Today's Students Are Tomorrow's Working Professionals: Bridging The Gap Between Technical And Communication Skills

Abstract

The study of core skills needed for IT professionals that emphasizes technical, managerial, and communication competencies can be described as basically an attempt to probe the perceptions held by senior Information Systems students in Mumbai, Maharashtra about various skill sets that are required in the modern IT industry through a survey conducted. The research methodology is designed as a Likert-scale survey capturing the views of students about key technical skills along with expectations toward job benefits and career progression. Application of statistical methods like univariate analysis and t-tests helps to interpret the outcomes, which shows a good level of agreement that continuous training, critical thinking, and technical tools efficiency are valued. Conclusion/Study Findings: The study resulted in findings of the emergent need for both technical skills and managerial as seen in the changing world of IT. The study hence points out the communication skills as a backbone of technical competence and would be an enormous essence of every professional IT employee in the future.

Keywords: Information Technology (IT) Skills, Technical Competencies, Managerial Skills, Communication Skills, Career Progression

1.INTRODUCTION

In this fast-changing landscape of today's job market, the professionals will be not anymore hinged on their technical acumen. Fine foundation in technical skills remains critical, but growing emphasis on communication and interpersonal ability has changed what 'all set' actually does mean to go into the workforce. Although the students are preparing for roles that will shape the professional life of working people tomorrow, today they yet still encounter a critical and significant lacuna between the technical skills acquired within the academic context and the more universal communication abilities by which they should succeed in creative group work where various disciplines are integrated. This gap has increasingly been scrutinized, as educators, industry leaders,

and even students become more aware of the need to approach education comprehensively, focusing on developing both technical skills and communication skills.

By their very definition, technical skills embrace domain-specific competencies: coding for software developers, circuit design in engineers, or lab techniques for the scientist. But technical acumen alone is insufficient. With a greatly diversified workplace today, projects often involve cross-functional collaboration. Therefore, technical professionals have to be able to communicate ideas that are complex to nonspecialists, manage team dynamics appropriately, and step into constructive dialogue. Communication skills have been, are, and always will be the accompanying essentials combined with technical knowledge when trying to communicate to stakeholders, pitch a project to upper management, or collaborate with colleagues from different disciplines. These synergies don't just enhance smooth workflows but also solve problems, innovate ideas, and adapt in competitive, fast-paced job markets.

The dilemma or gap that education institutions are now facing is bridging the gap with respect to curricula. The traditional education systems typically focus on technical concepts and mastery over them and may sometimes tend towards sacrificing "soft" skills such as communication, teamwork, and emotional intelligence. Students may, therefore, go out of institutions highly proficient technically but lacking in aspects like communicating ideas, active listening, or navigating through professional relationships. Recognizing the imbalance, many universities and colleges are now weaving into technical programs courses and collaborative projects that focus communication. This approach is looking to prepare better students of reality in modern workplaces.

Further evidence is the expectations of employers, which include candidates with capabilities ranging from technical excellence to effective interpersonal engagement. Roles in engineering, information technology, healthcare, and even business increasingly demand hybrid skills. This means that, where the stimulus to organize flat organizations and also to work more on collaboration in every project, the employees should not only perform task of a particularistic nature but also contribute to team cohesion, provide insights, and adapt to changing contexts. Therefore, for students, bridging this gap is about much more than meeting employer expectations; it is about the development of personal skills to lead, innovate, and succeed in diverse professional contexts.

2. REVIEW OF LITREATURE

Coupe and Porter (2018), In their edited volume, The Education of Children with Severe Learning Difficulties: Bridging the Gap Between Theory and Practice, Editror and contributors underscore that there often lies a gap between theory and practice. Several difficulties faced by teachers in the school setting arose from using theoretical frameworks to guide practice, especially when dealing with children who have severe learning difficulties. While the focus remains on special education, the insights implicitly divulged suggest a deeper need in general educational systems to close the gap between theory and praxis. It is indeed fitting for technical and

communication skills in general education, as students lack preparation through practical application in addressing the complexities of their workplaces.

Dunne and Rawlins (2000), In their research into bridging the gap between industry and higher education, they discuss the use of training academics to enhance teamwork among students. Published in Innovations in Education and Training International, their research illustrates how graduates are often unprepared for industry expectations when there is a lack of teamwork and collaborative skills. Dunne and Rawlins further suggest that the academic profession ought to supply methods of teaching that clearly develop teamwork, problem solving, and interpersonal communication - very very relevant to professional success in multidisciplinary and team-based job environments. This study will therefore contribute valuable insight into how academia can better prepare students for the realities of contemporary workplaces when suggesting that there is need to bridge the gap between technical competencies and communication skills by including certain structured forms of teamwork training within the curriculums.

Hart's (2017) Today's Learners and Educators: Bridging the Generational Gaps discusses the gap between generational learning styles and expectations in educational settings, including nursing environments. Authored by Hart in Teaching and Learning in Nursing, this text shows how student and educator generations often differ in approach to learning, communication, or technology use. Generational gaps may mean lost opportunities for effective teaching and learning. The generational differences must be taken care of by changing the communicative approach the educators must employ so that student engagement and understanding may be enhanced. Although this study is rather specific for nursing education, the results from it carries in its body meaning across disciplines since it shows how different communication approaches bring about the collaboration and adaptability required to attain a learning environment.

Hartman, Moskal, and Dziuban (2005), In their chapter Preparing the Academy of Today for the Learner of Tomorrow from Educating the Net Generation, look to how the expectations of students are shifting, especially through how digital technologies will alter how students connect with information and learning spaces. The authors expound on how this change is a challenge to academic institutions as they strive to accommodate students familiar with digital technologies who expect an exciting, interactive learning experience. They claim that the "net generation" learners may not be adequately served by such traditional teaching practices, especially as they desire technology-inclusive, flexible, and collaborative learning environments. This paper presents filling the gaps of education both through what is taught and through pedagogies that align teaching with the digital competence and learning needs of today's students. The institutions can prepare their faculties to embrace technology and the interactive methodologies so that it can foster an experience that modern learners necessitate.

Hora's (2019) Book Beyond the Skills Gap: Preparing College Students for Life and Work, Harvard Education Press has covered the issues in the more popular "skills gap" narrative that most often narrow down the issue to lack of particular technical skills of fresh graduates. Hora also pleads for a view of greater competency areas involving adaptability, problem solving, and interpersonal skills. Hora does qualitative research to demonstrate how students to be successful in a professional environment rely on both hard and soft skills, and higher education institutions have a role and responsibility to go beyond technically preparing students to enter the professional world. His work has focus on real-world application, collaborative work, and communication skills embedded inside the curriculums of academic courses to produce very well-rounded graduates. According to Hora, this holistic approach is designed not only to prepare students for specific job roles but also to arm them with lifelong skills transferable across careers and changing industry requirements.

3. RESEARCH METHDOLOGY

The methodology was designed while incorporating data gathering, statistical techniques, and research instruments. The research tool measures the perception of students regarding the technical, managerial, and artistic abilities required to succeed in the modern commercial world as an IT specialist. Data analysis would establish any differences among the responses of those students, especially the students with prior work experience. The questionnaire also includes demographic information pertaining to the students' major, academic class, age, and gender. The pilot testing was conducted with undergraduate students at Mumbai, Maharashtra for classes similar to the one our study uses for checking clarity and proper understanding of questions. Students were not used as units of sampling in the actual study survey. During the pilot test, the survey was adjusted based on its feedback. Agreement or disagreement with the statements made was assessed through a Likert-type scale with five points (1 = strongly disagree, 5 = strongly agree). It was not a survey where individual responses were matched to specific students whose names were taken, with all their responses kept confidential. The study was undertaken as a part of the undergraduate program in Information Technology conducted in Mumbai. Properly guided students completed the survey. Data collected from usable questionnaires are subjected to various statistical techniques, such as the t-test and univariate methods, utilizing SAS software.

3.1 Research Instrument

A summary of the survey instrument as per students' opinions on these attributes includes programming, networking, and database capabilities, leadership/communications ability, familiarity with other applications of technology, among others, managerial and other characteristics of employees. Pay expectant job mobility, job offer/fringe benefit prospects or more simply chances to work for better-established more respectable companies, in addition to some related items measuring computer competence. In addition, demographic data, such as the age, gender, major, academic class, and frequency of college-level information systems courses for students, were collected.

3.2 Data Collection and Statistical Methods

Surveys were administered in advanced Management Information Systems classes at colleges in Mumbai, Maharashtra. The sample consisted only of senior information systems majors, and there were 59 usable survey responses. A pilot study was conducted with students from a different Management of Information Systems section to ensure comprehension of the questions and eliminate any ambiguity. These students were excluded from the final sample. The pilot study hence confirmed the common sense logic implied between the questions and answers produced, with ambiguity in some of the questions highlighted. Result of the pilot study was taken into consideration and questionnaire was modified based on feedback. The degree of agreement or disagreement the respondents had with the statements was assessed on a five-point Likert-type scale. The scale ranges from 1, that indicates "strongly disagree" to 5, indicating "strongly agree." Respondent anonymity was maintained in the survey, and all the responses were made confidentially. Techniques for statistical analysis involved univariate analysis and t-tests. SAS statistical package would be used.

4. RESULTS AND DISCUSSION

This table presents the essential skills for IT professionals, highlighting the mean rating for each skill based on its importance for professional success. The p-values indicate the statistical significance of each skill's mean rating, showing that IT professionals consider attributes such as ongoing training, teamwork, decision-making, and stress management as critical to their roles. The group mean for managerial skills reflects the overall importance of these competencies.

Table 1: Strong Agreement Among Respondents on Managerial Skill Set

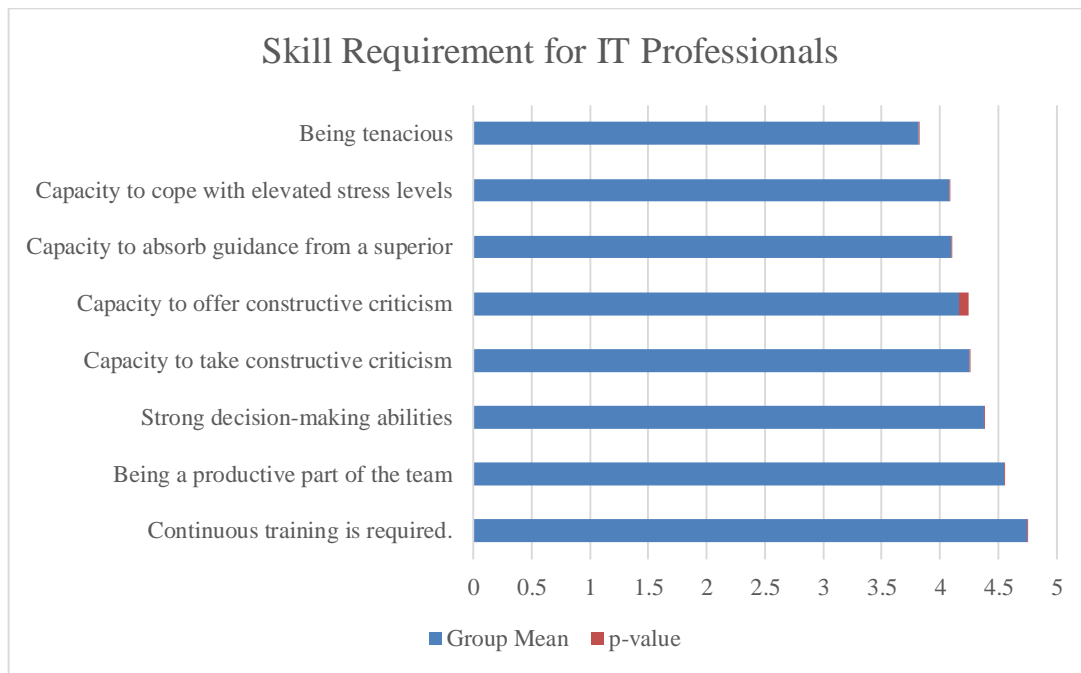| Skill Requirement for IT Professionals	Group Mean	p-value
Continuous training is required.	4.75	0.0002
Being a productive part of the team	4.55	0.0002
Strong decision-making abilities	4.38	0.0002
Capacity to take constructive criticism	4.25	0.0051
Capacity to offer constructive criticism	4.16	0.0839
Capacity to absorb guidance from a superior	4.10	0.0002
Capacity to cope with elevated stress levels	4.08	0.0002
Being tenacious	3.82	0.0079
Mean Group for Managerial Competencies	**4.26**	

Figure 1: Graphical Representation on Strong Agreement Among Respondents on Managerial Skill Set

As illustrated in Table 1, there seems to be a high level of agreement among the respondents in rating the importance of the different managerial skills for IT practitioners. Each skill has a mean score, and all the ratings are above 4, thus indicating a very high agreement on the need for these competencies in the sector. Therefore, since the group mean averaged 4.26, there is, in general, strong support for the concern for the requirement of these skills in IT success.

The skills ranked the highest require ongoing training skills (mean = 4.75, p = 0.0002) and the ability to work effectively in teams (mean = 4.55, p = 0.0002). Continuous learning, teamwork, and adaptability become the essence of one's survival in the rapidly changing IT environment. Good decision-making abilities receive a relatively high mean score of 4.38 (p = 0.0002) emphasizing their significant importance in allowing IT professionals to manage such complex situations and make right judgments under pressure.

Attention is also paid both while receiving and providing constructive criticism with mean scores at 4.25 (p = 0.0051) and 4.16 (p = 0.0839), respectively. Such values indicate that IT professionals find open constructive feedback loops important and something which is very essential for personal and team growth. Further, guidance from a superior (mean = 4.10, p = 0.0002) and coping with high stress levels at work (mean = 4.08, p = 0.0002) score very high. This suggests that flexibility and resilience are strong contributors to performance and productivity in demanding jobs for IT specialists.

Lastly, tenacity has a mean score of 3.82, p = 0.0079. Although it ranked below other skills, it is still statistically significant. This is an indication that persistence is vital, and particularly in demanding high-tech environments, it is much needed. The findings can be summarized as the respondents feel that IT professionals require a combination of technical, soft skills, and the adaptation to dynamic work conditions. The results thus aptly

underscore the need for educational and training programs to focus upon such skills to prepare the individual better for IT careers.

The findings of the students' opinions regarding analytical ability are shown in Table 2. The findings imply that being a successful IT professional requires analytical abilities, critical thinking, and the capacity to view your work from the viewpoint of a client.

The second set of crucial factors include logical reasoning, the capacity to imagine various situations from a single situation, and creativity. Furthermore, it seems that an essential component of the analytical skill set is familiarity with systems analysis and design.

Table 2: Strong Agreement Among Respondents on Analytical Skill Set

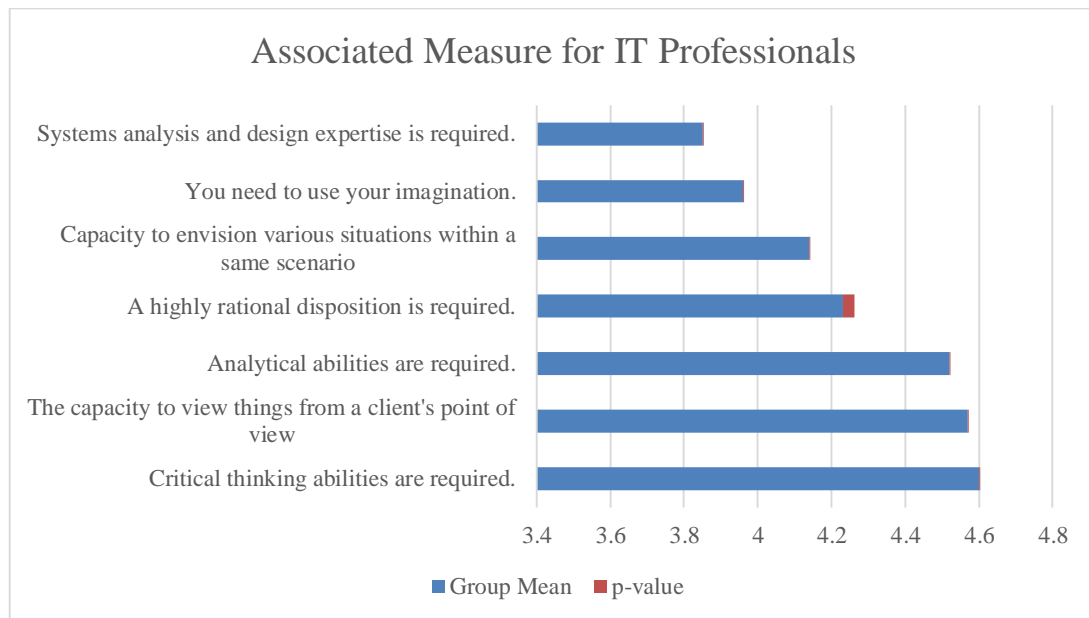| Associated Measure for IT Professionals	Group Mean	p-value
Critical thinking abilities are required.	4.60	0.0001
The capacity to view things from a client's point of view	4.57	0.0001
Analytical abilities are required.	4.52	0.0001
A highly rational disposition is required.	4.23	0.0316
Capacity to envision various situations within a same scenario	4.14	0.0001
You need to use your imagination.	3.96	0.0001
Systems analysis and design expertise is required.	3.85	0.0044
Group Mean for Analytical Skills Set	**4.26**	

Figure 2: Graphical Representation on Strong Agreement Among Respondents on Analytical Skill Set

Table 2 lights up the essence of analytical skills among IT practitioners, and indeed, respondents' answers showed high agreement in this regard, suggesting the importance of these competencies. The mean of the analytical skills set group is 4.26 and indicates a higher degree of importance of nearly all skills within this category. This indicates that among IT professionals, analytical skills are very essential for proper work or performance and, most importantly, to make decisions in their field of work.

The highest rated, critical thinking mean is at 4.60 with $p = 0.0001$ indicating the paramount importance of making IT professionals critically and thoughtful evaluators of complex problems. Situating situations at a client level has an average rating of 4.57 at $p = 0.0001$, further suggesting the significance of empathy and perspective taking from clients' points of view when it comes to IT as a customer-sensitive activity applicable in many of the technological projects.

Other skills, which are rated very high, are analytical thinking (mean = 4.52, $p = 0.0001$) and a logical nature (mean = 4.23, $p = 0.0316$), implying that the management of technical problems often requires highly systematic, logic-based approaches. The ability to envision several different scenarios from one situation is given as mean = 4.14, $p = 0.0001$; thus, IT professionals must be able to foresee several different outcomes and is important for planning projects or solving problems.

Yet imagination, with a mean value of 3.96, $p = 0.0001$, although ranking in lower position, as compared with other skills, is critical because creativity is an admired asset in the conceptualization of new solutions and innovative approaches. In the last place, knowledge of systems analysis and design, with a mean rating of 3.85, $p = 0.0044$, emphasizes technical knowledge in structuring and implementation of the solution.

The findings of students' opinions about the value of communication skills are shown in Table 3. The findings indicate that the communications skill set group mean was 4.46. Students understand that having strong written and verbal communication skills is essential for success in the IT industry.

Table 3: Respondents' Strongly Agreement on Communication Skill Set

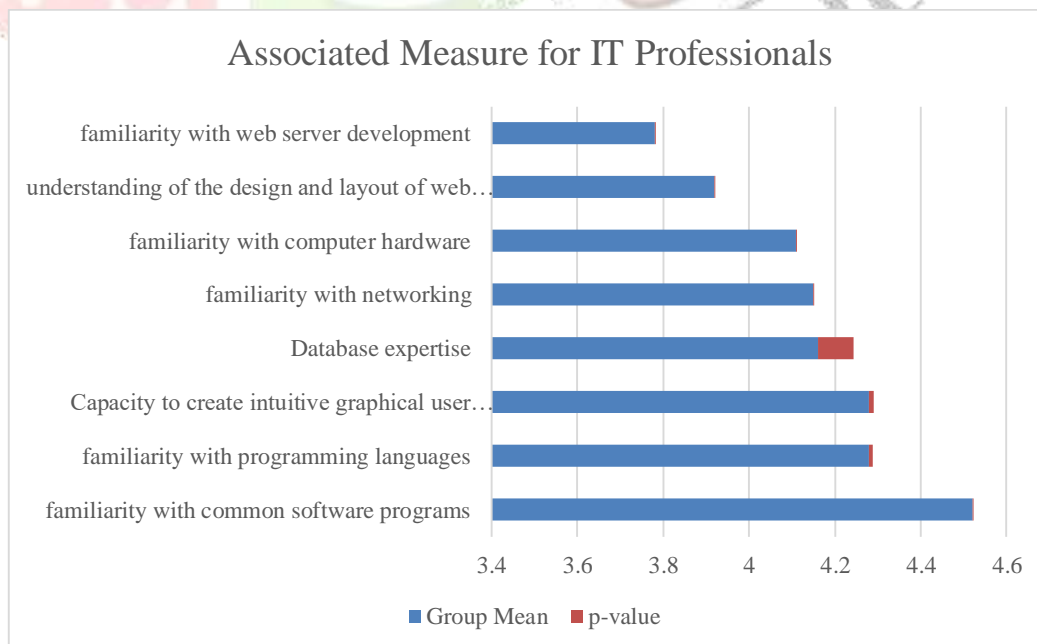| Associated Measure for IT Professionals	Group Mean	p-value
familiarity with common software programs	4.52	0.0001
familiarity with programming languages	4.28	0.0085
Capacity to create intuitive graphical user interfaces	4.28	0.0103
Database expertise	4.16	0.0836
familiarity with networking	4.15	0.0002
familiarity with computer hardware	4.11	0.0002
understanding of the design and layout of web pages	3.92	0.0004
familiarity with web server development	3.78	0.0022
Group Mean for Technical Skills Set	**4.16**	

Figure 3: Graphical Representation on Respondents' Strongly Agreement on Communication Skill Set

Table 3 Demonstrates the answer from IT practitioners, which shows an agreement of key technical skill sets for success in their field. The result was largely agreed, and the competencies show a high mean value of 4.52 for knowledge of standard software applications, stressing its critical importance in everyday IT tasks. Next to come in closely: knowledge about programming languages (4.28) and the ability to design user-friendly graphical interfaces (4.28), both a prerequisite for software development and a fun way of allowing users to engage with a system.

Knowledge of database systems (4.16) is also important, reflecting the management and retrieval of data. Networking knowledge (4.15) is also rated as very high, outlining its importance in terms of network configuration and communication protocols. Computer hardware competencies (4.11) are needed to troubleshoot and maintain information technology infrastructure, whereas web page layout and design competencies (3.92) and web server development competencies (3.78) are considered as less emphasized but valuable for creating and maintaining web applications and services. The overall group mean for the technical skills set is 4.16. Respondents therefore agree at a strong level that these technical skills are relevant in the practice of being an IT professional. Low p-values associated with most skills indicate that they are statistically significant, thus endorsing the general view of their critical natures and affording assurance towards success as an IT professional.

Table 4: Strong Agreement Among Respondents on Technical Skill Set

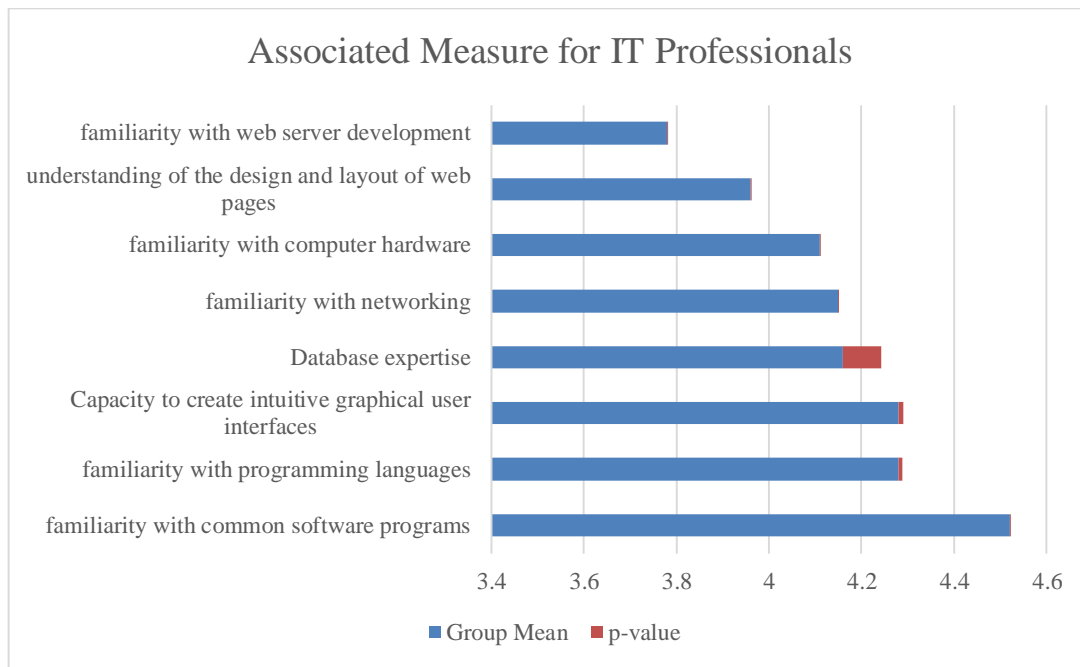| Associated Measure for IT Professionals	Group Mean	p-value
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familiarity with computer hardware	4.11	0.0002
understanding of the design and layout of web pages	3.96	0.0004
familiarity with web server development	3.78	0.0022
Group Mean for Technical Skills Set	**4.15**	

Figure 4: Graphical Representation on Strong Agreement Among Respondents on Technical Skill Set

Table 4 reveals that there was a fair consensus of opinions from the respondents as concerns the critical technical skills for it professionals, since there is a show of agreement in most competencies. The competency that received the highest mean score stands at 4.52 is knowledge of standard software applications, a competency which clearly substantiates its prominent role in the IT profession. This is because knowledge of programming languages and the ability to design user-friendly graphical interfaces both scored 4.28, as they are both considered very essential for developing operational and user-friendly software solutions. There were other competencies such as knowledge of databases (4.16), networking (4.15), and computer hardware (4.11) which also were rated high, reinforcing the broad technical expertise required in the IT field. For instance, despite web page layout and design still being perceived as important, with a score of 3.96, and development of web servers at 3.78, other competencies rank slightly lower on the list. A group mean of 4.15 overall indicates a great need for IT professionals to be well-rounded technically. The p-values are large and therefore of statistical significance especially for most of the skills enlisted, meaning that respondents are in strong agreement on relevance for success in the IT profession.

5. CONCLUSION

This research highlight what an IT professional should have, and that is technical expertise, managerial capability, and ability to communicate effectively. The IT professional needs a good grounding, not just in programming, networking, databases, and hardware but in all the other skills that will make him/her a decision-maker, a team member, and someone who can handle stress. Besides communication skills, mastering software applications and designing user-friendly interfaces are also integral to success in the current IT environment. It

adds a suggestion that students also feel that to maintain competitiveness, they require constantly acquiring new skills as the IT environment changes. Techno-managerial training should be a part of the curricula for education institutions for the development of future IT professionals to better serve the needs generated from the labor force. On this basis, the paper is justified in claiming that strong interpersonal and leadership skills are necessary in addition to contemporary organization technical knowledge as a success requirement in an IT profession. The study has been conducted with the undergraduate students of Mumbai, Maharashtra, and hence would furnish rich learnings into what these future IT professionals in the region would require and expect.

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