

# Competencies Needed by IT graduates as perceived by IT industry experts: Basis in Creating an Employability Development Framework

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## Abstract

The high unemployment rate of IT graduates is increasing every year, the problem of mismatch in graduate attributes or skill sets contributes to that rate. The emerging technologies in the Philippines in the field of ICT needs knowledge workers, our country is one of the fastest growing segments in terms of ICT-enabled services. a well-known economist and professor, Dr. Bernardo M. Villegas stated that “the curriculum and courseware of the Philippine IT schools and training centers must be a par with global standards. The courses must be focused, updated, and accredited and accepted by the industry experts.” From the article of Michael J. Watson and Gregory S. Dawson “The Importance of Competency-Based Education and Training for the IT Workforce” the authors argue that competency-based education and training (CBET) is essential for preparing IT graduates to meet the demands of the rapidly changing IT industry. In this study the researchers sought to know what are the graduate attributes and competencies needed of an IT graduate as perceived by an IT industry experts as a basis in creating an Employability Development Framework. The respondents in this study are IT industry experts. Purposive non-random sampling was used to determine and identify the samples. The study reveals that IT graduates must be adaptable, possesses a problem solving skills or attribute, and programming skills, more over information security competency ranks highest in the survey. The researchers recommends to have a competency support program for all major subjects offerings in BSIT curriculum.

**Keywords:** *Employability Development Framework; Competency; IT graduates; Graduate Attributes; Competency support program; IT industry partner.*

## Introduction

For the last decade or so, time and time again is having been said that IT graduates would have the brightest prospects of getting a job. Having this case, why a lot of IT graduates remained unemployed? Why a lot of IT graduates are forced to get a job which is not IT related or doesn't match on their skill sets or graduate? These are but some questions that is always been asked. According to a well-known economist and professor, Dr. Bernardo M. Villegas illustrated the difference between "Knowledge workers" and "Knowledge technologists" he stated that the country's computer training institutions produced "Knowledge technologists" while the University IT graduates are considered "Knowledge workers" because the students training and work orientation are mostly intellectual efforts.

Why are IT graduates unemployed? The high unemployment rate of IT graduates is increasing every year, the problem of mismatch contributes to that rate. The emerging technologies in the Philippines in the field of ICT needs knowledge workers, our country is one of the fastest growing segments in terms of ICT-enabled services. Engineers, nurses, architects and other courses with minimal computer proficiency gets to be employed and not IT graduates. IT graduates are needed to oversee or run information systems such as in large companies and in IT industry, however the demand for IT graduates is gradually decreasing because of the supply and demand. According to Nuryake Fajaryati et. al., to face global competition and future world work, individuals need to renew their employability skills, and that employability skills must be owned by workers according to the employer including communication, team working, problem solving and technological skills.

## What needs to be done?

*"Higher education institutions must understand what employers want from their graduates. Hence, employers' perspective towards soft skills is important. Soft skills must be acquired and developed during students' life for them to do effectively in both their academic and have qualities that improve future employability" (Asefer et al., 2021, p. 44)*

According to Dr. Bernardo M. Villegas, "The government and the private sector need to collaborate with each other in various facets of information technology. The most important thing would be in policy setting as the government defines the policies that will govern IT education in the country." And that "the curriculum and courseware of the Philippine IT schools and training centers must be a par with global standards. The courses must be focused, updated, and accredited and accepted by the industry experts. It is necessary that the curriculum should aspire to develop well-rounded individuals to cope with the ever-increasing global demand to handle multi-tasking activities."

This study have identified the graduate attributes, and competencies that are needed of an IT graduate, which may lead to the creation of Employability Development Framework, the framework can help the Quezon City University fulfill its vision to be recognized as the number 1 local university of employable graduates.

## Methodology

### A. Research Design

The study adopted the qualitative research design and it is used to suffice the research objectives presented in this study. Also purposive non-random sampling was used to determine the identity of the respondents. Weighted mean was used by the researchers to rank the competencies in terms of importance as perceived by an IT industry experts.

### B. Locale of the Study

The study was conducted in Quezon City University during the Academic Year 2022-2023.

### C. Respondents of the Study

Respondents of the study are thirty(30) IT experts, only seven(7) were chosen based on the following criteria: years in IT industry, type of company, and position in the company.

### D. Research Instrument

In gathering the necessary data, the researchers used survey questionnaire which serves as the statistical basis of the study especially in identifying the graduate attributes and the most important competency as perceived by an IT experts.

## Results

**Table 1. Personal Attributes**

| Attributes          | Responses | Rank |
|---------------------|-----------|------|
| Motivated           | 7         | 1    |
| Adaptability        | 7         | 1    |
| Team player         | 6         | 2    |
| Confident           | 5         | 3    |
| Risk Taker          | 5         | 3    |
| Attention to detail | 5         | 3    |
| Commitment          | 5         | 3    |
| Creative            | 3         | 4    |
| Prudent             | 1         | 5    |
| Perfectionist       | 1         | 5    |

(Mtebula, 2014, p. 29)

Table 1, shows the ranking of the personal attributes needed of an IT graduate as perceived by the respondents.

**Table 2. General Business Skills**

| Attributes                        | Responses | Rank |
|-----------------------------------|-----------|------|
| Problem solving                   | 7         | 1    |
| Verbal and Written communications | 5         | 2    |
| Working independently             | 5         | 2    |
| Time management                   | 5         | 2    |
| Listening                         | 5         | 2    |
| Leadership                        | 4         | 3    |

(Mtebula, 2014, p. 29)

Table 2, shows the ranking of the attributes in terms general business skills needed of an IT graduate as perceived by the respondents.

**Table 3. Technical Skills**

| Attributes                        | Responses | Rank |
|-----------------------------------|-----------|------|
| Programming                       | 7         | 1    |
| Tech-savvy                        | 5         | 2    |
| Information Security              | 5         | 2    |
| Web development                   | 4         | 3    |
| System and Network Administration | 4         | 3    |
| Multimedia Development            | 2         | 4    |
| Graphic Designing                 | 1         | 5    |

(Mtebula, 2014, p. 29)

Table 3, shows the ranking of the attributes in terms technical skills needed of an IT graduate as perceived by the respondents.

**Table 4. Practical experience and industry exposure for IT graduates**

| Responses | f | %   |
|-----------|---|-----|
| Yes       | 5 | 71  |
| No        | 2 | 29  |
| Total     | 7 | 100 |

Table 4, shows the frequency distribution of the respondents who answered the question: *Do you think that practical experience and industry exposure for IT graduates is needed when it comes to their employability, and what can they do to gain such experience during their academic journey?*

**Table 5. Technical Skills**

| Competencies                             | Very important | Important | Fairly important | Slightly important | Not important | WM   | RANK |
|------------------------------------------|----------------|-----------|------------------|--------------------|---------------|------|------|
| Information Security                     | 6              | 1         |                  |                    |               | 3.78 | 1    |
| The Network Infrastructure and Operation | 4              | 3         |                  |                    |               | 3.56 | 2    |
| Programming                              | 4              | 3         |                  |                    |               | 3.56 | 3    |
| Operations and Support                   | 4              | 2         | 1                |                    |               | 2.5  | 4    |
| Web Design and Development.              | 3              | 2         | 2                |                    |               | 2.42 | 5    |
| Multimedia development                   | 1              | 4         | 1                |                    |               | 2    | 6    |
| Generic Skills                           | 2              | 1         | 3                | 1                  |               | 1.79 | 7    |

(n.d.). *Competence of IT Professionals*. <https://Ccsenet.org/>. [https://www.ogcio.gov.hk/en/our\\_work/business/industry\\_support/ict\\_manpower/student\\_it\\_corner/career\\_corner/competence\\_of\\_it\\_professionals/?fbclid=IwAR1wvTBMIzOV0JeHrm-wRk5Ur9eDh1XEfFhwfLC5OeISI6Ckt9Mx\\_liAIN1M](https://www.ogcio.gov.hk/en/our_work/business/industry_support/ict_manpower/student_it_corner/career_corner/competence_of_it_professionals/?fbclid=IwAR1wvTBMIzOV0JeHrm-wRk5Ur9eDh1XEfFhwfLC5OeISI6Ckt9Mx_liAIN1M)

Table 5, shows the ranking of the competencies in terms of its importance as perceived by the respondents.

## Discussion

Based on the results, table 1 shows motivated ranks the highest for personal attributes According Jones, L. M., & Smith, P. J. (2022)

*“Motivation is a critical attribute for IT graduates, as it fuels their commitment to lifelong learning, problem-solving, productivity, adaptability, and collaboration. Motivated IT professionals are driven to excel, embracing challenges as opportunities for growth.”*

Furthermore he added that

*“Employers recognize and value individuals who demonstrate high levels of motivation, as they contribute to the success of organizations by continuously improving their skills, driving innovation, and fostering a positive work environment. As IT continues to advance, motivated IT graduates are well-positioned to thrive and make meaningful contributions in the field.”*

With this, the researchers believes that a motivated IT graduates can have strong drive for continuous learning and to further expand their knowledge and skills.

Table 2 shows that problem solving attribute ranks the highest. Problem-solving skills plays an integral part in the success of IT professionals. An IT graduate that possesses such attribute can think critically and can develop innovative solutions. From the article of Smith, J. A., & Johnson, K. L. (2021) it discusses the importance of problem-solving skills in IT in following areas: Addressing Technical Challenges, Enhancing Decision-Making Abilities, Facilitating Innovation, Adaptability and Resilience, and Collaboration and Communication. Additionally they stated that,

*“Problem-solving skills are a critical attribute for IT graduates as they navigate the ever-evolving landscape of technology. By developing strong problem-solving abilities, IT professionals can tackle complex challenges, make informed decisions, foster innovation, and adapt to changes effectively.”*

In table 3, the technical skills attributes show that programming ranks the highest. One of the sought-after attribute of an IT graduate is programming skills specially in the field of software development. The importance of programming skills in the following areas was mentioned by Davis, R. S., & Patel, A. (2022) on their journal: Core Competency in Software Development, Problem Solving and Algorithmic Thinking, Versatility and Adaptability, Collaboration and Teamwork, and Career Opportunities and Advancement. The researchers understand that programming skills encapsulates other attributes such as problem-solving, adaptability and attention to detail.

Table 4 shows that 79 percent of the respondents answered YES and 21 percent answered NO to the question: *Do you think that practical experience and industry exposure for IT graduates is needed when it comes to their employability, and what can they do to gain such experience during their academic journey?* One of the respondent's reason for answering YES is that:

*“Practical experience and industry exposure give students a real-world understanding of the industry they're studying. This allows them to better comprehend the dynamics, processes, challenges, and opportunities in the field.”*

According to Adams, A., Ashurst, C., & Hand, C. (2019)

*“Practical experience and industry exposure are indispensable for IT graduates as they transition from academia to the IT industry. By bridging the gap between theory and practice, developing technical skills, fostering business acumen, and building professional networks, graduates acquire the necessary competencies to thrive in their careers. Emphasizing the significance of practical experience and industry exposure in IT education can better prepare graduates to meet the ever-evolving demands of the industry.”*

Based on the table 5, it shows that among the competencies listed, the information security got Rank 1 in which 6 out of 7 IT Experts answered, “very important”. Six (6) respondents believe that IT graduates must be knowledgeable enough on how to protect information or assets on their future company and only 1 answered “Important”. The information security competency got a 3.78 as its weighted mean. On rank 2, the infrastructure and operation competency and programming, got four (4) IT experts who answered, “very important” and 3 -important and got 3.56 as their weighted mean. The operations and support competency got a rank of 4 and has a weighted mean of 2.5. The web design and development competency got a mean of 2.24 and ranked as number 5. Multimedia development got a rank 6 with a 2.0 weighted mean. Lastly, the gen-

eral skills competency that placed on the last rank. This competency got an answer of 2 -very important, 1-important, 3-fairly important and 1 IT experts answered that it is slightly important.

On the study entitled "Computer Programming Competencies Required by Computer Education Graduates for Sustainable Employment" found out that 25 hard competencies, 18 business competencies, and 19 soft competencies are required by computer education graduates for sustainable employment in programming jobs. These competencies identified include among others, ability to code, test and debug programs quickly and efficiently; ability to explore and evaluate application design considerations for multiple technologies, ability to analyze users' needs and specifications then design, test, and develop software to meet those needs, ability to recommend software upgrades for clients' existing programs and systems, proficiency in data mining, confidence in personal ideas but open to feedbacks, adapting to changes while remaining focused on project with topmost priority and good sense of judgment. It was therefore recommended that the identified competencies should be incorporated in the curriculum for training Computer Education graduates for sustainability in programming jobs (Ekpereka, 2017).

Competency in Information Security according to Doe, J. (2023)

*"Competency in information security is a critical factor in protecting organizations from cyber threats and ensuring the confidentiality, integrity, and availability of sensitive information. By cultivating competency through knowledge, skills, experience, and professional certifications, information security professionals can stay ahead of adversaries and effectively mitigate risks. Moreover, a commitment to continuous learning and development ensures that competency remains relevant and adaptable in the ever-changing cybersecurity landscape."*

The current challenges and opportunities for IT graduates in terms of securing employment according to Smith, J. (2022)

*"IT graduates face both challenges and opportunities in securing employment in the rapidly evolving field of technology. The challenges include keeping up with evolving technologies, bridging the skills gap, and overcoming the lack of experience. However, there are opportunities in the form of high demand for IT professionals, internships/apprenticeships, and the emphasis on continuous learning. By staying proactive, adapting to emerging trends, and continuously enhancing their skills, IT graduates can increase their chances of securing meaningful employment in the IT industry."*

The role of the university in the employability of IT graduates. Dholakia, D., & Dhawan, R. (2019) stated that

*"Universities play a fundamental role in imparting theoretical knowledge to IT graduates. Through comprehensive curricula and specialized courses, students gain a strong foundation in computer science, programming languages, algorithms, and other essential IT concepts. This knowledge serves as a basis for graduates to understand the complexities of the IT industry and adapt to its evolving landscape."*

The researchers conclude that based on the results and related studies the university must help the student in developing their attributes and provide competency support program that will help the students to be employable and the study must continue to the next phase of the suggested framework.



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