of higher education as the failure to meet labour market demands, inadequacy in quality of education at the school level, educational trends and demographic gaps. The researcher focused on the need for some factors that may support higher education and engineering education system in gaining employability for the students. These factors considered as career service, cooperation between employers and universities, technology transfer, career service and research on problems of an engineering student in context to employability. Hence, for future scope, some determinants are suggested by the researcher for analyzing employability and engineering education.

Kakepoto et al. (2012) explained the significance of oral communication at the job. A research study was conducted by researchers with a sample size of 32 engineers. Data was collected by designed survey questionnaire based on a Likert scale of 5 points which cover various facets of communication skills. The finding confirmed the role of communication skills such as oral presentations, participation in conferences and meetings, day-today conversations delivered considerable role in careers of engineers. Findings of the study also revealed 60% of time spent by an engineer at the job in communicating with people at the workplace. Hence, the demand for oral communication is always significant in employability skills for engineers.

Rao (2012) acknowledged some methods for improving employability skills in fresh engineering graduates by giving special consideration to communication skills which in India always remains an employability gap between students and employer. Methods suggested for improving communication skills of engineering graduates are classroom simulations which provide them with real-life situations. Innovative practices followed in improving communication skills are showing them cartoons, cricket commentaries, films, discussion on newspaper. These practices followed by engineering graduates help them in gaining employability skills.

Jolly (2012) explained that engineering graduates have a perception, they are employable after completion of their graduation. They are required to maintain rationality between technical skills and soft skills because both are considered significant in the demands of employers. The further researcher suggested soft skills must be included in course curriculum and programs of engineering graduates such as orientations, group discussions, interview skills, personality development and debate must for employability.

Kanagaluru (2011) conducted a research study on private engineering college to understand the perception of the students on satisfaction. The researcher designed a questionnaire on 4 points Likert scale and collected data on 33 different statements that cover college environment, placement, infrastructure, study material, education, extracurricular activities and student's development. The findings observed the highest gap in the dimension as 'education'. Students were not found satisfied with education in private engineering colleges.

Aggarwal (2011) found the difference that exists between employability rate and expectations valued by employers for types of IT companies for the employability of engineering graduates. The information revealed only 2.68% of IT engineering graduates were procured by IT product companies as they had a greater expectation of knowledge and understanding for the concepts of computer science and algorithms. However, employability was found 17.45% in IT service companies where companies impart prior 3-6 months training to engineering graduates. It was found employers show interest in engineering graduates with a good understanding of cognitive and soft skills so that they can train them easily.

Gokuldas (2011) examined the determinants of employability for fresh engineering graduates in campus placement drives conducted by Indian based software companies. Data was collected from 559 engineering graduates as respondents from reputed colleges of South India. Their performances were analyzed on technical and non-technical aspects with correlation and multiple regression. The findings affirmed that technical competencies as subject knowledge of engineering and commands over the English language were the significant determinants for employability of fresh engineering graduates.

Aspiring Minds Assessment Pvt. Ltd (2010) recruit engineers as per the requirement of companies. They recruit engineers from universities and institutions, conducted a standardized computer-based test on national employability skills in the year 2010. More than 40.000 engineering graduates were examined, the sample was collected from 12 states. The test emphasized on factors to measure necessary employability skills required by IT and ITES sector. The test examined factors such as knowledge of English, quantitative skills, problem-solving skills and programming skills. The findings ensured that soft skills such as verbal and quantitative skills recommended for improvement in the training program to enhance employability skills in engineers.

NASSCOM (2010) NASSCOM the key body for IT industry in managing functions has an important role in improving education for IT engineers and make them employable globally. The NASSCOM Mckinsey study 2005, discussed some lacking employability skills statistics in graduate engineers in India. To improve the employability skills of engineers, NASSCOM has initiated programs with government and private sectors. Among the optimal initiative was 'finishing school concept' for fresh engineering graduates to help them in achieving industrial employability. A pilot initiative was conducted in the year 2007 in institutes, for example, IIT Roorkee and seven NITs. The course curriculum designed were found covering important technical skill and soft skills.

Popli and Rao (2010) tried to understand entrepreneurship inclination among the final year engineering students of Delhi. The research study selected 200 engineering students in sample size. Findings of the study revealed 68% of students had shown their interest in entrepreneurship but were found lacking in gaining self–confidence to initiate risk. The study also confirmed 80 % of students wanted a change in the course curriculum of engineering pattern and desired entrepreneurship subject to be included in the mainstream. Researchers recommended the significant role of education and industry in promoting the concept of entrepreneurship for employability.

III.EMPLOYABILITY SKILLS AND EMPLOYER SATISFACTION

Aspiring Minds (2016) a report on national employability has brought consolidated views on employability of engineers in India, based on the data collected from 150,000 engineers. The report findings depicted that less than eight per cent of engineers are employable in core engineering roles. There is a scarcity of employability in the IT software development sector. Most of the engineers in India were found with inadequate employability skills which will hamper the future growth rate of manufacturing in India. This certainly required immediate and necessary interventions.

McKinsey (2012) discussed in the report on employability in India that only 25% of the technical workforce in India is employable. According to NSDC information in India, only8% workforce possessed the necessary skills for employment in India. About 92 % of the workforce is in the unorganized employment sector and need to develop their skills. PMO and NSDC have a target of 500 million workforces per year (NSDC, 2014).

Aring (2012) acknowledged, according to TCB report in the year 2008, India produced 450,000 engineers every year but only 25 per cent have adequate employability skills. Indian company's top executive's claim shortage of skills besides the apparent fact of Indian's largest population. According to an Indian employer, graduate engineers lacked in spoken English communication skills.

Blom (2011) acknowledged 64% of the employers admit that they are somewhat satisfied with the performance of Indian engineering graduates. Talent shortage survey (2005) shows 34% of employers satisfaction in employability skills of Indian graduate engineers. The findings recommend the proper awareness of training among graduate engineers to enhance employability skills.

Replacement migration (2009) confirmed that India has competencies to contribute to the requirements of the global talent market, but the immense challenge of employability of graduate engineers has hampered the growth of India (Talent shortage survey, 2005). However, in India, 400,000 engineers pass out every year, but still, employers are not satisfied with finding qualified employees with appropriate employability skills they require. According to (Talent shortage survey, 2005) India's National Association of Software Services Companies forecasted about the shortage of 500,000 technology employees in India by the year 2010.

World Bank (2009) explained that India is facing a crisis of skilled workforce which has hampered the growth of the Indian economy. The Indian economy almost moves ahead with growth of more than 8% over the last 5 years on an average, including the year 2009 of a financial crisis. The IT, infrastructure and power sectors of India were not meeting with the requirement of necessary employability skills among their engineers. The road sector had a crisis of qualified workforce (World Bank, 2008).

IV.THEORETICAL FRAMEWORK

Harvey (2002) discussed the 'magic bullet model' which focused on the significant role of higher education institution, students and employer in the employability of job potential candidate. The higher education institutions impart the quality education for the development of employability skills in the students. The student with its academic qualifications and its extracurricular activities likes to draw the attention of employer towards him. Employer likes to appraise the self-efficacy, abilities and experiences of the job aspirant in the employability process.

V. CONCLUSION

Most of the researchers have summarized the comatose condition of employability skills in Indian engineering graduates. The role of soft skills considered vital in the employability of Indian engineering graduates. The previous researchers emphasized the need to reinforce industry and academia relationship to address the challenges of Industry 4.0 transformational technological changes.

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