



International Journal of Applied Business and Economic Research

ISSN: 0972-7302

available at <http://www.serialsjournal.com>

© Serials Publications Pvt. Ltd.

Volume 15 • Number 13 • 2017

Persistence of Employability Skills Among IT Software Professionals – An Analysis

R. Alamelu¹, K.V. Lakshminarayanan² and V. Badrinath³

¹Faculty Member, School of Management, SASTRA University, Thanjavur

²Research Scholar, School of Management, SASTRA University, Thanjavur & Senior Principal - OD, Infosys, Bengaluru

³Dean, School of Management & Director, Training and Placement, SASTRA University

ABSTRACT

India is in a threshold of a unique era. For the first time from time immemorial, India is in a situation of having a huge demographic dividend over all countries of the world. India has the advantage of demographic dividend and a pool of young English-speaking people, all demographic studies agree that by 2022 India would be one of the higher volume young workforce in the world with average Indian's age being 29, compared to 37 for China and the US, and 45 for Western Europe. In addition, at 7.1 % GDP growth rate projected for Quarter ending March 2017, India is still the fastest growing economy in the world and this is going to need millions of skilled manpower to power this economy. Though the productive group has demographic dividend benefit but still India is not leveraging it as most of the population in working age not employable fully. At the other side, industries are running with scarcity of workforce. The study has been focused on the employability skills of software professionals working in software industry in Bengaluru. NASCOM registered five companies were selected randomly and two hundred IT professionals comprising forty respondents approximately belonging to various departments were randomly selected for the collection of primary data. The six employability factors such as Numerical ability, Logical ability, Domain Knowledge, Communication Skills, Learning Agility & adaptability and Interpersonal skills were considered. The findings have given a significant approach in employability skill of IT professionals. The first three skills which have significant impact over the overall employability skills are termed as Hard core skills and the remaining three as communication skills, learning agility and interpersonal skills are termed as soft core skills. According to the HRD ministry, engineering institutions in India (6,214) registered nearly 2.9 million students out of which 1.5 million engineers are graduated every year. It is only a quantitative numbers which do not ensure any employability skills. The number of higher education institutions, profit ploughing education leaders, schooling system and quality of faculty members and learning methods is some of the issues to be highlighted for the progress of education system in India.

1. INTRODUCTION

India is in a threshold of a unique era. For the first time from time immemorial, India is in a situation of having a huge demographic dividend over all countries of the world. India has the advantage of demographic dividend and a pool of young English-speaking people, all demographic studies agree that by 2022 India would be one of the higher volume young workforce in the world with average Indian's age being 29, compared to 37 for China and the US, and 45 for Western Europe.

India has the potential not only to meet its own manpower needs but it can also to cater to the manpower demand of other nations, thus becoming the "Human Resource" Capital Of the world With Human Resource being the only raw material in a Knowledge based future digital economy, we have an opportunity to be a Knowledge Superpower - a Guru to the world in line with our ancient heritage – if we can properly harness this huge Talent Pool. In addition, at 7.1 % GDP growth rate projected for Quarter ending March 2017, India is still the fastest growing economy in the world and this is going to need millions of skilled manpower to power this economy. Students may be prepared for meeting academic requirements, but still lacking in aptitude, analysis, logical reasoning etc. This research study used survey research and quantitative methods to determine the differences between employer's perceptions of needed skill sets and college students' perceptions of acquired skill sets obtained during their studies. A recent study by Aspiring Minds have concluded that 97 percent of engineers preferred job either in software or in core industry, but out of which only 3% have employable skill set in software product or service market.

2. LITERATURE REVIEW

Yorke, 2015 defined employability as "a set of skills, knowledge and personal attributes that make individuals more likely to secure and be successful in their chosen occupation (s) to the benefit of themselves, the workforce, the community and the economy." Different studies agree with this definition. In the study of Gray and Murray, they showed that academics and accounting practitioners in New Zealand were in agreement that communication skills both oral and written are primary at workplace. The authors reported that prospective employers were looking for newly graduates who could exhibit good listening skills, convey respect and interest toward clients, speak professionally with clients over the telephone, and promptly ask superiors for clarifications. These findings were utilized to improve the accounting curriculum. The study of Parasuraman and Prasad outlined the employability skills of engineering graduates. They found that recruiters would hire an engineer if the applicant underwent relevant training programs, possessed desirable personal traits and good academic, communication, soft, corporate, technical and job-seeking skills. Besides these skills, they revealed that job aspirants were expected to possess generic skills which include having a personal vision and goal, have the ability to evaluate and monitor one's own performance, articulate their knowledge and ideas, demonstrate a sense of responsibility, work ethically even under pressure, and exhibit resiliency. In summary, it can be concluded that employable engineering graduates should possess a perfect combination of technical and generic skills. In the field of Information Systems (IS) program, Davis and Woodward asked 222 Information System graduates of a Midwestern university in the United States. They disclosed that employers were looking for graduates who possessed both strong technical and soft skills. They also revealed that thinking skills, personal characteristics, desire to learn, attitude and motivation, teamwork, and communication skills were the top nontechnical skills needed in order to succeed in the IT field. Computer software skills, networking, and computer hardware skills were the top technical skills.

It was concluded that graduates perceived that soft skills were equally important as the technical skills for the attainment of a successful workplace.

In a similar study, Plice and Reinig solicited responses from the IS program graduates in order to revise the content of the curriculum. The focus of the study was to have a better realignment of the career of the graduates by balancing the technical and business content of the curriculum. The authors showed that when technical topics were emphasized, the effect would only be temporary when graduates entered in the workforce. However, these topics may inhibit career growth as graduates advanced through their careers. The authors recommended that there should be balance in the curriculum by emphasizing communications and teamwork skills while maintaining the existing contents.

The study of Kesner with the Information Management graduates revealed similar findings. The author showed that employers preferred graduates, who could collaborate with a team, communicate orally, work as an individual contributor, and communicate in writing. It was disclosed that employers were looking for graduates who manifest strong work ethics and are willing to get the assigned task done. Miller and Dettori conducted an interview with 10 Information Technology employers in the Chicago area to determine what skills were considered in hiring IT graduates. Respondents were asked about their opinions on the value of the four pre-selected competencies. The competencies were based on the Association for Computing Machinery (ACM) 2005 IT curricula guidelines. These competencies were abstraction, modeling, object-based user interface development, and interface and implementation. Respondents agreed that having a clear understanding of abstraction was the most important skills for IT graduates. However, the study also showed that knowledge specific to a particular language was irrelevant that prodded the authors to clarify the findings. According to the respondents, the ability to program was generally a required skill. However, the need for a specific programming language was not mentioned to be of importance. Instead, employers were looking for flexible and language-independent IT graduates who are trainable and willing to learn current technologies and programming languages.

Moreover, the ability to translate real world problems to programming objects or database tables and to define the separation of interface and implementation were deemed important. It was revealed that the object-based user interface development skill was rated important, but only for specific types of positions.

Radermacher and Walia conducted a systematic review of literature to identify which of the skills that computer science graduates fall short of the expectations of industry or academia. It was shown that the computer science graduates lacked technical abilities (e.g., programming), software engineering knowledge (e.g., design and testing), soft skills (e.g., oral communication), use of software tools (e.g., configuration management), and personal skills (e.g., ethics). Oral and written communications were the most commonly identified skill deficiencies of computer science graduates. Lastly, in a recent study conducted in Turkey, Turhan and Akman commented that there was dissatisfaction between employers' expectations and technical and/or social abilities of new graduates. The authors further said that this situation was rooted on the reason that the expectations of employers were not taken into account when developing a curriculum of computer-related departments of the Turkish universities. Through survey of senior IT professionals or IT project managers from government and private institutions, the researchers found that software development background was considered important for the work of an individual employee. However, leadership and communication skills were perceived important when an individual works in different environments.

In terms of teamwork performance, employers were particular with IT graduates' effective time usage and communication skills. Lastly, employers perceived that curricula that strongly focus on socio-cultural issues and universities with English as medium of instruction had significant impact on IT graduates' teamwork performance. The exhaustive research literature has thrown light on employers expectation and very little attempt was made to understand the root cause of the problem. This study necessitates the urge of understanding the employability issues in the context of academics and student perspective.

3. STATEMENT OF THE PROBLEM

Though the productive group has demographic dividend benefit but still India is not leveraging it as most of the population in working age not employable fully. At the other side, industries are running with scarcity of workforce. It is estimated that only 2.3 % of the educated workforce have undergone any sort of formal skill training and large majority have no practical hands on job skills to make them employable. According to authorized sources, "*of the roughly 75 million youngsters in the age group of 16 – 25, only a measly 4 % reach any of the Technical or graduate schools which includes ITS, Polytechnics and others ... where employable skills are imparted ...*" Now among these 4 % who cross this stage NASSCOM Reports say that "*Only 15 – 20 % of those who complete relevant qualifications are employable*" As per India Skills Report 2016, hardly 1/3rd meet the criteria of the employment set by the employers which is an alarming wastage of employable potential. Another authoritative source for employability statistics, the National Employability Report 2016, reports that only 17.9 % of engineering talent pool available is employable software services, and worse 3.67 % only for Software Products and Embedded solutions which is critical for maintaining leadership in IT Sector in future Adding fuel to fire, increasing protectionism by world economies calls for increasing competitiveness through skill upgrade and continuous reskilling infrastructure in line with evolving trends to stay relevant and employable. This study comprehends the need for individual core skills and capability towards potential employability expected by employer. The study objective covers the potential employability of engineering graduates in the context of employer's expectations relevant to core employability factors identified at workplace.

4. RESEARCH METHODOLOGY

The study has been focused on the employees of software industry in Bengaluru. As NASSCOM is the industry association for the IT-BPM sector in India, the city Bengaluru has 2416 registered IT companies. Out of which five companies were selected randomly. After scrutinising the software industry concerned, two hundred IT professionals comprising forty respondents approximately belonging to various departments were randomly selected for the collection of primary data. The primary data were collected from IT professionals through the distribution of a pre-tested research questionnaire. The six employability factors such as Numerical ability, Logical ability, Domain Knowledge, Communication Skills, Learning Agility & adaptability and Interpersonal skills were considered. The data collection was undertaken between January 2017 and February 2017. The primary data were analysed with the help of statistical tools namely, percentage analysis, weighted ANOVA and multiple regression. The demographic profile of the respondents were analysed with the help of percentage analysis. The respondents' opinion on employability in IT was accessed by weighted ANOVA. The multiple regression has been used to study the most influencing factors that contributes towards the employability skills among IT professionals.

5. ANALYSIS AND INTERPRETATION

The demographic classification of respondents were based on six variables such as age, gender, discipline of the study, schooling system, institution studied and location are shown in Table 1. It represents the distribution of the respondents in IT sector in Bengaluru.

Table 1
Demographic characteristics of the respondents

Demographic variables	Classification					
	Less than 25		25-30		Above 30	
Age in yrs	123 61.5%		59 29.5%		18 9%	
Gender	Male 113 56.5%			Female 87 43.5%		
Discipline of the study	IT 73 36.5%	Bio 32 16%	ECE& EI 45 22.5%	Mechanical 21 10.5%	Civil 26 13%	Others 3 1.5%
Institution studied	Government college 42 21%	Government-aided college 13 6.5%	Deemed university 96 48%	Self-financed college 49 24.5%		
Schooling system	State board 89 44.5%		CBSC 74 37%		Others 37 18.5%	
Habituation	Urban 132 66%			Rural 68 34%		

Source: Primary Data

The demographic profile of the respondents is discussed using the selected demographic variables. The age distribution of respondents are exhibited that more number of employees are belonging to the age of less than 25. The ratio of gender is almost equal and more proportion is denoted by male employees. The more number of employees have completed their degree through deemed university followed by self financing colleges which assures the campus interview placement options. Around 45% of the employees have completed schooling system through state board followed by the central board pattern. Out of 200 respondents, 66% of them are from urban place and the remaining from rural area.

To identify the perception of the respondents over the identified six skills, a weighted ANOVA test was conducted. In weighted ANOVA, weights are assigned to each factor to identify their degree of importance by the respondents. The weighted ANOVA also highlighted the order of importance based on their perception. The table has provided the ranking of the factors influencing the employability skills based on their importance.

Table 2
Ranking of the respondents ANOVA - Weighted Scale

<i>Particulars</i>	<i>Weighted ANOVA Scale</i>	<i>Rank</i>
Numerical ability	26.04	1
Domain knowledge	23.97	2
Logical ability	21.65	3
Communication Skills	20.21	4
Learning Agility	19.62	5
Interpersonal skills	18.76	6

The table has given the opinion of their importance and they ranked numerical ability as first which is the basic skill required for IT platform. Followed by this, the domain knowledge is identified as second which could impact over the type of projects they are going to handle in the IT field. As most of the Indian IT service providers offering services to banking, telecom, hospitality and government, the domain knowledge is very essential. The rank is assigned for logical ability which is identified as the core skill set expected from IT professionals to design a competitive projects. The communication skills which are ranked next has a remarkable consequences while handling IT projects. Handling teams, expressing views over customers, convincing them and very importantly communicating in clear terms has made the respondents to rank it in the sequence. Though the entry level employees are assigned projects, the learning ability and attitude towards learning, updating them is still enhances their future career options. Though the respondents have ranked the interpersonal skills as sixth, it is the base skill required to lead the team, maintain cohesiveness and provide the team orientation to achieve their targets.

In order to identify the impact of these creativity factors on the overall creativity among the respondents, multiple regression analysis were conducted considering the five factors identified through factor analysis.

Regression Analysis – Employability Skills Factors

The multiple regression lines were estimated to analyze the impact of employability factors towards software engineers. The general form of the regression model for the present study is given below.

$$Y = a_0 + a_1X_1 + a_2X_2$$

where,

Y = Overall Engineers employability

X₁ = Employability factors

Table 3
Regression-Overall employability

<i>R</i>	<i>R Square</i>	<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
.819	.863	110.277	6	8.221	31.157	.000
		83.109	169	.275		
		176.218	172			

Correlation value R (0.819) exhibits that good degree of correlation is found between the various employability skills of engineers and R square value (0.805) clearly depicts that the total variation in the six factors of employability is well explained by independent variable engineer’s overall employability by 86%. The P value = 0.000 which also supports the formation of regression equation.

Table 4
t-test and regression coefficients

Predictors	Un standardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	2.134	.172	.231	11.265	.000
Numerical ability	.156	.019	.229	.2122	.036*
Domain knowledge	.022	.067	.189	.2111	.048*
Logical ability	.021	.039	.012	.2317	.042*
Communication Skills	.212	.056	.213	5.165	.710
Learning Agility	.320	.039	.312	5.289	.726
Interpersonal skills	.267	.013	.256	4.271	.821

* = significant at 5% (If the sig. of t is less than 0.05 it indicates that the concerned variable is significant in the model)

Engineer’s Employability skills = 2.134+ 0.156 (numerical ability) + 0.022 (domain knowledge) + 0.021(logical ability) + . 212(communication skills) +.320(learning agility) +. 267(Interpersonal skills)

The model’s t test enunciated that the skills like numerical ability, domain knowledge and logical ability are significant at 5% in the estimation of status. Further it predicted that the predictors namely communication skills, learning agility and interpersonal skills are not significant at 5% in the estimation of status of overall engineer’s employability skills.

6. FINDINGS AND DISCUSSION

The present study has identified the core skills required to be placed in IT as numerical ability, domain knowledge and logical ability. The remaining skills are mostly individual self and attitude related. The findings have given a significant approach in employability skill of IT professionals. The first three skills which have significant impact over the overall employability skills are termed as Hard core skills and the remaining three as communication skills, learning agility and interpersonal skills are termed as soft core skills. According to the HRD ministry, engineering institutions in India (6,214) registered nearly 2.9 million students out of which 1.5 million engineers are graduated every year. It is only a quantitative numbers which do not ensure any employability skills. The number of higher education institutions, profit ploughing education leaders, schooling system and quality of faculty members and learning methods is some of the issues to be highlighted for the progress of education system in India.

The results of the study showed that both educators and IT practitioners recognized that being able to cope with the changing IT skills is needed to be hired. On one hand, IT practitioners pointed out that being a critical thinker is equally important with having IT skills. Informal interviews with one faculty and two IT professionals showed that when all applicants have equally the same set of skills, employers look

into their attitudes and personal background. They conduct background investigations as to what kind of students they were in college in terms of leadership and behavior. In short, employers are looking for applicants that could exhibit both technical skills and a high form of ethical and professional standards. The role of the academe is to position strategically the curriculum that could address the needs of the industry. It serves as an assurance to all stakeholders (students, parents, faculty members, industry) that the institution is committed to bring quality education. The college ensures that the course objectives and the syllabi are aligned through faculty industry collaboration. Faculty members construct the syllabus and these are sent to industry practitioners to verify the contents.

7. CONCLUSION

As various studies in the area of employability have identified the following major reasons for low employability, it is due to the % of population within productive age who acquire the minimum qualifications and skills to be employable itself is pathetically low, poor primary education system, education syllabi not updated and practical anchored with relevant skills, but focuses on rote learning of theory, higher education sector is more commercial oriented focusing on quantity and not on quality, mushrooming of colleges without any quality audit by accreditation bodies, churning out low quality manpower affecting credibility of the industry, syllabi rigor and relevance to industry needs are low and Industry – Academia Collaboration in grooming industry relevant talent is not fully developed. The better Industry Academic Partnerships – Industry Labs/ Summer Internships as part of curriculum/ talent sharing between industry and academics for cross pollination, capacity building in low talent density regions with Government support, Faculty refresher courses with Industry support and faculty quantity, focus on employability skills both hard and soft skills, rigor in Government regulatory framework for ensuring quality of degrees and industry to hire only trained and certified manpower. These guidelines may help to improve the employability skills of IT professionals in India.

References

- Davis, D. C., and Woodward, B. 2006. An analysis of skills required of graduates of an information systems program. *Information Technology, Learning, and Performance Journal*, 24, 2(2006), 11-21.
- Gray, F. E., and Murray, N. 2011. “A distinguishing factor”: Oral communication skills in new accountancy graduates. *Accounting in Education: An International Journal*, 20, 3(June 2011), 275-294.
- <http://indiatoday.intoday.in/education/story/engineering-employment-problems/1/713827.html>
- India Skills Report 2016- by *Peoplestrong, Wheebox, LinkedIn, CII and AIU*
- Kesner, R. M. 2008. Business school undergraduate information management competencies: A study of employer expectations and association curricular recommendations. *Communications of the Association for Information Systems*, 23, (Dec 2008), 633-654.
- Miller, C. S., and Dettori, L. 2008. Employers’ perspectives on IT learning outcomes. In *SIGITE '08 Proceedings of the 9th ACM SIGITE conference on Information technology education* (Cincinnati, OH, October 16-18, 2008). SIGITE '08. ACM, New York, NY. 213-217. DOI=<http://doi.acm.org/10.1145/1414558.1414612>
- National Employability Report – *Engineers- Annual Report 2016 by Aspiring Minds – India’s biggest National Employability Report for Engineers*

NSDC Report – *Human Resource and Skill requirements in the IT and ITeS Sector (2013 -17, 2017-22)*

Parasuraman, J., and Prasad, N. H. 2015. Acquisition of corporate employability skills: A study with reference to engineering graduates. *The IUP Journal of Soft Skills*, 9,2(June 2015),22-43.

Plice, R. K., and Reinig, B. A. 2007. Aligning the information systems curriculum with the needs of industry and graduates. *Journal of Computer Information Systems*, 41, 1 (Fall 2007), 22-30.

Radermacher, A., and Walia, G.2013.Gaps between industry expectations and the abilities of graduates. In *Proceedings of the Proceeding of the 44th ACM Technical Symposium on Computer Science Education* (Denver, Colorado, USA, March 6-9,2013). SIGCSE'13.ACM, New York, NY.525- 530.<http://doi.acm.org/10.1145/2445196.2445351>

Turhan, C., and Akman, I. 2013. Employability of IT graduates from the industry's perspective: A case study in Turkey. *Asia Pacific Education Review*, 14,4 (Dec 2013), 523-536.DOI=10.1007/s12564-013-9278-5

Yorke, M. 2006. *Employability in higher education: What it is - What it is not*. Hestlington, York, United Kingdom: The Higher Education Academy United Kingdom.

