

# Determinants of Workers' Competitiveness in Malaysian Information and Communication Technology Sector

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*In Malaysia, Information and Communication Technology (ICT) sector has been expanding very rapidly as a result of government policy which emphasizes on new technology adoption in all sectors. As a result of this development, the demand for competent workforces has been increasing dramatically. In fact, shortage in highly skilled workers has forced the employers to turn to foreign experts to fulfill their requirement. However, the Malaysian government is always working towards enhancing the locales' competitiveness especially in aiming to cut graduates unemployment. This paper aims to investigate determinants of workers' competitiveness in the ICT sector so that future human resource development can be put forward to produce a more competitive workforce. The analysis in this paper is based on 368 executives in the ICT sector in three major states, i.e. Selangor, Penang and Johor. The study will compute competitiveness index and subsequently regress this index on the determinant factors like workers' human capital attainment, personality, ethical, job satisfaction and working environment. The linear regression model and Ordinary least squared (OLS) procedure will be used in data analysis. The study finds that most of human capital variables and employee's attributes contribute significantly to workers' competitiveness.*

Field of Research: Human Resource Development, Human Resource Management, Labour Economics

## 1. Introduction

As Malaysia is moving towards a knowledge based economy, the importance of having knowledge workers to deepen the technology of firms, improve the productivity and attract foreign direct investment has been increasingly recognized (Fong Chan Ong 2006; Kanapathy, 1997; Malaysia, 2002, 2001a,b; Tan & Gill, 2000). Consequently educated and skilled human intelligence is increasingly viewed as a nation's and organizational primary economic resources (Brown & Lauder, 1996; Carnoy, 1998; Davies & Guppy, 1997; Kraak, 1999; Lewin, 1998; Oxfam, 1999a,b; Sieh, 2000; Steward, 1996; Varma, 1999).

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This circumstances points to the importance of human resource as factors of investment, economic development and as key element of competitiveness. Malaysia's is moving up the competitiveness rankings by seven spots to the 24th place in the Growth Competitiveness index in 2005 compared 2004. In terms of Business Competitiveness Index Malaysia's ranking unchanged at 24<sup>th</sup> place as shown in Table 1. Malaysia also places 26th in the World Economic Forum's (WEF) Global Competitiveness Index (GCI) rankings for 2006-2007. Currently Malaysia has moved up to the 19th place in the World Competitiveness Yearbook 2008 published by the International Institute for Management Development (IMD) based in Switzerland (IMD, 2008).

**Table 1: Comparative Overall of Malaysia' Competiveness**

Country	Growth Competiveness Index 2005 (2004,2003)	Business Competitiveness Index 2005 (2004)
Finland	1 (1,6)	2 (2)
Republik Korea	17 (29,18)	24 (24)
<b>Malaysia</b>	<b>24 (31, 29)</b>	<b>23 (23)</b>
Ireland	26 (30,30)	19 (22)
Thailand	36 (34,32)	37 (37)
China	49 (46,44)	57 (47)
India	50 (55,56)	31 (30)
Singapura	6 (7,6)	5 (10)
Filipina	77 (76,66)	69 (70)

Sumber: World Bank, Malaysia 2007

A highly quality of employees who possess a strong cognitive, functional and social competence in order to perform tasks efficiently and effectively is a crucial factor in company's competitiveness. There are several determinants of workers' competitiveness and among them are human capital variables. Rahmah (2002) showed that there were a significant positive relationship between workers' performance and their percentage with tertiary level of education and training attendance. Gerfin (2004) also found that training activities will increase workers' competitiveness and contribute 2.0 percent to wage increase. A study by Verner (2000) showed that there was a direct relationship between training and workers' experience on workers' productivity in

Ghana. His study indicates that workers' experience has higher impact on productivity as compared to its impact on wages. A study by Suharto Wijono (1997) in the central Jawa, Indonesia showed a significant relationship between workers' motivation and personality and workers' performance. Judith et al. (2005) studied the personality of the graduates who will enter the labour market and found that human capital variables (education, training and workers experience) and graduates' personality have significantly affect graduates' ability to fulfil the labour market requirement. The main purpose of this paper is to investigate determinants of workers competitiveness in the ICT sector in Malaysia. The finding from this study is important in providing future human resource development to produce a more competitive workforce. The analysis in this paper is based on 368 executives in the ICT sector in three major states, i.e. Selangor, Penang and Johor.

## **2. ICT Sector in Malaysia**

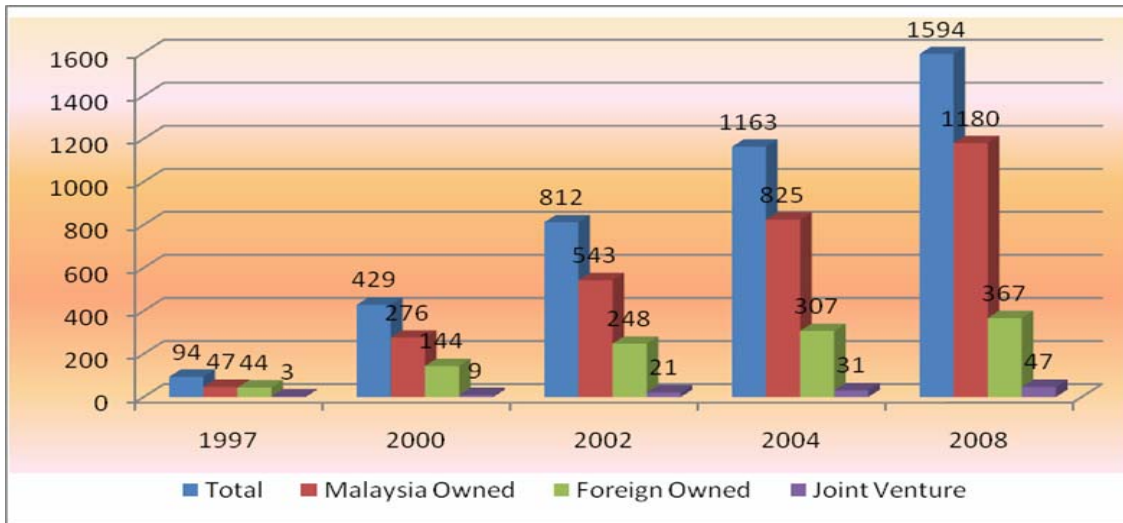
Many countries realize the importance of information and communication technology (ICT) to stimulate their economic growth. For example, Singapore's first ICT master plan was formulated and implemented between 1980 and 1985. Korea's first national computerization project was initiated in 1987. The Philippine's government also launched the National ICT Plan for the 21st century at the end of 1990s to spur the country to global competitiveness through information technology (Lallana, 2003). Malaysia's commitment to ICT has been intensified in the mid 1990s. In 1994, the Prime Minister's Department appointed a team of consultants to establish the necessary steps and strategies for Malaysia to achieve developed nation by the year 2020. Based on this report, the government forms an advisory group to drive the use of ICT as a strategic technology for national development, called The National Information Technology Council (NITC). This council, chaired by the Prime Minister, hosted by the Malaysian Institute of Microelectronic Systems (MIMOS) and composed of expert members from the public, private and community sectors launched the National IT Agenda (NITA) and establishment of Multimedia Super Corridor (MSC) in 1996 (ITU, 2002). The main objective of NITA is to provide a comprehensive framework for the use of ICT to convert Malaysia into a knowledge-based economy. While, the MSC managed by the Multimedia Development Corporation (MDec) is a major project designed to act as a catalyst for ICT industries and products by attracting and nurturing both local and foreign hi-tech companies (Malaysia, 2001). During the Eight Malaysia Plan (8MP) 2001-2005, RM7.9 billion has been allocated to ICT-related development, while in the Ninth Malaysia Plan (9MP) 2006-2010 the allocation rise to RM12.9 billion (Malaysia 2001, 2006). Special incentives and facilities are provided to attract more investors mainly from foreign multinational companies (MNCs) as shown in Table 2.

### **Table 2: Bill of Guarantees for MSC Status Companies**

■	Provide a world-class physical and information infrastructure.
■	Allow unrestricted employment of local and foreign knowledge workers.
■	Ensure freedom of ownership by exempting companies with MSC Malaysia Status from local ownership requirements.
■	Give the freedom to source capital globally for MSC Malaysia infrastructure, and the right to borrow funds globally.
■	Provide competitive financial incentives, including no income tax for up to 10 years or an investment tax allowance, and no duties on import of multimedia equipment.
■	Become a regional leader in intellectual property protection and cyberlaws.
■	Ensure no Internet censorship.
■	Provide globally competitive telecommunications tariffs.
■	Tender key MSC Malaysia infrastructure contracts to leading companies willing to use the MSC Malaysia as their regional hub.
■	Provide an effective one-stop agency - the Multimedia Development.

Source: Multimedia Development Corporation (MDec) (2008).

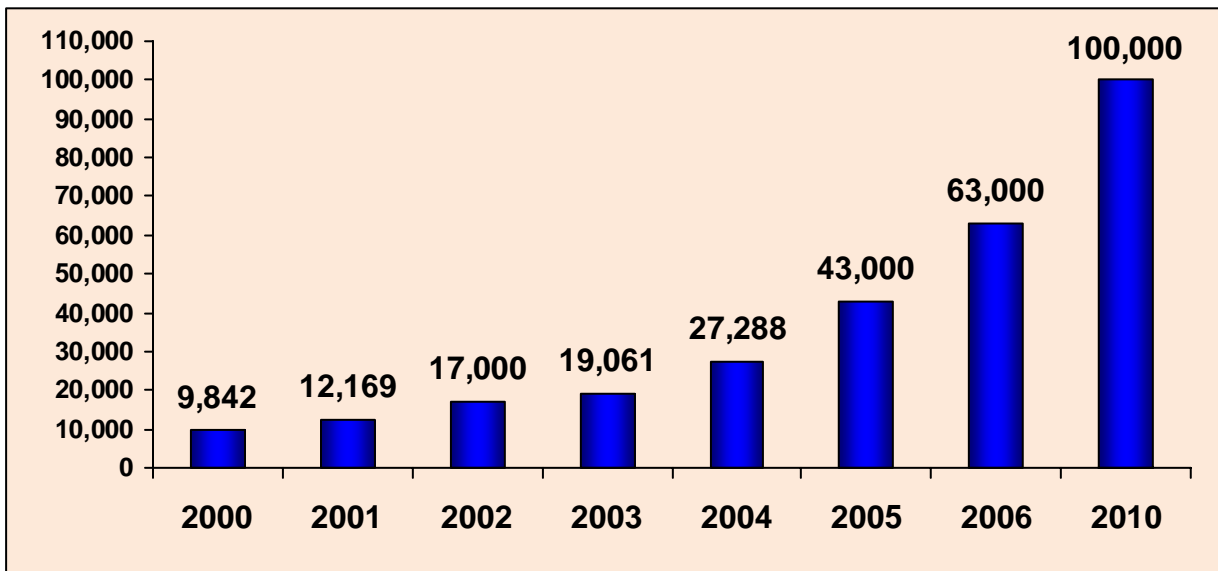
Based on a survey conducted by the Malaysian Statistic Department, a total of 1,090 establishments were engaged in computer and related services activities in 2005. The majority of these establishments were located in W.P. Kuala Lumpur (42.1 percent) and Selangor (36.5 percent). Malaysian residents owned 93.5 percent of the computer services establishments. The software consultancy and supply services establishments accounted for 55.2 percent of the establishments, followed by maintenance and repair of computers (16.7 percent), hardware consultancy services (15.6 percent), data processing services (9.1 percent) and database & other computer related activities (3.4 percent) (DOS, 2008). Figure 1 shows the ICT company at MSC has increased from 94 companies in 1997 to 1,163 companies in 2004 (MDec, 2004). Currently, there are 1,594 approved MSC status companies. Of these 74 percent are Malaysia owned, while 23 percent are foreign owned and only 3 percent are joint venture (MDec, 2008). Application software accounted for 45.0 percent, followed by mobility, embedded software & hardware (21.0 percent), shared services and outsource (7.7 percent), creative multimedia (10.2 percent), internet based business (10.7 percent) and IHLs & incubators (5.2 percent) (MDec, 2008).



Source: Multimedia Development Corporation (MDec) (2004, 2008).

**Figure 1: Number of ICT Companies at MSC**

In 2005, there were 34,192 persons engaged in the computer services. Of these, 97.8 percent (33,434 persons) were full-time employees, 1.7 percent (592 persons) were part time and 0.5 percent were working proprietors & unpaid (DOS, 2008). MDec estimated that an additional of 100,000 ICT workers for MSC status companies will be needed by 2010 as shown in Figure 2. In the emerging knowledge-based economy, the wealth of a nation is generated by workers. Therefore, competitiveness relies on the effective development, utilization and mobilization of human capital. The quality of a nation's human capital is the most critical element in the achievement of sustainable development in the economy.



Source: Multimedia Development Corporation (MDec) (2008).

**Figure 2: Number of K-Workers at MSC Status Companies**

### 3. Methodology

#### The Data

A survey is used to achieve the objective of this study. The population for the study is executives in the private ICT services companies. From the population size for each selected states in Malaysia, representative sample (935 executives) is drawn using a stratified sampling technique. The sample size is calculated using technique proposed by Israel (1992). These respondents are from three major industrialized states in Malaysia namely, Pulau Pinang, Johor, Federal State and Selangor. Population and sample distribution are provided in Table 3. Research instruments from previous studies are blended and adapted to develop a comprehensive measurement of workers' competitiveness index and its determinant factors. A survey questionnaire is designed mainly based on research articles published by Research Center for Education and the Labour Market", "Commonwealth Department of Education Science and Training", "Journal of Manegerial Psychology", "NEO Personality Inventory", Job performanve Inventory and several local studies.

**Table 3: Population and Sample Size by States**

State	Population (N)	Sample (n)
Selangor	4,163	365
Federal Territory	7,337	379
Pulau Pinang	211	138
Johor	61	53
Total	11,772	935

Note: Sample size,  $n = N / 1 + N (e)^2$ .

The survey instrument was tested on a small number (n=11) of executives. The survey instruments were evaluated for reliability using the consistency measure developed by Cronbach & Meehl (quoted in Rezin & McCaslin, 2002). According to George & Mallery, (2001) Cronbach alpha ( $\alpha$ ) 0.7 is considered acceptable, while 0.8 is good and 0.9 is excellent. Table 4 below shows, most instruments are excellent. The data was gathered using self-administered survey at the end of year 2007 (Sept - December). The response rate is 39 percent (368 respondents).

**Table 4: Reliability of Instrument**

Subjective Components	Pilot Test (n = 11)
➤ Ethic, Values & Personality (18 items)	.961
➤ Job satisfaction (14 items)	.975
➤ Employee Competency (40 items)	.965
➤ Job performance (8 items)	.945

## The Model

### Measurement of Workers' Competitiveness

Based on extensive literature reviews that have been obtained, the competitiveness of workers could be viewed from two broad dimensions, namely, competency and performance (Jonathan 2008). In the context of this study, the measurement of workers' competency is associated with their cognitive, functional and social competence. Each of the competences is captured by a set of indicators as shown in Table 5. Five-point Likert scale has been used to measure the competence level of workers for each construct in these indicators.

**Table 5: Measurement of Competence**

Component	Indicator	Total constructs
Cognitive (weight = 0.5)	a. thinking skills	5
	b. ICT skills	4
Functional (weight = 0.3)	a. decision making and problem solving skills	5
	b. planning skills	5
Social (weight = 0.2)	a. communication and interpersonal skills	9
	b. team work and leadership skills	15

Different weight also imposed on each component to represent its relative importance and contribution in calculating the competency index. The cognitive competence is assigned with a higher weight as compared to that of the other components mainly due to the importance of using knowledge in performing various tasks. Functional competence and social competence are given a weight of 0.3 and 0.2 respectively. The measurement of workers performance are comprised of both measurable and

perception components as shown in Table 6. As for perception based performance, the respective constructs are also measured using five-point Likert scale. The measurable performance and the perception based performance are given a weight of 0.6 and 0.4 respectively for the computation of performance index.

**Table 6: Measurement of performance**

Component	Indicator	Total constructs
Measurable performance (weight = 0.6)	a. wage	-
	b. appraisal point	-
Perception based performance (weight = 0.4)	a. general performance related to job	5
	b. specific performance related to skills	3

### Computation of Competitiveness Index

In the previous section, five main components and a total of ten indicators were identified to measure workers competitiveness. The computation of competitiveness index is illustrated as follows:

#### **Step 1: Computation of the aggregate index for each component**

In the first step, the total score for each indicator (except wage and appraisal) is obtained by summing up the response of all the constructs associated with indicator  $k$ . In order to make the scores or values comparable across individual, the total scores, wages and appraisal points are then normalized using following procedure:

$$\tilde{X}_k^i = \frac{\text{actual value} - \text{minimum value}}{\text{maximum value} - \text{minimum value}} \quad (1)$$

where  $\tilde{X}_k^i$  is the normalized value, between 0 and 1, for indicator  $k$  and individual  $i$ .

The computation of aggregate index for each of the five components is given as follows:

$$I_j^i = \frac{1}{n} \sum_{k=1}^n \tilde{X}_k^i \quad (2)$$

where  $I_j^i$  the aggregate index for component  $j$  and  $n$  is the number of indicators in component  $j$ .

**Step 2: Computation of the aggregate index for each dimension**

The second step derives the competency index and performance index by incorporating the weight as assigned in Table 1 and Table 2. The aggregation is undertaken using the following formula:

$$Z_y^i = \sum_{j=1}^m w_j I_j^i \tag{3}$$

where  $Z_y^i$  is the aggregate index for dimension  $y$ ,  $m$  is the number of components in dimension  $y$ , and  $w_j$  is the weight associated with each component.

**Step 3: Computation of overall competitiveness index**

Finally, the overall competitiveness index is computed by taking the weighted average between competency index and performance index. The formula for computing the overall competitiveness index ( $CI^i$ ) is as follows:

$$CI^i = \sum_y w_y Z_y^i \tag{4}$$

Where  $w_y$  is the weight associated with each dimension. Competence index and performance index are given a weight of 0.3 and 0.7 respectively.

The  $CI^i$  takes value between 0 and 1. A value of  $CI^i$  near to 1 implies that an individual is highly competitive. In contrast, the smaller  $CI^i$ , the individual exhibits a lower level of competitiveness. The classification of the level of competitiveness for subsequent discussion is shown in Table 7.

**Table 7: Level of competitiveness**

Competitiveness index	Level of competitiveness
less than 0.2000	very low
0.2001 to 0.4000	Low
0.4000 to 0.6000	Moderate
0.6001 to 0.8000	High
more than 0.8000	very high

A linear regression model is used to analyze the data. The model that incorporate human capital variables, workers' attributes, Demographics and ethnicity is written as follows,

$$CI = \beta_0 + \beta_1 S + \beta_2 JM + \beta_3 HC + \beta_4 EXP + \beta_5 T + \beta_6 JS + \beta_7 WE + \chi_8 MLY + \beta_9 CNS + \beta_{10} GEN + \mu$$

The definition of the variables is in Table 8.

**Table 8: Definition of Variables**

<b>Dependent Variable</b>	<b>Definition</b>
CI	Workers' Competitiveness Index
<b>Independent Variables</b>	
<b>(a) Human Capital</b>	
S	Mean years of schooling
JM	Job Mobility, dummy variable; coded 1 for ever change job and 0 otherwise
HC	Health Condition, dummy variable; coded 1 for less than 14 days medical leave, 0 otherwise
EXP	Mean of current and previous year of working experience
T	Training, dummy variable; coded 1 for attending any type of training and 0 otherwise
<b>(b) Employee Attributes</b>	
JS	Mean of job satisfaction
WE	Mean of work ethic, values and personality
<b>(c) Demographic &amp; ethnicity</b>	
MLY	Malays Ethnicity, dummy variable; coded 1 for Malay and 0 otherwise
CNS	Chinese Ethnicity, dummy variable; coded 1 for Chinese and 0 otherwise
GEN	Gender, dummy variable; coded 1 for male and 0 otherwise

## 4. Findings

### Background of Respondents

The majority of the respondents (69.3 percent) engaged with local companies and 30.7 percent with multinational companies. The educational qualification of the respondents is shown in Table 8. Of the 368 respondents, 61.7 percent have bachelor degree, 20.1 percent have diplomas and only 10.3 have higher academic qualification. Respondents with higher academic qualification gained better income, which is in line with human capital theory prediction. Respondents with masters degree receive RM3,826.00 gross monthly income as compared RM2,235.00 for Diploma holders.

**Table 8: Academic Qualification and Average Gross Monthly Income (RM)**

Academic Qualification	Frequency (%)	Average Monthly Income
SPM/STPM	8 (2.2)	RM2,000.00
Diploma	74 (20.1)	RM2,235.71
Bachelor Degree	247 (67.1)	RM2,698.48
Master	38 (10.3)	RM3,826.27
PhD	-	-
Others	1 (0.3)	RM3,800.00
Total	368 (100)	RM2,709.69

Source: Fieldwork 2007

In term of occupations classification, 41.5 percent are technicians and associate professionals, and 40.5 percent managers and senior executives. Only 14.5 percent of the respondents are services and sale officers as shown in Table 9. Most of the respondents (89.1 percent) are considered young executive with age below 34 years old and only 4.4 percent of the respondents are above than 40 years old.

**Table 9: Occupations Category**

	Frequency (%)
Managers and senior executives	145 (40.5)
Professionals	7 (2.0)

Technicians and associate professionals	148 (41.3)
Clerical officers	6 (1.7)
Services and sale officers	52 (14.5)
<b>Total</b>	<b>358 (100.0)</b>

Source: Fieldwork 2007

## Workers' Competitiveness Index

Workers' competitiveness index for ICT sector is shown in Table 10. The mean index is 0.5792, which can be considered as moderate. Almost half of the respondents (50.5 percent) are at the moderate level of competence. However, the respondents with high competency level are quite high accounted for 42.9%.

**Table 10: Workers' Competitiveness Index**

Level of Competitiveness	Frequency	Percentage
Ver low	0	0.0
Low	18	4.9
Moderate	187	50.8
High	158	42.9
Very high	5	1.4
Total	368	100.0
Mean	0.5792	

## Determinants of Competitiveness

The result of the multiple linear regression model of workers' competitiveness is reported in Table 11. Overall model shows a strong statistical significance with  $p < .001$  and R-square of 0.422. Multi-collinearity does not appear to be a serious concern since the VIFs for these variables are below 3.0 (Hair et al. 1995) while none of the VIFs for any the remaining variables exceeded 2.5. The study hypothesis posits that human

capital, job satisfaction, works ethics, values and personality are significantly associated with workers' competitiveness. Empirical evidence support that both predicted variables have a significant impact on workers' competitiveness index. Table 11 shows that years of schooling ( $p < .05$ ), working experience ( $p < .10$ ) and training ( $p < .01$ ) are positively related to the dependent variable. However, it appears that job mobility and employee health condition are not significantly related ( $p > .10$ ) to the workers' competitiveness. In terms of company's related factors, job satisfaction is a significant predictor variable. The work ethics, values and personality of employee positively ( $p < .01$ ) influence the workers' competitiveness. Findings from ethnicity and gender dummy variables are shown insignificant ( $p > .10$ ).

**Table 11: Regression Results for Workers' Competitiveness Index**

Independent Variables	$\beta$	Std. Error	t
Constant	-.077	.081	-.942
(a) Human Capital			
Years of schooling	.009	.004	2.059**
Job Mobility	.009	.008	1.071
Health condition	.012	.024	.481
Working experience	.002	.001	1.950*
Training	.023	.009	2.583**
(b) Workers' Attributes			
Job Satisfaction	.062	.008	7.922***
Work ethics, values and personality	.060	.009	6.427***
(c) Demographic & ethnicity			
Malay	.009	.016	.582
Chinese	.009	.020	.422
Gender	.010	.008	1.288
R <sup>2</sup>	.422		
Overall F	23.203***		

Note: \*\*\*  $p < 0.01$  \*\*  $p < 0.05$  \*  $p < 0.1$

## 5. Conclusion

The discussion above indicates that workers' competitiveness index in the ICT sector is quite high with 42.9 per cent achieve a high level and 50.8 per cent achieve a moderate level. Nevertheless, there are 4.9 percent of the respondents are still at the low level of competitiveness index and only 1.4 percent of the respondents are at the high level. Further, the study shows that human capital variables like year of schooling, working experience and training attended are significantly determine workers' competitiveness in the ICT sector. Also workers' attributes like job satisfaction and work ethics, values and personality contribute significantly to workers' competitiveness index, whereas demographic and ethnicity variables are not significant. In the effort to increase and maintain workers' competitiveness level in the ICT sector, enhancing human capital variables become pertinent. Workers must be equipped with training facilities and upgrading their level of educational achievement through life long learning. Since level of workers' competitiveness contributes to firms' performance, it is a must for the employers to provide training facilities to their workers. The study shows that it is very important for the employers to provide a good working environment, to enhance workers' job satisfaction. In this context, a comfortable workplace with good working condition and human relation is crucial to maintain workers' royalty to their employers and curbing them from moving away for other jobs. Another pertinent aspect is workers' work ethics, values and personality. These variables can be enhanced through a good relationship between the employers and the employees and among the employees themselves.

## Reference

- Brown, P., & Lauder, H. (1996). Education, globalization and economic development. *Journal Education Policy*,11(1),1-25.
- Carnoy, M. (1998). Higher education in a global innovation economy. <http://chet.hsrb.ac.za/debates/310798c.html>.(1/12/01).
- Davies, S., & Guppy, N. (1997). Globalization and education reforms in Anglo-American democracies. *Comparative Education Review*, 41(4), 435-459.

Department of Statistics (DOS). (2008). *ICT services sector census 2006*. Kuala Lumpur: Department of statistics Malaysia.

Dorte Verner. (2000). “*Wage and Productivity Gaps: Evidence from Ghana*”. The World Bank Group. <http://econ.worldbank.org/view>

Fong Chan Onn. (2005). Managing human capital in the globalised era. *11Public services conference*, 21 August, INTAN Bukit Kiara, Malaysia.

George, D & Mallery, P. (2001). *SPSS for windows step by step: A simple guide and reference, 10.0 update*. Allyn & Bacon.

Gerfin, M. (2004). “*Work-Related Training and Wages: An Empirical Analysis for Male Workers in Switzerland*”  
[http://papers.ssrn.com/Sol3/papers.cfm?abstract\\_id=525923](http://papers.ssrn.com/Sol3/papers.cfm?abstract_id=525923)

Hair, J., Anderson, R., Tatham, R. & Black, W., (1995). *Multivariate data analysis*. Prentice Hall, Englewood Cliffs.

IMD. (2008). World competitiveness Yearbook 2008. <http://www.imd.ch/research/publications/wcy/upload/scoreboard.pdf> (28.5.2008).

International Telecommunication Union (ITU). ( 2002). *Multimedia Malaysia: Internet case study*. ITU.

Israel, D.G. (1992). Determining sample size. Cooperative extension service, University of Florida. [http://edis.ifas.ufl.edu/BODY\\_PD006](http://edis.ifas.ufl.edu/BODY_PD006) (12.02.2001).

Judith Semeijn, Christophe Boone, Rolf van der Velden, Arjen van Witteloostuijn. (2005). “*Graduates’ Personality Characteristics and Labor Market Entry an Empirical Study among Dutch Economics Graduates*”. *Economics of Education Review* 24 (2005). 67-83.

- Kanapathy, V. (1997). *Labour market issues and skills training: Recent development in Malaysia*. Pacific economic cooperation council human resource development task force meeting, 30-31 May, Montreal, Canada.
- Kraak, A. (1999). Higher education and the knowledge economy: critical issues facing South Africa's post-apartheid transition. <http://chet.hsra.ac.za/debates/310798f.html>.(12.02.2001).
- Lallana, E.C. (2003). *Comparative analysis of ICT policies and e-strategies in Asia*. UNDP-APDIP.
- Lewin, K.M. (1998). Education in emerging Asia: Patterns, policies and futures into the 21<sup>st</sup> Century. *International Journal of Educational Development*, 18(2), 81-118.
- Malaysia. (2001a). *Eight Malaysia Plan 2001-2005* . Kuala Lumpur: National Printing Berhad.
- Malaysia. (2001b). *The Third Outline Perspective Plan 2001-2010* . Kuala Lumpur: National Printing Berhad.
- Malaysia. (2002). *Knowledge-Based Economy Master Plan*. Kuala Lumpur: Institute of strategic and international studies (ISIS).
- MDec. (2004). *Annual report 2004*. Cyberjaya: Multimedia Development Corporation.
- MDec.(2008). *K-workers*. Cyberjaya: Multimedia Development Corporation.
- Oxfam International. (1999a). Globalization and education: The looming threat. [Http://www.caa.org.au/oxfam/advocay/education/report/box14.html](http://www.caa.org.au/oxfam/advocay/education/report/box14.html).
- Oxfam International. (1999b). National economic growth and equity in the information age. [Http://www.caa.org.au/oxfam/advocay/education/report/chapter 1-3html](http://www.caa.org.au/oxfam/advocay/education/report/chapter 1-3html).

- Prathaban, V. (2006). The ICT agenda in the Ninth Malaysia Plan. *Malaysian Business*, April 16. [http://findarticles.com/p/articles/mi\\_qn6207/is\\_20060416/ai\\_n24910088/print](http://findarticles.com/p/articles/mi_qn6207/is_20060416/ai_n24910088/print) (26.5.2008).
- Rahmah Ismail. (2002). "Workers' competitiveness in agro- based industry and its implication on agriculture sector in Malaysia". Paper presented at the National Seminar, Trade Liberalization and Agriculture Sector in Malaysia. Fakulti Ekonomi. Universiti Kebangsaan Malaysia. 26. – 28 July
- Rezin, A. A., & McCaslin, N.L. (2002). *Comparing the impact of traditional and cooperative apprenticeship programs on graduates industry success*.
- Sieh, L.M. L. (2000). *Taking on the world: Globalization strategies in Malaysia*, Malaysia: McGraw-Hill (M) Sdn Bhd.
- Steward. F. (1996). Globalization and education. *International journal educational development*, 16(4), 327-333.
- Suharto Wijono. (1997). "Relationship between work motivation and personality and organizational work performance". PhD Thesis . Universiti Kebangsaan Malaysia.
- Tan, H.W., & Gill, I. S. (2000). Malaysia. In *Vocational education and training reform*, Indermit S.Gill, Fluitman, F & Amit Dar (ed), 218-260. New York: Oxford University Press.
- Varma, P. (1999). Technical and vocational education and development. *Canadian International Development Agency*.

