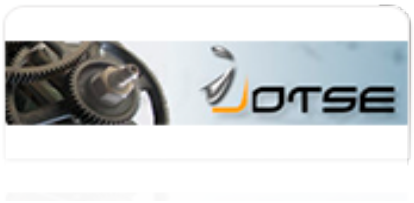

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EXPLORING THE IMPORTANCE OF SOFT AND HARD SKILLS AS PERCEIVED BY IT INTERNSHIP STUDENTS AND INDUSTRY: A GAP ANALYSIS

Frederick F. Patacsil, Christine Lourrine S. Tablatin

Pangasinan State University, Information Technology Department (Philippines)

frederick_patacsil@yahoo.co.uk, tablatinchristine@gmail.com

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Abstract

The research paper proposes a skills gap methodology that utilized the respondent experiences in the internship program to measure the importance of the Information Technology (IT) skills gap as perceived by IT students and the industry. The questionnaires were formulated based on previous studies, however, was slightly modified, validated and pilot tested to fit into the needs of the research. Respondents of this study were the IT students enrolled in internship while industry partners respondents were the internship supervisors of the IT students in their respected industries. Internship IT students were selected since they have a strong background on the needs of the company based on their internship experience. The findings of this study revealed that teamwork and communication skills are very important soft skills to be possessed by IT graduates as perceived by the respondents. Further, results reveal that there was no significant difference in the perception of the respondents in terms of the importance of soft skills. However, this finding contradicts the results in the case of hard skills were in there were a big range of disagreement on the importance of hard skills. IT students perceived that hard skills were very important while industry perceived hard skills were somewhat important. The study suggests that the university should enrich the soft skills and entry level hard skills component in the curriculum.

Keywords – Soft Skills, Hard Skills, Internship, Industry, IT Student, Gap Analysis.

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1. Introduction

The role of Information Technology (IT) professionals in the industries and organizations has expanded much over the past years. From basic encoding of business transactions and generation of reports, IT has stretched on to becoming an important means for software and application development, network engineering and maintenance, and more recently, call centers, medical and legal transcription, animation, and various forms of business process outsourcing. In short, it is widely applicable in all sectors of industry (Sipin, Lloyd & Malabanan 2014). IT is another evolving high-skills field that needs qualified workers to keep pace with its ongoing change. According to CompTIA, "more than 15 million businesses rate the aggregate skill levels of their IT staff as less than optimal, and 93 percent of employers indicate that there is an overall skills gap among employees" (American Society for Training and Development, 2012).

In a world where IT knowledge and skills are critical elements for nations to prosper and compete, primacy is placed on the quality and relevance of education and how to ensure that graduates have sufficient knowledge, skills, attitudes, and values to meet the demands of the industries. The changing nature of work environments, the emergence of technology-driven processes, and the diversified needs of clientele are the emerging challenges of Higher Education Institutions (HEIs) in order to meet the demand for employable graduates (Same Inanotech, 2014). Moreover, Silicon Valley-trained Filipino software gurus said that "only 10 percent of information technology or computer science graduates are hireable" – a reflection of the sorry state of the country's IT education. In 2011, the country produced 70,000 graduates of computer science, IT and related courses. From this figure, only 0.25 percent meet the needs of the global industries and this can be reversed given the number of potential talents that the country can have (Cuevas-Miel, 2012). Thus, becoming a critical concern for universities and colleges. This is an indication that Higher Education Institutions are challenged to equip their graduates with more than just academic skills (Singh & Singh, 2008). Nevertheless, graduates are expected to develop personal skills, qualities, and experiences that will enable them to compete in the labor market (Alsafadi & Abunafesa, 2012).

Skills gap is a major issue in the Philippines. In the Asian Development Outlook 2016, it was found that Filipino college graduates took about a year to find a work while high school graduates fared even worse, taking up to three years to do so. A main reason for the skills gap is that many of the graduates are not equipped with industry-relevant skills, especially in industries related to science and technology. Both public and private schools are facing challenges in

producing graduates who can meet industry demands (Song & Tang, 2016). Among the basic skills gap problems faced are seen throughout the economy: underdeveloped state of skills training system in the public schools, outdated curriculum, insufficient dialogue and coordination amongst the stakeholders regarding skills needs and training, inadequate accreditation of training programs, and scant avenues for re-skilling. The Commission on Higher Education (CHED) came out with an intervention. To address this gap problem an On the Job Training (OJT) or internship program to fill in the gap between academic acquired skills and practical skills knowledge needed by the industry. Policies and standard are adopted by the commission to rationalization of Information Technology Education (ITE) in the country and keep pace with the demands of global competitiveness. In the policies and standard, internship is included and expanded as a requirement for the BSIT and BSIS programs which aims was to give students the chance and opportunity to immerse the IT industries. Through the internship program, students will have the chance to apply the skills, knowledge and attitude learned in the school and at the same time the opportunity to experience the corporate environment.

In addition, through internship, students are given the opportunity to observe and apply the best practice the best trade to self-generate the skills necessary for this occupation (Sides & Mrvica, 2007). Since, the internship program is an academic activity often as a good venue to analyze the gap between the skills learned from the school and the industries can use as a baseline in enhancing the IT curriculum and improving the delivery of instruction.

In that context, this research examined the importance of soft and hard skills as perceived by the industry partners and IT students. Further, to considered possible solutions for bridging the perceived skill gap. Specifically, it answers the following:

- To determine the most important employable soft and hard skills as perceived by the industry partners and IT intership students;
- To determine if there are differences in the importance of various employable skills as perceived by the industry partners and IT intership students; and
- To recommend possible solutions to bridge the skill gap.

2. Related Literature and Studies

"Skills refer to the level of performance of an individual on a particular task or the capability to perform a job well which can be divided into technical elements and behavioral elements" (Noe, Hollenbeck & Gerhart, 2015). Technical elements measure "HARD" technical skills while the communication elements measure "soft" skills which include the attitudes and approaches applicants take to their work, such as the ability to collaborate on team projects (Daud, Abidin, Sapuan & Rajadurai, 2012). Skills gap is defined "as the difference between the markets need (demand) and the current skills supplied by local education institutes (supply)" (Alsafadi & Abunafesa, 2012). In this context, students should be aware of the needs and relate their abilities to be able them to meet the requirement of their future by employers (Yorke & Harvey, 2002). If students do not see the need and the importance of IT skills, the likelihood of higher education institutions managing to convince students to instill the desired competencies will be difficult (Coll, Zegward & Hodges, 2002).

Parsons trait and factor theory operate under the premise that it is possible to measure both individual skills, talents and the attributes required in particular jobs. It also assumes that people may be matched to an occupation that will fit into them. Therefore, if the ability of the individual suited to the job, they will perform best and their productivity will be at the highest (Careersnz, 2016). In addition, Barnard, Veldhuis & Van Rooij (2001) job-matching theory claims that the foremost goal of education is to prepare the instilling graduate appropriate skills for the tasks they will go to perform in their future jobs. The theory asserts that a mismatch between the required skills and the skills a graduate actually possesses has a significant contribution in their productivity, wages and probability get a job. Therefore, the skills required by employers must be equivalent with the skills of the graduates. The challenge therefore is to enable students realize how importance generic competencies, how these aligned skills improve their employment opportunities in a highly competitive market and that they should take ownership of these (Maher & Graves, 2008).

National Workforce Center for Emerging Technologies (NWCET) identified IT career clusters that have been broadly adopted by industry, education, and government policymakers as a standard framework for classifying IT jobs and careers and for quantifying their supply and demand. The cluster is presented in the IT skills Pyramid as shown in Figure 1.

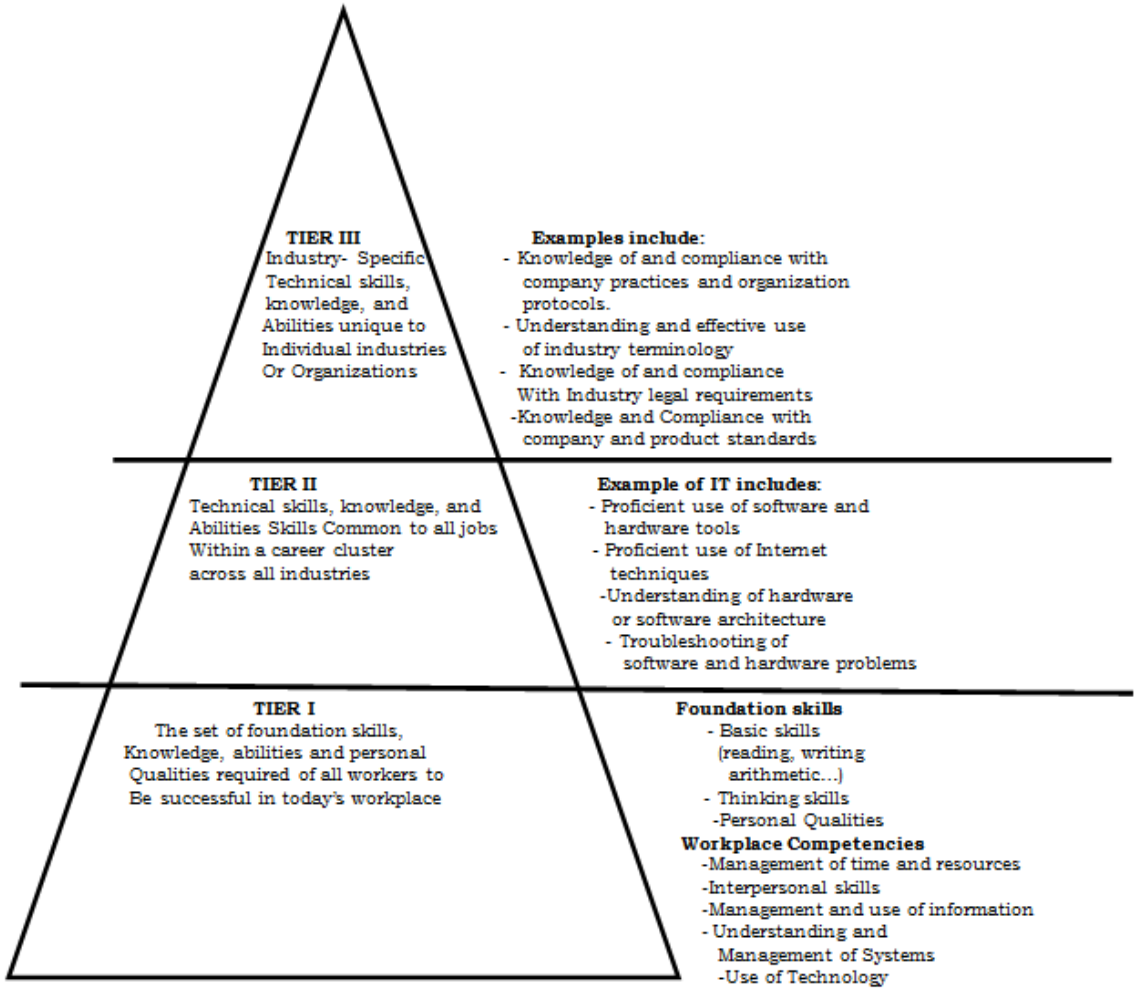

Figure 1. The IT Skills Pyramid

The three-tiered pyramid depicts IT skill standards in 3 broad IT skill categories: foundation and employability skills, common technical skills, and industry-specific technical skills and organizational knowledge.

Tier 1 is the set of foundational and employability skills, knowledge, and abilities that are required to all information worker employees. These are the universal skills—problem solving, team skills, and flexibility—that are needed to apply technical knowledge and tools effectively.

Tier 2 is the set of technical skills, knowledge, and abilities common to all IT positions within an IT career cluster.

Tier 3 is the set of industry-specific technical skills, knowledge, and abilities that are unique to individual clusters and that are the most susceptible to change.

This study focuses on the tier 1 and tier 2 since both are employability skills and general requirements associated with the function or task required for a new IT graduate. Input from industry clearly shows that without solid mastery of this employability skills, a graduate cannot succeed in the highly competitive work environment. In addition, employers often say that "technical skills are attributes that may land graduate to a job, but foundation skills make them a valued employee and significantly increase their career advancement".

2.1. Skill gaps input to curriculum enhancement

The development of an individual's knowledge, skills, and attitudes is not just the sole responsibility of the academic community; nevertheless, it is a join responsibility of the students, school and industry.

In a congruent study conducted by Radermacher, Walia and Knudson (2014) which intended to assist educators in identifying areas where students may not measure up the expectations of industry companies and in improving the curriculum at their universities to better prepare them for their future careers. In this study, the respondents were asked questions about what particular skills where recent graduates frequently struggled when they started their employment at their companies and which particular skill deficiencies might prevent a recent graduate from being hired.

The study of Scott, Alger, Pequeno and Sessions (2002) revealed that there was alignment between the importance rating of industry and the skills of students in some areas. Although there are correlation exists on the specific skills that industry requires and those which students possess, however, there are knowledge of certain technical and technological skills that are still lacking from the formal Information System (IS) curriculum.

Shariff, Kayat and Abidin (2014) and McMurtrey, Downey, Zeltmann and Friedman (2008) shown that their findings were used to assist the academic institutions in the process of designing the curriculum as to meet the industry needs and suggest that revision should be consulted and participated by industry partners. Another study conducted by Zaharim, Omar, Basri and ISA (2009) utilized the outcomes of their study to revise guideline for the engineering education curricula of Malaysian Institutions of Higher Learning. In all of these studies, both the academic community and industry partners play important roles in providing needed information about skill gaps in the key industrial work areas. To achieve this, it needs to establish mechanisms for

active, structured and meaningful consultation with industry partners on a regular basis through OJT or Internship. The researchers believe that this research will surely provide academic community and the industry with more knowledge to obtain more effective collaboration so that it will be helpful to both academic ad industry.

2.2. Soft Skills

Several researchers investigated numerous ways in which recently graduated students struggle when they started their first jobs. There are 10 commonly noted soft skills related to jobs in the fields of business and computer technology were communications, critical and decision-making, interpersonal, negotiation, problem solving, self-confidence, self-management, teamwork and worth ethics (Williams, 2015; Singh & Singh, 2008; Pritchard, 2013; Robles, 2012; Bringula, Balcoba & Basa, 2016; Ajzen, 1991). A study conducted by Williams (2015) directly affects positive social change of college students by enhancing the quality of soft skills for their future employees. The study revealed that key soft skills communication skills were the most relevant, and the skills most students needed to improve. Although other skills–negotiation and critical thinking skills–needed improvement, they were not as crucial at the entry-level status suitable for the community college students. In addition, a professional development training program where proposed to help students enhance their soft skills before entering their future careers. Another study by Radermacher et al. (2014) indicated that recent graduates struggle communicating with co-workers and customers. Therefore, their study proposed that that the academic community should make sure that students will have effective problem solving and effective communication skills.

Noll and Wilkins (2002) utilized a survey instrument asking respondents to rate the importance of each knowledge/skill areas from each of the staffing groups. The results show that IS knowledge relating to the entire organization and overall business knowledge is important, however the so-called 'soft skills' such as teamwork and collaboration, planning and leading projects, presentation delivery, and writing skills will be critical for success in the IS profession.

In addition, the results of the study show that there is a need to enhance the quality of soft skills for future employees who enter the local workforce and soft skills are perceived by students and employers as relevant employability skills (Ajzen, 1991; Singh & Singh, 2008; Robles, 2012; Pritchard, 2013; Goswami, 2013; Williams, 2015; Bringula, Balcoba & Basa, 2016). These

previous studies bring to light the importance of soft skills for professional growth and technical skills alone are not sufficient for success in the IT profession - soft skills like communication, problem solving, and teamwork are increasingly important.

The study consequently tried to confirm whether academic acquire soft skills of our students need to be enhanced based on the performance of IT students as observed by their intership supervisors. Likewise, the results of this investigation will try to prove that, overall, IT students and industry partners viewed soft skills equally important as technical skills for the successful integration of entry-level employees. In addition, the study tried to determine the most important soft skill an IT graduate should possess using different research respondents, culture, industry and the venue including the difference in the results as compared to the previous studies.

2.3. Hard Skills

These skills are used as a basis for the development of educational curriculum, future profiling of jobs and the technical functions that the industry desire most (Kennedy, 2016). Information Technology (IT) may be the most challenging program in terms of skill gaps due to the fast pace of change in terms of hardware and software development. Nevertheless, according to Pritchard (2013) entry-level skills if posses by the student can provide long-term careers. It is important to note that very few ICT occupations are "low skill" and that the entry point for ICT career lattices is considerably higher than that in other program. According to Work2future Skills Gap Analysis (2013) entry-level ICT occupations are computer operators, Computer User Support Specialists, Computer Network Support Specialists, Network and Computer Systems Administrators, Computer Systems Analysts and Database Administrators. The study further suggests that educational institutions should focus on strengthening the skills of their students in these areas. An empirical investigation conducted by Medlin, Schneberger and Hunsinger (2007) tries to determine IT students view on the IT technical skills necessary to be a successful IT professional and how well their perceptions match those IT technical skills actually sought in IT online job advertisements. The result of their study finds several gaps that exist between student perceptions of the skills they need versus the actual IT skills employers are advertising.

This study utilized the concept of entry level hard skills as discussed by NWCET and ICT occupations "low skill" of Work2future Skills and the following technical skills are knowledge of standard software applications, knowledge of programming languages, the ability to design user-

friendly graphical interfaces, knowledge of database, knowledge of networking, and knowledge of computer hardware. These technical skill keywords were listed and rank by the employee as very important ICT entry level skills. Further, the same six groups of technical skills were used in the survey of student perceptions of skill demands used in searching job listings.

The study was conducted for the following reasons which is important to both our industry partners and to the academic communities. IT technology is rapidly developing overnight and there should be a continuous process to determine the desirable skills of future IT professionals. Furthermore, this study concentrates solely on the required skills and their importance as perceived by our industry partners and as observed by IT intership students.

The study identifies the skills in which industry recognized as very important skills that our future graduates should possess and the university should address immediately.

2.4. Conceptual Framework

The framework implies that IT students will utilize their academic acquired skills through an internship program while industry will provide the venue where IT students can apply their skills in an actual work environment. Figure 2 presents the conceptual framework of the study.

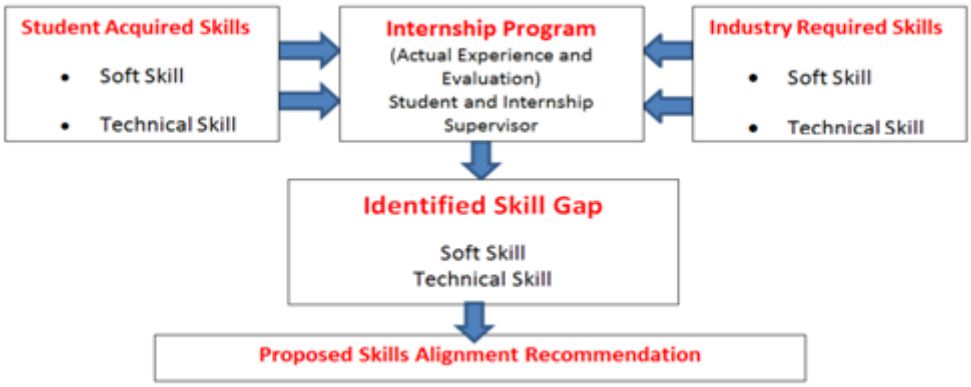

Figure 2. The conceptual framework of the study

Students will now observe the importance of their skills based on the actual work task / function at the same time internship supervisor observe and evaluate the performance of the students based on their skills. In addition, the interaction between a student and industry supervisor in an

internship program allows the student to perceive the importance of these skills through the exchange their knowledge and ideas. Thus, the internship program is a good avenue to observe the importance of the academic acquired skills as compared to the actual skill needs by the industries. The result of the study will be used as input in the enhancement of IT curriculum to bridge in the skill gap.

3. Methodology

This study was descriptive research in nature. A descriptive survey was designed and utilized to examine the important skills needed as perceived by the industry and academic acquire skills by IT internship students.

3.1. Instrument

A survey- questionnaire was developed based on surveys by other researchers (Williams, 2015; Singh & Singh, 2008); Pritchard, 2013; Robles, 2012; Bringula et al., 2016; Ajzen, 1991) and was modified by the researchers to include some additional items. The survey questionnaire is composed of two parts. Part 1 focuses on the profile of company respondents which includes type of company, number of employees, and services provided. The second part was aligned to ask the respondents to rate the perceived level of importance of soft skills and technical skills in their assigned industry/company. The items used a five-point Likert type scale to measure a respondent's degree of agreement or disagreement with the statements (1 = "Least Important" and 5 = "Very Important"). The instrument was validated in terms of its content and reliability by ten (10) people, which include IT faculty members, industry partners and university OJT coordinators. The result of the reliability test shows a good internal consistency reliability in terms of Cronbach's alpha value of 0.833 (Andale, 2017). In addition, comments and suggestions were incorporated in the survey instrument. The instrument that was revised and pilot-tested using undergraduate level IT students who were not included in the actual survey, to eliminate survey question ambiguity and improve instrument reliability. The survey questionnaire was modified based on the results and feedback from the pilot study.

3.2. Population

Purposive sample techniques using total population sampling was employed to identify the respondents of the study. Only IT students who were enrolled internship course and almost to finish their internship program were included while industry partners respondents were the supervisors of the IT students in their respective units. Internship IT students were selected since they have a strong background on the needs of the company based on their internship experience. In addition, supervisors of these IT students from their internship industry were also asked to determine their the IT skill needs based on the company needs and observations.

The survey questionnaire that covers the profile of the company, soft and hard skills were distributed to 4th IT students undertaking internship and their respective industry supervisors.

3.3. Limitations of the study

There are several limitations with the current study, thus the results should be cautiously generalizable since the study was conducted with only one group of undergraduate 4th year IT college students enrolled in the internship course at Pangasinan State University and their corresponding industry internship supervisors. Furthermore, only industry partners located nearby and within the province where the university is located is included as respondents, so it did not represent all of the different industry. In addition, only 78 IT students and 56 industry respondents were included in the study in which only 46 survey questionnaires were included as part of the data set. Due to the narrow range and the use of purposive sampling, there is the possibility to put unnecessary weight on the data obtained since it was gathered in a small sample population which may cause more sensitive results.

3.4. Research Procedure

Fourth year IT internship students and internship supervisor (company where IT student is going internship) were asked to rate the importance of the various items from least important at all to very important using a five point Likert scale. The survey-questionnaires were distributed to the respondents two weeks before the internship ended. IT OJT coordinator was asked and tasked to distribute the questionnaires to the respondents where they were asked to answer the survey based on the perceived skills needed by the industry. In the case of the industry skill

needs, respondents from the industry also answered the same survey based on their actual IT skill needs.

Seventy eight (78) IT students enrolled in the internship program and 56 companies that were asked to answer the survey questionnaire, however, only 46 students and their respective company had the time to participate in the survey. The remaining 32 respondents and their survey questionnaires were not completed and some participants failed to provide some critical answers so they had to be excluded from the data analysis.

3.5. Data Analysis Measures

For the analysis, Average Weighted Mean (AWM) was utilized to determine the importance of a certain skill. The following were utilized to describe the importance of the skill based on the perception of the respondents. Table 1 presents the description and range used to interpret the results of the importance of a certain skill.

Description	Range
5 - Very important (VI)	4.21 - 5.00
4 - Important (I)	3.41 - 4.20
3 - Somewhat Important (SI)	2.61 - 3.40
2 - Less Important (LI)	1.81 - 2.60
1 - Least Important at all (NIA)	1.00 - 1.80

Table 1. Interpretation of the Results of the Importance of a Soft and Hard Skills

Furthermore, the ranking was utilized to identify the most important perceived skills and rank one (1) was considered as the most important skill. The ranking of the skills were based on their mean average where the highest mean will have the highest rank.

3.6. Skills Gap Analysis

The measure of the difference is defined as the mean average difference between the perceptions of IT students and company representative on the importance of soft and technical skills:

$$Skills\ Gap = \sum_{i-1}^{n} \left[\frac{\left(stuperception - iduperception \right)}{n} \right]$$

Where

I	refers to the *i*th respondents
N	refers to the total number of respondents
stuperception	refers to the student perception on the importance of skills
iduperception	refers to the industry perception on the importance of skills

The bigger mean gap value depicts a more discrepancy between what is perceived by the industry and student as important skills of IT students. Furthermore, negative results indicate that industry partners give more importance to the said skills, however positive results indicate that students perceived higher important on that skill.

One way ANOVA was also utilized to determine whether there are mean differences in the response of student respondents and industry representative.

4. Results

4.1. Company Respondents' profiles

The findings include respondents' company type, services provided and the number of employees.

Status of Company / Industry	**Percent %**
Government	73
Semi-Government	13
Private	14
Type of Services provided	
Services	57
Financial	9
Education	4
Consulting	26
Utility	4
Number of Employees	
Less than 5	6
6 - 10	2
11 - 15	8
16 - 20	22
21 - 25	11
26 - 30	7
More than 30	2

Table 2. The demographic profile of the company/ industry

Table 2 shows the percentage of respondents' profile. As reflected in the table, more than two-third of the industry partners respondents were government sector, which had the largest number of respondents (73%), while semi-private and private sector were composed of one-third or 27 of the total respondents. Furthermore, more than half (57%) of the company respondents were in line with providing client/customer services, 24% were on consulting company and the remaining were on financial institution, utility and education. In addition, more than one half of the company employed more than 15 employees. Based on the above results, industry partners were mostly government corporation or company, small to medium in terms of the size of employee and mostly focus on customer related support services. Generally, government offices provide services utilizing information technology applications to fast-track their transactions to their clients or customers as stated in their citizen charter. As a result, the majority of their front line and support services were IT graduates.

4.2. Soft Skill Gap Analysis

Table 3 shows a small range of the mean difference between the perception of the group of respondents as to the importance of the selected soft skills. Furthermore, the result of on way ANOVA indicated that there is no significant difference in the perception of IT students and company representatives in terms of the importance of soft skills in the industry. However, both respondents agreed that teamwork was the most important skill and facilitating skills was the least important skill. This research has established and agree with Noll and Wilkins (2002) that teamwork skills is one of the most important soft skills that students should develop and acquire.

Additionally, together they agree soft skill is a very important skill. The findings implied that soft skills should be embedded in the IT curriculum besides this skill were as crucial as hard skill at the job entry-level status of the IT graduates. This research confirms the trend identified by Williams (2015), Singh and Singh (2008), Pritchard (2013), Robles (2012), Bringula et al. (2016) and Ajzen (1991) that soft skills are similarly important as technical skills for the successful integration of entry-level employees. Furthermore, results show the importance of soft skills as an essential for the success in the workplace as perceived by students and industry partners.

Soft Skills	Student Perception (AWM)	Description	Rank According to Importance	Company Perception (AWM)
Communication Skills	4.40	VI	3	4.48
Interpersonal skills	4.45	VI	2	4.39
Management skills	4.36	VI	4	4.48
Team work	4.50	VI	1	4.52
Presentation Skills	4.36	VI	4	4.13
Skills in Dealing with difficult personalities	4.36	VI	4	4.13
Facilitating skills	4.22	VI	5	4.04
Leadership Skills	4.36	VI	4	4.48
Total AWM	4.37	Very Important		4.33

Soft Skills	Description	Rank According to Importance	Mean Difference (Gap)	F-Statistics	Significance
Communication Skills	VI	2	-.08	0.15	p 0.70 ***ns*** at p <0.05
Interpersonal skills	VI	3	.06	0.34	p 0.56 ***ns*** at p <0.05
Management skills	VI	2	-.12	0.45	p 0.50 ***ns*** at p <0.05
Team work	VI	1	-.02	0.00	p 0.1 ***ns*** at p <0.05
Presentation Skills	I	4	.23	2.24	p 0.14 ***ns*** at p <0.05
Skills in Dealing with difficult personalities	I	4	.23	4.14	p 0.04 ***ns*** at p <0.05
Facilitating skills	I	5	.18	0.15	p 0.70 ***ns*** at p <0.05
Leadership Skills	VI	2	-.12	1.36	p 0.72 ***ns*** at p <0.05
Total AWM	Very Important				

Legend:	**Description**	**Range**	
	5 - Very important (VI)	4.21 - 5.00	*ns* - not significant
	4 - Important (I)	3.41 - 4.20	*s* - significant
	3 - Somewhat Important (SI)	2.61 - 3.40	
	2 - Less Important (LI)	1.81 - 2.60	
	1 - Least Important at all (NIA)	1.00 - 1.80	

Table 3 Industry and IT students Perceptions on the Importance of Soft Skills in the Industry

Furthermore, industry favors more on leadership, management, communication and teamwork skills while IT student respondents' desire more on interpersonal, presentation, dealing with difficult personalities, and facilitating skills. In addition, the biggest skill means average disparity between responses can be seen between IT students and industry respondents in the area of presentation skills and skills in dealing with difficult personalities. IT students favor of those skills since, the office that they were station was focused on providing customer services to their clients or customers and they perceived that these were the most important skills when dealing with clients or customers. However, industry partners perceived the needs of skills for future managers like leadership and management skills. With this perception from the industry partners, these soft skills should be incorporated into the curriculum which comprise of working in a team environment, leadership, communication, and managing skills.

The supposed "soft skills" have typically been important to the students and industry partners confirming research of Williams (2015); Radermacher et al. (2014); Noll and Wilkins (2002), Scott et al. (2002). The identified skills should incorporate the in the curriculum matrix, the course and program requirements that would be developed...

4.3. Hard Skill Gap Analysis

Table 4 presents the perceptions of the industry partners and IT students on the importance of hard Skills in the industry the different hard skills that should be developed by IT students during their internship. The table revealed a wide range of disagreement between groups of respondents on the importance of the selected skills based on the mean difference. In addition, the result of one way ANOVA indicated that there is a significant difference in the perception of IT students and industry represented in terms of the importance of skills in the industry. The result confirmed the result of a study of Medlin et al. (2007) that finds significant skill gaps between student perceptions of the skills they need versus the actual IT skills needed by the industry. The majority of skills was perceived as somewhat important by industry, whereas IT students emphasized hard skills as an important skill. The study indicated that skills are not that so important for the industry specifically for companies that focuses on customer services.

Top ranked skills like knowledge of standard software applications, knowledge in computer hardware and networking were in the top ranks on students' and the industry's ratings. In addition, table 3 shown that the biggest mean skill gap disparity between responses can be seen between IT students and industry respondents is the ability to design user-friendly graphical interfaces, followed by knowledge of programming languages while the knowledge of computer hardware obtained the smallest gap. It was worth noting that knowledge of computer hardware and knowledge of standard software applications perceived these skills as important by both respondents. However, there is a significant difference in their perception in terms of its importance in the work environment.

The results indicate that industry focused more on document processing and hardware operation and maintenance skills which were the basic operations in a customer service oriented office and it is the backbone of all these public transactions. This research has established a part of the reference that IT students should learn skills in the areas of hardware and document processing

skills. Besides, entry level job for IT graduates are focused more on computer operation which manages hardware and application system processing of a certain organization.

Hard Skills	Student Perception (AWM)	Description	Rank According to Importance	Company Perception (AWM)
Knowledge of standard software applications	4.36	VI	1	3.83
Knowledge of programming languages	4.13	I	3	2.87
the ability to design user-friendly graphical interfaces	4.13	I	3	2.65
Knowledge of database	4.13	I	3	3.13
Knowledge of networking	4.27	VI	2	3.43
Knowledge of computer hardware	4.27	VI	2	3.87
Total AWM	4.22	Very Important		3.30

Hard Skills	Description	Rank According to Importance	Mean Difference (Gap)	F-Statistics	Significance
Knowledge of standard software applications	I	2	.53	15.91	p 0.00 ***s*** at p <0.05
Knowledge of programming languages	SI	5	1.26	28.44	p 0.00 ***s*** at p< 0.05
the ability to design user-friendly graphical interfaces	SI	6	1.48	51.61	p 0.00 ***s*** at p <0.05
Knowledge of database	SI	4	1	21.92	p 0.00 ***s*** at p < 0.05
Knowledge of networking	SI	3	.84	17.62	p 0.00 ***s*** at p <0.05
Knowledge of computer hardware	I	1	.4	7.12	p 0.01 ***s*** at p< 0.05
Total AWM	Somewhat Important				

Legend:	**Description**	**Range**	
	5 - Very important (VI)	4.21 - 5.00	*ns* - not significant
	4 - Important (I)	3.41 - 4.20	*s* - significant
	3 - Somewhat Important (SI)	2.61 - 3.40	
	2 - Less Important (LI)	1.81 - 2.60	
	1 - Least Important at all (NIA)	1.00 - 1.80	

Table 4. Industry Partners and IT students Perceptions on the Importance of Hard Skills in the Industry

The views of the industries on the importance of these skills clearly imply that it is vital for IT program to improve, particularly in several non- aspects of behavioral education. The result of this study can be attributed to the nature of the company that the majority of the industry respondents focused to customer oriented services company.

4.4. Recommendations

The findings of this study suggest that PSU should target enhancement or inclusions of soft skills on the specific development component on its planning and revisions of the curriculum. Specifically:

- Curriculum enhancements should undertake to improve soft skills capability of IT students and entry level technical skills such as computer operations and maintenance.
- Make sure that stakeholders and industry partners participate in the deliberations related to the framing of policies and curriculum development.
- The cooperative effort involving stakeholders and the PSU institutions should strengthen to provide opportunities for students' exposure in the development of their skills.

Another study should be conducted, particularly in the industries that focus on system and software development to determine the needed and important skills that IT graduate should possess.

5. Conclusions

Our results indicated that key soft skills, for example, teamwork and communication skills were the most relevant, which means that these are the skills most needed by the students for them to improve as agreed by the respondents. Although other skills–negotiation and critical thinking skills also needed improvement, they were not as crucial at the entry-level status suitable for the IT college students. Soft skills are equally important as technical skills as perceived by the industry and students, especially for the company that are involved in providing customer services. The importance of soft skills as a customer oriented communicative tool is recognized and acknowledged as an indispensable skill by industry. However entry level technical such a computer hardware operation and standard software applications are also crucial skills that they

should acquire, therefore, IT graduates must be trained with regards to this aspect for their future employment requirements.

Our institutions need to help students to hone the relevant soft skills as employers place significant importance of soft skills. Soft skills training strategies should be tailored to meet the needs of the future IT employee and industry. Industry partners should be encouraged to participate in curricular and course development to facilitate a greater collaboration between the industries and institutions. This could help to narrow down the gap between the future skills needed by the industries and what is being taught and developed in the institutions.

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