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Employer Satisfaction on Employee's Project Management and Technical Skills: A Study on IT Sector in Punjab

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ABSTRACT

This research measures the employer satisfaction about project management skills and technical skills in Information Technology industry of Punjab (Pakistan). Using a simple random sampling technique, survey is conducted to test hypothesized relationships among the mentioned constructs using Multiple Regression Analysis. Regression analysis shows significant positive relationship between employer satisfaction with project management skills and technical skills, therefore IT industry should develop collaboration with HEIs to develop curriculum for improved project management skills and technical skills.

KEY WORDS: Information Technology, Employer Satisfaction, Project Management Skills, Technical Skills, Multiple Regression Analysis, Punjab.

1. INTRODUCTION

The rapidly-changing Information Technology (IT) industry environment is prompting and encouraging a new look that what type of skills employers expect for new hiring. In today's competitive environment, one of the most challenging tasks for human resource managers is to find the right people for the right job. Recruiting skilled and able workforce is quite a complex and difficult task for the IT industry. Due to brain drain in the last decade along with the high demand of skilled technical workers abroad, adding/hiring technical and managerial talent has become difficult and expensive. According to a study published by Pakistan Software Export Board (PSEB), Pakistan's educational infrastructure is making a huge number of software/IT professionals that are critically lacking in technical and project management skills[43]. The repaid growth in IT industry and leaps of improvement in technology has led to the global challenge of maintaining up-to-date skills for IT professionals. For long and sustained employment, IT professionals should learn modernized and personalized technical skills [22].

Employer judges suitability and capacity of employees through their technical skills, soft skills and their personal attributes [15]. Most of the employers complain that newly hired graduates do not have necessary skills required as prerequisite to perform assigned work. The HEIs' (higher educational institutes) graduates should avail different chances to arise, develop and improve required knowledge and skills which are demanded by employers [28].

Previous studies in IT sector have ensued in two wide groups of skills such as technical skills and non-technical skills. According to Cash et al. (2004) [7]*"Technical skills basically consist of those skills specific to the IT field, including but not limited to knowledge and competencies associated with hardware, systems and application software, and telecommunications"*. Non-technical skills usually include (1) Business Skills such as information of an organization's structure, processes, strategy, ability to know the business environment, and culture of the organization[7, 33]; (2) Management Skills which include the capability to perform traditional management activities with some variation such as planning, leading, organizing, and controlling [30, 33]; and (3) Interpersonal Skills consist of ability to work in teams, ability to communicate, leadership and relationship building skills [7, 8, 33, 35]. IT manager emphasizes on non-technical skills of subordinates[8, 9, 24].Therefore, traditional skills are not enough for today's work environment. Project management skills are more in demand for workforce due to rapid changes in the work setting for better planning of the projects [48]. Managers demand high level of technical skills, project management skills, and interpersonal skills for hiring personnel in IT industry[49].This research study is focused to investigate the satisfaction level of IT employer about skills set of newly hired subordinate/employees. The sample population for this study is the managers working in the IT industry of Punjab, Pakistan. In this study

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the word employer means manager/supervisor. It is clear that little studies has been conducted in the area of employer satisfaction about the skill sets (project management and technical skills) of graduates/entry-level employees in IT industry of Pakistan. The objective of research study is as follows:

To evaluate the significance level of employer/manager satisfaction about the project management skills and the technical skills in Information Technology industry in Punjab, Pakistan.

The remaining part of this study consists of five sections. Second section discusses earlier studies regarding project management skills, technical skills and employer satisfaction. Next part is about conceptual framework. Then part four is about the methodology, questionnaire design, sampling technique and data collection and analysis techniques. Then part five illustrates different results which are derived by the statistical analysis of hypothesis. The last part of the paper concludes the entire study.

2. LITERATURE REVIEW

The academic skills are a broad set of capabilities that are helpful during the scientific or professional environment. Different types of skills are important for the current jobs requirements[31]. It becomes very difficult to identify, prepare and inculcate skills in graduates according to the industry requirements [4, 38]. Skills set and abilities of employees in the private IT firms are one of the strategies to gain competitive advantage [54].Skills include capabilities, knowledge, abilities, understanding, motivation, willingness and the ability to use these capabilities and knowledge [29].Welford (1968)[62] defined skill as "*a combination of factors resulting in competent, expert, rapid and accurate performance, regarded this as equally applicable to manual operations and mental activities"*.

Skill shortage in IT professionals has been found in different areas like project management skills, business skills, technical skills [33, 41, 59]. In context of knowledge and skills managers of the different firms point out that there are three competencies that most of the new hires are lacking these days. These are (1) graduates are not properly proficient and are unproductive on their jobs; (2) graduates' skills and abilities have gradually become worse over the last ten years; (3) deficiencies are particularly in written and oral communication and are in applied technical skills [13]. Skills can be divided into different categories like project management skills, technical skills, personal skills, management skills[49]. Literature suggests that employees need project management skills, hard skills and soft skills to fulfill the industry need [6, 32].These skills are also demanded by the IT industry of Pakistan[43].

2.1 Project Management Skills Needed by IT Workforce

Project management is spread throughout in the literature and applying in various industries like engineering, IT, finance, and biotechnology[32].In the formal sense, "*a project is a combination of human and non-human resources pulled together in a temporary organization to achieve a specified purpose*" [10]. PMBOK Guide (4th Edition) [46]defines project as *"a temporary endeavor undertaken to create a unique product or service"*. Lewis (1998) & Smith (2000)[34, 51]defined project management skills (PMS) as *"a combination of human and technical skills needed to help a group of people work together to accomplish a task"*. According to PMBOk Guide (4th Edition)[46] "*Project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements.* "So skills needed for the project managers to handle projects of certain size are known as project management skills [49]. Nicholas (1990) [42]sums up the principal characteristics of a project as a well-defined aim with known goals, one-time and temporary activity, time cost and performance essentials, numerous recourses across organizational lines, risk element, and process of phases.

For project oriented fields project management skills are in need these days[32]. Similarly, IT employees need a bunch of project management skills because IT is a project based industry. A common feature of unsuccessful projects is the deficiency of strong project management skills [1].Three main important skill areas are needed to be valuable for a project manager: behavioral skills include interpersonal problem solving, conflict resolution and negotiation; effective communication skills; and applying of project management tools to handle project responsibilities and resources [45]. Project management users must learn and use suitable interpersonal skills that motivate all those people that are connected in a project [61]. Software engineering education should consider software PMS as a significant component because employers demanded project management skills. Unluckily, most universities and institutes provide insufficient education in software PM and are lacking in giving the graduates with practical knowledge[37].IT workforce should acquire a broad variety of project management skills. Important among these skills is the fundamental skills of planning, budgeting, scheduling and managing project risks. IT employers showed their satisfaction with that workforce having project management tools and techniques [55]. Project Management Skills include project planning, budgeting and scheduling, project risk management,

negotiation, project leadership, user relationship management, functioning with virtual teams, and Capability Maturity Model utilization…[27, 66].According to Zwieg, P. et al. (2006) [66] IT specialists with a blend of technical skills and project management skills are more demanded by the IT industry.

The critical feature in the projects those are outsourced is that people from multiple organizations and locations are engaged in projects, where various languages and cultures are involved. That's why, skills related with working internationally and workings with virtual teams are necessary. Ability to integrate different projects, program management skills, and Capability Maturity Model skills are more important skills these days. Connecting the package of project management expertise collectively is a project manager or a leader. A current research has supported that project manager's abilities and skills are linked with IT employers' satisfaction [53].A study lists down nine skill categories of project management like client management, team building, general management, communication, personal integrity, leadership, problem solving, planning and control, and system development…[40].

Little empirical research has investigated the relationship of employer satisfaction with the project management skills. Erickson, S. et al. (2011) [21] checked the relationship of employer satisfaction with skills. According to their findings, employers show satisfaction with project management skills of new hires. A prior research showed that IT workers need project management skills [33]. IT service provider firms give emphasis on project management skills than technical skills [23]. According to Hagan, D. (2001)[25] the main area of dissatisfaction of employers is project management skills. Zachary (1984)[64] proposes that there should be an equality between technical and leadership characteristics of project management". Zielinski (2005) [65], on the other hand, mentions in his study that "if someone had questioned from gurus of project management about project managers skills and abilities, the answer would be technical competencies. But today, they had be more persuaded and ranked to project management skills like negotiation and communication".

Many new Computer Science or IT graduates in India could gain the job within 6 months' time from the date of graduation. The graduates set their mind to join a good quality training institution at least for three months' time period where they become skilled in areas of technology, communication and project management. Such training programs add value to their skills and make them attractive for big IT firms for a junior software developer position. Employers feel happy recruiting those graduates as they don't have to spend money and time providing training to such a graduate any longer [3]. IT employer has suggested the need for academic programs to create students that are knowledgeable in general project management concepts and skills [50].

2.2 Technical Skills Needed by IT Workforce

Technical skills are required for new technology adoption, technology development and deploying new technologies successfully and profitably for fulfilling new business objectives [56]. Dictionary of Investopedia (2014) [16] defines Technical Skills: *"Technical job skills refer to the talent and expertise a person possesses to perform a certain job or task."* It is also named as 'hard skills'. These are those abilities developed through practice and learning. Technical skills are often task or job specific. In IT sector, technical skills may comprise of working information of numerous hardware components, memory caches and CPUs, programming languages like Java or XML, software applications like Cold Fusion, data networking protocols like TCP/IP, and databases like Sybase or Oracle. These skills contain processes to obtain and build up particular systems, write and develop technical documents, detect complications, and correct and maintain these complications and problems [36]. Technical skills in IT industry are Systems Analysis, Systems Design, Programming, System Testing, Database Design/Management, IT Architecture/Standards, Voice/Data Telecommunications, Operating Systems, Server Hosting, Security, Mainframe/Legacy, Operations, Continuity/Disaster Recover, and Desktop Support/Help Desk… [27, 66]. Todd et al. (1995) [58] found that IT employers put more importance and give satisfaction to technical skills and abilities than on systems or business know-how when they hire IT workers. Corcoran (1997) [12] argues that "an ideal IT employee has a balance of technical and business know-how. An MBA is beneficial, but capable IT workers also have a strong technical understanding. They should have the awareness of difficult concepts and trade-offs of new technologies."

To fulfill the employer requirement, graduates should develop a list of technical skills and update those skills according to the need of the changing world. Only then they could independently deliver quality work and satisfy the employers of the IT organizations. For hiring/adding quality technical personnel in IT sector, IT professionals face difficulties due to deficiency in technical expertise in new hiring. Most of the CEOs in IT sector give preference to employ graduates from the best three institutions of Pakistan, as follows GIK, LUMS, FAST and a few more. However, some companies think that it is attitude rather than previously acquired technical expertise and knowledge [47].

Blom and Saeki (2011) [5] studied the skill gap for Indian engineers through a survey of employers conducted in 2009. The study findings showed that overall employers showed dissatisfaction with the graduates' skills. Literature shows that employer satisfaction is analyzed with technical skills and soft skills. These skills have

suitable reliability where Cronbach's alpha > 0.70. Technical skills and soft skills are positively and significantly correlate with satisfaction [14]. Soft skills have significant positive effects on satisfaction regardless of nature and magnitude of business enterprise [44]. The satisfaction level of managers/employers towards skills is quite low [28].

2.3 Employer Satisfaction:

Employer satisfaction is a basic thought when evaluating any employer-employee (manager-subordinate) relationship [52]. The compassion of the satisfaction process is the assessment of what was expected with the product's or service's performance. Satisfaction is defined as *"Fulfillment of one's wishes, expectations, or needs, or the pleasure derived from this*" [17]. Employer is "*a manager or business that employ's one or more people, especially for wages or salary"*[18]. In this study the employer satisfaction means to check the satisfaction of the employers (supervisors/managers) of the IT industry of the Punjab (Pakistan) about the skills and abilities of the newly hired IT personnel working as subordinates. According to employer satisfaction survey (2012) by WCB [19]; "*Employer Satisfaction means to discover employer's opinions about his expectations, experiences and overall satisfaction".* According to employer satisfaction survey report (2012) by TESDA [20],employer satisfaction means to check the satisfaction level of employers/managers about the competencies and performance of employed workers in the workplace. The employers which are satisfied with their employees, so those employees have better chance to move forward in their careers. In order to recognize employers' need, most of the educational institutes and universities should frequently conduct surveys to check employer requirement. Normally employers give their remarks on their required skills in their new hiring. In order to increase graduates' skills requirement, universities and educational institutes should conduct skills need survey to recognize the real need of the employers. Many of the business concerns have recommended that universities should redevelop and review their curriculum and properly develop skills and attributes [63]. During the time period of November-December 2010, the American University of Armenia managed a survey of Employer Satisfaction. The main purposes of this survey were to evaluate satisfaction with the fresh graduates in the fields of technical skills and academic skills[26]. A survey findings show the mean score for each skill from 3.64 to 3.88 for a list of soft skills while the mean value for technical skills is 3.77. It means that on average the employer gave a "very satisfactory" rating to the newly hired employees for each skill [20]. A survey of employers found that employers showed satisfaction for soft skills greater than technical expertise[7].Employers which hire entry-level information system (IS) personnel, they have expectations that the personnel should have number of skills like management and interpersonal skills, technical and business skills. This study shows dissatisfaction on IS entry level hiring skills and relates this knowledge into courses at the institutes of higher education [57].

Employer-university fundamental interaction is now characterized by dilemma of skills mismatch between what the employer desire and what the university can offer. Thus the universities should design an appropriate agenda for the suitable recognition of employers' skills requirements. Worldwide organizations are judging themselves ill equipped to fight in the 21st Century because of shortage of right skills in new graduates that are working in labor market [2].

3. Conceptual Framework

This research study investigates the satisfaction of employer/manager about project management skills and technical skills. The figure 1 presents the variables studied in this research. The two independent variables (project management skills and technical skills) are hypothesized to effect on employer satisfaction about the entry level hiring skills in the IT sector of Punjab (Pakistan).

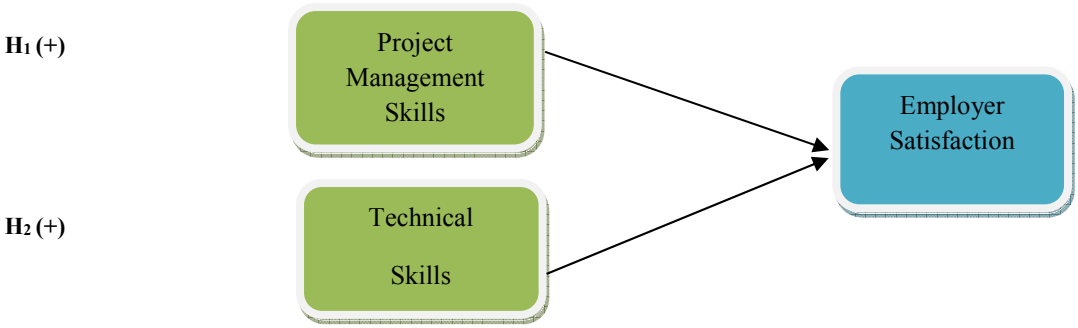

Figure 1: Conceptual Framework

3.1 Research Hypothesis

H_1: Project Management Skills have a significant positive impact on employer satisfaction by the IT sector employees of Punjab IT companies.

H_2: Technical Skills have a significant positive impact on employer satisfaction by the IT sector employees of Punjab IT companies.

4. METHODOLOGY

Questionnaire Design

This study is conducted to determine the satisfaction of managers/employers about skills in the IT firms of Pakistan and questionnaire is used as a research instrument for collecting data. In this research, all two types of self administrated questionnaire i.e. mailed questionnaire and online questionnaire are used in order to get maximum reponses from the participants of the research. The survey questionnaire is prepared in English language. It is divided into two parts. Part - I is linked to demographic variables while part - II is related to employees' skills at the times they were initially hired. The Questions are formulated with an aim to illustrate the level of understanding about the skills requirement in IT sector. A five point likert scale is applied for collecting the data. Scaling level in this survey questionnaire is: extremely dissatisfied=(1), dissatisfied=(2), neutral=(3), satisfied=(4), and extremely satisfied=(5).

Sampling Technique and Data Collection

The approach of this research study is quantitative. The study type is cross-sectional study. The researcher has selected all the members of PASHA (Pakistan Software Houses Association) and PSEB (Pakistan Software Export Board) belonging to the Punjab province of Pakistan as sampling frame for this research. Sampling frame provides the list of all the elements in the population. Unrestricted or simple random sampling is used in which sample is selected randomly. In this research, simple random sampling technique is used in selecting the company. The target population of this study is managers of IT firms of Pakistan registered under PASHA and PSEB. There are 1870 firms which are considered as total population while the target population is 600 firms (Punjab based) which are registered under PASHA and PSEB (with no duplicates). So, total of 150 companies are selected randomly. Finally, 1 to 3 questionnaires are distributed randomly in each IT firm to the manager/employer (having two or more than two year experience) at different management level. Total of 300 questionnaires were sent out of which 200 questionnaire are available for data analysis and interpretation which makes the response rate of 66.7%.

Analysis Technique

The statistical analysis is performed with the help of SPSS version 20. Descriptive analysis of the each item of each construct is done that includes the frequency and percentage of frequency of the responses. The reliability analysis of each variable of the studied model has been performed. Then the bivariate correlation analysis of each variable of the studied model has been performed. In the last step multiple linear regression has been performed to investigate the collective effect of independent variables on dependent variable.

5. RESULTS

5.1 Demographic Analysis:

Control Variables	% of Total Respondents
Gender	
Male	81%
Female	19%
Age	
21-40	87.5%
41-60	11.5%
above 60	1%
Educational Level	
Bachelor	49.5%
Master/MS	49.5%
PHD	1%
Current Employment Status	
Lower level Management	32.5%
Middle level Management	60%
Top level Management	7.5%

Experience	
10 years or above	12.5%
Between 5-10 years	37.0%
Below 5 years	50.5%
Organization Size	
15-30 employees	21%
31-40 employees	29.5%
Above 40	49.5%
No. of employees reporting to the respondents	
1-10 employees	78.5%
11-20 employees	15%
21-30 employees	3.5%
>30 employees	3%

Table 1: Respondent Profiles

5.2 Descriptive statistics of model variables

Variables	Mean	Std. Deviation
PMS	2.76	0.677
TS	3.24	0.645
ESAT	2.97	0.827

Table 2: Descriptive statistics of model variables

Table 2 indications that employers are generally not satisfied with project management skills while employers show satisfaction with technical skills among new employees. Overall trend of employer satisfaction is below average in IT industry of Punjab.

5.3 Frequency Analysis

This section contains the results of frequency distribution of separate items of all variables of the study by using the software SPSS Version 20. In the table 3, 4 and 5, there are eight questions mentioned under the construct "Project Management Skills" which is coded as PMS, fourteen questions mentioned under the construct "Technical Skills" which is coded as TS and two questions are mentioned under the construct "Employer Satisfaction" which is coded as ESAT. Data is collected from sample of 200 respondents at junior managers, senior managers and team leads from IT firms of Punjab (Pakistan). Below mention tables explain the responses of the all respondents in terms of frequency (f) and percentage of frequency (% f).

Project Management Skills

PMS	Extremely Dissatisfied f (% f)	Dissatisfied f (% f)	Neutral f (% f)	Satisfied f (% f)	Extremely Satisfied f (% f)
Project Planning, Budgeting and Scheduling	39 (19.5)	51 (25.5)	73(36.5)	31(15.5)	6(3)
Project Risk Management	37 (18)	71 (35)	61(30.5)	31(14.5)	2(1)
Negotiation	33 (16.5)	62 (31.0)	72(36.0)	29(14.5)	4(2)
Project Leadership	32 (16.0)	51 (25.5)	63(31.5)	49(24.5)	5(2.5)
User Relationship Management	22 (11.0)	41 (20.5)	81(40.5)	42(21)	14(7)
Working with Virtual Teams	20 (10)	43 (21.5)	68(34)	65(32.5)	4(2)
Working Globally	19 (9.5)	38 (19.0)	65(32.5)	63(31.5)	15(7.5)
Capability Maturity Model Utilization	34 (17.0)	36 (18)	62(31)	54(27)	14(7)

Table 3: Frequency Distribution of Project Management Skills

IT jobs require some form of project management skills for managing different projects of IT sector. IT professionals handle projects of different size and level of complexity, manage projects schedules, build teams and they should know the PM tools. According to the survey findings shown in table 3, in response to the first item of the construct, 45% of total respondents are not satisfied with their employees' project planning, budgeting and scheduling skills, 36.5% respondents are neutral with the skills of the employees at the time of initial hiring while 18.5% respondents show their satisfaction level about that skill. 15.5% respondents show their satisfaction level about project risk management skills, 30.5% are neutral while 54% respondents show their dissatisfaction level. Survey reveals that 36% managers are neutral with negotiation skills, while 47.5% are dissatisfied and 16.5% show their satisfaction level about negotiation skills of IT employees. About project leadership skills of subordinates, 31.5% show neutral response while 41.5% are dissatisfied and 27% are satisfied. Survey reveals that 40.5% respondents are neutral with user relationship management skills, 31.5% are dissatisfied and 28% are satisfied with that skill of workers of IT firms. 34% respondents are neutral with Working with Virtual Teams, while 31.5% are dissatisfied and 34.5% show their satisfaction about that skill. According to survey findings, 28.5% managers think that their employees don't work globally in a proper manner while 32.5% are neutral and the remaining 39% show their satisfaction level. About Capability Maturity Model Utilization 31% respondents show that they are neutral, 35% are dissatisfied and 34% are satisfied with that skill of subordinates. Overall, from the above result, conclusion can be drawn that large number of IT employers/managers of IT sector of Punjab believes that their subordinates are not fulfilling the requirements of industry in PMS. The mean score (2.76) of PMS also confirms these findings.

Similarly, some of the respondents are unable to express their point of view and marked neutral response against all the items of the above mentioned construct. While, by analyzing the table 3, the satisfaction level of supervisors about PMS is relatively low for IT workforce at the initial stage of their career. These findings are also supported by some prior studies which also show dissatisfaction in project management skills of newly hired graduates [21; 25].

Technical Skills

TS	Extremely Dissatisfied f (% f)	Dissatisfied f (% f)	Neutral f (% f)	Satisfied f (% f)	Extremely Satisfied f (% f)
Systems Analysis	16(8.0)	19(9.5)	69(34.5)	72(36.0)	24(12.0)
Systems Design	11(5.5)	27(13.5)	80(40.0)	65(32.5)	17(8.5)
Programming	13(6.5)	28(14.0)	46(23.0)	91(45.5)	22(11.0)
System Testing	14(7.0)	29(14.5)	66(33.0)	72(36.0)	19(9.5)
Database Design/Management	12(6.0)	22(11.0)	73(36.5)	62(31.0)	31(15.5)
IT Architecture/Standards	19(9.5)	34(17.0)	78(39.0)	54(27.0)	15(7.5)
Voice/Data Telecommunications	12(6.0)	20(10.0)	92(46.0)	56(28.0)	20(10.0)
Operating Systems	5(2.5)	30(15.0)	73(36.5)	78(39.0)	14(7.0)
Server Hosting	6(3)	37(18.5)	82(41.0)	56(28)	19(9.5)
Security	9(4.5)	55(27.5)	59(29.5)	59(29.5)	18(9.0)
Mainframe/Legacy	27(13.5)	34(17.0)	90(45.0)	21(10.5)	28(14.0)
Operations	17(8.5)	36(18.0)	71(35.5)	63(31.5)	12(6.5)
Continuity/Disaster Recovery	14(7.0)	31(15.5)	71(35.5)	61(30.5)	23(11.5)
Desktop Support/Help Desk	12(6.0)	20(10.0)	47(23.5)	92(46.0)	29(14.5)

Table 4: Frequency Distribution of Technical Skills

There are different schools of thoughts about the level required for the technical skills. The importance of technical skills depends on the size and type of the projects, availability of resources, projects structure and the environment in which projects are handled. According to table 3, 17.5% respondents are dissatisfied with the system analysis skills of the employees and 48% are satisfied while 34.5% are neutral. 19% respondents are dissatisfied with system design skills of the IT employees while 41% are satisfied. The survey findings show that 56.5% respondents are satisfied with the programming skills of their employees while 20.5% show their dissatisfaction level. Moreover, about system testing skill 21.5% managers show their dissatisfaction level while 45.5% show their satisfaction level. 17% are dissatisfied with Database Design/Management skill and 46.5% are satisfied. 26.5% managers show their dissatisfaction level about IT Architecture/Standards skills while 34.5% are satisfied. 16% respondents are dissatisfied with Voice/Data Telecommunications skills, 38% are satisfied with that skill and the remaining show neutral response. 17.5% managers are dissatisfied with Operating Systems skills while 46% are satisfied. Survey reveals that 21.5% managers are dissatisfied with Server Hosting skills, 37.5% are satisfied and 41% are neutral. 32% managers think that employees are lacking in security skills while 38.5% are satisfied with that skill. 30.5% respondents are dissatisfied with their employees' Mainframe/Legacy skills while 45% are neutral and 24.5% are satisfied with that skill. 26.5% respondents are dissatisfied with their employees 'operations skills while 38%revealtheir satisfaction level. Moreover, 22.5% respondents show their dissatisfaction level about Continuity/Disaster Recovery skill, while 42% are satisfied. Survey results show that 16% respondents are dissatisfied with Desktop Support/Help Desk skill while 60.5% are satisfied. Overall, from the above result, conclusion can be drawn that large number of IT employers/managers of IT sector of Punjab believes that their subordinates have technical skills and expertise to do their jobs at the time of initial stage. Mean value (3.24) also supports these results. Some of the respondents are unable to express their point of view and marked neutral against all the items of the above mentioned constructs. While, by analyzing the table 3, the dissatisfaction level of managers about TS is relatively low for IT workforce at the initial stage of their career.

Employer Satisfaction

TS	Extremely Dissatisfied f (% f)	Dissatisfied f (% f)	Neutral f (% f)	Satisfied f (% f)	Extremely Satisfied f (% f)
Overall PMS Satisfaction	32(16.0)	48(24)	74(37)	35(17.5)	11(5.5)
Overall TS Satisfaction	11(5.5)	26(13)	86(43)	63(31.5)	14(7)

Table 5: Frequency Distribution of Employer Satisfaction:

Frequency distribution of the managers'/employers' satisfaction about their subordinates' overall PMS and TS is given in the table 5. According to the survey findings, for overall PMS satisfaction, 37% respondents show neutral

response, 40% are dissatisfied while only 23% are satisfied with PMS skills. For overall TS satisfaction, 43% respondents show neutral response, 18.5% are dissatisfied while only 38.5% are satisfied with TS. The mean value of employer satisfaction 2.97 reveals that overall employer satisfaction for PMS and TS is below average and IT industry's employers don't show "satisfactory" response about the skills of their employees at the initial stage of their career.

5.4 Reliability Analysis

In this study, the reliability of all construct is measured by applying Cronbach's alpha test. The Cronbach's test is used to all the constructs separately and collectively as indicated in table 6. According to Murphy and Blazer (1989)[39] usually Cronbash's Coefficients value of more than 0.70 is believed as acceptable. The maximum range of Cronbach's Alpha is 0.877 for Technical Skills and the minimum range of Cronbach's Alpha is 0.461 for employer satisfaction while the PMS have the value of 0.792. According to Van de Ven and Ferry (1980) [60]value of Cronbach's alpha of 0.35 is an adequate standard. Therefore reliability of the instrument is valid and good. The result shows the ranging of values from 0.416 to 0.877, showing that scales are internally reliable and reasonably free of measurement error. Cronbach's alpha for this study is 0.890 for 24questionnaire items and 200 respondents. It is the measurement of total reliability of research instrument.

Constructs	No. Of Items	Cronbach's Alpha
Project Management Skills	8	.792
Technical Skills	14	.877
Employer Satisfaction	2	.461
Overall Reliability	24	.890

Table 6: Reliability of the Constructs

5.5 Correlation Analysis

		PMS	TS	ESAT
PMS	Pearson Correlation (r)	1	.404**	.446**
	Sig. (2-tailed)		.000	.000
	N	200	200	200
TS	Pearson Correlation(r)	.404**	1	.574**
	Sig. (2-tailed)	.000		.000
	N	200	200	200
ESAT	Pearson Correlation (r)	.446**	.574**	1
	Sig. (2-tailed)	.000	.000	
	N	200	200	200

**. Correlation is significant at the 0.01 level (2-tailed).

Table 7: Correlation Analysis

This analysis is performed in order to create interrelationship among independent variables "project management skills and technical skills" and dependent variable "Employer Satisfaction". Correlation analysis is executed to find out the strength and the direction of relationships among all dependent and independent variables of the model. The table 7demonstrates the findings of correlation analysis. The table contains the values of Pearson Correlation (r), the sample size (N) and significance Level (p). Viewing the p value, the findings indicate that of relationship ESAT is significant with all independent variables at 0.01 level.

According to Cohen (2003) [11] 'r' ranging from 0.10 to 0.30 indicates the weak correlation between two variables. While 'r' ranging from 0.30 to 0.70 shows the moderate correlation and value of 'r' ranging from 0.70 to 1.00 as strong correlations between two variables. In the table 7, abbreviations are used for all the variables. The values of 'r' indicate the positive correlation among all of independent variables and dependent variable. The table directs that each variable of the model has positive relationship with other variables and there is certainly no negative coefficient. The value of "r" of ESAT shows positive relationships with all independent variables. The value for PMS is 0.446 and for TSis 0.574. ESAT has moderate relationship with PMS and TS. Overall correlation analysis among variables confirms that there is significant and positive relationship have been found between ESAT

and PMS and TS. The result of correlation analysis also indicates that if the entry level employees of the IT firms have blend of project management skills and technical skills then the employers of IT industry are satisfied with those employees.

5.6 Regression Analysis

Output shows that all independent variables are good predictors of ESAT. As showed in table 8, the value of R-Square=0.384 which indicates that all these constructs show38.4% variability of ESAT. The table 8 shows that all the predictors are included no one is excluded. The value of standard error of estimate is 0.65289, which reveals that the data is not far-off from the estimated line and the ESAT regression model is satisfactory. The Durbin-Watson statistic ranges in value from 0 to 4. Here, the table 8indicates the value of 1.502, reveals that it is near to 2 and there is no autocorrelation.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.620	.384	.378	.65289	1.502

Table 8: Model Summary

Result of analysis of variance (ANOVA) is showed in table 9. ANOVA significance value is 0.000, which indicates that model is statistically significant at Alpha=0.05. As indicated in table 10, significant predictors of ESAT are both PMS & TS; significance of PMS is 0.000 and that of TS is also 0.000. The table also approves that the ESAT shows linear relationship with all predictors. The results show that all VIF values and Tolerance values of PMS and TS having employer satisfaction as dependent variable. It means that there is no multicollinearity between variables, because all Tolerance values> 0.1 and all VIF values< 5. Proposed model for employer satisfaction about PMS and TS is as follows:

$$\mathbf{ESAT= \beta_0 + \beta_1 PMS+ \beta_2 TS +\epsilon_i}$$

Here are the beta coefficients; one to go with each predictor. Based on the table10, the equation for the regression line is:

$$\mathbf{ESAT= 0.146 + .312(PMS) + .604(TS)}$$

A positive and significant relationship is explored between ESAT and PMS and TS. These results are supported by a previous study by (Danielson, et al., 2012)[14]technical and soft skills are positively correlate satisfaction. Finally, it can be summarized from the above model that TS has highest effect (0.604) on ESAT, the PMS has average effect (0.312) on ESAT.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	52.346	2	26.173	61.402	.000[b]
	Residual	83.974	197	.426		
	Total	136.320	199			
a. Dependent Variable: ESAT						
b. Predictors: (Constant), TS, PMS						

Table 9: ANOVA[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.146	.259		.564	.573		
	PMS	.312	.075	.255	4.176	.000	.837	1.195
	TS	.604	.078	.471	7.702	.000	.837	1.195

Table 10: Coefficients

	Research Hypothesis	Results
H_1	Project Management Skills have a significant positive impact on employer satisfaction by the IT sector employees of Punjab IT companies.	H_1 is accepted
H_2	Technical Skills have a significant positive impact on employer satisfaction by the IT sector employees of Punjab IT companies.	H_2 is accepted

Table 11: One-to-One Hypothesis Results

Conclusion and Implications:

The main aim of this study is to check the employers'/managers' satisfaction about the skills of new employees. Present study illustrates that what can be the contributing factors of the employer satisfaction regarding significance of skills of the employees working in Information Technology industry of the Punjab. According to this study employers are generally not satisfied with the project management skills while employers show satisfaction with technical skills among new employees. Overall trend of employer satisfaction is below average in IT industry of Punjab. A linear relationship model is presented between employer satisfaction, project management skills and technical skills of subordinate employees working in IT sector of Punjab. The results reveal that employer satisfaction has strong positive relationship with project management skills and technical skills. The study reveals that IT industry should focus more on collaboration with HEIs to develop curriculum to improve the satisfaction level of IT managers regarding project management and technical skills and also to develop student internship and placement schemes.

This research has highlighted some important issues about the skill level of freshly hired employees and how their skill level is perceived by the IT managers working in the IT industry. This information will be useful for HEIs that offer IT programs to revise the curriculum for IT undergraduates and graduates programs. Research output will enable HEIs to align their curriculum according to the requirements of the industry. This research emphasis HEIs to develop close linkages with IT industry in order to develop Industry consultation, internship programs and placements schemes and industry academia dialogues to find ways to increase the quality of curriculum and level of student learning regarding project management and technical skills. Overall, this will create a positive impact in the economic growth of the country while increasing the quality of the potential workforce through developing hard and soft skills according to the needs of the IT industry.

REFERENCES

1. Applegate, L. M., Montealegre, R., Nelson, H. J., Knoop, C. (1996). BAE Automated Systems (A): Denver International Airport Baggage-Handling System. *Harvard Business School*, 396-311.
2. Ayofe, A.N., Ajetola, A.R. & Oyewole, A.S. (2009). Assessment of Existing Gap between Industrial IT Skill Requirements and Computer Science Curriculum in Tertiary Institutions. *The Pacific Journal of Science and Technology*, 10(2), 326-336.
3. Azeez, N., (2008). A Seminar of Computer Science Student Association on Computer and the Society.
4. Barley, S.R. & Orr, J.E. (1997). Between craft and science: Technical work in US settings. Cornell University Press.
5. Blom, A., & Saeki, H. (2011). Employability and skill set of newly graduated engineers in India. World Bank Policy Research Working Paper Series, Vol.
6. Byrd, T. A., & Turner, D. E. (2001). An exploratory analysis of the value of the skills of IT personnel: Their relationship to IS infrastructure and competitive advantage. Decision Sciences, 32(1), 21.
7. Cappel, J. J. (2001). Entry-level IS job skills: A survey of employers. *Journal of Computer Information Systems*, 42(2), 76–82.
8. Cash, E., Yoong, P. & Huff, S. (2004). The impact of e-commerce on the role of IS professionals. *ACM SIGMIS Database*, 35(3), 50-63.
9. Cheney, P. H. & G. W. Dickson (1982). Organizational Characteristics and Information Systems: An Exploratory Investigation. *Academy of Management Journal,* 25(1), 170-184.
10. Cleland, D. I., & Kerzner, H. (1985). A project management dictionary of terms. Van Nostrand Reinhold.
11. Cohen, A. (2003). Multiple commitments in the workplace: An integrative approach. Psychology Press.
12. Corcoran, C. T. (1997). How to find an IT management job. *InfoWorld, 19*(48), 125.
13. Dabalen, A., Oni, B. & Adekola O. A. (2001). Labour market prospects for university graduates in Nigeria. *Higher EducationPolicy*, Vol.14, 141-159.
14. Danielson, J. A., Wu, T. F., Fales-Williams A. J., Kirk R. A., Preast V.A. (2012). Predictors of employer satisfaction: technical and non-technical skills. *Journal of Veterinary Medical Education*, 62-70.
15. DEST (2002). Employability skills for the future. A report by the Australian Chamber of Commerce and Industry and the Business Council of Australia for the Department of Education, Science and Training, Canberra.

16. Dictionary, I. (2014). Investopedia Inc.
17. Dictionary, O. E. (2014). Oxford: Oxford University Press.
18. Employer (2014). Retrieved from Dictionary.com.
19. Employer Satisfaction Survey (2012). A Survey of WCB.
20. Employer Satisfaction Survey (2012). A Survey of Technical Education and Skills Development Authority (TESDA).Office of the Deputy Director General for Sectoral TVET Planning Office
21. Erickson, S., Williams, C. & Braget, M. (2011). 2010 UND Employer Satisfaction Survey.
22. Fanning, E. (2006). The IT profession: 2010. *Computerworld*.
23. Goles, T., Hawk, S. &Kaiser, K. M. (2008). Information technology workforce skills: The software and IT services provider perspective. *Information Systems Frontiers*, 10(2), 179-194.
24. Gupta, J. N. D. & Wachter, R. M. (1998). A Capstone Course in the Information Systems Curriculums. *International Journal of Information Management*, 18(6), 427-441.
25. Hagan, D. (2001). Employer satisfaction with ICT graduates. In Proceedings of the Sixth Australasian Conference on Computing Education, Vol.30, 119-123. Australian Computer Society, Inc.
26. Hakobyan, N. (2010). American University of Armenia Employer Satisfaction Survey of AUA Graduates.
27. Hawak, S., Kaiser, K. M., Goles, T., Bullen, C., Simon, J. C., Beath, C. M., Gallagher, K. P.,& Frampton, K. (2012). The Information Technology Workforce: A Comparison of Critical Skills of Clients and Service Providers. *Information Systems Management*, 29(1), 2-12.
28. Herath, H. M. T. S., & Ranasinghe, A. (2011). Labour Market Prospects for Business Graduates in Sri Lanka. *International Journal of Social Science and Humanity*, 1(1), 26.
29. Industry Training Federation: Leading a Skilled Future (2013).
30. Igbaria, M., Greenhaus, J. H., & Parasuraman, S. (1991). Career orientations of MIS employees: an empirical analysis. *MIS quarterly*, 151-169.
31. Janssen, M., Daalen, C. E., Elling, R., Ubacht, J. & Bouwmans, I. (2010). Lessons Learned from Introducing a Skills Line into a Systems Engineering Curriculum. *In Transforming Engineering Education: Creating Interdisciplinary Skills for Complex Global Environments*, 1-13.
32. Kinkus, J. (2007). Project management skills: A literature review and content analysis of librarian position announcements. College & Research Libraries, 68(4), 352-363.
33. Lee, D., Trauth, E. M., & Farwell, D. (1995). Critical Skills and Knowledge Requirements of IS Professionals: A Joint Academic/Industry Investigation. *MIS Quarterly,* 19(3).
34. Lewis, J. P. (1998). Team-based project management. Beard Books.
35. Litecky, C. R., Arnett, K. P., & Prabhakar, B. (2004). The Paradox of Soft Skills versus Technical Skills in IS Hiring. *Journal of Computer Information Systems*, 45(1).
36. Medlin, B. D., Schneberger, S. C. O. T. T. & Hunsinger, D. S. (2007). Perceived technical information technology skill demands versus advertised skill demands: An empirical study. *Journal of Information Technology Management*, 18(3-4), 14-23.
37. Merrill, D. & Collofello, J. S. (1997). Improving software project management skills using a software project simulator, Published in: Frontiers in Education Conference, 1997. 27th Annual Conference. Teaching and Learning in an Era of Change. Proceedings. Vol. 3, 1361-1366.
38. Mirvis, P. H., & Hall, D. T. (1996). New organizational forms and the new career. *DT Hall & Associates, The career is dead: Long live the career*, 72-101.
39. Murphy, K. and Blazer. (1989). Rate Error and Rating Accuracy. *Journal of Applied Psychology*, 71 (4), 619-624.
40. Napier, N. P., Keil, M., & Tan, F. B. (2009). IT project managers' construction of successful project management practice: a repertory grid investigation. *Information Systems Journal*, 19(3), 255-282.
41. Nelson, R. R. (1991). Educational Needs as Perceived by IS and End-User Personnel: A Survey of Knowledge and Skill Requirements. *MIS Quarterly*, 15(4), (December 1), 503-525.
42. Nicholas, J.M. (1990). Managing business & engineering projects. Englewood Cliffs, NJ: Prentice Hall.
43. Osama, A. (2005). Pakistan's Software Industry: Best Practices & Strategic Challenges. An Exploratory Analysis. Ministry of Information Technology Government of Pakistan.
44. Paranto, S. R., & Kelkar, M. (2000). Employer satisfaction with job skills of business college graduates and its impact on hiring behavior. *Journal of Marketing for Higher Education*, *9*(3), 73-89.
45. Perce, K. H. (1998). Project management skills. *Official journal of the American Association of Occupational Health Nurses.*
46. PMBOK Guide (2008). A Guide to the Project Management Body of Knowledge, Fourth Edition Project Management Institute.

47. PSEB (2014). Pakistan Software Export Board. Source: http://www.pseb.org.pk.
48. Satty, B. & James (2006). Applying project management skills; Speech & Language Therapy in Practice.
49. Shakespare, W. & Night, T. (2000). Basic Skills for Project Managers.
50. Smith III, H., Smarkusky, D., & Corrigall, E. (2008). Defining Projects to Integrate Evolving Team Fundamentals and Project Management Skills. *Journal of Information Systems Education*, 19(1).
51. Smith, K.A. (2000). Project Management and teamwork. New York: McGraw-Hill.
52. Smith, K., Webber, L., Graffam, J. & Wilson, C. (2004). Employer satisfaction with employees with a disability: Comparisons with other employees. *Journal of Vocational Rehabilitation,*21, 61-69.
53. Sumner, M., Bock, D., & Giamartino, G. (2006). Exploring the linkage between the characteristics of IT project leaders and project success. *Information Systems Management*, 23(4), 43–49.
54. Talebnejad, A. (2012). The role and effect of information technology in the creation and maintenance of sustainable competitive advantage. *International Journal of Information Science and Management* (IJISM), 6(1), 59-72.
55. Taylor, H. (2006). Critical risks in outsourced IT projects: the intractable and the unforeseen. *Communications of the ACM*, 49(11), 74-79.
56. Tesch, Debbie B., Elaine A. C., & Gerald F. B. (2003). Evaluating IS Curriculum Issues Through an Ongoing Alumni Assessment Mechanism. *Journal of Computer Information Systems*, 44(2), 40-48.
57. Tesch, D., Braun, G. & Crable, E. (2006). An Examination of Employers' Perceptions and Expectations of IS Entry level Personal and Interpersonal Skills.
58. Todd, P.A., J. D. McKeen, & R.B. Gallupe (1995). The Evolution of IS Job Skills: A Content Analysis of IS Job Advertisements form 1970 to 1990. *MISQuarterly*, 1-27.
59. Trauth, E. M., Farwell, D. W. & Lee, D. (1993). The IS expectation Gab: Industry Expectation versus Academic Preparation. *MIS Quarterly*, 17(3).
60. Van de Ven, A. H., & Ferry, D. L. (1980). Measuring and assessing organizations (19). New York: Wiley.
61. Verma, V. K. (1996). The Human Aspects of Project Management. *Human Resource Skills for the Project Manager,*2(12).
62. Welford, A. T. (1968). Fundamentals of Skill, London: Methuen.
63. Weligamage, S. S. (2009). Graduates' Employability Skills: Evidence from Literature Review. *University of Kelaniya, Sri Lanka.*
64. Zachary, W. B. & Krone, R. M. (1984). Managing creative individuals in high-technology research projects. *IEEE Transactions on Engineering Management*, *1*, 37-40.
65. Zielinski, D. (2005). Soft skills, hard truths. *Training*, *42*(7), 18-22.
66. Zwieg, P., Kaiser, K., Beath, C., Bullen, C., Gallagher, K., Goles, T., Howland, J. & Simon, J. (2006). The information technology workforce: Trends and implications 2005–2008. *MIS Quarterly Executive*, 5(2), 47–54.