Employability of Computer Engineering Graduates from 2013 to 2015 in one Private Higher Education Institution in the Philippines

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Abstract - *Employability is one of the important performance measures of higher education institutions and tracking of graduates provides substantial input to the student development program of the institution. This study aimed to determine the present employment status, competencies learned in college and work – related values of the respondents that contributed to their job placement and to determine the employer's feedback on the job performance of the graduates based on the leadership brand. Descriptive type of research method was utilized to analyze the result of the study. Findings show that the average employment rating of BS Computer Engineering graduates from 2013 to 2015 is 84.6 percent. Skills in information technology, problem solving and communication are considered most useful competencies they learned in college. Perseverance, love for God and hard work are the work-related values they considered with very high contribution to their job placement.*

Keywords: *employability, computer engineering, communication*

INTRODUCTION

Employability of graduates is one of the measures of success of higher education institutions, making this as an important component of providing quality education to the community. Nilsson [1] emphasized that it is the ability to find employment and remain employed and it includes both hard and soft skills, including formal and actual competence, interpersonal skills, and personal characteristics. Meanwhile, Dotong [2] noted that graduates move in every part of the world to showcase their skills and competencies and be involved in the development of every nation and they are now part of the work force who contributes to the success of every organization leading towards a common goal. Any Quality Assurance mechanisms either locally or internationally recognized that is being utilized and adopted by the Higher Education Institutions (HEIs) must reflect on the quality of their graduates which is one way of measuring the performance of an institution [3], ; [4], [5] where employability really exists.

The development of knowledge, skills and attitude towards work of the learners is being held during their early age in primary and secondary schools and these are being enhanced and strengthened when they go to college. The whole educational process and system makes up the entirety of the students. Everyone and everything from their environment is a contributory factor on how they build careers in the future in the midst of innovation and trends in information technology.

The proliferation and utilization of computers in every aspect of human existence brought so many changes and challenges on how people interact and communicate. Technical knowledge and experience in the operations of computer systems becomes in demand among the small and large scale industries to sustain their organizations being powered by technology.

Computer engineering blends together computer science and electrical engineering to further advancements in digital technology, computer networking and computer systems. In turn, computer engineers use their extensive knowledge of hardware and software design and computer programming to make computing platforms and applications more efficient and effective. Seamlessly integrating the latest innovations, computer engineers develop new computer hardware, design and implement software applications, and enhance the capabilities of networks and communications [6].

Apart from technical aspect of work environment is also the importance of having appropriate attitude and values towards work. Laguador and Dotong [7] noted that the employed graduates are now getting involved in an environment which needs hard working professionals who are committed to serve the company whatever policy or condition might the employers have. Perseverance or determination of the graduates to reach their dreams served as their strong foundation and stepping stone to get employed and earn a living not only for themselves but also for their family.

Meanwhile, Laguador and Ramos [8] emphasized that the industry-partners strongly preferred employees who are loyal and committed to their works and functions; who can assume responsibilities as team members; who possess strong moral values as required by the industry [9]; who practice high sense of professionalism while employees who can easily adapt the culture of the organization obtained the least.

It is the utmost concern of this study to determine the employment status of graduates that would greatly enhance the delivery of services of the College of Engineering and realize its mission and vision for the good of all stakeholders. It will also strengthen the implementation of outcomes-based education [10]-[14] that measures the capacity of the students to perform certain tasks based on learning outcomes. This is to address the gap between the actual job performance of the graduates and the teaching and learning process of the Engineering Department for the next generations of computer engineers. Keeping an eye with them would monitor the strengths and weaknesses of the computer engineering program and it would make valuable inputs to intensify the curriculum and other student services to produce more competent graduates.

This study aims to determine the employability of Computer Engineering graduates for the last three academic years. It specifically aims to determine the present employment, employment status, nature of employment, competencies learned in college and work – related values of the respondents; and to propose an action plan.

METHOD

Research Design

This employability study used the descriptive research design wherein according to Shuttleworth [15], it is a scientific method which involves observing and describing the behavior of a subject without influencing it in any way. The subject is being observed in a completely natural and unchanged natural environment. Descriptive research is often used as a pre-cursor to quantitative research designs, the general overview giving some valuable pointers as to what variables are worth testing quantitatively. Quantitative experiments are often expensive and time-consuming so it is often good sense to get an idea of what hypotheses are worth testing.

Participants

Total population of 38Computer Engineering graduates from three Academic Years from 2012-2013 to 2014-2015 is considered. Graduates of 2016 were excluded in the study since there are only few months after their graduation and it would not provide precise data of employment.

Instrument

Survey questionnaire is the main instrument used in this study. The instrument will be crafted from the prescribed instrument for tracer study of the University wherein some variables were omitted just for the purpose of determining some basic data and information from the graduates which include: the present employment, employment status, nature of employment, competencies learned in college and work – related values of the respondents. This was content-validated by the Department Chair of Computer Engineering, Dean of the College of Engineering and one Language teacher.

Procedure

The respondents were informed on the purpose of the study and were invited to participate in the survey with the assurance that the data provided in the survey were treated with utmost confidentiality and will solely be used for the purpose of this research. The researchers administered the questionnaires through online survey. The study achieved 100 percent retrieval rating. The collected data were classified, tabulated and coded for analysis.

Data Analysis

The following statistical tools were employed in interpreting the data obtained from the survey: Frequency count, Percentage, Weighted Mean and Rank. The respondents were given five options to identify the factors that contributed to the placement

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of the computer engineering graduates in their present employment and to determine the skills developed by Lyceum of the Philippines University and work related values of the respondents. To arrive at a verbal description of each item, the given scale was used: 4.5 – 5.00: Very Much (VM); 3.5 – 4.49: Much (M); 2.5 – 3.49: Little (L); 1.5 – 2.49: Very Little (VL); 1.0 – 1.49:Not at all (NA).

RESULTS AND DISCUSSION

Present Employment

All graduates of Batch 2013(100%) are already presently employed and 9 out of 11 or 81.82 percent for Batch 2014 and 8 or 66.7 percent for Batch 2015.. A total of 32 out of 38 surveyed graduates or 84.2 percent are currently employed. This implies that the engineering graduates of LPU – Batangas is highly employable.

There were 29 or 90.6 percent regular or permanent employed computer engineering graduates and 3 or 9.4 percent contractual and 100 percent of the computer engineering graduates were gainfully employed. They were employed as Technical/ Network Engineer, Comp. Graphics and Layout Artist, Staff Engineer, Machine Technician, System Engineer, Hardware Assistant, Data Analyst, Web Application Security Consultant, Desktop Engineer, Software Engineer, Software Associate, Consultant Engineer, Implementation Engineer, Structural Draftsman and Engineering Instructor. Two (2) of them are working in Engineering firms in United Arab Emirates.

Table 1. Reasons for Unemployment* (N = 6)

Reasons	F	%	Rank
Advance or further study (training)	1	17	5
Family concern decided not to find a job	3	50	2
Health-related reason(s)	1	17	5
Lack of work experience	2	33	3
No job opportunity within in the area of residence	4	67	1
Did not look for a job	1	17	5

**Multiple Response*

Table 1 presents the reasons of the unemployed graduates. No job opportunity within in the area of residence is the unemployment reason of 4 or 67 percent of the unemployed computer engineering graduates followed by family concern decided not to find a job (3 or 50%) and Lack of work experience (2 or 33%). This signifies that some of the unemployed surveyed graduates prefer to find a job within the vicinity of their residence for some reasons of convenience and practicality of not spending too much budget in bo9ard and lodging as well as meal allowance. Leaving with the family members and going back home after work is one thing they still wanted to experience.

Table 2 presents the reasons for staying and accepting the job and period spent to find the first job. The reason on salaries and benefits (27 or 84.4%) is the most common answer of the employed graduates of their motive of staying on the job followed by career challenge (22 or 68.8%), Related to course or program of study (19 or 59.4%) and Related to special skill (16 or 50%). Meanwhile, graduate – respondents answered that career challenge (28 or 87.5%) is their most common reasons for accepting the job followed by salaries and benefits (25 or 78.1%) and related to special skills (16 or 50%).

Table 2.Reasons for staying and accepting the joband Period Spent to Find the First Job(N = 32)

Reasons for staying on the job	F	%	Rank
Salaries and benefits	27	84.4	1
Career challenge	22	68.8	2
Related to special skill	16	50.0	4
Related to course or program of study	19	59.4	3
Proximity to residence	6	18.8	6
Peer influence	3	9.4	7
Family influence	7	21.9	5
Period Spent to Find the First Job			
Less than a month	2	6.3	3
1 to 6 months	24	75.0	1
7 to 11 months	4	12.5	2
1 year to less than 2 years	1	3.1	4.5
2 years to less than 3 years	1	3.1	4.5
Reasons for accepting the job			
Salaries & benefits	25	78.1	2
Career challenge	28	87.5	1
Related to special skills	16	50.0	3
Proximity to residence	6	18.8	4

In terms of the period they spent finding for the first job, 24 or 75% of them landed in the job within 1 to 6 months followed by 7 to 11 months and less than a month. This signifies that the computer engineering graduates can find a work in a very short period of time. The result of this study is similar with the

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findings of Laguador and Dotong [7] wherein majority of the computer engineering graduates from previous batches also obtained their jobs in less than 7 months.

Table 3 presents the frequency distribution of Computer Engineering graduates in terms of competencies learned in college they find very useful in their first job. Computer Engineering graduates found that information technology skill they learned from college is the most useful competency in finding their job followed by problem communication skills (88%), solving skills (84%), critical thinking skills (78%) and human relation skills (75%).

Table 3.Frequency Distribution of Engineering Graduates In Terms of Competencies Learned in College They Find Very Useful in Their First Job

Competencies Learned in College	F	%	Rank
Communication skills	28	88	2
Human Relations skills	24	75	5
Entrepreneurial skills	9	28	6
Information Technology skills	32	100	1
Problem-solving skills	27	84	3
Critical Thinking skills	25	78	4

**Multiple Response*

Entrepreneurial skill (28%) is the least useful in finding their first jobs. Computer Engineering graduates find the Communication skill as very essential most especially during the interview process where they need to impress the interviewee regarding their knowledge and skills acquired in college. They need to convince the employer through their confidence in speaking in order for to be hired because of their capacity to participate in discussing significant contribution for the growth of the company.

Critical thinking skill helped them solve engineering problems through undergoing process of offering solutions to arrive in the right decision. Information technology helped them understand the computerize operations of the machine in the manufacturing plants and how to prepare good reports and presentations. Employability skill emphasizes the need for graduates to create their own profile to prepare for today's highly competitive market place for graduate jobs [16]. Leaders in government are calling for new graduates to demonstrate mastery of employability skills such as communication skills, teamwork, problem solving and decision making skills [17]-[19].

The industry-partners have very high regards in the competence of the graduates in terms of the relevance of their knowledge and skills in research and work discipline, communication skills, computer skills while entrepreneurial skills obtained the least [8].

Table 4.Work – Related Values Contributed in Meeting the Demands of the Present Employment of the Respondents

Work-Related Values	WM	VI	Rank
Love for God	4.85	VM	3
Honesty and love for truth	4.32	M	11
Punctuality	4.62	VM	7
Obedience to superior	4.44	M	9
Hard work	4.89	VM	1.5
Creativity and innovativeness	4.31	M	12
Courage	4.61	VM	8
Professional Integrity	4.82	VM	4
Love for co-workers and others	4.26	M	14
Unity	4.25	M	15
Fairness and Justice	4.35	M	10
Leadership	4.66	VM	5
Tolerance	4.24	M	16
Efficiency	4.65	VM	6
Supportiveness	4.29	M	13
Perseverance	4.89	VM	1.5
Nationalism	4.17	M	17
Composite Mean	4.50	VM	

Table 4 shows the work – related values contributed in meeting the demands of the present employment of the respondents. Hard work (4.89) and perseverance (4.89) contributed very much to their present job followed by Love for God (4.85), professional integrity (4.82) and leadership (4.66) as the top 5 work related values to their job placement.

Inner motivation to give the best of their ability to perform any job assignment brings the character of hard work and perseverance as significant attribute of great employees who are willing to commit themselves and take higher responsibilities in the organization. Giving high importance to the value of perseverance and Love for God could lead someone to have appropriate attitude towards co-workers, work environment and the work itself. Being faithful to one God as part of being religious of Filipinos in asking for guidance in all the way makes them feel secured and blessed with the hope of getting the job they want

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as they hardly prayed. They keep in mind the value of professionalism as college graduates considering the aspects of being computer engineers remind them to behave and act respectably. Professional integrity tells them to do the right things with great honesty and perseverance along with efficiency of doing all things right. Having their initiative to give support for those who need their assistance creates an atmosphere of promoting leadership.

Efficiency (4.65), punctuality (4.62) and courage (4.61) have also contributed very much to their job placement. Being efficient and direct to the point in answering questions brought them to a lighter situation where their confidence speaks so much of their competence and courage to handle the challenge of meeting the requirements and responsibilities of the position. Giving the human resource an impression of punctuality through arriving in the venue earlier than expected also gave them a thought of professionalism.

On the other hand, they also considered obedience to superior (4.44), fairness and justice (4.35), creativity and innovativeness (4.31), honesty and love for truth (4.32) that contributed much to their present job. Tolerance (4.24), Unity (4.25) and Nationalism (4.17) were considered the least work related values that contributed to their job placement. Being a good follower means understanding clear instruction and direction is achieved where obedience comes from. Obeying task is important primarily to those beginning to learn the task and adopting to the new environment.

In the study of Laguador and Dotong [7] concluded that fairness and justice, tolerance and nationalism were considered the least work-related values of engineering graduates which contributed much to their job placement. They can't find nationalism as very important to their job placement because most of them are employed in private companies and industries.

Proposed Action Plan

The proposed action plan focuses on the strategies related to employability and skills development of students through the delivery of instruction. Enhancing the delivery of services of the university is also encouraged to strengthen the relationship of the university with the alumni for curriculum development and other university activities they may be interested to participate.

Table 5.Proposed Action Plan

Key Result Area	Strategies	Responsible
Employability	• Strengthen LPU's initiative in conducting Job Fair and Career Congress • Send email messages to Alumni regarding job opportunities in any computer related job opening and other school announcement and news update • Enhance the employability skills of the graduates through undertaking series of pre-employment examination and mock interviews. • Communicate with the employed alumni in various industries especially those assigned in the Human Resource Department to provide the University with the list of their job openings. • Obtain a strong collaboration among industries to employ engineering graduates	Alumni Office, Dean and Department Chair, INTO, LAIA
Engineering Education	• Intensify the classroom instruction and student activities related to writing and public speaking • Allow students to attend training and seminars related to technical skills required by most industries • Provide strong support to extra-curricular activities to address the gap of cultural diversity in the workplace	Faculty Members from English department and Professional Courses, OOSA
Work Values	• Provide team building activities that would highlight the value of perseverance, Love for God, team work and hard work • Integrate core values of the University in all classroom activities and lessons and ask the students to write for a reflective essay. • Relate all applications of lessons to actual work environment and how values should manifest in performing certain duties and responsibilities following some ethical standards.	Faculty Members, Dean and Department Chair

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CONCLUSION

Computer Engineering Batch 2013 graduates obtained 100 percent employability rating while 81.82 percent for 2014 and 66.7 for 2015. Nine in every ten (10) employed computer engineering graduates have regular or permanent employment status and all of them are gainfully employed and landed a job within 6 months with salaries and benefits and career as common reasons for staying in the job. Skills in information technology, problem solving and communication are considered most useful competencies they learned in college. Perseverance, love for God and hard work are the work-related values they considered with very high contribution to their job placement.An action plan was proposed for implementation and evaluation.

RECOMMENDATION

The Department Chair may consistently seek the advice of the alumni regarding the latest software application being utilized by the industries to incorporate in the curriculum. The university may strengthen its job placement programs and send communications regarding job opportunities for unemployed graduates. English teachers may further enhance the communication skills of the students through intensified instruction of giving enough classroom exercises and activities designed to boost their confidence in both writing and oral communications. Engineering students may also be trained to become future entrepreneurs through attending seminars and workshop on Technopreneurship. Engineering students must realize the value of having appropriate attitude towards work through making a classroom as an example of a workplace where they need to exercise and practice perseverance, love for God and hard work. The university may have constant communication to alumni for any announcement and school activities they could be invited to participate through the effort of Strategic Communications and Alumni Affairs Office. The proposed action plan may be implemented and evaluated for further utilization of the result of this study. This study is only limited to the employment status and employers' feedback of computer engineering graduates and further studies may be conducted in terms of their productivity after five years of graduation.

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