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MODELLING EMPLOYABILITY BASED ON THE ICT CERTIFICATION TRAINING PROGRAM

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Abstract

Improvement of employability among fresh graduates requires initiative and good strategic plan from many parties especially from tertiary public institutions and industries. This study demonstrates the overview of employability trend for tertiary public institutions in Malaysia and the effect of training certifications in increasing the employability rate. Based on the data gathered from web portal of Ministry of Higher Education (MoHE), recruitment agency and authorized training provider the graduates' employability is modelled using Binary Logistic Regression (Binary LR). The sample size of 7,342 graduates from year 2006 to 2016 consist of 10 faculties in Universiti Teknologi MARA (UiTM) is used for modelling purpose. Three factors of demographic, education and training factors are found to be significant in improving the employability of the fresh graduates. Hence, it is recommended that other factors such as industrial training, work activities in industry and soft skills should be included in the syllabus, in order to enhance students' skill and marketability.

Keywords: Employability, certification, graduates, training

1.0 INTRODUCTION / BACKGROUND OF THE STUDY

Information and Communication Technology (ICT) globalisation has changed the overall social economic, cultural and geographical aspects of our societies. In addition of this technology era, there are several ICT applications used around the world. This is not limited to just web browsing applications but also online shopping trading and services, mobile applications, social network, and free messaging and calling services. Thus, it has greatly increased the demand for ICT sector employees in all area including engineering, medicine, business administration, mathematics, accounting and finance, agriculture and arts. In addition to that, the growth and use of ICT resulted in demand for workers with specialized skills. This scenario affects the current educational system to provide a certified and sustainable IT & Engineering graduates. The report by Economic Planning Unit, Prime Minister's Department, Strategy Paper 15, Driving ICT in the Knowledge Economy (2010) indicate that in 2013 the ICT employment is 779, 500 or 5.9% of total employment from 13.2 million. In term of supply of ICT graduates in 2014, the total number of graduates in core area decreased from 8,237 in 2010 to 8,000 in 2014, while the demand for ICT graduates almost doubled from 7,121 to 13,300 for the same period.

In Malaysia, graduates who completed their undergraduate program are competitive enough in term of knowledge of the job, however they are lack in soft skill and practical skills to prepare them for job demand.

This issue has attracted the interest of many researchers to examine and identify the real causes that led to the unemployment problems of graduates in the country. There will be a lack of advantage in terms of marketability and employability possessed by graduates as an important factor in explaining unemployment problem. It can be a lack of individual's skill and knowledge such as analytical thinking, time management, self-reflection, leadership skill and confidence level to continuously adapt to changing environment and team work (Bailey and Ingimundardottir, 2015). Another factor that contributes to unemployment can be graduates who tend to look at the salary offered rather than job scope.

Ministry of Higher Education (MoHE) and public tertiary institutions need to figure out the causal factors and additional skills required of the graduates for them to get higher chances of employment. Many factors can affect or increase the marketability of graduates. Among those, an additional certification is viewed to be able to give added values that may help graduates to prepare themselves for employment selection stages along with knowledge gained from institutions. However, can certifications be effective in increasing graduate's marketability and what type of certification should they have in order to improve their individual's skill?

Therefore, this paper analyzes the effect of ICT certifications training program conducted by authorized training provider towards the employability rate. Simultaneously, this research identifies types of certifications that is in high demand, for employment among fresh graduates in Malaysia. The objectives of this study are to determine factors that affect the employability among fresh graduates and to identify the types of certification on job prospective with the current employment trends in Malaysia.

2.0 LITERATURE STUDY

One of the key challenges to the higher education providers (HEPs) around the world is to have a sensitivity to fulfil the demand and the need of employers in order to maintain a better fit of industry requirements. This section elaborates on the relationship between higher education enrolment, the certification and its impact on employability.

Coming up with technological advancement, higher education institutions hence have the responsibility of preparing students for the jobs. In Malaysia, the survey states that the lack of skills or employability skill among graduates as the number one cause for graduate unemployment (Pillai et al., 2012). On top of that, there are several factors that might help in upskilling and promoting them to get a job such as education (Klemencic, and Fried, 2015), soft skill (Bennett et al., 2000; Abdullah et al., 2014), environment, and individual factor (Barnes et al., 2015).

Based on previous researchers, most of the organization have put IT certifications as an indicator of an applicant as a base line suitability for a specific IT related position. According to The News Strait Times on June, 2014 published that certification is one the important criteria for graduate for promising career. For example, in line with the Economic Transformation Programme (ETP) vision to transform Malaysia into high income nation with consist of 60,000 qualified accountants by 2020. The Association of Chartered Accounting (ACCA) certification is one of the recognized qualifications among employers. Therefore, if the graduates want to be in demand, they should pursue professional accounting certification. With certified ACCA, the chances of employability will be higher and competence with the demand for future job scope.

Several authors have argued that employers increasingly perceive that higher education institutions are not producing 'work ready' graduates. The research done by Shafie et al.(2014) found that there a mismatch between the quality of graduates with the needs of the labour market, especially in terms of skills and knowledge of graduates in the country. Pillai et al (2012) show that employers have rated the students' ICT

certification skills is good if they obtained 56.9% during experience within industrial training. Similarly, according to report done by IPSOS and Malaysia Digital Economy Corporation (MDeC) on Sept 2014 of Malaysia Talent Supply Demand state that 20% of the local companies who have been recognized as MSC companies indicated that certification is important criteria in the recruitment of fresh graduates. This supports the notion that certification is one of the main job criteria needed by all types of industries.

3.0 METHODOLOGY

There are several stages in data collection. The first stage is on data of employment and employability for selected IPTAs, gathered from Publication Library of MoHE for the purpose of having information on the latest employability trend among fresh graduates. Next, the data from employers are captured from recruitment agency portals. The information captured focuses only on vacancies for fresh graduates and companies which stated certification as one of the job requirements for that vacant position. The aim is to identify whether there exists a demand for certification in job hiring among industries. Next, the data from authorized training providers are collected in order to identify the top certifications selected by students in the training and selection for variable used in the modelling phase.

After data collection is completed, the Binary LR technique is used to model the relationships between the variables from year 2006 to 2014. For validation purpose, data from year 2015 to 2016 is used to predict the employability of the graduates.Figure 1 illustrates the research framework for this study

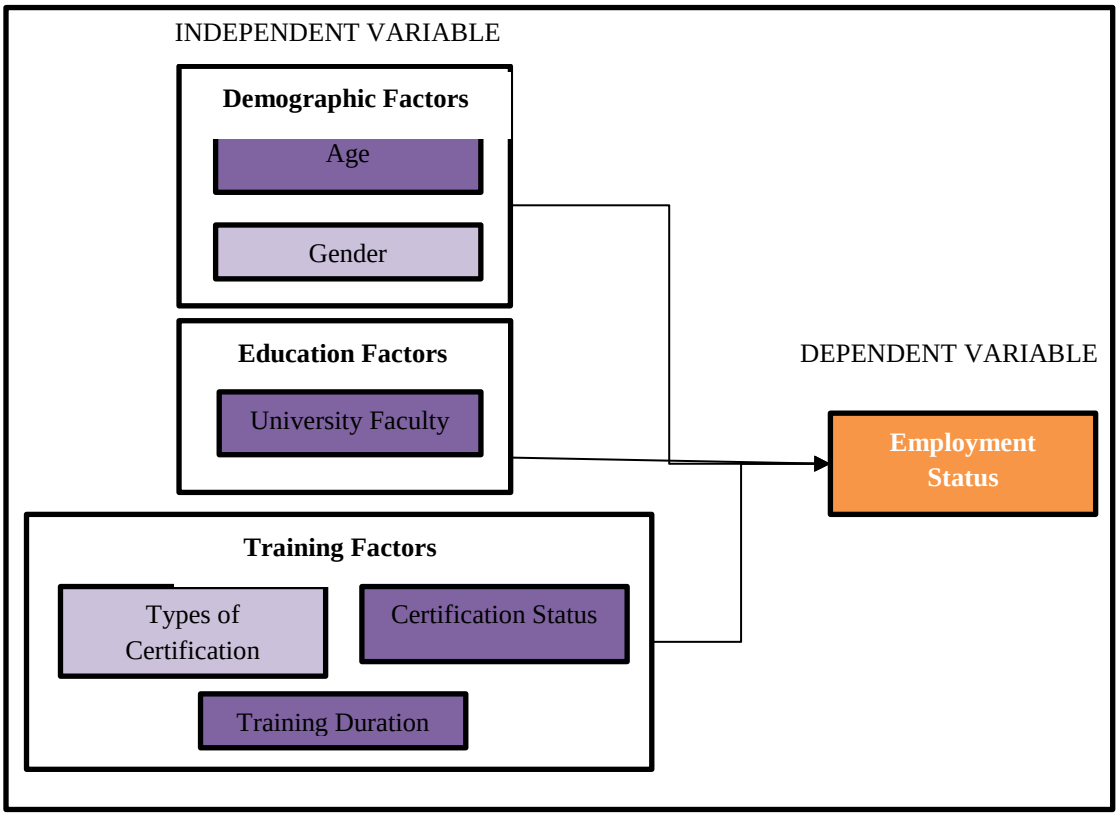

Figure 1. Research Framework

3.1 Data Collection

This research relies on secondary data. Data collected is a ten (10) year data from 2006 to 2016 available in authorized training provider system. The system is as known as Training & Certification Management System (TCMS). To visualize the relationship between higher education enrolment and employability, the descriptive analysis is conducted to analyse the trend. According to MoHE portal, there are 24 public universities in the Malaysia. However, this study focuses on fresh graduates from Universiti Teknologi MARA (UiTM) as it is the largest public university in Malaysia.

The enrolment information consists of seven (7) levels of study: PhD, Masters, Postgraduate Diploma, Degree, Higher Diploma, Certification and Professional. Data is collected from Nov and Dec each year by MoHE and can be retrieved from MoHE Official Portal, Publication Library, *Laporan Kajian Pengesanan Graduan*, 2016. Table 1 shows that as the enrolment increases, so is the unemployed candidates except for year 2015.

3.2 Job Requirement by Employer

As reported by The Star on October, 2016 the majority 66.8% of 284,475 job seekers were in 20 to 24 years old group. In addition, about 41% of the registered and active jobseekers were degree holders. Hence, in this section, the identification of the certification demand from employer perspective is conducted. Data of 30 companies are collected through recruitment agency portal and summarized in Table 2.

Table 1. Public Universities Enrolment and Employment rate from year 2011 to 2015

Abbreviation	2011		2012		2013		2014		2015	
	Enrolment	Unemployed	Enrolment	Unemployed	Enrolment	Unemployed	Enrolment	Unemployed	Enrolment	Unemployed
UiTM	38,457	6,755	43,946	8,775	51,253	10,651	53,481	10,762	35,681	7,300
Total (24 IPTAs)	100,009	21,282	121,799	26,965	123,856	27,312	125,850	28,125	123,883	27,801

Source: MoHE Official Portal, Publication Library, 2016

Table 2. Summary of Companies Sectors

No.	Category	Total Companies	No.	Category	Total Companies
1	Accounting	1	**6**	Information Technology	7
2	Banking	2	**7**	Manufacturing	5
3	Engineering	9	**8**	Recruitment	1
4	Event & Multimedia	2	**9**	Telco	1
5	Healthcare	1	**10**	Retail	1
				Total	**30**

3.3 Modelling Using Logistics Regression (LR)

Logistic Regression (LR) is a popular non-linear statistical model has been widely applied in many fields. LR model deals with binary or dichotomous dependent variable. For binary variable, the event occurred is

coded as 1 (employed) and non-event occurred as 0 (non-employed). The outcome of the regression is not a prediction of a Y value, but a probability of belonging to one of two conditions of Y which can take on any value between 0 and 1 rather than just 0 and 1.

4.0 RESULT AND DISCUSSION

4.1 Descriptive Analysis

The finding shows that the percentage of the unemployment rate from year 2011 to 2015 revolves around 18% to 23% annually. UiTM constitutes the highest enrolment rate compared to other universities. Within this duration, UiTM shows an average of 18% to 21% unemployment rate. Data on required certification were gathered from 30 companies in 10 different sectors. These companies placed job vacancy advertisement for over a 3-month period from May to July, 2017. The information captured focuses only on vacancies for fresh graduates and companies that stated certification as one of the job requirements. Figure 2 illustrates percentage ratio of each sector with Engineering sector shows the highest percentage of 30%.

4.2 Binary Logistic Regression (LR) Results

Binary LR model consists of two (2) methods to predict the probability of outcome. These are Enter and Stepwise methods. In this research, the Enter method is chosen to run the analysis. Data is split into two (2) phases for modelling (2006-2014) and validating process (2015-2016).

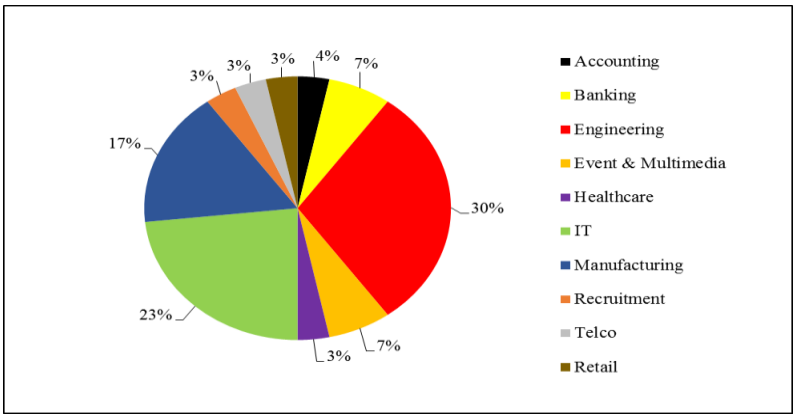

Figure 2. Certification Requirement by Company Sectors

Phase 1: Data modelling (year 2006 to 2014)

At this phase, the output for Enter Method is described before coefficients are entered into the equation. Block 0 presents the result with only the constant included before any coefficient such as education, demographic and training factors are entered into the equation. The finding shows that the 4,264 graduates were employed and 3,078 are not. The early model predicts that every graduate will be employed and this prediction is correct 58.1% of the time. The Wald statistic and associated probabilities provide an index of the significance of each predictor of success or failure for job status. The variables with Wald statistic and its p-value less than 0.05 are included in the model and those variables with p-value greater than 0.05 were considered to be not significant. Hosmer-Lemeshow Test result also shows small chi-square value of 12.335 to indicate a fit model. Additionaly, the *p* value is greater than (0.05) shows that the model is fit for prediction.

Hence, the final model can be written as follows:

$$log\left(\frac{P}{1-P}\right) = -2.745 + 0.098_{Age} + 0.315_{Gender} + 21.141_{FSG} - 3.432_{FSPU} + 0.204_{FBM} - 0.788_{FKK} - 0.497_{FKA} + 0.006_{FSKM} - 0.258_{FKE} - 0.053_{FIM} - 0.011_{FKM} - 0.145_{Server} + 0.104_{Networking} + 0.011_{Desktop\ \&\ OS} + 0.106_{Developer} + 0.17_{Database} - 0.107_{Security} - 0.337_{ProjectMngmt} - 0.127_{Creative} + 0.205_{Engineering} - 0.125_{Others} + 0.013_{TrainigDays} - 0.705_{CertStatus}$$

Where:

y	= 0; Unemployed and 1; Employed
x_1	= Age
x_2	= 1; Male and 2; Female
$x_{3\text{-}11}$	= Nine faculties in UiTM
x_{12}	= Server
x_{13}	= Networking
x_{14}	= Desktop & OS
x_{15}	= Developer, Programming & Application
x_{16}	= Database
x_{17}	= Security
x_{18}	= Project Management
x_{19}	= Creative & Multimedia
x_{20}	= Engineering
x_{21}	= Others
x_{22}	= Training Days
x_{23}	= 1; Not Certified and 2; Certified

The following factors are significant in predicting the employability of a graduate: their demographic profiles (age and gender), faculties they are from and types of certifications they have.

5.0 CONCLUSION AND FUTURE WORKS

This study aims to analyse the possible factors that might influence the employability rate among fresh graduates. There are several factors that contribute to the graduates' employment as suggested by the researchers. By describing the employment and unemployment trend, job requirement by employer perspective and top certification in demand, several factors and types of certifications are found to be significant.

Hence, it is recommended that the institutions and employers should collaborate to reveal the current programs offered by academic institutions and develop a new syllabus to respond to market's need. Secondly, universities should give more attention and provide more targeted support to graduates who had difficulty in getting a job. It also allows universities to tailor their courses somewhat to the skills that employers demand. Finally, universities should collaborate with industries and authorized training provider to conduct a training to expose the students on requirement for industry.

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