HUMAN CAPITAL AND THE DEVELOPMENT OF MANUFACTURING SECTOR IN MALAYSIA

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Abstract: The First Industrial Master Plan (IMP1), 1986-1995 was introduced by the Government of Malaysia to accelerate the development of manufacturing sector in potential industries with a strategy of export-orientation. In the latest or the Third IMP, 2006-2020, industrialisation in Malaysia is riding on the theme "Malaysia-Towards Global Competitiveness". In realising the existing series of industrial master plans, this paper is mainly aimed at examining the components of human capital and discussing their roles in achieving sustainable industrial development. For analysis purpose, a single-equation regression model of Malaysia's development of manufacturing sector is formed, which covers the period from 1981 to 2010. The findings highlight the significance of human capital in which the variable of employment has the highest elasticity in contributing to the share of gross domestic product (GDP) of manufacturing sector. It is followed by labour productivity and human capital investment in education and health. Increasing in the number of job creations is expected to increase production of output to meet the market demand of local people and for exports. Moreover, increasing in labour productivity reduce cost of production and investment in education and health programmes assist in strengthening the skills, knowledge and capabilities of individual workers in the sector. The development of manufacturing sector clearly needs the development of human capital, which is an important input for the growth of output in a country. Cooperation between private sector and relevant institutions is thus encouraged to improve and upgrade human skills and talents in industrial activities. By this way, human capital can be enhanced to increase value-added products in various industries.

Keywords: Manufacturing Sector, Human Capital, Employment, Education, Health

INTRODUCTION

Malaysia's high economic performance from the late 1980s had been a result of the Malaysian government's decision to change the country's focus from agriculture to manufacturing. In the period 1987-1996, Malaysia's annual average growth rate was 8.8 percent. The country was able to raise its per capita income from US$1,850 in 1987 to US$4,425 in 1996. For this achievement, Malaysia has been positioned as one of the high-performing economies in Southeast Asia (Athukorala, 1998; Salih & Colyer, 2000). Significant development of manufacturing sector in Malaysia began when the Malaysian government created the First Industrial Master Plan (IMP1) for a period 1986-1995 with an export-oriented industrialization strategy. Malaysia implemented a big-push industrialization so that potential industries in the sector could make large contribution to economic growth (MITI, 1986). To achieve the plan strategy, the Malaysian Industrial Development Authority (MIDA) was established in 1988 to promote foreign and local investments in the sector (MIDA, 1996).

In line with the First IMP (1986-1995), the Promotion of Investment Act 1986 was established to replace the old Investment Incentives Act 1968. In

the new Act, the already existing incentives were improved and incentives for high technology industries and strategic projects were provided. To encourage export-oriented industries, free trade zones were also developed so that the needs of those firms to export their goods from the zones could be catered (MIDA, 2001). In the Second IMP (1996-2005), a cluster-based approach was emphasized to inter-connect core industries, suppliers and economic foundations. The approach was aimed at moving the sector towards high value-added activities (MITI, 1996). In the latest or the Third IMP, 2006-2020, industrial activities in the sector are geared towards achieving long-term global competitiveness through transformation and innovation. The sector has been targeted to achieve 5.6 percent growth annually and 28.5 percent contribution share of gross domestic product (GDP) in 2020 (MITI, 2006).

In the series of industrial master plans, both domestic and foreign firms have provided large employment opportunities in the manufacturing sector. During the First IMP period, 1986-1995, there was an increase in number of employed persons in the sector from about 861,000 in 1986 to 1,780,000 in 1995. An annual average growth of 10.7 percent for total employment in the sector had been achieved compared with 3.4 percent for total employment at national level. During the Second IMP period, 1996-2005, there was shortage of labors in two categories, particularly in the leading industry, electrical and electronics. The first category was the shortage of unskilled domestic labors. This shortage put pressure on wages that increased faster than increase in productivity, which caused a loss in comparative advantage in labor-intensive assembly-type activities in Malaysia. The second category was the shortage of skilled manpower in relevant technical areas (Zainal Abidin, 1996).

In the present Third IMP (2006-2020), several initiatives on human capital development are undertaken to produce more knowledge workers and upgrade workers' skills and capabilities to work. These include alignment of existing curricula and development of new curricula of training institutes and higher learning institutions to match the needs of industries in Research and Innovation (R&D), creativity and innovation. Database has also been developed that stores data of scientists, including scientists residing abroad and those possessing skills in the field of information and communication technology (ICT) (MITI, 2006).

MANUFACTURING SECTOR

In Malaysia, manufacturing was a dynamic sector in terms of its contribution to national output and employment. In 1990, the leading sector contributed about 41 percent of the country's GDP. The share increased to 47 percent in 2000 but slightly declined to 44 percent in 2010. In the aspect of employment, the sector had a share of 20 percent of the country's total employment in 1990 and increased to 23 percent in 2000. However, it dropped to 17 percent in 2010. Malaysia's changing focus towards promoting services sector was a reason for the sector's decline in the shares of national output and employment.

Table 1 shows the distribution of manufacturing output across states in the country in 1990, 2000 and 2010. Malaysia has thirteen states and three federal territories. Selangor, Pulau Pinang/Penang, Perak, Johor, Negeri Sembilan, Melaka, Kedah and Perlis are located in the west part of Peninsular Malaysia while Kelantan, Terengganu and Pahang are located in the east part of Peninsular Malaysia. Sabah and Sarawak, the other two states, are located on the northern part of Borneo Island. The two federal territories, Kuala Lumpur and Putrajaya are located in the west part of Peninsular of Malaysia and Labuan Island, the other federal territory is located near Sabah. In 1990 and 2000, Kuala Lumpur, Selangor and Johor each contributed more than 10 percent of the total national manufacturing output, followed by Penang, Perak, Sabah and Sarawak, which each contributed between 7 to 10 percent and Terengganu with 6 percent. Ten years later, instead of Kuala Lumpur, Penang was together with Selangor and Johor each contributed above 10 percent, followed by Sarawak with 9 percent and Negeri Sembilan, which took place of Terengganu on the ranking with nearly 7 percent. All the years highlights Selangor as the top among all the states. The state had a share of more than 19 percent in 1990, 21 percent in 2000 and increased to 30 percent of the total in 2010.

Table 1 also shows the distribution of number of persons that were employed in the manufacturing sector across states. In all the years, Selangor, Penang and Johor each contributed more than 12 percent of the total national employment. In 1990. Perak had a share of 10 percent, followed by Kuala Lumpur with 7 percent and Kedah with 5 percent. In 2000, Perak and Kedah contributed more than 8 percent while Sarawak with 6 percent. In 2010, Perak and Kedah contributed 9 and 8 percent, respectively and followed by Sarawak and Sabah each with 6 percent. In this competition, Selangor was also the top among the states. The state had a share of more than 20 percent of the total in all the years 1990, 21 percent in 2000 and increased to 30 percent of the total in 2010.

Table 1: Output and Employment in Malaysia's Manufacturing Sector by State, 1990-2010

State	1990[1]		2000[1]		2010[2]	
	Output *(RM million)*	Employment *(Number)*	Output *(RM million)*	Employment *(Number)*	Output *(RM million)*	Employment *(Number)*
Kuala Lumpur[3]	12,277	96,600	25,968	93,500	5,109	53,800
Selangor[4]	20,103	283,900	44,708	458,300	43,876	391,300
Penang	7,997	172,800	17,314	285,900	22,884	226,100
Perak	9,582	133,100	17,153	175,100	5,548	165,800
Johor	11,093	253,800	23,425	419,000	17,992	365,900
Negeri Sembilan	3,427	30,300	6,776	89,200	10,124	66,800
Melaka	3,124	44,900	6,148	78,200	6,727	62,600
Kedah	4,670	70,300	9,087	174,300	5,818	147,600
Pahang	4,926	53,800	8,250	63,300	6,735	65,900
Kelantan	3,098	56,300	5,061	52,000	475	57,400
Terengganu	6,011	30,500	12,746	44,600	4,427	44,600
Perlis	712	7,300	1,362	12,800	278	7,200
Sabah[5]	9,268	35,600	14,947	106,700	2,906	109,100
Sarawak	9,687	63,600	16,323	121,200	13,468	115,700
Malaysia (total)	**105,975**	**1,332,800**	**209,268**	**2,174,100**	**146,367**	**1,879,800**

Note: [1]At constant prices, 1987=100 for the 1990-2000.
[2] At constant prices, 2000=100 for 2010.
[3]Kuala Lumpur is a federal territory.
[4]Includes Putrajaya (a federal territory).
[5]Includes Labuan (a federal territory).
Source: Government of Malaysia (2001), Department of Statistics, Malaysia.

Table 2: Capital Investment and Employment in Approved Manufacturing Projects, 1990-2010

Year	Number of Projects	Domestic Investment	Foreign Investment	Total Investment[1] (RM Million)	Proposed Employment (Numbers)
		(% share of total investment)			
1990	906	37.4	62.6	40,646.2	169,764
1994	870	50.6	49.4	28,896.9	136,487
1998	844	50.4	49.6	27,388.9	83,241
2002	792	35.3	64.7	17,613.0	64,744
2006	1,077	56.0	44.0	38,073.3	88,952
2010	910	38.4	61.6	34,463.4	97,319

Note: [1]At constant prices, 2000=100.
Source: Re-calculated from Malaysian Industrial Development Authority (MIDA).

Table 3: Labor Productivity by State in Malaysia, 1990-2010 (in RM)[1]

State	1990	2000	2010
Kuala Lumpur[2]	26,307	45,398	121,546
Selangor	18,368	41,681	60,457
Penang	19,148	35,345	65,082
Perak	15,715	27,457	34,409
Johor	14,768	26,081	39,971
Negeri Sembilan	14,040	26,359	52,689
Melaka	17,020	32,169	51,204
Kedah	9,798	19,970	26,036
Pahang	12,747	26,439	39,959
Kelantan	8,429	16,528	18,975
Terengganu	29,216	46,324	36,843
Perlis	12,058	22,443	36,592
Sabah[3]	8,205	29,827	25,446
Sarawak	12,254	27,681	50,356
Malaysia (average)	15,577	30,264	47,112

Note: [1]At constant prices, 2000=100.
[2]Kuala Lumpur is a federal territory.
[3]Includes Labuan (a federal territory).
Source: Re-calculated from Government of Malaysia (2001) and Department of Statistics, Malaysia.

Table 4: Government Expenditure in Health and Education, 1990-2010

Year	Education	Health
	(% share of total expenditure)	
1990	18.5	5.0
1994	21.8	5.5
1998	21.4	6.5
2002	28.1	6.4
2006	21.6	7.0
2010	24.4	8.1

Source: Re-calculated from Asian Development Bank.

Table 5: Selected Health Indicators, 2000-2010

Year	2000	2005	2010
Life Expectancy at Birth (in years)			
Male	70.0	70.6	71.7
Female	75.1	76.4	76.6
Crude Birth Rate (%) (per 1,000 population)	24.5	21.0	18.8
Crude Death Rate (%) (per 1,000 population)	4.4	4.5	4.9
Infant Mortality Rate (%) (per 1,000 live births)	6.6	5.8	6.3

Source: Department of Statistics, Malaysia.

Table 6: Employed Persons by Educational Attainment, 1990-2010 (in number)

Year	No Formal Education	Primary	Secondary	Tertiary	Total
1990	657.6	2,311.0	3,129.2	587.3	6,685.0
1995	666.0	2,139.0	3,987.4	852.1	7,645.0
1998	604.4	2,358.9	4,505.3	1,131.0	8,599.6
2002	509.6	2,279.6	5,163.3	1,588.4	9,542.6
2006	393.0	2,131.7	5,774.3	1,975.2	10,275.4
2010	401.9	1,861.1	6,178.9	2,687.5	11,129.4

Source: Department of Statistics, Malaysia.

In Malaysia's regional development policy, dispersal of industrial activities across states is emphasized so that equitable distribution of income can be benefitted by less developed states in the country.

Through a development composite index created by the government, Kedah, Pahang, Kelantan, Terengganu, Perlis, Sabah and Sarawak are categorized as the less developed states. In order to achieve the national policy objective, five regional cities and economic corridors have been developed, namely Georgetown and the Northern Corridor Economic Region (NCER); Johor Bahru and Iskandar Malaysia, Kuantan and East Coast Economic Region (ECER); Kuching and Sarawak Corridor of Renewable Energy (SCORE); and Kota Kinabalu and Sabah Development Corridor (SDC). Their role is to accelerate industrial development in the less developed states.

Table 2 further exhibits data on capital investment, which consists of two major parts, namely domestic investment and foreign investment. Except for the years of 1994 and 2006, foreign investment had higher shares of total investment compared with domestic investment. Foreign investment's share was the highest, with 65 percent in 2002. The United States, Japan, Korea, Singapore, Taiwan, Saudi Arabia and the European Union are among the important foreign investors in Malaysia. In 1990 and 1994, the total investment had high level of proposed employment but it declined when the East Asian financial crisis happened in 1997-1998. As mentioned earlier, changing national economic focus on services sector and rising labor costs in Malaysia also caused the decline in the number of proposed employment. In Malaysia's industrial master plans, the twelve industries identified as having potential for greater growth of the manufacturing sector are electrical and electronics, medical devices, textiles and apparel, machinery and equipment, metals, transport equipment (which are grouped into non-resource-based) and petrochemicals, pharmaceuticals, wood-based, rubber-based, oil palm-based and food processing (which are grouped into resource-based). They are targeted to increase levels of value-added, technology, exports, knowledge content and strengthen sectoral-linkages.

HUMAN CAPITAL

Human capital development is important to meet industrial requirements in economic sectors. In this regard, labor productivity helps measure performance of individual workers whether they are capable to achieve the economic sectors' targeted output growths or not. Labor productivity measures total value of output per worker. Table 3 shows data on general labor productivity across states from 1990 to 2010. In 1990, Terengganu was the top among the states in labor productivity with more than 29 thousand ringgit. In ranking order, it was followed by Kuala Lumpur, Penang, Melaka and Perak, which each had above 15 thousand ringgit. In 2000 and 2010, all states had improved their labor productivities with above 15 thousand ringgit. In 2010, Kuala Lumpur's achievement was remarkable with more than 100,000 ringgit. In national average, there was also an increase in labor productivity from 1990 to 2010.

Education and health are the two significant inputs contributing to increase in output levels through performance of individual work. In the study of Tang and Lai (2011), education has a causal relationship with health in short- and long-run. In Table 4, the Malaysian government spending on education was much larger than in health. As discussed in Tang and Lai, Malaysian society put preference on education investment rather than health. They are less aware of the importance of health before they achieve higher level of education. Nevertheless, Table 5 shows that Malaysians have improved their life expectancies over a period of 1990 to 2010. Although the health's share of total public investment was less than 10 percent, it had increased gradually over the period.

Table 6 shows that workers with secondary school level were highly demanded to work in Malaysia's economic sectors. On the other side, workers with tertiary level indicates increasing trend over the period 1990 to 2010. In development policy of Malaysia, workers with tertiary education in science and technical fields has been given a greater emphasis in a way that it can facilitate the national aim to develop knowledge-based economy in the country.

MODEL FOR ESTIMATION

In the traditional neoclassical growth models developed by Solow (1957) and Swan (1956), economic output of a country grows in response to increases in physical inputs of capital and labour (workers). Non-economic variables such as education and health are excluded in the model. In the modern theory of economic development, Romer (1986) developed the so-called "endogenous growth models". In his models, the concept of capital in Solow and Swan is broadened that includes human capital. Investment in human capital such as provision of education, skills training and health services will contribute to economic growth because this factor will enable individual labor to use capital and technology with more efficient. Technology and human capital are both "endogenous" in his model. In the model of Acemoglu (1997), firms and workers are the two actors in economic.

Table 7: Estimation Results

Independent variable	Estimated coefficient	Standard error	t-ratio	p-value
LP_{t-1}	0.704*	0.426	1.65	0.056
EMP_{t-1}	1.039***	0.174	5.97	0.000
$GEDH_{t-1}$	0.286**	0.163	1.76	0.046
Constant	-3.962***	1.056	-3.75	0.001

Adjusted R-square = 0.9706. F-statistic (from mean) = 320.150 (p-value = 0.000).

Note: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.
The p-values are appropriate for one-sided hypothesis tests for *LP*, *EMP* and *GEDH*.

Firms adopt technology and workers use the technology. Workers' skills in using technology are a great advantage for a firm to increase their output. In the studies of Gallup & Sachs (2001) and Bloom & Sachs (1998) in Africa, health affects economic development when medicines are unavailable to resist malaria in the country. As found by Bloom & Sachs, the disease was estimated to reduce output growth by more than one percent per year in the country.

Concluding from the past theories, the economic model in this analysis is developed as follows:

$$MFGD = f(LP, EMP, GEDH) \quad (1)$$

where *MFGD* is Malaysia's development of manufacturing sector, which is represented by Malaysia's total manufacturing output (in Ringgit), *LP* is Malaysia' total labor productivity (in Ringgit), *EMP* is Malaysia's total employment in the manufacturing sector and *GEDH* is Malaysia's total expenditure on education and health. Annual data on Malaysia's manufacturing output from 1981 to 2010 were taken from Key Indicators published by Asian Development Bank (ADB). Data on total labor productivity were obtained by dividing Malaysia's total GDP over total employment. Data on general labor productivity are taken instead of manufacturing because other sectors' labor performance also plays important role in manufacturing development. The real values of *MFGD*, *LP* and *GEDH* were calculated by using GDP deflator (also taken from the ADB) at the base year 2000=100. The relationships of all the three variables with the *MFGD* are expected to exist with positive sign, which means that higher level of a country's manufacturing development is related to higher levels of these three variables.

In econometric analysis, a multiple regression technique is used to estimate the following single-equation model.

$$\text{In } MFGD_t = b_0 + b_1 \text{ In } LP_{t-1} + b_2 \text{ In } EMP_{t-1} + b_3 \text{ In } GEDH_{t-1} + \varepsilon_t \quad (2)$$

where b_0 is the intercept, b_1, b_2, and b_3, are the slope coefficients that measures the elasticity of *MFGD* with respect to the lagged explanatory variables, ε is a random error term, and t refers to the t-th time period (time period t = 1981, 1982…...2010). The model is estimated in a log-linear form.

RESULTS AND DISCUSSION

Table 7 shows the estimation results in which all the explanatory variables' coefficients have the right signs and are statistically significant to explain the development of manufacturing sector in Malaysia. The *EMP* variable has the highest elasticity in which one percent increase in the level of manufacturing employment would lead to more than one percent increase in the level of manufacturing output. The model's adjusted R-Square implies that 97.1 percent of the variation in the sector's development can be explained by the three variables.

In Gundlach (1997), it is not impossible if the effect of human capital variables is found statistically insignificant because of multicollinearity between the

explanatory variables. However, it is not a serious problem when the reported standard errors of the regression coefficients are small. The employment results support all the neo-classical and modern growth theories, which include labor as an important input besides capital in production of output. In other results, labor productivity and investment in education and health confirm the endogenous growth models developed by Romer.

According to Ciccone and Papaioannou (2006), there are significant positive effects of human capital levels and human capital accumulation on output and employment growth in human-capital intensive industries. In Klíma and Palát (2003), labor productivity is a factor that affects a country's economic efficiency and competitive ability. In different study, Shastry and Weil (2003) argued that health improvements explain cross-country gaps in income levels. Increasing competition in global market has pushed Malaysia to give a greater emphasis on investment in human capital. In order to sustain the development of manufacturing sector, the quality of labor force should be improved with increasing supply of educated and skilled human resource. For this reason, several training and re-training programs are implemented, which can reduce skills mismatch and enhance labor employability. In the Ninth Malaysia Plan 2006-2010, human capital development encompasses acquisition of knowledge and skills, progressive attitude as well as strong moral and ethical values. Smart partnership and collaboration among stakeholders in education, training and lifelong learning are intensified. Participation from private sector is strongly encouraged in the provision of quality education and training (Government of Malaysia, 2006).

In the manufacturing sector in Malaysia, domestic firms' in-house training capabilities are not very strong because they rely more on skills development centers and other public institutions to provide advanced skills training. Therefore, foreign firms are encouraged to create industrial linkages with domestic firms so that more workers can be trained to increase their efficiency at work. Improvement in the level of labor productivity of domestic firms will induce a greater contribution of total labor productivity in the country.

In the Tenth Malaysia Plan 2011-2015, the Malaysian government has put a target of 6 percent annual growth rate during the plan period in order to achieve high-income status by 2020 (Government of Malaysia, 2011). This target requires significant changes of economic strategies. Transformation towards productivity-led growth however, can be done only if high quality education and improvement of health status of labors are made available. The program expects private sector to expand its activity significantly.

CONCLUSION

This paper emphasizes the importance of human capital in the development of manufacturing sector in Malaysia. A log-linear model that covers a period of 1981-2010 for the dependent variable was developed to estimate the influences of labor productivity, employment and investment in education and health on the sector's development. The estimation results confirm the neo-classical and modern growth theories that labor (employment) is an important input besides capital in production of output. The results of labor productivity and investment in education and health confirm the endogenous growth models developed by Romer. Employment opportunities provided by foreign and domestic firms are to increase production of output for local market and for exports. Increase in labor productivity can reduce cost of production and investment in education and health programs is to increase workers' efficiency in the manufacturing sector.

In the present Tenth Malaysia Plan 2011-2015, human capital development is emphasized in the program of transformation towards productivity-led growth. In line with this program, economic strategies in the Third IMP (2006-2020) are implemented in a way that human capital will increase value-added products in various manufacturing industries, which is important to sustain the development of manufacturing sector in Malaysia.

REFERENCES

[1] Acemoglu, D. (1997). Training and innovation in an imperfect labour market. Review of Economic Studies, 64 (220, July), 445–64.

[2] Asian Development Bank (various issues). Key indicators. Manila: ADB.

[3] Athukorala, P. C. (1998). Swimming against the tide. ASEAN Economic Bulletin, 15(3), 281-89.

[4] Bloom, D.E., & Sachs, J.D. (1998). Geography, demography, and economic growth in Africa. Brookings Papers Economic Activity, no. 2, 207–73.

[5] Ciccone, A., & Papaioannou, E.(2006), Human capital, the structure of production, and growth. Working Paper Series, no.623 (May), European Central Bank, 1-59.

[6] Departmentof Statistics Malaysia (n.d.). Labour force survey time series data, 1982 – 2010. Retrieved from http://www.statistics.gov.my/portal/index.php?option=com_content&view=article&id=1251&Itemid=109&lang=en

[7] Gallup, J. L., & Sachs. J.D. (2001). The economic burden of Malaria. American Journal of Tropical Medicine and Hygiene, 64 (1-2 Supplement), 85–96.
[8] Government of Malaysia (2001). The third outline perspective plan 2001-2010. Putrajaya: Government Press.
[9] Government of Malaysia (2006). Ninth Malaysia plan 2006-2010. Putrajaya: Government Press.
[10] Government of Malaysia (2011). Tenth Malaysia plan 2011-2015. Putrajaya: Government Press.
[11] Gundlach, E. (1997). Human capital and economic development: A macroeconomic assessment. Intereconomics, January/February, 23-35.
[12] Klíma, J., & Palát, M. (2003). Labour productivity as a factor forming the economic efficiency and competitive ability of the country. Agri. Econ.-Czech, 49(11), 515-19.
[13] MIDA (Malaysian Industrial Development Authority) (2001). Malaysia: Investment in the manufacturing sector – policies, incentives and facilities. Kuala Lumpur: MIDA.
[14] MITI (Ministry of International Trade and Industry Malaysia) (1986). First industrial master plan 1986-1995. Kuala Lumpur: Government Press.
[15] MITI (1996). Second industrial master plan 1996-2005. Kuala Lumpur: Government Press.
[16] MITI (2006). Third industrial master plan 2006-2020. Putrajaya: Government Press.
[17] Romer, P. M. (1986). Increasing Returns and Long-Run Growth. Journal of Political Economy, 94(5), 1002-37.
[18] Salih, T., & Colyer, D. (2000). A case study of structural transformations, trade and poverty in Malaysia's socioeconomic development, 1960-95. International Journal of Commerce and Management, 10(1), 24-47.
[19] Shastry, G. K., & Weil D. N. (2003). How much of cross-country income variation is explained by health? Journal of the European Economic Association, 1(2-3), 387–96.
[20] Solow, R.M. (1956). A contribution to the theory of economic growth. Quarterly Journal of Economics, 70, 65-94.
[21] Swan, T.W. (1956), Economic growth and capital accumulation, Economic Record, 32, 334-61.
[22] Tang, F.C., & Lai, Y.W. (2011). The causal relationship between health and education expenditures in Malaysia. Theoretical and Applied Economics, 18 (8), 61-74.
[23] Zainal Abidin, M. (1996). Malaysian industrial policy: Sustaining growth momentum. Paper presented at the Conference on Globalization and Development: Lessons for the Malaysian Development. Petaling Jaya: University of Malaya.