



## Innovation barriers and risks for food processing SMEs in Malaysia: A logistic regression analysis

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### Abstract

The food industry is facing a period of rapid change driven by globalization, trade liberalization, development of genetic, processing and information technology, intellectual property rights, changes in family structure and health and food safety concerns. Given that the food processing SMEs account for a large part of mainstream businesses in Malaysia, this study sought to examine the impact of barriers and risks on the innovation of new product, process and services of food processing SMEs in Malaysia. To achieve this objectives, the study analysed primary data gathered from 247 executives of food processing SMEs in Malaysia with statistical and econometric techniques. The multiple logistic regression models were employed to estimate how innovations were being affected by the existing barriers. The study revealed that the Malaysian SMEs were suffering from financial sourcing problems and beset with the barriers of human capital, business competitiveness, infrastructure, and government policy. Further multiple logistic regression model's outputs showed significant impacts on innovations from financial barriers, especially in regard to financial assistance from the government or financial institutions, namely, high interest rates or profit charged, complicated loan application process and unable to enjoy promotional financial packages by financial institutions for food processing SMEs in Malaysia. The study recommended that the Malaysian SMEs' challenges be considered seriously and that the industry be provided with sufficient financial assistance in developing new products, new market and new sources of supply so that they can be truly sustainable and globally competitive.

**Keywords:** business competitiveness, financial packages, financial sourcing problems, innovation barriers, innovation risks, Small and Medium Enterprises (SMEs)

### Introduction

The food industry is facing a period of rapid change, driven by globalization, trade liberalization, development of genetic, processing and information technology, intellectual property rights, changes in family structure and health and food safety concerns. The food processing SMEs account a large part of mainstream businesses in Malaysia (Hussain & Idris, 2010).

The SMEs contribute 99.2% to the overall business establishments in Malaysia and they contribute 32 % to GDP, and 19 % to exports; and the industry has matured and played its remarkable roles since the 1970s. The SMEs employed about 56% of the country's workforce and the value added products are expected to worth RM120 billion in the manufacturing sector in 2020. Due to Malaysia's halal image, there is an increasing trend in domestic as well as foreign markets. In particular, the processed food exports have increased dramatically in recent time in Malaysia. However, due to shortage of raw materials, lack of technology and limited research and development, the sector is facing various

challenges to compete in global SMEs' arena. In 2009, Malaysia's food imports were valued at \$9.1 billion. Studies have identified that the food industry is currently facing a period of rapid change driven by globalization, trade liberalization, development of genetic, processing and information technology, intellectual property rights, changes in family structure and health and food safety concerns (De Silva & Takeda, 2005)

On the other hand, the processed food products have become the choice of many Malaysians due to the increase in their standard of living and purchasing power. The changes of Malaysians' lifestyle have resulted in an increase in the demand for convenience food and health food; which in turn leads to innovative new products in the food processing based SMEs in Malaysia. In such situation, innovation is considered as the key element to success in the increasing global competitive environment (De Silva & Takeda, 2005; Ussman et al., 2001). It is one of the most powerful, but difficult activity in the sectors of SMEs in Malaysia as it is a process of introducing new products (goods or service) or significantly improved product to the competitive market; that is, the new technological developments, new technology based on the combination of existing technologies or the utilization of other knowledge acquired by the company (Lee & Ging, 2007; Lee & Lee, 2007). In spite of the various supports from the government, Malaysian SMEs are still facing many challenges in innovating new and timely demanded product as per market's requirement.

In such situation, studies and reports showed that only a small number of SMEs in Malaysia are aware of the benefits of innovation. So there is a need for more focused and concerted efforts in increasing the awareness among SMEs on the benefits of innovation. The aim of this study is to identify the determinants of barriers of innovation faced by the Malaysian food processing based SMEs. Thus, this study had made a rigorous empirical work by utilizing the empirical data to measure innovation and performance of food processing in Malaysian SMEs.

## Literature review

### *SMEs in Malaysian economy and innovation*

SME in Malaysia was initiated by the Malaysian Government in the early 1970s. The 'New Economic Policy' was introduced in 1971 and aimed to improve the people's welfare and restructure ethnic economic imbalances. The government's support to the development of SMEs can be seen in the second Industrial Master Plan (IMP2), which ended in 2005. This was then continued by the Third Industrial Master Plan (IMP3), 2006–2020. The government is still trying to achieve Bumiputera's equity ownership of at least 30% in the corporate sector. The Ministry of Entrepreneur and Cooperative Development has formulated 4 strategic thrusts under the 8MP to achieve the BCIC objectives as follow:

- Development of quality and competitive entrepreneurs,
- Encourage entrepreneurs to venture into new growth sectors
- Create a middle class Bumiputera community through human resource capacity building (via acculturation, business opportunities and support service programs); and
- Establish cooperative as the third sector to generate economic growth.

By 2005, 48,260 individuals had attended the entrepreneurial trainings for Bumiputera entrepreneurs / companies. Approximately 15% of these activities are estimated to benefit those residing in the ECER. The Small and Medium Enterprises (SMEs) play a vital role in the Malaysian economy and are considered as a backbone of industrial development in the country. SMEs account 99 percent or 519,000 of total establishments. The Malaysian SMEs operate in three main economic sectors, namely manufacturing, services and agriculture. They provided employment to about 3.0 million workers in 2003; with 65.1 % (4.6 million) were of the three main sectors. The services sector employed the most at 2.2 million, manufacturing at 740,000 and agriculture at 131,000. Of the 2.3 million workers involved in

the SMEs, 76.5% were full-time employees, self-employed (16.7%) and part-time workers were the remainders (Aris, 2007). As such, the government has implemented many programs to strengthen the performance of SMEs. The significant role of Malaysia's SMEs is demonstrated by their contribution to output and value added at RM405 billion and RM154 billion, respectively, in 2003. SMEs in the services sector contributed 51 percent of output and 55 percent of value added to the services sector.

As SMEs are facing stiff global competition and innovation is the solution toward better cost control, quality, improved products, or new products. This is because innovation is one of the business strategies for SMEs to sustain and grow, especially in current market scenario. SMEs are highly encouraged to invent and innovate for their survival. Wright et al in 2005 mentioned that SMEs can play vital roles in process innovation as to enhance the capability of their production processes or their supply chain operations (Wright et al., 2005). Further, SMEs could improve their revenues by selling their current products in new regional or international markets or by expanding their existing product lines into new segments of existing markets (Branzei & Vertinsky, 2006). This type of innovation, known as "application innovation" involves applying existing technology to new uses in new markets (Moore, 2004). Different types of innovation are important at different points of a product's life cycle (Moore, 2004). For example, Moore suggested that niche strategies be used by firms that offer leading-edge technology to early adopters. He also suggested that business model innovation is useful after mainstream products being commoditized (Moore, 2004). From the above discussion, innovation of new or modified products, processes and services should be the main focus in surviving and sustaining Malaysian SMEs in the global arena.

Innovation is a vital process of survival to global pressure and to gain competitive advantage in the food processing industry. The report of European Confederation of the food and drink industry (CIAA, 2006), cited by Fortuin and Omta (2008), advised its members to put more efforts into innovation if they want to remain competitive in the years to come. Firms, therefore, spend a great deal of time and energy developing their capabilities to innovate and one of the ways is through product development (Vermeulen, O'Shaughnessy & de Jong, 2003). Vermeulen et al. (2003) reported that most of the researches on innovation tend to focus on large firms as innovation is the least important for small firms. From the strategic point of view, to satisfy consumers' needs, small companies need to offer high-quality products and services to the best of their abilities. Therefore, a permanent flow of product innovations is significantly important to small firms (Simon et al., 2000).

### *Innovations and barriers of SMEs*

Jani and Alam, in 2011 examined the important barriers that affect the innovation process of food processing based SMIs in Malaysia. The study found that there are various factors that could prevent the food processing based SMIs from innovating. The results of this study showed that some barriers did significantly impacted firms' innovation process. The findings in this research will be useful to everyone, particularly the SME Corporation and Ministry of Entrepreneurship Development of Malaysia in gaining ideas and develop suitable training programs to help and assist the SMIs owners in their future endeavour. The paper ended with some conclusions for policy makers, industry and other stakeholders, and also future researches (Jani & Alam, 2011).

Kaufmann and Tödtling in 2002 mentioned that the SMEs are confronted with problems that constrain their innovation activities. How their needs are fulfilled by support instruments had been investigated by a recent European research project. The results in the region of Upper Austria lead to the conclusion that some of the supports mitigated and disregarded certain indicated or latent deficiencies of SMEs. Also, direct financial supports concentrated on research and development, and neglected the commercialization of innovations. In general, high-technology innovation projects are preferred, and less technologically advanced or innovative firms lacked the adequate support. The spillover effects of technology centers are limited. The problem is that, most SMEs hardly interact with knowledge providers outside their business sector (e.g., universities). Furthermore, they interact insufficiently with innovation-related resources and

outside information. There is a lack of proactive consultancy concerning strategic, organizational, and technological weaknesses; which are necessary and often the firms are not aware of such deficiencies (Kaufmann & Tödting, 2002). Amriah, Abdullah and Zainol (2010) reported that the FAMA's contract farming (CF) programme has had very limited success of Malay small scale farmers and as such could not be regarded as an effective mechanism to further develop Malay small scale farmers. Another study conducted by Amriah and Suryandari (2011) on the Malaysian National Vision Policy and the advancement prospects of the Malay small-scale farmers. The results of the study confirmed that the performance of the two high impact programmes least encouraging. They also highlighted that the prospects of developing the Malay small farmers remain uncertain and doubtful. Saleem (2012) study examined the relationship between socioeconomic factors and success of small business in Pakistan. This study results shown that socioeconomic factors such as entrepreneurial experience, business profile and culture have significant effect on success of small business.

## Research methods

Towards achieving its objectives, the present study had used descriptive statistical and econometric techniques, as well as factor analysis through the field survey of executives of food processing SMEs in Malaysia. The purposive stratified random sampling methodology was used to select samples of respondents. There were 247 samples from the field survey of Malaysian SMEs.

**Table 1. Distribution of sample collection and field area by SMEs in Malaysia**

Distribution of sample	No. of Sample	%
Palm Oil Products	25	10.1
Livestock product	41	16.6
Fish and related products	35	14.2
Agro-Bio products	30	12.1
Fruits and Vegetables products	49	19.8
Others	67	27.1
Total	247	100

Source: Primary data from survey at 2012

### *Techniques of data analysis*

The descriptive statistics had been used through means, ranges, and frequency, percentages, ratios, etc. for the measurement of the socioeconomic productivity of SMEs in terms of total SMEs' profile, innovation growth and barriers. Further, the multiple logistic regression model was constructed to explain how innovation barriers and other socioeconomic and demographic factors affect the innovation of goods or products of SMEs in Malaysia.

### *Empirical model*

Logistic regression on innovation of goods or products of SMES, where,

$P_i$  = 1 if Innovation of goods or products

$1-P_i$  = 0 if No Innovation of goods or products

X = the list of explanatory variables

$L$  =  $\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + u$

Where are

- Y = Innovation of goods or products in the last 3 years (Yes =1, No=0)
- X1 = Types of business, X2= Years of business establishment, X3= Annual sales,
- X4 = Sources of finance, X5= Exporting your business products,
- X6 = Barriers in the area of financing
- X7 = Barriers in the area of human capital, X8= Barriers in the Area of business competitiveness, X9 = Barriers in the area of infrastructure, X10= Barriers in the area of government policy
- u = Error term and  $\beta_0$  = Constant (intercept term)  $\beta_{1,2,...10}$  are the coefficients of explanatory variables

## Results discussion

### *Innovation barriers of Malaysian SMEs*

- Innovation barriers faced by the Malaysian SMEs in the area of financing

The study observed the innovation barriers faced by the Malaysian SMEs in the area of financing. From the survey data, it was revealed that Malaysian SMEs are facing innovation barriers from the area of financing. In the case of financial assistance from the government or financial institutions, about 51.4 % strongly agreed that they are facing a serious problem but only 12.6 % disagreed. Moreover, based on the average value of all responses, the current status of financial assistance from the government or financial institutions averages at 3.43 (out of five) and the standard deviation stands at 0.84.

Moreover, the interest rate or profit charged is quite high with about 52.6 % strongly agreed that they are facing serious problems with this issue, but only 7.7 % disagreed. Further, based on the average value of all responses, the issue of interest rate or profit charged is quite high has an average of 3.49 (out of five); and the standard deviation stands at 0.80. In the case of loan application process being quite complicated, about 54.7% strongly agreed that they are facing serious problem with this issue, but only 8.5 % disagreed; with an average of 3.52 (out of five) and standard deviation of 0.84.

In regard to the issue of Malaysian SMEs not being considered for any promotional package, about 46.6 % strongly agreed that they are facing serious problems in this issue, but only 16.2 % disagreed; with an average of 3.32 (out of five) and standard deviation of 0.89.

**Table 2. Distribution of innovation barriers faced by the Malaysian SMEs in the area of financing**

Issues	Barriers in the area of financing					Average Value of Scale	S.D	Proportion of High	Proportion of Low
	Observation Scale								
	1	2	3	4	5*				
Financial assistance from the government or financial institutions	5	26	89	111	16	3.43	0.84	51.4	12.6
Interest rate or profit charged is quite high	6	13	98	114	16	3.49	0.80	52.6	7.7
The loan application process is quite complicated	7	14	91	113	22	3.52	0.84	54.7	8.5
Malaysian SMEs is not considered for any promotional package	9	31	92	102	13	3.32	0.89	46.6	16.2

Source: Primary data from survey in 2012

- Innovation barriers faced by the Malaysian SMEs in the area of human capital

Lack of skill human capital is one important innovation barriers faced by the Malaysian SMEs. The study found that the lack of professional and competent employees in the SMEs is preventing them from innovating. In regard to the issue of lack of professional and competent employees in the SMEs, about 48.98 % strongly agreed that they are facing a serious problem with this issue, but only 15.8 % of them disagreed. Moreover, based on the average value of all responses, the lack of professional and competent employee in the SMEs has an average of 3.36 (out of five) and the standard deviation stands at 0.98.

Furthermore, in the case of loan application process being quite complicated, about 54.7% strongly agreed but only 8.5 % of them disagreed. Also, based on the average value of all responses, it has an average of 3.52 (out of five) and the standard deviation stands at 0.84. Furthermore, in the case of low level managerial and administration skills for SMEs about 41.7 % strongly agreed that they are facing serious problems in this issue, but only 13.8 % of them disagreed. Based on the average value of all responses, the low level managerial and administration skills for SMEs has an average of 3.27 (out of five) and the standard deviation stands at 0.82.

**Table 3. Distribution of innovation barriers faced by the Malaysian SMEs in the area of human capital**

Issues	Barriers in the area of human capital					Average Value of Scale	S.D	Proportion of High	Proportion of Low
	Observation Scale								
	1	2	3	4	5*				
Lack of professional and competent employee in the SMEs	14	25	87	98	23	3.36	0.98	48.98	15.8
Low level Managerial and Administration skills for SMEs	8	26	110	95	8	3.27	0.82	41.7	13.8
Malaysian workforce in SMEs has low productivity	10	45	93	92	7	3.16	0.89	40.08	22.3
Malaysian workforce in SMEs has low creativity/innovation	17	35	92	95	8	3.17	0.95	41.7	21.1
Malaysian workforce failed to properly deal in international transactions	8	39	74	87	39	3.44	1.03	51.01	19.0

Source: Primary data from survey in 2012

In the case of Malaysian workforce in SMEs having low productivity, about 40.08 % strongly agreed but only 22.3 % of them disagreed. Moreover, based on the average value of all responses, this notion averages at 3.16 (out of five) and the standard deviation stands at 0.89. Moreover, in the case of Malaysian workforce in SMEs having low creativity/innovation, about 41.7 % strongly agreed but only 21.1 % of them disagreed. As for the average, it is 3.17 (out of five) and the standard deviation stands at 0.95.

- Innovation barriers faced by the Malaysian SMEs in the area of business competitiveness

Business competitiveness is the one of the important issues in which Malaysian SMEs are facing in innovating. Due to their lack of business competitiveness in the market, the Malaysian SMEs could not achieve their innovation target. In this issue of SMEs in Malaysia facing stiff competition from local companies, about 58.3 % strongly agreed but only 14.17 % of them disagreed; it also has an average of 3.52 (out of five) and the standard deviation stands at 0.96., In the case of stiff competition from MNCs, about 64.8 % strongly agreed but only 12.15 % of them disagreed; with an average of 3.67 (out of five) and standard deviation of 0.95.

**Table 4. Distribution of innovation barriers faced by the Malaysian SMEs in the area of business competitiveness**

Issues	Barriers in the area of business competitiveness									
	Observation Scale					Average Value of Scale	S.D	Proportion of High	Proportion of Low	
	1	2	3	4	5*					4 & 5 (%)
SMEs in Malaysia face stiff competition from local companies.	9	26	68	114	30	3.52	0.96	58.3	14.17	
Main and stiff competition is from MNCs	6	24	57	118	42	3.67	0.95	64.8	12.15	
SMEs in Malaysia face stiff competition from foreign companies.	9	18	96	100	24	3.45	0.89	50.2	10.93	
High cost reduces competition ability	6	26	90	101	24	3.44	0.89	50.6	12.96	

Source: Primary data from survey in 2012

Furthermore, in the case of SMEs in Malaysia facing stiff competitions from foreign companies, about 50.2 % strongly agreed but only 10.93 % disagreed; with an average of 3.45 (out of five) and standard deviation stands at 0.89. As for high cost reduces the SMEs' ability to compete, about 50.6 % strongly agreed but only 12.96 % of them disagreed; with an average of 3.44 (out of five) and the standard deviation stands at 0.89.

- Innovation barriers faced by the Malaysian SMEs in the area of infrastructure

Proper infrastructure is also one of the important issues that Malaysian SMEs need to deal with in overcoming innovation barriers in the global competitive market. Due to the lack of proper infrastructure in the market, the Malaysian SMEs could not achieve their innovation target. Similarly, in regard to the lack of access to information hinders the growth of innovation of Malaysian SMEs, about 44.1 % strongly agreed but only 13.8 % of them are disagreed; with an average of 3.35 (out of five) and the standard deviation stands at 0.87.

Furthermore, in the case of lack of access to better technology or ICT applications hindering the growth of innovation of Malaysian SMEs, about 52.2 % strongly agreed but only 12.1 % disagreed; with an average of 3.46 (out of five) and the standard deviation stands at 0.84. As for the lack of access to research and development leading to less growth of innovation in Malaysian SMEs, about 51.8 % strongly agreed but only 20.6 % disagreed; with an average of 3.36 (out of five scales) and the standard deviation stands at 0.97.

**Table 5. Distribution of innovation barriers faced by the Malaysian SMEs in the area of infrastructure**

Issues	Barriers in the area of infrastructure									
	Observation Scale					Average Value of Scale	S.D	Proportion of High	Proportion of Low	
	1	2	3	4	5*					4 & 5 (%)
Lack of access to information hinders growth of innovation of Malaysian SMEs	6	28	103	91	18	3.35	0.87	44.1	13.8	

Issues	Barriers in the area of infrastructure									
	Observation Scale					Average Value of Scale	S.D	Proportion of High	Proportion of Low	
	1	2	3	4	5*					
Lack of access to better technology or ICT applications hinders growth of innovation of Malaysian SMEs	4	26	87	111	18	3.46	0.84	52.2	12.1	
Lack of access to research and development hinders the growth of innovation of Malaysian SMEs	8	43	68	107	21	3.36	0.97	51.8	20.6	
Lack of available raw materials hinders growth of innovation of Malaysian SMEs	20	34	102	65	26	3.17	1.06	36.8	21.9	
Lack of legal protection of properties impedes the growth of innovation of Malaysian SMEs	21	111	71	28	16	3.43	0.8	40.1	59.9	

Source: Primary data from survey in 2012

In the case of lack of available raw materials hindering the growth of innovation of Malaysian SMEs, about 36.8 % strongly agreed but only 21.9 % of them disagreed; with an average of 3.17 (out of five) and the standard deviation stands at 1.06. Moreover, 40.1% strongly agreed but only 59.9% disagreed that the lack of legal protection of properties impedes the growth of innovation of Malaysian SMEs. This notion scored an average of 3.43 (out of five scales) and the standard deviation stands at 0.8.

- Innovation barriers faced by the Malaysian SMEs in the area of government policy

Favourable government policy is also one of the issues essential to the Malaysian SMEs' innovation. However, the lack of favourable government policy hinders the Malaysian SMEs innovation achievement. As such, about 47.0 % strongly agreed that Malaysian SMEs have not received sufficient support to innovate new products, but only 17.41 % disagreed; with an average of 3.38 (out of five) and standard deviation stands at 0.97.

Furthermore, in the case of bureaucracy preventing the SMEs from achieving high growth, about 53.4 % strongly agreed but only 7.7 % disagreed; with an average of 3.60 (out of five) and the standard deviation stands at 0.89. In regard to the unpredictable policy by Malaysian government resulted in innovation problem to Malaysian SMEs, about 38.9 % strongly agreed strongly but only 23.9 % disagreed; with an average of 3.13 (out of five) and standard deviation stands at 1.00.

As for current government policy on financial assistance, incentives and grants for SMEs, about 42.9 % strongly agreed but only 57.1 % of them disagreed with an average of 3.42 (out of five) and the standard deviation stands at 0.72. Moreover, in the case of current government policy helps to develop human resources for SMEs, about 38.5 % strongly agreed but only 10.5% disagreed; with an average at 3.29 (out of five) and standard deviation stands at 0.86.



**Table 6. Distribution of innovation barriers faced by the Malaysian SMEs in the area of government policy**

Issues	Barriers in the area of government policy									
	Observation Scale					Average Value of Scale	S.D	Proportion of High	Proportion of Low	
	1	2	3	4	5*					4 & 5 (%)
The Malaysian SMEs do not get enough support to innovate	8	35	88	88	28	3.38	.97	47.0	17.41	
Bureaucracy is preventing high growth	4	15	96	92	40	3.60	.89	53.4	7.7	
Unpredictable policy by the Malaysian government creates innovation problem to the Malaysian SMEs	18	41	92	83	13	3.13	1.00	38.9	23.9	
Current Govt. policy on financial assistance, incentives and grants for SMEs	18	123	90	16	0	3.42	.72	42.9	57.1	
Current Govt. policy on developing human resources for SMEs	12	14	126	80	15	3.29	.86	38.5	10.5	

Source: Primary data from survey in 2012

*Logistic regression result of the innovation of goods or products of SMEs in Malaysia*

The logistic regression model was constructed to explain factors affecting innovation of goods or products of SMEs. The model considers 247 survey respondents of the SMEs' representatives of the different categories. The study's summarized results of the model are found to be within acceptable level. The Cox and Snell R2 is 0.260 and most of the predictions are correct. The modification of the Cox and Snell R2 Nagelkerke was also estimated, and it was found to be within an acceptable level at 0.360. The prediction success table is symmetrical, indicating that the model performs well at predicting of the annual sales turnover of SMEs in Malaysia.

Based on the model performance in the coefficient table (classification Table 7) the model shows acceptable predicting power between dependent and independent variables; which was found to be at about 26% percent. Furthermore, the chi-square tested is also comparable to the overall F-Test. The chi-square value of 74.697 at "P<0.01" significance level indicates that logistic regression is meaningful in the sense that the dependent variable is related to each specified explanatory variable. Furthermore, log likelihood statistics of 243.308 and Wald Chi-Square of 23.189 also support the above outcome. Finally, the correlation matrix of the variables was also studied to identify the occurrence of multicollinearity. The model confirms that there is no multicollinearity, which means that there are no two variables with a correlation in excess of 0.80.

**Table 7. Distribution of result of Logistic Regression on the innovation of goods or products of SMEs in Malaysia**

	B	S.E.	Wald	df	Sig.	Exp(B)
Constant	-1.883***	.520	13.115	1	.000	.152
X1= Types of business	.604*	.341	3.127	1	.077	1.829
X2= Years of business establishment	.050**	.024	4.312	1	.038	1.052
X3= Annual sales	.776*	.423	3.364	1	.067	2.173

	B	S.E.	Wald	df	Sig.	Exp(B)
X4= Sources of finance	.787**	.381	4.262	1	.039	2.197
X5= Exporting your business products	.524**	.268	3.834	1	.050	1.689
X6= Barriers in the area of financing	.598***	.219	7.433	1	.006	1.818
X7= Barriers in the area of human capital	.277 NS	.172	2.601	1	.107	1.319
X8= Barriers in the area of business competitiveness	.104 NS	.161	.417	1	.518	1.110
X9= Barriers in the area of infrastructure	.025 NS	.157	.024	1	.876	1.025
X10= Barriers in the area of government policy	.059 NS	.157	.141	1	.707	1.061
Number of observations	= 247					
Chi-square	= 74.697					
Wald Chi-Square	= 23.189					
Cox & Snell R- Square	= 0.260					
Log Likelihood	= 243.308					
Nagelkerke R- Square	= 0.360					
Hosmer and Lemeshow Chi-Square	= 10.99 at 0.202 Level of significance					
Overall Percentage Correct of predicted	= 76.92					

1. \*\*\* Indicates significant at 99% level
2. \*\* Indicates significant at 95% level
3. NS Indicates significant at 90% level

Source: Primary data from survey in 2012

From the above Table 7 the results of the logistic model revealed that six independent variables are statistically significant while the four variables are found to be insignificant to the sales turnover of SMEs. The estimated equation shows that all the explanatory variables have positive effect on the innovation of goods or products in the last 3 years of SMEs.

However, the overall result of the logistic regression model is merely being supported by the value of Cox and Snell R<sup>2</sup> of 0.260, and Cox and Snell R<sup>2</sup> Nagelkerke of about 0.360; at 0.000 levels of significance measuring the goodness of fit of the model. The R<sup>2</sup> value indicates that the innovation of goods or products of SMEs could be explained by the all independent variables in the model. Thus, the study summarized that there is a significant relationship of innovation of goods or products of SMEs including other demographic characteristics. Finally, from the above findings the study revealed that all the explanatory variables influence innovation of goods or products of SMEs. In particular, the years of business establishment, annual sales, sources of finance, exporting your business products and barriers in the area of financing have been determined as main and important factors to influence the level of sales of SMEs in Malaysia.

## Conclusion and recommendations

From the empirical result the study concluded that Malaysian SMEs are facing a problem in regard to financial assistance from the government or financial institutions; whereby they are subjected to high interest rate or profit charged, complicated loan process and being ignored from promotional financial packages by financial institutions. In the case of barriers of human capital, the study summarized that Malaysian SMEs are randomly facing shortages for professional and competent employees, low level of managerial and administration skills, workforce's low productivity, lack of creativity/innovation to deal with international trades.

Further, as for the barrier in the area of business competitiveness, the Malaysian SMEs are still struggling with stiff competition from local companies, MNCs and foreign counterparts; and their high cost also reduces their ability to compete. Moreover, in the issue of barriers in the area of infrastructure, the study found that the lack of access to information, better technology or ICT applications, research and development, available raw materials, and legal protection of properties hinder the growth of innovation of Malaysian SMEs.

Finally, the study concluded that from the overall result of this logistic regression model based on the value of Cox and Snell R<sup>2</sup> of 0.260 and Cox and Snell R<sup>2</sup> Nagelkerke of about 0.360, indicate that the innovation of goods or products of SMEs have been explained by all the independent variables in the model. Thus, the study summarized that there is a significant relationship of innovation of goods or products of SMEs including other demographic characteristics. The above findings also revealed that the Malaysian SMEs are facing the problems of innovating new product, process and services especially due to issues of financial assistance from the government or financial institutions, high interest rate or profit charged, complicated application process of a loan and do not enjoy promotional financial packages offered by financial institutions.

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