Relationship Between Employability and Graduates' Skills

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Abstract: As a developing country, Malaysia's economic sector relies heavily on industries like agriculture, services, banking, transportation, hotels and others. These industries need qualified skilled labor that supposed to be produced by higher education institutions systems. Measuring the quality of the graduates produced is important. This measurement can be used as an indication on the effectiveness of the program offered at the university. Therefore, this study aims to examine whether graduates produced by higher education institutions systems are able to meet the market requirements. This study was conducted on graduates at the National University of Malaysia particularly at the Faculty of Information Science and Technology (FTSM) for the 2010/2011 session. FTSM has produced thousands of graduates since it was first established so there is a need to measure the employability of the FTSM graduates. Measurement carried out is based on the skills possessed by graduates, the effectiveness of the program offered by the faculty in meeting the needs of the industry and the ability of graduates in the job market. There are six programs offered at FTSM and the effectiveness of these programs are evaluated based on students perceptions towards the learning outcomes associated with the program and their ability to get employed based on the knowledge they gained. As an IT graduates, their skills are assessed based on their basic knowledge of programming, system development, soft and entrepreneur skill. The data used in this study were obtained in September, 2011 which means 5 months after the graduates completed their studies. The methodology used in the study is by circulating the questionnaire online and manual distribution. A total of 152 questionnaires (87.86%) were collected. Descriptive inference and statistical analysis technique were used to analyze the data. This analysis seeks to find a relationship between the achievement of programs' objective, graduates' perception of their own skills and the employability of graduates. The findings are important to ensure that the programs offered at FTSM are compatible with market requirements.

Key words: Employability, graduates, academic institution, skill, measurement

INTRODUCTION

The phenomenon of unemployed graduates is worrying the Malaysian government. Various programs were launched (Mohamad and Ghani Hamzah, 2011) to overcome this phenomenon so that graduates have the skills needed by the industry. This phenomenon may be caused by two aspects: oversupply of graduates in the job market and graduates are unable to meet the skills needed by the industry. The first aspect is due to national economic factors and the second may be due to the skills are not fully polished while the graduates are still studying. The phenomenon of unemployment is not only happened in Malaysia but also felt in many developing countries like Philippines, Indonesia, India, Thailand and the developed countries such as Britain and the United States (Ibrahim, 2009). Based on the employers' perception there are five factors that affect the chance of the graduates to get jobs which are:

- Lack job skills, experience and knowledge
- Mismatch between the industry needs and the graduates' field of study
- Ability to communicate well in English
- Negative attitude of some graduates towards work
- Lack of awareness of various job opportunities available

The graduates need to have all these skills in order for them to be competitive and survive in the job market. To be competitive, well educated graduates need to equip themselves with various skills and knowledge. These

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skills and knowledge can be an attribute to them and it can determine their marketability. This study will look into two attributes: the perception of the graduates based on the skills they have and the knowledge they gained during the studies. An analysis is conducted based on the perception in order to find a relationship between these two attributes and the employability of the graduates.

FTSM academic program structure: A strong program structure is important to ensure the graduates acquire enough knowledge and also essential in supporting graduates in searching for a job after their graduation. The question raised is how the designed programs are able to develop graduates competitive enough in the job markets? Do graduates fail to get employed are due to the program failed to provide adequate knowledge to the student? Each year thousands of IT graduates graduated from various public and private universities and colleges (Mohamad and Ghani Hamzah, 2011). These graduates are competing among themselves to meet the job market in various sectors. Because of limited amount of jobs available, many graduates end up as unemployed. Due to this fact, unemployment has increased from year to year where competition for jobs becomes fierce. Thus, the complete structure of the program is very important in shaping the graduates to ensure they are competence in the job market (Ibrahim, 2009). The university must examine whether the program offered at the faculty capable of providing complete knowledge to the graduates (Ashari *et al.*, 2009). Therefore, this study aims to look at the employability of graduates and the robustness of program at FTSM in preparing graduates for job markets. This study also tries to find the relationships between the achievement of Programme Educational Objectives (PEOs) and the employability of graduates.

FTSM outlines the objectives that should be achieved by students after they graduated (Mat Desa, 2010). This study evaluates the ability of graduates to achieve PEOs after their graduation. There are five PEOs outlined by FTSM which are:

PEO1: To produce graduates who are knowledgeable, skilled and innovative as IT professionals.

PEO2: To produce graduates who are humanity skilled, professional and ethical in responsibility to creator, clients and community.

PEO3: To produce graduates who are able to communicate knowledge in ICT using Malay and English language.

PEO4: To produce graduates who can contribute to community development, responsive to environment and adaptable to the global work environment.

PEO5: To produce graduates who are able to lead and conduct research in ICT field.

The study conducted aims to see how knowledge they gained through studies are enough in preparing them for the job market. To assess the student perception towards the achievement of PEOs, questionnaires are distributed. Indirectly, this study also tests the effectiveness of the program in producing quality graduates.

Required employability skills: Employability is a term that is often used as a measurement by employers on graduates' marketability. Mohamad and Ghani Hamzah (2011) proposed four employability skills that every graduates should have which are academic, connectivity, personality management and exploration skill. If the graduates have these four skills, they shall not have any problem in the job market. However, this study focus on four basic skills that all the IT graduates have which are programming, system development, soft and entrepreneur skills. It is expected that they must good for at least two programming languages when completed their studies. To develop a good system application in accordance with the requirements of users, a graduate must have skills in systems development. These skills require them to understand the basic knowledge of computer science and information technology, able to design the database and apply the methodology in system development life cycle. In addition to have skills in programming and system development, a graduate must also have soft skills (Ashari *et al.*, 2009). These skills are seen by the ability of graduates working in groups have good communication in writing and speech and skills in life-long learning.

As there are a lot of competitions in the job market, graduates are also encouraged to open their own business. Now-a-days, it is good to have graduate with an entrepreneur skills. These skills are associated with attributes that enable the graduates have the strength and consistency to build their own careers and able to be innovative employers that can build wealth and create jobs (Mat Desa, 2010). IT graduates have the entrepreneur skills if they are able to use IT as a medium strategy in business process and able to create business in IT. Having this skill is essential whether they are working for somebody else or open their own business. These four skills are important for graduates to be competitive in the

job market. Therefore, this study aims to find the graduates' perception towards these four skills that they gained during their studies. These perception are then mapped with the graduates employability status in order to find the relationship between these two.

MATERIALS AND METHODS

During the 39th UKM convocation on 2011, there are 280 FTSM graduates completed their degree in the programs offered at FTSM. However, this study only considers full time graduates at the faculty. Data collection for the study was done using a survey. A set of questionnaires were developed such that it consists of three main parts: respondents' profile; skill possessed during the study and assessment of program curriculum. For the first part, the study was to review the employability of graduates in terms of:

- Number of graduates employed within 5 months after graduation
- Analyze the time taken by the graduates to get employed
- Distribution of wages they received
- Graduates' perceptions towards PEOs

The duration of graduates to get employed is break into two: employed before May, 2011 and employed between May and September, 2011. If the graduates employed before May, 2011 means they got employed immediately after they finished their 3rd semester of their 3rd year. There are cases where a number of students finished their studies in 2nd year of the 3rd semester which are much earlier. The graduates in this category are considered as a marketable graduate. Those graduates got employed between May and September, means they employed just before the convocation day.

This quantitative survey used two approaches in distributing the questionnaire: online and manually distributed during the convocation. A total of 152 (87.86%) samples were collected from the graduates. The collected data and information was analyzed using descriptive statistics to achieve the objectives. Statistical Package for the Social Sciences (SPSS) software Version 16 is used to analyze the result. The analysis of the survey is discussed considering the assessment of graduates on their achievement of the PEOs. This achievement is then linked to the employability of graduate in order to see the relation between these two items.

RESULTS AND DISCUSSION

Analysis of the results obtained from research instruments was analyzed based on 2 stages. The 1st stage is a descriptive analysis to look at the demographic distribution of respondents according to employment status and period of employment. The 2nd stage is an analysis of the two relationships: between the PEOs with employment status and period of employment and between graduates' skills with employment status and period of employment. Chi-square test was used to examine the relationship among the PEOs, skills on the status and period of employment of the graduates.

Descriptive analysis: Employability status of graduates is viewed from three aspects: the knowledge they gained, the skills they possessed and the time taken by the graduates to get employed. Perception of graduates on their achievement of PEO is examined and this perception is used as a measurement of the knowledge they gained. For an employed graduate, an analysis was made to look at the period they got employed. The analysis is divided into two: employed before May (before the graduates finished their studies) and employed between May and September (after they have finished studying and before their convocation day). Table 1 shows the result of the surveys.

The result shows the total graduates got employed are 57% and most of the employed graduate found their job between May and September. Another 10% decided to further their studies at the masters' level and the remaining 32.2% are still unemployed.

Relationship between PEOs with employment status and period: Based on the ability of graduates to get employed, this study tries to find relationship between this ability and the knowledge they gained after graduated. The ability of graduates to get employed is looked into their employment status and the period they got employed. A perception of graduates on the achievement of PEOs for the program is evaluated as a measurement of the graduates knowledge. This perception is collected that

Table 1: Employment status of graduates

Status	Total	Percentage
Employed		
Before May	-	19.0
May to September	-	38.0
Total	-	57.0
Unemployed	49	32.2
Further studies	15	9.9
Total	152	100.0

Table 2: Frequency of employment status based on PEOs achievement

	Status				
	Employed		Unemployed		Total
Achievements	Frequency	Percentage	Frequency	Percentage	freq.
PEO1					
Strong disagree	1	1	0	0	1
Disagree	7	4	3	2	10
Not sure	20	13	14	9	34
Agree	55	35	50	32	105
Strong agree	5	3	1	1	6
PEO2					
Strong disagree	1	1	0	0	1
Disagree	6	4	3	2	9
Not sure	14	9	7	4	21
Agree	65	42	58	37	123
Strong agree	2	1	0	0	2
PEO3					
Strong disagree	1	1	0	0	1
Disagree	1	1	0	0	1
Not sure	18	12	15	10	33
Agree	61	39	53	34	114
Strong agree	7	4	0	0	7
PEO4					
Strong disagree	2	1	2	1	4
Disagree	17	11	12	8	29
Not sure	65	42	52	33	117
Agree	3	2	2	1	5
Strong agree	1	1	0	0	1
PEO5					
Strong disagree	1	1	0	0	1
Disagree	3	2	1	1	4
Not sure	15	10	12	8	27
Agree	62	40	54	35	116
Strong agree	7	4	1	1	8

Table 3: Frequency of employment period based on PEOs achievement

	Period				
	Before May		May to September		Total
Achievements	Frequency	Percentage	Frequency	Percentage	Freq.
PEO1					
Strong disagree	0	0	1	1	1
Disagree	0	0	3	3	3
Not sure	7	8	8	9	15
Agree	18	20	44	50	62
Strong agree	4	5	3	3	7
PEO2					
Strong disagree	0	0	1	1	1
Disagree	2	2	4	5	6
Not sure	4	5	10	11	14
Agree	23	26	42	48	65
Strong agree	0	0	2	2	2
PEO3					
Strong disagree	0	0	1	1	1
Disagree	0	0	1	1	1
Not sure	8	9	10	11	18
Agree	16	18	45	51	61
Strong agree	5	6	2	2	7
PEO4					
Strong disagree	0	0	2	2	2
Disagree	7	8	10	11	17
Not sure	20	23	45	51	65
Agree	2	2	1	1	3
Strong agree	0	0	1	1	1
PEO5					
Strong disagree	0	0	1	1	1
Disagree	0	0	3	3	3
Not sure	7	8	8	9	15
Agree	18	20	44	50	62
Strong agree	4	5	3	3	7

based on 5 likert scale namely (Strong disagree = 1, disagree = 2, not sure = 3, agree = 4 and strong agree = 5). This perception is then mapped with employment status and period of employment of the graduates.

Table 2 shows the frequency of the achievement on each PEOs against the employment status of graduates that based on likert scale. The result shows that most of the graduates agrees that they are able to achieve PEO1, PEO2, PEO3 and PEO5 but not sure on their achievement for PEO4. However, most employed graduates have better achievement towards PEOs rather than unemployed graduates.

Table 3 shows the frequency of each PEOs against the employment period of graduates that based on Likert scale. The result shows that most of the graduates agree that they are able to achieve for PEO1, PEO2, PEO3 and PEO5 but not sure on their achievement for PEO4. However, most graduates got employed between May and September have better achievement towards PEOs than graduates who got employed before May. Based on the result from Table 2 and 3, an analysis is conducted to find the achievement of PEOs by the graduates and the affect of this achievement towards the graduates' ability and the duration the graduates took to get employed.

Table 4: Chi-square value for PEOs with status dan period of employment

	Chi-square asymp. sig.	
PEO	Status	Period
PEO1	0.397	0.580
PEO2	0.375	0.778
PEO3	0.117	0.092
PEO4	0.916	0.451
PEO5	0.298	0.237

SPSS is used for the analysis. Table 4 shows the Chi-square value of the PEOs with status and period of employment. Results of the analysis found that no significant relationship between the PEOs with status and period of employment. This concludes that even though the graduates are able to achieve all the PEOs but it does not guarantee them to get employed. In other words, it means that the ability of graduates to get employed and the period of employment have nothing to do with their achievement in PEOs. It also shows that no relationship exists between the status of employment and the achievement of PEOs.

Contributing factors in unemployment of graduates:
Based on the ability of graduates to get employed, this study also tries to find the perception of graduates on the

contribution factors towards unemployment. Six identified factors were used as shown in Table 5. Perception of graduates towards these factors are collected that based on 5 Likert scale; namely (Strong disagree = 1, disagree = 2, not sure = 3, agree = 4 and strong agree = 5). From the survey, 53.2% graduates agree that lack of programming language skill is a major drawback for them to get employed. While 46.8% graduates agree that they need to have skills in the latest software for them to survive in the job market. However, most graduates disagree that they need to have a good time management skills in order for them to get employed which represents by 35.3%. Table 5 shows the overall result on the perception of graduates towards the contributing factors on unemployment.

Graduates perception on their own skills: Perception of graduates on skills they should possess are identified and categorized into four: programming, system development, entrepreneur and soft skill. The graduates' perception on their own skill score is composed of eleven items that were rated on 5-point using Likert scale, from strongly disagree (1) to strongly agree (5). The Cronbach's alpha was computed and the value was 0.854 which indicates that the items form a scale that has good internal consistency reliability. Table 6 shows the frequency of graduates' perception using Likert scale that mentioned

before. From Table 6, 76.9% graduates agree that they have basic knowledge of Computer Science and Information Technology and 119 graduates were able to work as software development team. Upon graduation, most graduates agree that they have the required basic skills which are programming, system development and soft skills.

Relationship between employability and skills: Inferential analysis using Chi-square test is selected to see the relationship between employability and skills of graduates. The value of employability is measured based on the period of graduate's getting the jobs. Measurements of skills were made by the perceptions of graduates based on their own skills. According to the Table 6, skill perception are classified into 4 categories and for each categories will consists of different item related to the categories of skill. All items of skills perception were tested with employability. However, only three items from three different categories showed significant relationship. Table 7 shows the skills categories and significant items and the hypothesis.

Based on the analysis, there is one item in the programming skills, one item in system development skills and one item in soft skills show significant relationship with employability ($p<0.005$). However, there is no significant item for the entrepreneur skills. This may be caused by limited exposure of the graduates in IT business. The results of the hypothesis and conclusion of the three significant items are described further.

Programming skills: The null hypothesis is rejected since $p<0.027$. Based on the p-value, it means that graduates who are good to at least two programming language are much easier to get employed. Graduates felt that their skills over more than one programming language can open up more career opportunities for them.

Table 5: Contribution factors in unemployment of graduates

	Frequency (%) based on Likert scale				
Contributing factors	1	2	3	4	5
Lack of communication skills	8	4	32	65	5
Lack of English language skills	1	4	28	63	8
Lack of programming language skills	3	2	31	82	1
Lack of skills in the latest technology	6	3	31	72	1
Lack of time management skills	1	5	32	48	1

Table 6: Graduate perceptions on their own skills

	Frequency (%) based on Likert scale				
Categories of skills	1	2	3	4	5
Programming skill					
I am good for at least two programming languages	1.3	8.3	17.9	64.1	8.3
I can produce computer program using at least one programming language	0.6	7.1	22.4	64.1	5.8
System development skill					
I can use the basic knowledge of computer science and information technology	0.0	1.9	8.3	76.9	12.8
I can design databases	1.2	6.4	17.3	67.9	7.1
I was able to apply the methodology in system development life cycle	0.6	1.9	19.2	67.3	10.9
Soft skills					
I was able to work as a team for software development projects	1.2	0.6	7.1	76.3	14.7
I was able to communicate through writing and speaking effectively	0.6	3.2	19.2	69.9	7.1
I was able to use common and professional software	0.6	2.6	18.6	62.1	16.0
I am easy to learn new knowledge	0.0	1.9	13.5	71.8	12.8
Entrepreneur skill					
I am able to use IT as a medium strategy in business process	0.6	2.6	28.2	64.1	4.5
I am able to be a IT entrepreneur	1.2	7.7	43.6	38.5	9.0

Table 7: Relationships that exist between employability and graduate perceptions of their own skills

Skills	Items	Hypothesis	p-value
Programming skill	I am good for at least two programming languages	H_0: Good for at least two programming language is not associated with employability H_1: Good for at least two programming language is associated with employability	0.027
System development skills	I can use the basic knowledge of computer science and information technology	H_0: Can use the basic knowledge of computer science and information skill is not associated with employability information skill H_1: Can use the basic knowledge of computer science and is associated with employability	0.005
Soft skill	I am easy to learn new knowledge	H_0: Easy to learn new knowledge skill is not associated with employability H_1: Easy to learn new knowledge skill is associated with employability	0.042

System development skills: The null hypothesis is rejected, since $p<0.005$. Based on the p-value, it means that graduates who have basic knowledge of computer science and information skill are much easier to get employed. IT students' ability to use basic knowledge of computer science and technology skills is one of the key elements that will be seen by employers before they looked for the others skills.

Soft skills: The null hypothesis is rejected, since $p<0.042$. Based on the p-value, it means that graduates who are easy to learn new knowledge skill are much easier to get employed. Graduates think that generic skills like ability to learn new knowledge or technology are badly needed by the employer because of what they are learning is sometimes not the same as the real world. Experience will make graduates more competitive.

CONCLUSION

The study on employability of FTSM graduates in 2011 has met the objectives. Based on the results obtained shows that 56.4% graduates are able to get employed within 5 months after graduation. While 9% continue their studies at the masters level. About 79.5% of them works in the private sector where most of them are in the IT Department. Four categories of skills are identified as contribution factors to the employability but only three categories shows there are significant relationships. These skills are programming, system development and soft skills. Entrepreneur skill is seen as not contributes to the employability of graduates in a job market.

Analysis of the existence of significant relationships shows in Table 7. By looking at the percentage of employed graduates (56.4%) within 5 months after graduation shows that graduates are competitive in the job market by leveraging the skills they acquired while still studying at the faculty. This also proves that the skills of graduates and the program offers at FTSM are in line with industry requirements.

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