Source of output growth in small and medium scale enterprises in Malaysia

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January 2007

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Abstract

Small and medium scale enterprises (SMEs) play an important role in the Malaysian industrial development. SMEs comprise of more than 90 per cent of the total manufacturing establishments, contributing about 40 per cent of the total employments and 30 per cent of the total fixed assets in this sector. However, SMEs' value added is very much lower than that of the large scale. A low productivity of physical inputs or factors efficiency may be attributed to low level of value added. In general the benefit gained from technological advancement and human resource development varies for different size and types of industry. Consequently, this leads to productivity differences of their physical inputs and quality of inputs. This paper aims to address this issue using data from the Manufacturing Industries Survey conducted by the Department of Statistics of Malaysia. The analysis will look at the source of output growth in different types of SMEs sub-industries.

Introduction

In the Malaysian manufacturing sector, small and medium scale enterprises (SMEs) play an important role in generating employment and supporting the large scale enterprises (LSEs). With a small capital requirement and a medium level of technology, SMEs can attract many new entrepreneurs to venture into new business. In other words, SMEs act as a platform to the young and aspiring entrepreneurs.

SMEs can generate a massive employment due to the fact that their production techniques are still low or medium levels and they are more labour intensive. The role of SMEs as supporting industries to the LSEs can be viewed from interdependency between them. SMEs provide inputs, parts and components to LSEs. In fact, in the Second Industrial Master Plan (IMP2), 1996, a strong linkage between SMEs and LSEs was emphasized by the Malaysian government, which was aimed to be achieved through the

development of cluster industry. If linkages can be strengthened, the dependency on the import market for obtaining intermediate inputs can be lessened, hence contributing positively to the Malaysian balance of payment.

Ministry of International Trade and Industry (MITI) of Malaysia, 1994 underlined four major roles of SMEs. They are as follows: -

a) Act as a catalyst to economic growth through their contribution to output, value added and employment. To make this role more effective, SMEs must produce a high quality sustainable output to compete in the international market.

b) SMEs development can reduce the problem of sectoral and regional growth imbalances. This can be achieved through promoting SMEs in the industrial zones where economic growth is still moderate or low.

c) Create many job opportunities through relatively labour intensive production techniques.

d) Increase sectoral value added through processing natural resources and primary commodities locally before exporting them. This can be done through promoting agro-based industries.

In Malaysia, the majority of the manufacturing establishments are small and medium in size. Based on the census on establishments conducted by The Department of Statistics (DOS) in 2003, 86.7 percent of the establishments in the manufacturing sector were small and medium scale industries (SMEs). Even though SMEs are large in terms of number, their contribution to value added and value of fixed assets are far less than that of the large enterprises. For example, in 2003, SMEs' value added comprised only 26.6 per cent of the total manufacturing value added and 26.7 per cent of fixed assets of this sector. In term of employment, SMEs' contribution was 26.9 per cent (DOS, 2005). The detail distribution is shown in Table 1.

Table 1: Relative Changes in Percentages Contribution of SMEs

1981, 1992 and 2003

	Contribution by Sector (Percentages)		
	1981	1994	2003
Number of Firms			
Small and medium size industries (SMEs)	94.7	84.5	86.7
Large size industries (LSEs)	5.3	15.5	13.3
Total Employment			
Small and medium size industries (SMEs)	28.2	31.5	26.9
Large size industries (LSEs)	72.8	68.5	73.1
Total Output			
Small and medium size industries (SMEs)	29.0	26.5	26.6
Large size industries (LSEs)	71.0	73.5	73.4
Total Fixed Assets			
Small and medium size industries (SMEs)	29.7	23.7	26.7
Large size industries (LSEs)	71.3	76.3	73.3

Source: Department of Statistics, Malaysia 2005.

A low level of productivity and input quality may attribute to low level of value added in the SMEs. This can be related to low skills amongst workers as well as inappropriate skill composition. The correct skill composition would produce an optimum efficiency in the production process[1].

[1] *MIDA defines skilled workers as those who obtain certificate from the vocational schools or Industrial Training Institutes. The Ministry of Human Resource defines skilled workers as those who receive training for a period of more than 6 months, whereas semi-skilled workers are those who receive 3-6 months training. The Department of Statistics defines skilled workers as those who receive formal training for their specific job (either in service training or other type e.g. formal training in an institution). Unskilled workers are those who have not received any formal training for job they are performing. Semi-skilled workers are those who are not classified either as skilled or unskilled.*

This paper attempts to analyse source of output growth in SMEs in different sub industries. It can be divided into two categories, namely, contribution from a) physical inputs b) residual that may be attributed to the technological advancement of human resource development, human resource management and any factor that contributes to inputs quality improvement. This is often referred to as total factor productivity (TFP).

Review of Literature

A common approach to measure source of growth is through calculating growth accounting equation introduced by Solow (1957). This is called residual approach, whereby, the value of residual is obtained after the contribution of physical inputs is determined (Solow, 1957, 1962). This value will depend on the number of dependent variables incorporated in the production function. The limitation of this approach is, when data on the share of inputs, for example, share of wages and profits in national income are not available. To overcome this problem, an alternative approach is used in the literature, through estimating the regression of growth equation. Through this approach the value of residual will decrease whenever the number of dependent variables increases. For example, in the growth function with two inputs, physical capital and quantity of labour are normally utilized but not their qualities. However, quality of labour can be measured through educational attainment, which can directly be used as one of the independent variables besides capital and labour. These two approaches will produce different value of residual where the smaller residual is found in the latter approach (Denison 1962, 1976; Jamison & Lau 1982; Hector Correa 1970; Hicks 1980; Walter & Robinson 1983; Otani & Villanueva 1990; Lau, Jamison, Liu & Rivkin, 1993). Many studies attempt to look at the source growth of the national economic growth (Rahmah, 1998; Denison 1962, 1967, 1974, 1979; Schultz, 1961, 1971) but a few studies in this area have focused on SMEs as specific or even study according to industry size.

An increase in the level of productivity reflects an increase in the efficiency of inputs. Hence, the same level of inputs can produce a higher output level, which means that the cost of production reduces. In other words, it reflects an improvement in the quality of inputs. There are several factors affecting productivity such as level of technology and socio-demographic (Bhatia, 1990). Other factors like human resource

development (HRD), human resource management (HRM), institutional restructuring may also influence productivity. Bhatia (1990) argued that lower level of technology and unstable socio-demographic changes causing low productivity in India as compared to the United States and the United Kingdom. In his study of manufacturing sector using 1965-1985 data, it was shown that factor efficiency was influenced by factor of production, workplace and working condition, socio-economic and socio-politics.

Even though TFP does not merely mean technological improvement, but also improvement in quality of inputs due to other factors like HRD and HRM. Many researchers argue that TFP as a contribution of technological advancement (Katz, 1969, Pickles, 1990). Katz calculated residual factors to show the contribution of technological progress to output and labour productivity growth in Argentina in the period 1946-1961. He concluded that capital was the major determinant of labour productivity besides TFP. Pickles (1990) looked at the economic growth of Iraq and found that apart from technological improvement experienced by this country, capital was still the main contribution to output growth.

Some studies in this area do not specifically discuss residual factor but rather emphasize productivity of input. Hwang (1989) studied manufacturing sector in Taiwan to compare productivity level among sub-industries particularly between export-oriented industries with non-export oriented industries. His study revealed that the export-oriented industries managed to achieve higher level of productivity as compared to the non-export one due the fact that government policy was in favour of the export oriented industries.

Technological advancement is closely related to capital intensity. Accordingly, in the capital- intensive firms, productivity may be higher. For example, Hishashi (1991) found that in Japan the contribution of capital to productivity growth was larger in the capital-intensive industry as compared with the labour-intensive industry. Another important determinant of productivity is capital-labour ratio. In fact, this ratio is frequently used as an indicator of level of technology where the higher capital-labour ratio is associated with higher level of technology. In the United Kingdom, for example, between 1980-1986, a study in 81 firms showed that productivity increased by 4.7 per

cent. Of this 2.2 per cent was due to the growth of capital-labour ratio (Haskel and Martin 1993). Further, this study revealed that a decrease in skilled labour by 2.63 per cent led to productivity reduction by 0.7 per cent each year. In other words, if there was no reduction in the number of skilled labour, productivity would have increased higher than 4.7 per cent to achieve 5.4 per cent.

Maisom & Arshad (1992) using data of manufacturing survey in Malaysia from 1973-1989 showed that TFP increased each year but its contribution to the manufacturing sector growth was still small. Further in their study, it was shown that TFP was larger in the foreign owned firms as compared to the local ones. They concluded that foreign investors had achieved higher benefits from technological progress in Malaysia. Using the same data source, Nik Hashim (1998) focused his study on the contribution of TFP to output or productivity growth in the manufacturing sector in Malaysia as a whole between the period 1985-1994. No attempt was made to segregate the data by industrial size or even by types of sub-industries. His study revealed that capital was a major determinant of productivity growth, and TFP still played a very minimal role.

Data and Model Specification

The analysis of this paper will be based on data from the Manufacturing Industries Survey conducted by the Department of Statistics of Malaysia covering 22 years, 1982-2003. Eleven SMEs sub-industries are chosen for the purpose of analysis to include: -

a) food
b) beverage and tobacco
c) textiles, wearing apparel and footwear
d) wood-based
e) plastic products
f) rubber-based
g) chemical industry
h) metal products
i) non-metallic mineral products
j) electrical and electronics
k) transport equipment

In this analysis SMEs are defined as enterprises with the number of full-time workers between 5-199 persons.

Sub-industries are selected based on their relatively higher contribution to the growth of the manufacturing sector in Malaysia, either in terms of number of employment, value added or exports.

A Cobb-Douglas production function used in this analysis is written as

$$Y = AK^{B_1} L^{\beta_2} e^{\lambda t} \quad (1)$$

or $$\ln Y = InA + \beta_1 \ln K + \beta_2 \ln L + \lambda t + \mu \quad (2)$$

To get growth equation, we differentiate equation (2) with respect to t to yield

$$\frac{1}{Y}\left(\frac{dy}{dt}\right) = \beta_1 \frac{1}{K}\left(\frac{dk}{dt}\right) + \beta_2 \frac{1}{L}\left(\frac{dl}{dt}\right) + \lambda + \quad (3)$$

or $$G(Y) = \beta_1 G(K) + \beta_2 G(L) + \lambda \quad (4)$$

and $$\lambda = G(Y) - \beta_1 G(K) - \beta_2 G(L) \quad (5)$$

where

Y	=	value of output
K	=	value of fixed asset
L	=	number of employment
t	=	time period
β_1 β_2	=	factor efficiency parameters
λ	=	time efficiency parameter which can indicate technological progress
μ	=	error terms

Equation (4) is estimated using ordinary least squares (OLS) procedure. Equation (4) shows that output growth is determined by physical capital, labour and TFP (λ).

The value of capital elasticity (β_1) and labour elasticity (β_2) obtained from equation (4) are multiplied by their respective annual average rate of growth to get physical inputs contribution to output growth, G(Y). The growth of output can be calculated from the above data. Thus, what is left is the value of residual (λ) or TFP. This value can be obtained by substracting contribution of capital and labour from the output growth as shown in equation (5).

General Features of SMEs

Table 2 shows distribution of SMEs by sub-industries based on the Manufacturing Survey 2003. Three sub-industries, namely food products, textiles wearing apparel and footwear, and wood-based accounted for more than two-third of the number of establishments surveyed. Textiles wearing apparel and footwear is the single largest sub-industry accounted for almost one-fourth of the total number of firms surveyed.

During 1982-2003, a more capital intensive SMEs subgroups like transport equipment, metal-products and chemical products had experienced a higher rate of output growth. In these sub-industries, capital stock grew at a tremendously high rate. In the metal-products industry, for example, an average output growth was achieved at 9.38 per cent and the capital grew at 14.26 per cent. In the chemical products, the output growth was 11.71 per cent and the growth of capital was 17.94 per cent. While the output growth in the transport equipment was 15.4 per cent and the growth of capital was 13.0 per cent. A tremendous high growth rate of output also observed in the plastic products at 10.24 per cent and the capital grew at 11.83 per cent. The introduction of heavy industry has contributed to a faster growth in metal-products and transport equipment. Diversity in the manufacturing sector has also attributed to large capital flow in the chemical and plastic products as well as in the textile industry.

Results of Growth Analyses

Table 4 shows results of regression analysis of equation (4) using OLS procedure. Serial correlation test of the first and higher order (second and third order) were carried out. The

test indicates the absence of serial correlation in the beverage and tobacco, textiles, plastic products, rubber products, metal products, electrical and electronics, and non-metallic mineral products sub-industries. The residuals show strong evidence of first order serial correlation in the food, wood-based, and transport equipment sub-industries; second order serial correlation in the chemical sub-industry. None of these sub-industries suffer from the third order serial correlation. Therefore, further estimation using iterative Cochrane-Orcutt procedures is performed to correct this problem.

Table 2: Number of Establishments, Output, Value Added, Employment Fixed Assets and Capital-labour Ratio in SMEs, 2003

Industry	Number of Establish-Ments (%)	Output (RM mill)	Value Added (RM mill)	Employ-ment	Fixed Assets (RM mill)	Capital-labour, ratio (RM mill)
Food	22.9	38,177.2	4,992.0	79,744	6,157.7	0.077
Beverage & tobacco	2.9	751.3	202.2	10,427	249.6	0.024
Textiles, wearing apparel & footwear	24.9	2,126.2	774.6	32,692	861.8	0.026
Wood-based	18.4	6,479.6	1,941.5	36,151	2,368.9	0.066
Plastic products	7.4	9,133.2	3,145.9	43,732	4,227.6	0.097
Rubber products	3.0	5,903.3	929.1	19,208	1,294.2	0.067
Chemical	5.5	12,522.8	3,595.6	23,499	5,493.1	0.234
Metal products	0.5	1,720.9	341.6	3358	690.9	0.206
Non-metallic mineral products	6.5	4,200.2	1,605.2	21,536	2,591.6	0.120
Electrical and electronics	4.2	13,170.0	2,057.7	27,846	2,060.5	0.074
Transport equipment	3.9	3,072.3	840.2	15,272	1,121.1	0.073

Source: Department of Statistics 2004.

The value of R^2 in almost all SMEs subgroups is greater than 0.7 indicating that the independent variables explain more than 70 per cent in the variation of the dependent variables respectively. The R^2 for beverage and tobacco, and rubber products sub-industries is 0.573 and 0.642 respectively. This is due to the fact that production in these

two industries heavily relies on natural resources besides capital and labour. However, to have a consistent estimation we exclude this input from the estimation.

Table 3: Average Growth Rate of Output, Capital and Labour in SMEs 1982-2003

Industry	Output	Capital	Labour
Food	4.56	0.37	4.45
Beverage & tobacco	2.15	1.41	3.09
Textiles, wearing apparel & footwear	7.62	8.62	1.21
Wood-based	4.26	7.53	0.87
Plastic products	8.62	11.52	0.89
Rubber products	5.08	1.95	0.05
Chemical	8.65	10.19	0.64
Metal products	17.00	17.77	4.91
Non-metallic mineral products	7.80	5.04	2.15
Electrical and electronics	7.92	3.84	1.60
Transport equipment	11.10	10.96	1.18

In most of the SMEs subgroups the results show that the growth of capital significantly determines the output growth. Exception is found in the wood-based, rubber products, chemical and transport equipment products.

On the contrary, labour input growth is not a significant determinant of output in six of SMEs sub-groups that is food, wood-based, rubber products, chemical, metal products and electrical and electronics. Analysis by SMEs sub-groups show that in the wood-based, rubber products and chemical, none of the incorporated inputs growth significantly determines its output growth. In the food, metal products and electrical and electronics, capital is merely the determinant of output growth. A one percentage point increase in the growth of capital will increase output growth in the electrical and electronics by 0.910 per cent point. While in the food industry a one-percentage point increase in capital growth will increase output growth by 1.227 percentage point. A one percentage point increase in the growth of capital will increase output growth in the metal products industry by 0.273 per cent point.

Table 4: Results of Output Growth Regression Analysis In SMEs 1982-2003

Sub-industry	Intercept	G(K)	G(L)	R^2	D.W.
Food	0.100	0.997	0.344	0.946	
	(1.584)	(4.993)***	(0.922)		
Beverage & tobacco	-7.213	0.824	0.020	0.573	1.903
	(3.926)***	(4.109)***	(1.798)*		
Textiles, wearing Apparel & footwear	1.555	0.432	0.775	0.924	1.97
	(11.068)***	(2.375)**	(2.895)**		
Wood-based	4.236	0.180	1.089	0.811	
	(4.568)***	(1.518)	(0.431)		
Plastic products	4.264	0.166	1.008	0.892	1.821
	(3.652)**	(4.337**	(4.914)***		
Rubber products	8.594	0.732	1.093	0.642	1.88
	(6.546)***	(0.177)	(1.293)		
Chemical	3.976	0.469	0.086	0.917	
	(3.707)***	(1.367)	(-0.093)		
Metal products	2.956	0.171	0.967	0.853	2.13
	(4.388)**	(1.886)**	(1.414)		
Non-metallic Mineral products	1.652	0.360	0.790	0.925	1.94
	(2.886)**	(2.902)**	(2.885)**		
Electrical & electronics	4.413	0.300	0.023	0.808	1.971
	(1.634)	(5.152)***	(-0.028)		
Transport equipment	3.595	0.031	1.070	0.879	
	(2.956)***	(0.789)	(2.916)***		

Note:

Figures in parentheses are t-values

*** - significant at 1 per cent
** - significant at 5 per cent
* - significant at 10 per cent

Both the input growths significantly explain the output growth in beverage and tobacco, textiles, plastic products, and non-metallic mineral products with capital as a major determinant. In the beverage and tobacco a one percentage point increase in labour growth will increase output growth by 0.174 percentage point, whereas, a one percentage point increase in capital growth will increase output growth by 0.431 percentage point. For the textiles industry, a one percentage point increase in capital growth will increase

output by 0.152 percentage point, whereas, a one percentage point increase in labour growth will increase output growth by 0.112 percentage point. In the plastic products, a one percentage point increase in labour growth will increase the output growth by 0.292 percentage point, whereas, a one percentage point increase in the growth of capital will increase output growth by 0.471 percentage point. For the non-metallic mineral products, a one percentage point increase in capital growth will increase output by 0.293 percentage point, whereas, a one percentage point increase in labour growth will increase output growth by 0.123 percentage point only.

The results of estimation for the transport equipment show the opposite pattern, whereby; labour growth is the only significant determinant of output growth. In the transport equipment SMEs sub-groups, an increase of one percentage point in labour growth will increase output growth by 0.173 percentage point.

One would suggest that capital intensity has a relationship with factor determinant of output growth, whereby, the more capital-intensive industries would benefit more from the growth of capital input. However, the results from this analysis do not reveal a clear pattern regarding this statement. This is to say that sub-industries with relative capital intensive do not necessarily gain higher benefit from capital growth compared to those with less capital intensive. For example, in the SMEs sub-groups of transport equipment, which are relatively more capital intensive, the results show that the contribution of capital growth is smaller than in other sub-industries. This reflects inefficiency in capital utilization due to difficulties in adapting to new technologies where technological advancement has taken place very rapidly in this type of industry. Some firms in the transport equipment are considered new niches in the Malaysian manufacturing sector and they have to cope with fast changing technologies.

Sources of Output Growth

Further analysis of this paper is to look at the factor contribution to the output growth in SMEs which can be classified into two categories;

a) contribution of physical inputs which are capital and labour

b) contribution of factor efficiency which is measured by the residual as a result of improvement in the quality of inputs due to technological advancement, human resource development, management efficiency and so forth. This is often called total factor productivity.

Table 5 and Table 6 show the contribution of labour and capital to the output growth. The contribution of capital is large i.e. more than 40 per cent of the total output growth rate (100 per cent) in the beverage and tobacco, textiles, and chemical sub-industries. In other SMEs subgroups, the contribution of capital is between three per cent to 31.78 per cent (wood-based sub-industry), with the lowest seen in transport equipment despite being relatively more capital-intensive. In other capital-intensive industries, such as metal products and electrical and electronics, capital contribution to the output growth rate can be considered quite low at less than 20 per cent. These reflect less efficiency in the capital utilization that may be due to too much capital inflow in these industries. Surprisingly, the beverages and tobacco, and textiles industries, which can be classified as labour-intensive, the contribution of capital to its output growth is relatively very high.

Efficiency in labour utilization is largely dependent on skill composition of employment. Since there is interrelation or complementarity between labour at different levels, the right combination may produce higher productivity, hence, higher growth of output. The study reveals that SMEs subgroups that enjoy higher contribution of labour input are food and metal products with more than 30 per cent. Even though metal-product is more capital intensive, the contribution of labour is much higher than capital, due to the fact that the majority of employment in this industry is the skilled and semi-skilled labours.

Labour contribution to the growth of output in the other sub industries is between one to 30 per cent, with the exception, in the chemical and electrical and electronics products where its contribution is less than one per cent. An extremely low labour input contribution to output growth in these two SMEs sub-groups is due to the fact that they are gaining substantially from technological progress. The contribution of labour to the output growth is also extremely low in the chemical and electrical and electronics. This reflects inefficiency in labour utilization or the ratio between capital and labour is not at the optimum level. The existence of too many unskilled workers non-proportionate to the

skilled and semi-skilled labours may also cause a small contribution from the labour input.

Table 5: Source of SMEs* Output Growth Rate

Sub-industry	G(Y)	$B_1G(K)$	$B_2G(L)$	Residual (λ)
Food	4.56	0.997(0.37) =0.369	0.344(4.45) = 1.531	2.66
Beverage & tobacco	2.15	0.824(1.41) =1.162	0.020(3.09) =0.062	0.926
Textiles, wearing Apparel & footwear	7.62	0.432(8.62) =3.724	0.775(1.21) =0.938	2.958
Wood-based	4.26	0.180(7.52) =1.354	1.089(0.87) =0.947	1.959
Plastic products	8.62	0.166(11.52) =1.912	1.008(0.89) =0.897	5.811
Rubber products	5.08	0.732(1.95) =1.427	1.093(0.05) =0.055	3.598
Chemical	8.65	0.469(10.19) =4.779	0.086(0.64) =0.055	3.816
Metal products	17.00	0.171(17.77) =3.039	0.967(4.91) =4.748	9.213
Non-metallic Mineral products	7.80	0.360(5.04) =1.814	0.790(2.15) =1.699	4.287
Electrical and electronics	7.92	0.300(3.84) =1.152	0.023(1.60) =0.037	6.731
Transport equipment	11.10	0.031(10.96) =0.340	1.070(1.18) =1.263	10.177

Technological advancement may result from transfer of technology or technological development within the SMEs. Theoretically, over time technology will improve. However, technology will raise output if it is appropriate or suitable to be adapted and assuming that there are enough skills to operate new technology. For this to be materialised, SMEs must have skilled labour that can be obtained from human resource development such as training. Another important issue is the management and maintenance of new technology, which again need an appropriate work force.

Table 6: Inputs Contribution to SMEs Output Growth Rate (per cent)

Sub-industry	Output Growth (Y)	Contribution of		TFP
		Capital	Labour	
Food	100.0	8.09	33.57	58.34
Beverage & tobacco	100.0	54.05	2.88	43.07
Textiles, wearing apparel & footwear	100.0	48.87	12.31	38.82
Wood-based	100.0	31.78	22.23	45.99
Plastic products	100.0	22.18	10.41	67.41
Rubber products	100.0	28.09	1.08	70.83
Chemical	100.0	55.25	0.64	44.11
Metal-products	100.0	17.88	45.58	36.54
Non-metallic	100.0	23.26	21.78	54.96
Electrical and electronics	100.0	14.54	0.47	84.99
Transport equipment	100.0	3.06	11.38	85.56

Benefits from technological advancement and other institutional arrangement like HRD and management can be viewed from the value of residual. From Table 6, it is apparent that all SMEs subgroup experiencing very high TFP growth. TFP growth in sub-group transport equipment, electrical and electronics, and rubber products accounted for more than 80 per cent of the total growth of output. Other sub industries with more than 50 per cent contribution from the TFP growth are food, plastic products, rubber products, and non-metallic mineral products. The TFP growth in the remaining sub-industries, textiles and metal products are 38.8 per cent and 36.5 per cent respectively.

The results reflect that in some SMEs sub-industries the contribution of residual or TFP does depend on the capital intensity. For example, chemical industry, which is

the most capital intensive, has lower contribution from TFP growth as compared to electrical and electronics, rubber products, and transport equipment, which are relatively less capital intensive. On the other hand electrical and electronics sub-industry, which is less capital intensive than non-metallic mineral products and metal products, has higher source of growth from the residual. Therefore, what is more important to achieve high efficiency is not capital intensity but the choice of technology and skills composition as well as management aspects. However, on average all capital intensive industries like transport equipment, plastic products and non-metallic mineral products manages to gain contribution from the residual at more than 50 per cent.

Policy Implications

Malaysia has experienced a fast changing industrial process from relatively low technology to a high technology. In this process the most affected sector is SMEs because they form the majority of the manufacturing establishments. Some SMEs manage to cope very well with the changing needs and current market requirements. Nevertheless, some have to struggle and suffer from many problems coping with the manufacturing development process as a result of liberalisation and globalisation.

One aspect that must be possessed by SMEs so as to compete in the global market is efficiency in using inputs. When efficiency can be increased there will be a comparable reduction in cost of production and output price can be kept relatively lower. Through this mechanism, SMEs can penetrate the export market if the quality of their output is competitive enough.

In general, the results from the analyses in this paper reveal that SMEs have benefited from technological progress by looking at the contribution of the TFP growth to their output growth. In the textiles, beverage and tobacco, chemical, metal products and wood-based products, the contribution of the TFP growth are still less than 50 per cent. Heavy reliance on these industries on physical inputs, especially capital may jeopardize their future growth patterns because price of capital is increasing over time. They may also face capital shortage and the country, as a whole may have to depend on foreign

direct investment. Therefore, in these industries, contribution of the TFP growth must be improved and enhanced. There are several measures can be taken,

a) Improve the quality of labour. This can be done through upgrading human resource development. Many SMEs in Malaysia do not have a proper programme or plan to train and upgrade their labour force. Facilities from Human Resource Development Fund (HRDF) are underutilized by the SMEs despite the fact that they register with the council (HRDC). Therefore, capital from HRDF must be utilized or harnessed through greater enforcement and participation with the government providing the facilities. Many SMEs apparently commented and lamented that procedure to train workers using HRDF are too strict with red tapes and difficult to follow (Rahmah, 1999).

b) Improve the quality of capital, through adapting to appropriate technology. This means that the technology must be suitable with the current needs of SMEs and also suitable with the skills they have. However, SMEs must not be a status quo, instead, they must adjust and adapt themselves to modern technology to grow faster or even bigger in size so as to gain from economics of scale. Again, this falls back to HRD in order to have skilled labour.

c) Conducting a continuous research and development is important for SMEs to develop their own indigenous technology. For this to be realised and harnessed successfully, R&D comes into because without this new, technology cannot be developed. Technology does not mean only the use of machines but also in terms of other aspects like marketing the products and other related aspects like advertising, packaging and so forth.

d) Improve management within SMEs, which include all aspects of management like personnel, product, input, human resource and so forth. Good management may result in efficiency through better understanding among workers, smoother production process, linkages, and information from one division with another division and also establishing the external contact. All these aspects as enumerated

above will help increase SMEs' efficiency, productivity and marketability of the products.

Conclusion

The development of SMEs is crucial for the expansion of the manufacturing sector in Malaysia. SMEs form the backbone of the industrial sector since the majority of the establishments are SMEs. Results from the analyses show that TFP contribution to output growth in SMEs are considerably substantial except in certain industries where it is still quite low. However, we need to improve technical efficiency and input quality over time so that the dependence on physical inputs can be reduced to produce the same level of output. For this to be realised, several steps can be taken to include HRD, management system, appropriate technology transfer, research and development. This can be achieved through aid from the government or its agency, especially in terms of providing financial facilities. The large firms themselves can play a significant role in terms of providing SMEs with enough market opportunities for their products through appropriate strengthening linkages.

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