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RETURNS TO EDUCATION FOR MALAYSIAN ILKBS GRADUATES

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ABSTRACT

The Malaysian government has consistently invested in human capital development to achieve a developed, competitive and high income nation by 2020. As such, this study examines the rates of return to education for male and female graduates of Youth and Sports Skills Training Institution (ILKBS) Malaysia. Specifically, the objectives of this study are to estimate the private rates of return to education for ILKBS graduates and compare the private rates of returns to ILKBS graduates by gender. This study uses Mincerian Earning Method (1974) to estimate private returns to education for ILKBS graduates. This research uses a quantitative survey that involved a total of 3517 ILKBS graduates at the 11th IKBN/IKTBN Convocation Ceremony. Data was analysed using the Ordinary Least Square method. The findings of this study indicate that the average private returns to education for male graduates (n=2416) and female graduates (n=1101) were 15.1% and 18.8% respectively. Furthermore, this study also found that the average private returns for male graduates (n=2416) and female graduates (n=1101) at diploma level are 16.9% and 17.9% respectively. The findings imply that further investment in the human capital development of ILKBS graduates will yield greater returns in the future.

Keywords: **Returns to education, gender, TVET, Malaysia**

INTRODUCTION

Malaysia is currently moving towards a fourth wave industry based economy that emphasizes on Industrial Revolution 4.0 as a stimulus to economic growth to realize Malaysia's aspirations to build a developed, competitive and high-income Malaysian nation by 2020. In conjunction with this, the Malaysian government has allocated RM 4.8 billion to 545 government institutions to achieve the target that 60 percent of the 1.5 million new jobs are for Technical Education and Vocational Training (TVET) skilled workers (Ministry of Finance (MOF), 2015). Thus, the Malaysian government encourages TVET institutions to offer more competitive programs and training as well as meet the needs of the industry, which provides job security for graduates. Currently, the Malaysian government is investing heavily in the TVET education sector, targeting the achievement of 650,000 quality skilled workers by 2025 through the Malaysian Education Development Plan (Higher Education), 2015-2025.

Investment in education from preschool to tertiary education aims to produce quality workforce that enhances self-development and improves socioeconomic status (Chang, 2018). Expenditure on the educational sector is considered as an investment in individuals through the form of wages, allowances, bonuses and salaries (Mohd Radzi, Ismail, & Tin, 2012). Investment in education aims to provide positive returns to education which yields increase in individual income and eventually aggregate income. This leads to economic growth (Psacharopoulos, & Patrinos, 2004).

The enrolment rate in public universities are dominated by female students compared to male students (Chang, 2018). However, the enrolment rate in Polytechnics and Community Colleges is higher for male students (50,827) compared to female students which is 11, 569 (Ministry of Higher Education (MOHE), 2016). Recently, it has been observed that students enrolment in the fields such as Automotive, Sports Therapy, Marine, Aero Space Engineering, Mechanical, Electronics, Electric, Photography and others have been dominated by male students compared to female students. This is because male students are more prone to technical fields.

Specifically, the objective of this study is to analyze the private rates of return to education for ILKBS graduates and to compare the private rates of return to ILKBS graduates by gender. This study used Mincerian Earning Method (1974) to estimate the private returns to education for ILKBS graduates. The organization of this paper is as follows: the second section provides literature review on the private returns to education. Section 3 provides research-related details in terms of data collection and methodology. Section 4 presents the results. Section 5 provides the discussions. Section 6 presents policy implications of the studies. Finally, section 7 presents conclusion.

LITERATURE REVIEW: RATES OF RETURN TO EDUCATION

Since the late 1950s, rate of return to education has been employed by economists to understand educational investment decisions. The benchmark model for the empirical estimation of rates of return to education has been developed by Mincer (1974). The Mincerian Earnings Function has been widely used in the literature (Mincer, 1974).

$$\ln Wi = \beta_o + \beta_1(S_i) + \beta 2(EXP_i) + \beta 3(EXP_i)^2 + \mu$$

In this above equation, In Wi logs a linear income, β is an estimated parameter, S is the number of school years, EXPi as the level of individual work experience, EXP^2 as the level of individual work experience squared, i is individual and μ is an error term. The dependent variable in the income function is in logarithmic form since the distribution of income log is very close to the normal distribution, especially when wages are used (Card, 2001).

In the Mincer model, individual wages (Wi) as a dependent variable is obtained based on the average annual salary for the required period of the year. Education is an independent variable, measured using the number of years spent in the formal education system (scholing year, S). In Malaysia, the schooling period for primary schools

is six years and it is followed by another five years of secondary schools. After completing secondary schools, students have the option to continue STPM for two years. Alternatively, students can enrol in foundation or matriculation programs. In TVET institutions, students have the option to complete the certificate, diploma and advanced diploma which require an additional period of study for two to four years.

Even though various methods have been employed to estimate rates of return to education, studies have widely estimated rates of return to education using the conventional OLS method. Ka and Alfred (2016) explained that an additional one year of schooling will increase the rate of return by 13.5 percent for Bachelor Degree graduates which is much better than the 7.5 percent returns for diploma graduates in China. Haroon (2015) estimated that an additional year of schooling will increase the rate of return by 5.5 percent for graduates with earnings after controlling hetergeneity in Pakistan. It implies that returns for men are 9.2 percent higher than for women. Additionally, Carol (2015) mentioned that the rate of return for Bachelor Degree graduates is higher than the return for Associate Degree graduates in Australia.

Previous studies in Malaysia mostly estimated returns to education using Malaysian Household Income Survey. In general, the trends in returns to education continue to persist, as shown by Chung (2003), Said et al. (2009), Kenayathulla (2013) and Arshad (2016). Investment in upper secondary education gives the highest private return, followed by investment in higher education. Kenayathulla (2013) found that average private returns to education for both males and females are highest at the secondary (16.5 percent and 27.2 percent, respectively) and followed by university degree (15.5 percent and 16.1 percent, respectively) levels. Arshad (2016) found that the return to education increases from 6.1% at the lower secondary level to 11.9% at the upper secondary level. The rate however, declines at the postsecondary level to 10.68% and then increases again at the university education level to 11.48%. Previous research consistently showed that the returns for female workers with secondary qualification is higher than their male counterparts. The rates are 13.85% for female workers and 10.9% for male workers (Arshad, 2016).

Previous researches have consistently focused on returns to education in general. However, this is an attempt to provide a comprehensive return of education for TVET ILKBS Malaysia. In this study, OLS estimation method will be employed due to limitation of data.

METHODS

The sample of this study consists of all ILKBS graduates who completed their studies at the certificate level (Level 1 and Level 2), advanced Certificate (Level 3), Malaysian Skills Diploma (Level 4), Malaysian Advanced Skills Diploma (Level 5). The 11th IKBN/IKTBN Convocation Ceremony throughout Malaysia was officiated by YB Brigadier General Khairy Jamuluddin, Minister of Youth and Sports Malaysia on 20 April 2015. The empirical analyses in this study use a human capital earnings function to estimate the private rate of return to education in Malaysia. Data was collected and analysed using the OLS.

For the first question, this study aims to analyze private rate of return for ILKBS male and female graduates based on years of schooling in Malaysia, as shown below:

$$\text{In } Wi = \beta_o + \beta_I (S_i) + \beta 2 (EXP_i) + \beta 3 (EXP_i)^2 + \beta\ 4D1 + \beta 5D2 + \mu$$

In above equation, In Wi logs a linear income, β is an estimated parameter, S is the number of school years, EXPi as the level of individual work experience, $EXPi^2$ as the level of individual work experience squared, D1 is a male gender, D2 is other factors (such as ethnicity) and μ is an error term.

For the second question, this study aims to analyze private rate of return of ILKBS male and female graduates based on education level in Malaysia as shown below:

$$\ln W_i = \beta_o + \beta 2 (EXP_i) + \beta 3 (EXP_i)^2 + \beta\, 4D1 + \beta 5D2 + \beta 6S1 + \mu$$

In above equation, In Wi logs a linear income, β is an estimated parameter, EXPi as the level of individual work experience, $EXPi^2$ as the level of individual work experience squared, D1 represents male, D2 is other factors, S1 is Diploma level and μ is an error term.

RESULLTS

Demographics

This study was conducted on 3517 ILKBS graduates in the IKBN/IKTBN Convocation Ceremony throughout Malaysia in 2015, most of them (2416) are male respondents (68.7 percent) and 1101 female respondents (31.3 percent).

Table 1 describes the age group of 20 to 21 years as a total of 1690 people. The majority of the respondents (45.8 percent) are within the age group of 20-21, followed by 22-23 years old which is 1125 people (32.0 percent), graduates aged 24 to 25 years are 608 people (17.3 percent), graduates aged 26 to 27 years are 150 people (4.2 percent) and finally the age group of 28 to 29 years is 25 people which is equivalent to 0.7 percent. This table also describes the Bumiputera ethnic group as the highest number of respondents which is 3390 people. This number represents 96.4 percent of the total number of respondents, followed by the Chinese ethnic group of 72 people (2.0 percent) and Indian and others ethnic background are 55 people (1.6 percent).

Table 1
Distribution of Frequency and Percentage of Respondents

	Variables	Total Respondents	Percentage (%)
Gender	Male	2416	68.7
	Female	1101	31.3
Age	20	382	10.9
	21	1227	34.9
	22	720	20.5
	23	405	11.5
	24	484	13.8
	25	124	3.5
	26	85	2.4
	27	65	1.8
	28	12	0.3
	29	13	0.4
Ehtnicity	Bumiputera	3390	96.4
	Chinese	72	2.0
	Indian/Others	55	1.6
Total		3517	100

Based on Table 2 below, the highest number of respondents attained certificates (n=2946, 83.8 percent) which consist of Malaysian Skills Certificate Level 1, Level 2 and Adavanced Malaysian Skills Certificate Level 3. The diploma respondents obtained Diploma in Skills Malaysia Level 4 and Advanced Diploma in Skills Malaysia Level 5, which are a total of 571 graduates (16.2 percent). The number of respondents for the full sample separately, for male graduates (n=2416) and women (n=1101) were 68.7 percent and 31.3 percent respectively.

Table 2
Distribution of Frequency and Percentage of Higher Education of Respondents

Highest Education	Full Sample n (%)	Male n (%)	Female n (%)
Certificate	2946	1931	1015
	(83.8)	(80.0)	(92.2)
Diploma	571	485	86
	(16.2)	(20.0)	(7.8)
Total	3517	2416	1101
	(100)	(68.7)	(31.3)

Regression Analysis

Private rates of return for male and female ILKBS graduates based on their schooling year in Malaysia

Table 3 below describes the summary statistical results of the OLS estimation model for the rate of return of education based on the schooling year and level of education in Malaysia for the full sample and full sample separately for male and female ILKBS graduates. In the schooling year column, the school variable is defined as a continuous variable (year of schooling) with the assumption that the return on education is linear (additional schooling year produces the same return). In the OLS model (for male and female graduates), the coefficients of experience and experience squared are positive and significant squared experience and experience. This imply that income will increase as experience increases.

Table 3
Results of OLS Regression Model by Gender Based on Years of Schooling and Education Level

Variables	Years of Schooling			Education Level		
	Full Sample	Male	Female	Full Sample	Male	Female
Experience	0.029*	0.036*	0.017*	0.062*	0.069*	0.056*
	(0.004)	(0.005)	(0.006)	(0.006)	(0.008)	(0.010)
Experience Square	0.003*	0.005*	0.002*	-0.007*	-0.009*	-0.005*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Years of Schooling	0.159*	0.151*	0.188*			
	(0.002)	(0.002)	(0.004)			
Diploma				0.343*	0.339*	0.357*
				(0.009)	(0.010)	(0.021)
Malay	0.016**	0.034**	0.012**	0.059**	0.101*	0.053*
	(0.017)	(0.020)	(0.029)	(0.026)	(0.030)	(0.049)
Chinese	0.023**	0.045**	0.029**	0.042**	0.087**	0.086**
	(0.014)	(0.026)	(0.047)	(0.034)	(0.038)	(0.079)
Male	0.016*			0.006**		
	(0.005)			(0.007)		
Constant	5.219*	5.291*	4.859*	7.206 *	7.176*	7.314*
	(0.029)	(0.034)	(0.056)	(0.027)	(0.031)	(0.050)
Estimate R^2	0.719	0.716	0.738	0.352	0.383	0.251
N	3517	2416	1101	3517	2416	1101

Note: (*), significant at 1% level; (**), significant at 5% level

An additional year of experience increased (please refer Table 4) income by 3.7 percent and 1.7 percent, respectively, for male and female ILKBS graduates. The findings of the study explain that Bumiputera male and female graduates earn significant and higher incomes (3.5 percent and 1.2 percent, respectively) compared to Indian and other ethnic groups. The findings of the study also explained that when a Chinese male individual is added, the income will increase by 4.6 percent whereas when a Chinese female individual is added it will increase by 2.9 percent compared to members of Indian and others ethnic groups.

Table 4
Coefficient Value Table of Schooling Years

Variables	Coefficient Value	
	Male	Female
Experience	(exp (0.036) -1) * 100 = 3.7%	(exp (0.017) -1) * 100 = 1.7%
Malay	(exp (0.034) -1) * 100 = 3.5%	(exp (0.012) -1) * 100 = 1.2%
Chinese	(exp (0.045) -1) * 100 = 4.6%	(exp (0.029) -1) * 100 = 2.9%

The coefficient value reported above is obtained after taking the exponential coefficient (exp) value in the OLS model for the full sample separately for male and female ILKBS graduates, then subtracted by 1 and finally multiplied by 100 percent. A similar approach was applied to ethnic coefficients in the OLS models. For example, the coefficient value of the full sample experience (male) is obtained as follows:

Coefficient Value (Experience) = (exp (Value of Exponential Coefficient) -1) *100
= (exp (0.036) -1) * 100
= 3.7%

In conclusion, the effect of the school year coefficient is positive and significant on income for both men and women. The average private educational return for the entire sample (N=3517) was 15.9 percent. For all graduates involved in this study, an additional one year of experience will increase the educational return by 15.9 percent at a significant level of 1 percent. The average private educational return for male (n=2416) and female graduates (n=1101) was 15.1 percent and 18.8 percent respectively at the significance level of 1 percent. The average educational return is obtained by multiplying beta coefficient for the schooling year in the OLS model by 100 percent for both the full sample and separately for male and female ILKBS graduates. Examples of calculations for the years of schooling in the OLS model for the full sample are as follows:

Average Education Return = Value of Exponential Coefficient x 100%
= 0.159 x 100%
= 15.9%

Private rates of return for male and female ILKBS graduates based on their education level in Malaysia

It is noted that the rate of return on education for additional schooling years is the same regardless of the level of education in Malaysia. Further analysis has been conducted where the variables of school year have been regrouped based on level of education which ae certificates (Level 1, Level 2 and Level 3) and diploma (Level 4 and Level 5). In this analysis, certificate category is used as reference is used as reference group for the analysis in Table 3. In the OLS model (for male and female graduates), the effect of experience on income was positive and significant. The coefficient for the squared experience is negative at the 1 percent level and this indicates that experience increases but not in linear or continuous form.

An additional one year of experience increased (please refer Table 5) income by 7.1 percent and 5.8 percent, respectively, for male and female ILKBS graduates. The findings of the study explain that bumiputera male and

female graduates earn significant and high incomes (10.6 percent and 5.4 percent, respectively) compared to Indian and other ethnic groups. The findings of the study also explain that when a Chinese male individual is added, the income will increase by 9.1 percent whereas when a Chinese female is added, income will increase by 9.0 percent compared to members of Indian and other ethnic groups.

Table 5
Coefficient Value Table of Education Level

Variables	Coefficient Value	
	Male	Female
Experiences	(exp (0.069)-1)* 100 = 7.1%	(exp (0.056)-1)* 100 = 5.8%
Malay	(exp (0.101)-1)* 100 = 10.6%	(exp (0.053)-1)* 100 = 5.4%
Chinese	(exp (0.087)-1)* 100 = 9.1%	(exp (0.086)-1)* 100 = 9.0%

The coefficient value reported above is obtained after taking the exponential coefficient (exp) value in the OLS model for the full sample separately for male and female ILKBS graduates, then subtracted by 1 and finally multiplied by 100 percent. A similar approach was applied to ethnic coefficients in the OLS model for all full samples separately for male and female ILKBS graduates. For example, for the coefficient value of the full sample experience (male) is obtained as follows:

Coefficient Value (Experince) = (exp (Value of Exponential Coefficient) -1) * 100
= (exp (0.069) -1) * 100
= 7.1 %

In conclusion, the effect of the schooling year coefficient is positive and significant on income for both men and women. The average private educational return for the entire sample (N=3517) was 17.2 percent. For all graduates involved in this study, an additional year of experience will increase returns to education by 17.2 percent at a 1 percent significant level. The average private educational returns for male (n=2416) and female graduates (n=1101) were 16.9 percent and 17.9 percent respectively at a 1 percent significant level. The average rate of return r to each educational level (campared to the level below) is calculated using the estimated OLS coeffients in the following way:

Average Return of Education (ri) = (βi – βi 1) ÷ (Si – Si 1)*100
= (0.343 – 0) ÷ (15.5 – 13.5)*100
= 16.9%

Where i is the level of education (i.e., SKM Level 1, SKM Level 2, SKM Level 3, DKM Level 4, DLKM Level 5). Si is the year of schooling at education level i (SKM Level 1= 11.50 years, SKM Level 2= 12.25 years, SKM Level 3= 13.50 years, DKM Level 4= 14.50 years and DLKM Level 5= 15.50 years).

DISCUSSIONS

Private rates of return for male and female ILKBS graduates based on their schooling year in Malaysia

The results of the summary statistical results of the OLS estimation model, explain the average private return on education based on the schooling year in Malaysia for the entire sample (N=3517) is 15.9 percent. This finding is much better than the study conducted by Mohd Radzi, Ismail, and Tin (2012) in Malaysia where an increase in one year of education helps generate a monthly return of 13.43 percent. A study conducted by Sook Fan, Yusof, and

Ismail (2013) in Malaysia found that an increase in one year of education increases the return by 11.52 percent. This means that additional years of schooling help graduates to get higher education returns continuously. In other words, the higher the schooling year, the higher the return earned by each graduate (Psacharopoulos, & Patrino 2004). For the full sample separately, the returns to education for male graduates (n=2416) and female graduates (n=1101) were 15.1 percent and 18.8 percent respectively. This explains that with the extra year of schooling, the return on education of the labor market is higher for female compared to male. It also reflects that there are better job opportunities for female. A study conducted by Caroline (2013) proves that Vocational College graduates are much better than Vocational Schools in particular to increase the income of individuals, households, and firms as well as the country to manage the country's financial system firmly and with stability because graduates can enjoy educational returns of 18.6 percent from the related industries.

Private rates of return for male and female ILKBS graduates based on their education level in Malaysia

The findings of the OLS estimation model explain that the average private return on education based on their highest education for the entire sample (N=3517) is 17.2 percent. Based on a study conducted by Hongbin, Pak and Junsen (2011) it was found that the educational returns of Vocational High Schools, Vocational Colleges and Skills Colleges in China are 22 percent, 23 percent and 40 percent respectively. Shahar (2008) found that the rate of return on educational investment for Polytechnic graduates in Malaysia at the diploma level is 14.0 percent. It explains that the educational returns of diploma graduates are much better than those of certificate graduates. It is also possible that the level of examination-oriented secondary school education only serves as a major platform for the enrolment of students to college studies and it is only able to give a low return on education. Additionally, the findings show that private returns for male and female graduates with diploma education were 16.9 percent and 17.9 percent respectively. Such findings also indicate that the labor market returns are higher for female compared to male with diploma education. Vencent and Cornel (2014) contend that graduates who attended technical training obtained a 14.8 percent return to education compared to secondary school in Tanzania.

Policy Implications

The findings of this study provide insights to policy makers on the importance of investment in the TVET sector. Malaysian government opens the opportunity for skills graduates to continue their education at the degree level with the colloboration of the Universiti Teknikal Malaysia (UTeM) and Universiti Kuala Lumpur (UniKL). TVET plays a pivotal role in providing the skilled workforce required for Malaysia's economic growth and transformation. It is the pathway of the 21st century, the way forward to close gaps between economies of the globe, and vital in meeting the demands of a technologically complex and unique future. The findings provide insights to parents that TVET sector yields positive returns and parents should consider that as an alternative avenue for skills development and to improve the standard of living. Parents need to give more confidence and support to their children to gain a foothold in the field of TVET because this field is able to produce knowledgeable human capital, highly skilled, virtuous, intellectual and competitive workforce (Ministry of Education Malaysia (MOE), 2015) in order to achieve a high income nation that can boost economy (Mat Isa, 2004) and overcome the challenges of the Industrial Revolution 4.0.

CONCLUSION

Overall, the findings indicate that there is a positive return on education for ILKBS graduates. Higher returns on investment for both male and female graduates indicate that there are better job opportunities for TVET graduates. This clearly shows that TVET will be the main driver for the government's effort to produce highly skilled and semi-skilled workers, thus reducing the country's dependence on foreign labor. The Malaysian government encourages training institutions to offer more competitive training programs and meet the needs of the industry, with job security for graduates through substantial allocations. The government has allocated RM20 million to improve youth competencies through the Bootcamp Program at Public Skills Training Institutions (ILKA)

(Ministry of Finance Malaysia (MOF), 2019). This research provides estimates for returns to education for ILKBS graduates. Further research which covers more diverse technical fields is necessary to provide more comprehensive estimates on returns to TVET education in Malaysia

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