EFFECTIVENESS OF INDUSTRIAL TRAINING IN IMPROVING STUDENTS' GENERIC SKILLS

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ABSTRACT

Mismatch of skills, in particular generic skills, has been suggested as one of the potential causes of the graduate unemployment problem in Malaysia. This paper aims to investigate the effectiveness of industrial training (also known as practicum or internship) in solving this problem. Results of descriptive statistics show that industrial training is effective in increasing a student's generic skills and English language proficiency. In particular, industrial training improves the communication skills and spoken English proficiency. Relatively, industrial training at GLC is more effective in improving communication, creative and analytical, time and group management skills. On the other hand, industrial training at the government department and private company are more effective in improving one's English language proficiency. The estimated regression models suggest that the determinants of effectiveness of industrial training are level of the related generic skills before attending industrial training, English language proficiency, academic achievement and gender.

Keywords: Industrial Training; Generic Skills; Mismatch Skills; Graduate Unemployment.

1. INTRODUCTION

The financial crisis of 1997 that was experienced by Malaysia, together with the liberalization of the universities' education sector (which increase the enrollment of university students substantially) since 1996, has led to a drastic change in demand and supply of graduate in the Malaysian labor market. Subsequently, this embeds a profound effect on the number of graduate's entry-level job opportunities and tightening of the hiring procedures for fresh graduates.

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From the perspective of a graduate, this implies a highly competitive and selective job market. A piece of paper (degree scroll) will no longer ensure a graduate entry-level job. Instead, it is the skills that the graduate possessed that will determine the graduate's performance in the labor market. Indeed, empirically, skills mismatch has been quoted as one of the potential determinants of graduate unemployment in Malaysia (Lim and Normizan, 2004; Morshidi et al., 2004; Lim, 2007; Lim, 2010; Lim, 2011).

The university sector has been urged to understand the needs of industry when considering their courses and enrollments (The Star, 2004a). The soft skills of local university graduates, such as their communication skills, are deficient: the head of the human resources of Perusahaan Otomobil National Bhd, Malaysia's first national carmaker, has remarked on their recruitment of fresh graduates, "… of the 419 people we interviewed between 2001 and 2003, only 49 made it through… the rest failed because of weak communication skills…" (The Star, 2004b).

In addition, it has been argued that one of the key determinants of poor labor market outcomes for graduates in Malaysia is a lack of proficiency in English (The Star, 2004c; The Star, 2004b). Skills mismatch, which includes English language skill mismatch, plays an important role in determining the graduate's labor market outcomes. Clearly, how to narrow this skill mismatch is a vital task of university authorities in their endeavor to improve graduate employability.

One of the solutions to solve this mismatch problem is by offering industrial training (also known as practicum or internship) to students before they enter into the labor market. As described by Neuman (1999), industrial training is a "bridge" from the classroom to the workplace, a "place" to test student's learned skills in a real work situation and most important, it is an "opportunity" to learn new skills. The new skills learned, in particular generic skills (i.e., transferable skills that essential for employability such as communication skills), provide an edge to the student. From the employers' perspective, industrial training provides opportunities for them to discover the ability of students that they might wish to recruit or as a flexible (and inexpensive) human resource.

Students appear to have a positive perception of industrial training. For instance, industrial training is viewed by students as an effective way to obtain their first job and a valuable experience that is more valuable than case courses or guest speakers (Cannon & Arnold, 1998). Belt and Richardson (2005) examine the effectiveness of pre-employment training for call center work, in particular in improving generic skills. They find that most of the participants reported that their generic skills (for instance, IT skills) have improved substantially. The majority of participants obtained call center jobs.

This is in line with the finding of Lundgren and Rankin (1998) that occupational skills' job training program has a significant and positive impact on one's post-training hourly wage. In Malaysia, Lai, Karim and Johl (2011) examine the effectiveness of industrial training for undergraduates. They found that indeed, the industrial training is successful in improving student's soft skills attributes (lifetime learning capacity, critical thinking, communication and behavioral skills).

Thus, it is clear that industrial training improves student's generic skills. However, the questions that follow are: to what extend does industrial training improves generic skills? What are the determinants of this improvement in generic skills? These are research questions that the present research attempts to examine. In doing so, it is hoped that the present research will shed more lights on the effect of industrial training on student's generic skills. The objectives of this research are to estimate the effectiveness of industrial training in improving student's generic skills quantitatively and also identify the determinants which improve the student's generic skills (that is due to industrial training).

2. DATA AND METHODOLOGY

2.1. Data

In 2008, the economic program of Universiti Utara Malaysia, has decided to offer industrial training to its undergraduate students at voluntary basis. This industrial training takes 4 months at various types of companies. The students who choose industrial training are the targeted population.

Census method (i.e., all students who choose industrial training) is used. Participation is voluntary. There were 178 students registered for the industrial training and 75 of them willing to participate in this research. This represents a responses rate of 42.14%.

On May 2008, questionnaires are distributed to the students before they started their industrial training (first survey). At the end of their industrial training (September 2008), the students were contacted again and surveyed using a similar questionnaire of the first survey (second survey). Thus, it is a "before" and "after" sampling design to measure the effectiveness of industrial training in improving students' generic skills.

The generic skills measurement are communication, creative and analytical, time and group management, and ICT. These skills are measured with 7-point rating scale (1 being strongly disagree and 7 being strong agree). The language proficiencies (English and Malay) are measured with 7-point rating scale (1 being extremely limited use and 7 being very good useable).

2.2. Methodology

The effectiveness of industrial training is defined as the increase in the self-perceived generic skills (after-before). Thus, the differences between the self-perceived generic skills before and after attending the industrial training are the dependent variable in this study. Multiple regression model with dependent variable represents differences in self-perceived skills (before-after attending industrial training) for each generic skills (communication skills, creative and analytical skills, time and group management skills, ICT skills, written English, and spoken English).

The independent variables are communication skills, creative and analytical skills, time and group management skills before attending industrial training, ICT skills, written English language proficiency, spoken English language proficiency, Malay language proficiency (before attending industrial training); place of industrial training Government (comparison group: private), place of industrial training GLC (comparison group: private), male (comparison group: female), Malay (comparison group: non-Malay), CGPA, entry CGPA and grade MUET.

3. RESULTS

3.1. Characteristics of respondents

It is found that the sample is dominated by female (80%). More than half of the respondents are Malay (56%). It is followed by Chinese (17.33%) and India (6.67%). Relating to the score of respondents in MUET, most of the respondents score band 2 and 3 (89.33%). There are only less than 3% of the respondents score the band 5. Almost half of the respondents have their industrial training at government departments. It is followed by private companies (37.93%) and GLC (18.97%).

3.2. Effectiveness of Industrial Training

Table 1 presents the summary statistics on the self-perceived generic skills before and after attending industrial training, and also their differences. These values of differences are used to measure the effectiveness of industrial training. On average, before attending industrial training, the respondents perceived that their generic skills are satisfactory – ranging from 5.33 to 5.76 (from 7-point rating scale). After attending industrial training, the respondents reported that their generic skills are more satisfactory – ranging from 5.62 to 5.88. Thus, these results of descriptive statistics suggest that the industrial training effectively increases the generic skills of students. Relating to the English language proficiency, it is found that the industrial

Table 1: Effectiveness of Industrial Training

Generic Skills	After		Before		Difference
	Mean	**StdDev**	**Mean**	**StdDev**	**Mean**
Communication skills	5.6213	0.8138	5.3307	0.8899	0.2907***
Creative and analytical skills	5.6400	0.7813	5.3588	0.8418	0.2812***
Time and group management skills	5.8800	0.7527	5.7603	0.8233	0.1197*
ICT skills	5.7700	0.8658	5.4633	0.8888	0.3067***
English language: written	4.8933	0.7982	4.6351	0.8533	0.2582**
spoken	4.8904	0.8260	4.4583	0.9029	0.4321***
Malay language: written	6.5600	0.6826	6.5811	0.6826	-0.0211
spoken	6.5833	0.5993	6.6351	0.6319	-0.0518

Notes: Scale of measurement: 7-points rating scale (1 being strongly disagree and 7 being strongly agree). Please refer to Appendix 1 for detail items. "***", "**" and "*" represent 1%, 5% and 10% significant for the paired sample t-test (Ho: the skill increases after attending industrial training).

training is effective as well, especially for improving proficiency in spoken English. These mean differences are found to be significantly more than zero (paired sample t-tests). However, industrial training is found to be ineffective in increasing the Malay language proficiency of its participants.

To gain further insights, the effectiveness of industrial training is examined with the types of industrial training company. From Table 2, it is found that the effectiveness of industrial training in improving one's generic skills varies across the different types of industrial training company. On average, it is found that the GLC is relatively more effective in improving student's communication, creative and analytical, time and group management, and ICT skills. On the other hand, government departments are relatively more effective in improving student's English language proficiencies and ICT skills; private sector is effective in increasing one's spoken English proficiencies. These mean differences are significantly more than zero (paired sample t-tests).

Table 2: Type of Industrial Training Company and Effectiveness of Industrial Training

Skills	Private			Government			GLC		
	After	Before	Diff	After	Before	Diff	After	Before	Diff
Communication	5.4636	5.3000	0.1636	5.5840	5.5520	0.0320	5.7273	5.3273	0.4000*
Creat. & analytical	5.5985	5.5000	0.0985	5.6133	5.5694	0.0439	5.7576	5.2273	0.5303**
Time & group mgt	5.8750	5.7955	0.0795	5.7900	5.9792	-0.1892	6.0227	5.7045	0.3182*
ICT	5.7955	5.6477	0.1477	5.5800	5.3500	0.2300**	6.0000	5.7045	0.2955*
English language:									
written	5.0000	4.9048	0.0952	4.6800	4.4000	0.2800*	5.0000	4.9091	0.0909
spoken	5.0909	4.7619	0.3290*	4.6087	4.0800	0.5287***	4.8182	4.7273	0.0909

Notes: Scale of measurement: 7-points rating scale (1 being strongly disagree and 7 being strongly agree). Please refer to Appendix 1 for detail items. "***", "**" and "*" represent 1%, 5% and 10% significant for the paired sample t-test (Ho: the skills increase after attending industrial training).

3.3. Multiple Regression Models

Table 3 presents the estimated regression models of the various skills (effectiveness) and its goodness of fit tests. From Table 3, it is clear that the level of generic skills before attending industrial training is the important determinant of the effectiveness of industrial training. Students who perceived themselves as having lower levels of the related generic skills are more likely to experience increase in this generic skill after attending the industrial training. The interesting finding is the written English proficiency (before attending industrial training) is found to be a significant determinant of the effectiveness of industrial training in increasing all the generic skills (including English language proficiency itself). Specifically, the lower the self-perceived written English proficiency, the higher effectiveness of industrial training. Another determinant (of all generic skills) is the academic achievement of university entering examination (entry CGPA). The determinants with positive significant effects are spoken

English language proficiency before attending industrial training (on creative and analytical skills), ICT skills before attending industrial training (on time and group management skills) and gender.

Table 3: The Estimated Regression Models and Goodness of Fit Tests (Estimated Coefficients)

Variable	Comm.	Creative & Analytical	Time & Gpmgt	ICT	English-w	English-s
Comm. skills before	-0.6456**	-0.0888	0.2394	0.1893	-0.0183	0.0627
C.& anal. skills before	-0.7189**	-1.0865***	-0.3096	0.1226	-0.6226*	-0.8915***
Time & group mgt skills before	0.5489	0.3491	-0.6458***	-0.1220	0.3508	0.6747**
ICT skills before	0.2280	0.2599	0.3669*	-0.7517***	0.0379	-0.0361
English language: written before	-0.3880*	-0.3963*	-0.4956***	-0.4299**	-1.1900***	-0.2689*
English language : spoken before	0.3306	0.4710**	0.1494	0.3918	0.2555	-0.5526***
Malay language before	0.2399	0.0953	0.1946	0.1920	0.3861	0.4683*
Industrial training : Government	-0.0183	0.0818	-0.1910	0.1085	-0.0367	0.1113
GLC	-0.0526	0.0414	-0.1233	-0.0173	-0.1076	-0.3302
Male	-0.6077*	-0.4645	-0.8055***	-0.9110**	-0.4232	-0.1844
Malay	-0.2839	-0.0481	-0.3182	0.1192	-0.8429	-1.3605**
CGPA	-0.3459	-0.0547	-0.1514	0.1008	-0.6537	-0.1945
Entry CGPA	-1.3534*	-2.2748***	-1.4814**	-1.4655**	-0.5205	0.2934
MUET	-0.1549	-0.2386	-0.0731	0.1000	0.1826	-0.0986
Constant	7.9074	10.2528	8.2613	6.5140	7.1624	2.8260
Goodness of fit tests:						
R^2	0.5925	0.6388	0.6072	0.4785	0.6741	0.5725
Overall fit test	0.0005	0.0001	0.0044	0.0131	0.0000	0.0055
S-W normality	0.3153	0.5637	0.2427	0.0814	0.3475	0.5617
VIF	<7 (all)	<7 (all)	<7 (all)	<7 (all)	<7 (all)	<7 (all)

Notes: The standard errors are robust standard errors (heteroscedasticity-consistent); The skills refer to the overall measurement (average of the items); ***, **, and * represent significant at 1%, 5% and 10% level respectively; the values of overall fit and normality test are p-values; the models are estimated with robust standard error estimation (heteroscedasticity-consistent).

4. DISCUSSIONS AND CONCLUSION

Industrial training is found to be effective in increasing a student's generic skills and English language proficiency in particular the communication skills and spoken English proficiency. Relatively, industrial training at GLC is more effective for improving communication, creative and analytical, time and group management, and ICT skills; whereas, industrial training at the government department and private company are more effective in improving one's English language proficiency. Thus, it is concluded that the four month industrial training is effective and its effectiveness varies across different types of industrial training company.

The estimated regression models suggest that the determinants of effectiveness of industrial training are the level of the related generic skills before attending industrial training, English language proficiency, academic achievement, and gender. The level of related generic skills before attending industrial training could be significant determinants because students with low level of skills before attending are relatively easier to experience a higher increase in their generic skills during industrial training compared to those who have a high level of skills . This finding also implies that industrial training is indeed a good training opportunity to students who are weak in generic skills.

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