DETERMINANTS OF HUMAN CAPITAL DEVELOPMENT: CASE OF MALAYSIA

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Abstract

As a developing country with upper-middle income status, Malaysia aspires to become high income status by 2020. Human capital utilization is vital for a country to achieve high income status. Even though development of human capital is one of the essential efforts that can give benefit toward individual, organization, economy and also country, Malaysia still needs to undertake structural changes in resolving longstanding problems like education. It is because education acts as a medium or foundation to human capital development. The need of high quality leaders to move forward and become more competitive nation does not only require talent but must be built continuously from within the education system. Structural changes which are revamping the education system would create challenges not only to the government but also learning institutions and most importantly the human capital. This study is undertaken to determine factors that affect human capital development in Malaysia. Using time series data which is from 1982 until 2014 that covers a period of 33 years, human capital development acts as a dependent variable while the independent variables are unemployment, education level, and foreign direct investment (FDI) and economic growth. The model of this study is tested through multivariate framework. It is found that education level has statistically significant relationship in determining human capital development.

Keywords: human capital development; unemployment; education; FDI; economic growth;

1.0   INTRODUCTION

The meaning of human capital is the production elements which will able to generate added-values through inputting it. Human capital refers to the ability and efficiency of people to transform raw materials into goods and services and that ability or skill can be generated through education system. Meanwhile, according to Aunindita (2010) human capital can be referred to the people who have the knowledge and competence to perform their job. They will able to share their own experience and training to improve education and overall human capital in country.

In 1991, Tun Dr. Mahathir bin Mohamad; former prime minister had introduced a plan called Vision 2020 during the presentation of Sixth Malaysia Plan. This envisioned Malaysia is to become a country that will be fully developed in all aspects such as economic, social, political, spiritual, and others. The final platform to achieve Vision 2020 in Eleventh Plan (Abdul Razak, 2015) is based on theme of "Anchoring Growth on People" where one of the strategic thrusts is focusing to speed up human capital development for progressive country.

Flash forward to 2010, current Prime Minister Dato' Sri Najib bin Tun Abdul Razak introduced New Economic model (NEM); a framework that would bring Malaysia out of upper-middle income status to become high-income status like Singapore, Australia, Japan, Korea and others. One of the initiatives out of eight Strategic Reform initiatives (SRIs) is to develop a quality and competitive workforce. Other than reducing dependency on foreign labor such as from Thailand, Indonesia and Vietnam, Malaysia needs to focus more on high-quality investment in human capital. Hence, a major milestone in improving the quality of human capital is focusing on entrepreneurial skills issues, institutional reform and also level of education.

According to Tuicu and Simko (2015), education of an individual will determine the higher earnings which is an important key to human capital development. With education, people can enhance their skill and expertise to contribute to the economic growth. Wilson and Briscoe (2004) had observed that substantial development of formal education and training in developed countries like Malaysia leaves implications for the skill level and employed workforce.

As a developing country with upper-middle income status, Malaysia aspires to become high income status by 2020. Human capital utilization is vital for a country to achieve high income status. Even though development of human capital is one of the essential efforts that can give benefit toward individual, organization, economy and also country, Malaysia still needs to undertake structural changes in resolving longstanding problems like education. It is because education acts as a medium or foundation to human capital development (Federation of Malaysian Manufacturers, 2015). There are challenges exist in structural change which is revamping the education system. Malaysia needs high quality of leaders to move forward and in order to become more competitive nation, it does not only attract talent but must build it continuously from within the education system. Due to lack of study has been done on Malaysia context, this study tries to contribute to existing studies on this matter.

2.0   BACKGROUND/LITERATURE REVIEW

A study done by Mauro (2003) on the estimation of human capital and the regional Italian development causing unemployment from 1963 to 1995, found that unemployment has negative relationship toward human capital and also economic growth. However, according to Lahlum (2007) on the study of urban youth unemployment and human capital development in Iran, it is found that eventhough human capital investment is costly for the firm since it increases the probability that an employee will create an innovation that is non-firm specific, and thereby move on to found its own venture, it increases the probability that the employees in the long run will create innovations that are profitable to the company. In a situation when employees resign from their job, they can still manage to survive with the skills they had learned, thus although there is an increase in unemployment it does not affect in the human capital development. Other than that, Benos and Karagiannis (2016) take census data to investigate the effect of four education levels on labor productivity and human capital that covers on 51 Greek regions for a period of 1971 until 2011. The result is education at upper secondary and also tertiary has positive association with human capital and primary education shows negative relation while the education at lower secondary does not give any reaction toward productivity which leads to human capital.

Apart from that, Diaconu and Popescu (2008) examined the factor affecting human capital in Romania based on 300 respondents. The result of study found that formal educational system does not only affect financial system but also in institutional reforms gives a positive impact toward human capital's quality. However a research based on Tanzania and Zambia suggests a significant relationship between education expenditure and human capital formation (Idrees & Siddiqi, 2013). This is also supported by the findings of Baah-Bonteng (2013) and Jung and Thorbecke (2003).

A study conducted on the impact of controlled variables such as FDI on human capital for 34 countries from 1981 to 2013 shows that the rate of FDI has positive relationship to human capital through a fixed-effect model. The streaming technology and management skills lead to the development of human capital development in the host country (Azam et al., 2015). Besides, Reiter and Steensma (2010) used data from 49 developing countries for a period of 1980-2005 to conduct a study on investigation of human capital and FDI in developing countries. The researchers found that FDI inflows have positive significant relationship towards improvement of human development when policies of FDI restrict any investors from foreign country to enter some sectors. On a contrary, a negative result is confirmed by Checchi, De Simone and Faini (2007) on FDI inflow and human capital based on 147 developing countries for a period of 1990 until 2000.

Meanwhile, according to Dias (2015) in the study on human capital development in Brazil by using panel data found that economic growth has positive significant relationship towards human capital. The result shows that if economy growth increases, the demand of human capital with three education level also will increase. Based on research on the estimation of economic growth and human development in the Republic of Korea, result shows that ECONOMIC GROWTH will provide positive significance towards human capital development (Lee, 2007). Similar results were also found in studies by Krueger and Lindahl (2001) Bildirici et al., (2005) and Hafner and Mayer (2012).

3.0 METHODOLOGY

3.1 Data Collection

This study collects secondary data human capital development (HCD) index as dependent variable and independent variables are unemployment, education level and FDI and economic growth. The yearly data used is from 1982 until 2014 (33 years) due to the availability of data. All data is analyzed using STATA software. The proxy represents HCD is the index itself, education level is proxied by number of Bachelor's holder and proxy for economic growth is gross domestic product (GDP).

3.2 Hypothesis

H_0 : There is no significant relationship between unemployment and HCD
H_1 : There is no significant relationship between education level and HCD
H_2 : There is no significant relationship between FDI and HCD
H_3 : There is no significant relationship between economic growth and HCD
H_4 : There is significant relationship between economic growth and HCD

3.3 Model of the study

$$LNHCD_t = \beta_0 + \beta_1 LNUM_t + \beta_2 LNEDU_t + \beta_3 LNFDI_t + \beta_4 LNEC_t + \varepsilon_t$$

LNHCD	=	Human Capital Development
LNUM	=	Unemployment
LNEDU	=	Education level
LNFDI	=	Foreign Direct Investment
LNEC	=	Economic growth
LN	=	Natural Logarithm
ε_t	=	Error term
t	=	Time series
$\beta_1, \beta_2, \beta_3, \beta_4$	=	Regression Coefficient

The model used in this study is adapted from Shuaibu & Timothy (2016).

3.4   Data Analysis

3.4.1 Descriptive Statistics

Descriptive statistics can be defined as brief descriptive coefficients of formulating a set of data that is provided which can be either whole population or representative sample. It measures the central tendency (mean) and diversity (standard deviation or variance, min and max values). Mean is an average value of the data that is obtained by adding series and is divided by the number of observations while standard deviation is a measure of dispersion or spread in the series. The max and min are the maximum and minimum values of the series in the current sample.

3.4.2 Unit Root Test (Stationary Test)

This test used to check whether the data is stationary or non-stationary. This is due to most of the macro variables are trended (non-stationary). This study applies Augmented Dickey-Fuller (ADF) test. If the p-value is < 0.5, it shows that the researcher needs to reject null hypothesis (H_0: The data is non-stationary)

3.4.3 Diagnostic Test

3.4.3.1 Multicollinearity Test

This test is used to check whether all variables are highly correlated to each other and ensure all the variables have no multicollinearity problem. Two tests can be used for this test; i) Pearson correlation and ii) Variance inflation factor (VIF). Firstly, for the Pearson correlation test, the value of correlation coefficient between independent variables should not be above than 0.6. If the value is above 0.6, there could be multicollinearity problem. Secondly, for VIF, the correlation of independent variables is based on the value of VIF and 1/VIF. The value of VIF must be less than 10 but 1/VIF value should be more than 0.1. If the value is opposite with the procedure stated by Stock and Watson (2003), the model has multicollinearity problem and STATA will drop one of the variables to avoid a division by zero in the OLS procedure.

3.4.3.2 Heteroscedasticity test

This test will help to determine whether the residuals of model are depending on the independent variables of a model. Breusch Pagan test is used to test heteroscedasticity in a linear regression model. The p-value that is less than 0.05, will result in null hypothesis being rejected.

3.4.4 Normality test

The normality test will apply Shapiro-Wilk test. This test determines whether the data set is normally distributed and possibility of residuals also to be normally distributed. If the p-value is less than 0.05, null hypothesis is rejected.

3.4.5 Multiple Linear Regression

Multiple linear regression allows simultaneous investigation of the effect of two or more independent variables on a single, interval-scaled or ratio-scaled dependent variable. In the general multiple linear regression model, the dependent variable Y is hypothesized to be a function on n independent variables $X_1, X_2, ... X_n$. Then tests like Multiple Coefficient of Determination, R^2, hypothesis testing, F-test and t-test are run for estimating the results.

4.0 RESULTS AND DISCUSSION

4.1 Descriptive Statistics

Based on the estimated results, the mean of HCD, unemployment, education level and FDI are 0.899574, 12.71651, 12.85761, 1.158634 and 1.710927 respectively. In addition to that, the standard deviation of HCD is 0.141677, unemployment is 0.237480, education level is 0.887963, FDI is 0.8971925 and economic growth is 0.6993805.

The minimum value of HCD is 0.6204134 and unemployment is 12.11396. But, minimum value of education level is 11.40978, -2.870117 for FDI and -0.658407 for economic growth. Meanwhile, the maximum value of HCD, unemployment, education level and FDI is 1.088090, 13.08112, 14.28056, 2.170257 and 2.302855 respectively.

4.2 Unit Root Test

Based on Table 1, it is concluded that all variables are stationary at 2nd difference with HCD (0.0033), education level (0.0003), FDI (0.0000) and economic growth (0.0006) significant at 1 percent level while unemployment (0.0470) at 10 percent level. Therefore, null hypothesis is rejected indicating stationary of the data. Then next test shall be proceeded.

Table 1 Unit root test

Variables	Level	1st Difference	2nd Difference
	Augmented Dickey Fuller (ADF)		
HCD	0.0558*	0.0530*	0.0033***
Unemployment	0.6539	0.3662	0.0470*
Education	0.9285	0.0713	0.0003***
FDI	0.3353	0.0006***	0.0000***
Economic growth	0.3358	0.0263*	0.0006***

Note: ***significant at 1% level **significant at 5% level *significant at 10% level

4.3 Pearson Correlation

Table 2 shows that variables with negative correlation are i) HCD and unemployment, ii) unemployment and FDI, iii) unemployment and economic growth, iv) education level and FDI and v) education level and economic growth. Other than that, all variables confirmed with positive direction. Education level and HCD give significant result at 0.0000, Education level and unemployment at

0.0244, FDI and unemployment at 0.0278 and economic growth and unemployment at 0.0001. However, since only education level and HCD record strong relationship it is concluded that all variables are not correlated with each other.

Table 2 Pearson correlation test

Variables	LNHCD	LNUM	LNEDU	LNFDI	LNEC
HCD	1.0000				
Unemployment	0.3342	1.0000			
	0.0573				
Education	0.9796	0.3911	1.0000		
	0.0000*	0.0244*			
FDI	-0.1178	-0.3830	-0.1791	1.0000	
	0.5139	0.0278*	0.3185		
Economic growth	0.0021	-0.2723	-0.0987	0.6722	1.0000
	0.9197	0.1106	0.5847	0.0001*	

***significant at 1% level. **significant at 5% level. *significant at 10% level.

4.4 Variance Inflation Factor

Table 3 postulates that there is no multicollinearity problem in all variables. This is due to VIF of all variables are less than 10 and 1/VIF is greater than 0.1. Therefore, it is agreed that null hypothesis is fail to reject which means there is no multicollinearity problem in the model of study.

Table 3 Multicollinearity test-Variance Inflation Factor

Variables	VIF	1/VIF
Unemployment	1.34	0.743952
Education	1.18	0.844274
FDI	1.98	0.506174
Economic growth	1.83	0.546260
Mean VIF	1.58	

4.5 Heteroscedasticity Test

Based on the estimated results, the p-value is recorded at 0.0347 which is less than 0.05. Hence, this study rejects null hypothesis. Therefore, it can be concluded that residuals are homogenous and thus residuals are dependent to other variables. This also does not indicate a heteroscedasticity problem in this model.

4.6   Normality Test

As shown in Table 4 the p-value stands at 0.48167 which is greater than 0.05 simply explains that this model is normally distributed.

Table 4 ShapiroWilk Test

Variable	Obs.	W	V	Z	Prob > z
y	33	0.97005	1.022	0.046	0.48167

4.7   Multiple Linear Regressions

Table 5 Multiple Linear Regression

Variables	Coefficient	T-values	P-values
Unemployment	-0.0223064	-0.73	0.472
Education Level	0.159737	29.72	0.000***
FDI	0.0000608	0.01	0.991
ECONOMIC GROWTH	0.0141249	1.55	0.132
Constant	-0.8948399	-2.13	0.042
Number of observation		33	
F (4, 28)		269.29	
Prob > F		0.0000	
R-squared		0.9669	
Root MSE		0.02756	

Note: ***significant at 1% level. **significant at 5% level. *significant at 10% level

According to Table 5, p-value of this model is 0.0000 which indicates the reliability of independent variables to dependent variable. The p-value is less than 0.05 indicates a statistically significant relationship between independent variables and dependent variable. Besides, the value of R-squared at 0.9669, reflects 96.69 percent of HCD is explained by education level, unemployment, FDI and economic growth. The remaining 3.31 percent is explained by other unknown factors. The value of 0.02756 shown by Root MSE proves that the model is a good fit since the error value is near to zero. The result of F-test shows significant relationship between independent variables and dependent variable in general. On the other hand it is also found that education level is the most significant variable in explaining HCD at 0.000. There is a positive significant relationship between education level and human capital development at 1 percent significance level as the p-value of the variable is 0.0000. However, there is no significant relationship between unemployment, foreign direct investment and economic growth toward human capital development which p-value of the variables is more than 0.05.

Therefore, the regression equation used in this model is as follows:

LNHCD = -0.8948 - 0.0223LNUM + 0.1597LNEDU + 0.0001LNFDI + 0.0141LNEC

                (0.042)   (0.472)   (0.000)   (0.991)   (0.132)

For every one percent increment in unemployment will decrease human capital development by 0.0223 percent. Meanwhile, for every one percent increment of education level, FDI and economic growth will increase HCD by 0.1597 percent, 0.0001 percent and 0.0141 percent respectively. The result of hypothesis testing rejects H_0 only for one variable; education level which suggests that hypothesis testing for unemployment, FDI and economic growth fail to reject the H_0. Thus, there are no significant relationship between unemployment, FDI and economic growth with HCD.

5.0   CONCLUSION

Overall, model of this study does not have multicollinearity problem and is correctly specified model. Other than that, no existence of heteroscedasticity problem detected as the data of this model are normally distributed. From the estimated results, it can be seen that the unemployment, FDI and economic growth are not significant in affecting HCD. In the case of variable unemployment, the result is supported by the previous study done by Lahlum (2007). However none of the past results are found to confirm the result of FDI. This might be due to different proxy used by researcher which is number of person with bachelor's degree only. The same goes to economic growth where previous studies used different proxies by researcher which is number of person with bachelor's degree only. For economic growth where previous studies are observed from either lower middle income, advanced country or panel data consists of various levels of countries, contrary to Malaysia as upper middle income country. Thus, only education level has significant positive relationship with HCD. The same result can be found in various study such as Jung and Thorbecke (2003), Idrees and Siddiqi (2013), Baah-Bonteng (2013), Benos and Karagiannis (2016), Diaconu (2008) and Bildirici et al. (2005).

This study is limited to secondary data extracted from various sources that is available until year 2014. Hence, future research should include the recent data and also extend education to Master's Degree holder as proxy to education level. It is also plausible to be cautios, while the country is producing high level skill talent, the job market needs to be able to provide so that skills waste is avoidable.

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