



DEMAND ANALYSIS OF BEEF IN MALAYSIA

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BY

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DECLARATION FORM

This project entitled, “Demand Analysis of Beef in Malaysia” was prepared by Nur Syakirah binti Ismail and submitted to Department of Agribusiness and Bioresource Economics, Faculty of Agriculture in the fulfilment of requirement of PPT4999 for the award of degree in Bachelor Science of (Agribusiness).

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ABSTRACT

The purpose of this study is to analyse the current market growth, meat consumption of beef and the elasticity of beef towards price of beef, price of mutton, price of chicken and income. An econometric model was set up for analysis of demand for beef in Malaysia. Secondary data was used and it is obtained mainly from the Department of Veterinary Services. Time series data covering the period of 1988-2017 (30 years) was use for this analysis.

The overall demand models are generally quite satisfactory with an R^2 value of 0.941. Demand elasticity shows that beef is an inelastic product, which means that the consumption will not be highly influenced by the changes of the price of beef in market. The results also indicate that mutton and chicken are substitutes to beef. The beef meat also is a normal good as proven by the positive results from income elasticity. The consumption of beef is influence by many factors such as religion, lifestyles, habits as well as the availability of the beef meat itself. Besides that, the current growth market for variety of meat like beef, mutton and chicken are on an increasing growth trend.

ABSTRAK

Tujuan kertas projek ini adalah untuk menganalisis pertumbuhan pasaran pada masa kini, penggunaan daging lembu dan nilai keanjalan terhadap harga lembu, harga kambing, harga ayam dan pendapatan. Satu model ekonometrik telah dibina bagi menganalisis fungsi permintaan daging lembu di Malaysia. Data sekunder telah diperolehi dari Jabatan Perkhidmatan Veterinar. Data siri masa yang meliputi tahun 1988-2017(30 tahun) digunakan bagi menganalisis fungsi ini.

Model permintaan ini secara keseluruhan mendapat nilai R^2 yang memuaskan iaitu 0.941. Keanjalan permintaan ini menunjukkan bahawa daging lembu adalah tidak anjal, bermakna bahawa penggunaan mahupun permintaan tidak terlalu sensitif terhadap perubahan harga daging lembu di pasaran. Keputusan juga menunjukkan bahawa daging kambing dan daging ayam boleh menggantikan daging lembu. Daging lembu merupakan barang biasa seperti yang dibuktikan oleh keputusan positif dari keanjalan pendapatan. Penggunaan daging lembu adalah dipengaruhi oleh banyak faktor seperti agama, gaya hidup, tabiat serta ketersediaan daging lembu itu sendiri. Bukan itu sahaja, pertumbuhan pasaran terkini juga meningkat bagi semua komoditi daging seperti lembu, kambing dan ayam.

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CHAPTER 1

INTRODUCTION

1.1 Agriculture sector in Malaysia

Agriculture is one of the sector that is very important in Malaysia's economy. It contributes about 12 percent to the national GDP and provides 16 percent of the population's employment. British had established large-scale plantations for new crops such as rubber, palm oil and cocoa.

Malaysia is a newly industrialized and wants to become a developed nation by 2020. Malaysia main economy contributes by the service sector, followed by manufacturing, mining and agricultural sector. Even agriculture sector are small in contribution, this sector still important because it can supplies food and create jobs for people that are unemployed especially rural people.

The ministry that responsible towards agriculture sector is Ministry of Agriculture and Agro-Based Industry, Malaysia (MOA). They serve as an agency for private agricultural businesses to get advised by expert that specialise in agriculture, livestock and fishing.

Malaysia's economy shows that, every year the share of the agricultural sector is declining. For instance, the share of the agricultural sector in GDP has declined from 7.63%

in 2011 to 7.29% (2012), 7.16% (2013) and 7.02% (2014). The contribution of agriculture was increasing from RM54.2 million in 2011 to nearly RM56.2 million in 2013 and further increase to nearly RM58 million in 2014 (Table 1). Even though the absolute value was increasing, the share of the agricultural sector in GDP still declined.

This result shows that this sector was influenced by several factors. First, the idle agriculture land was increasing due to labor shortage. It is because, these sectors was depending on foreign labor. Most of Malaysia people especially teenagers not interest to work under agriculture sector. Some people said that people who work in this sector are not popular and the work are very tough compared then work at the office. Besides that, the factor that influences this sector is the production of cost was increasing. For example, the increase of wages, the price of agricultural inputs and capital cost. Next, the low productivity and quality of agricultural produce also the factor that influences the declining of agricultural sector in GDP.

Table 1: Gross Domestic Product by kind of economic activity,

Source : World Bank, 2017

	2010	2011	2012	2013	2014
Agriculture	51263	54253	54782	56281	57996
	(2.40)	(5.80)	(1.00)	(2.70)	(3.00)
GDP at purchasers' price	676653	711351	751471	786526	825590
	(7.4)	(5.1)	(5.6)	(4.5-5.0)	(5.0-5.5)
Share of agriculture to GDP (%)	7.58	7.63	7.29	7.16	7.02

1.2 National Agro- Food Policy

Nowadays, agricultural sector had faced many challenges towards their sector. Therefore, they need a new strategic direction to overcome their issues and problems. There are competition between land use for agriculture and bioenergy. For example, it shows an increasing from 8% in 2008 to 20% in 2020 land use for agriculture and bioenergy.

The new attention and direction was required due to global aspect such as the increasing of world population, climate changes, trade liberalization and the change of lifestyle. Nowadays, majority of consumer are concerned of the demand for quality and affordable product and these make agricultural sector need to face this kind of preferences as a new challenges for their sector.

The National Agro-Food Policy was constructing to face challenges in domestic and global market. It is to ensure sustainable production for food safety and security. The aim of this policy is to reform and transform the agro-industry in Malaysia to become more modern and dynamic industry.

Under this policy, agriculture has been identified as National Key Result Area. In 2020, Gross National Income has been targeted by Agriculture Sector to be increasing until it can reach RM49.1 billion. Therefore, by 2020, they had targeted to increase the employment opportunities more than 109,000 and more focusing on rural areas.

Until 2010, The National Agro Policy 3 (NAP3) was developed for agricultural and forestry. This policy focuses on enhancing food security and increasing the productivity and competitiveness. However, the price of food becomes higher due to increase in food demand of a high income of population. Nowadays, people more concern about their health and they prefer the foods that have good quality. Therefore, in order to enhance the economic contributions and growth of the agricultural sector, they must to be more innovative and efficient in managing their resources.

1.3 Malaysia Livestock Sector

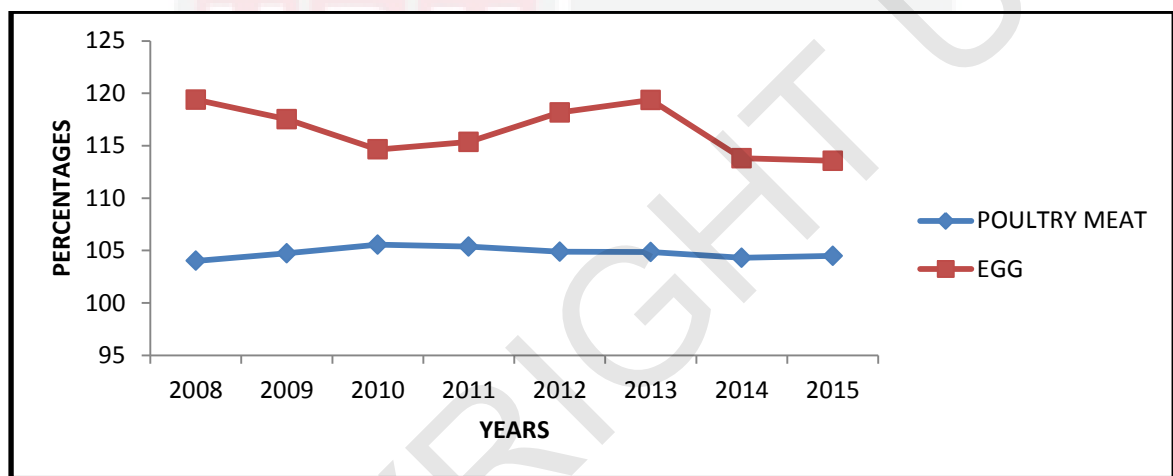
Malaysia livestock industry is one of the important industries that are providing source of protein in our country. There are divided into two sectors, which are ruminant and non-ruminant sectors. Within a short period, non-ruminant sector have achieved a great performance and make their sector more efficient and adopting highly modern systems and technology.

However, ruminant sector still at smallholder business and the contribution for the livestock is very small. Some issues and challenges like high cost of feed, lack of quality breeds and work force in ruminant make this sector hard to achieve their self-sufficiency.

To further expand this sector, *Dasar Agromakanan Negara (DAN)* had set by government as a transformation that more focussed into Good Animal Husbandry Practices (GAHP), livestock breeds and production of high quality feed competitive prices. Not only that, for efficiency of livestock systems and animal disease control, research and development will be emphasize.

Non ruminant sector like poultry meat, swine and eggs are already achieving their self-sufficiency level thus will continue to be develops so that their sustainability and competitiveness can be improved. As shown in Figure 1.0, in period from 2008 until 2015, the self-sufficiency level of poultry meat and eggs already achieving more than 100%.

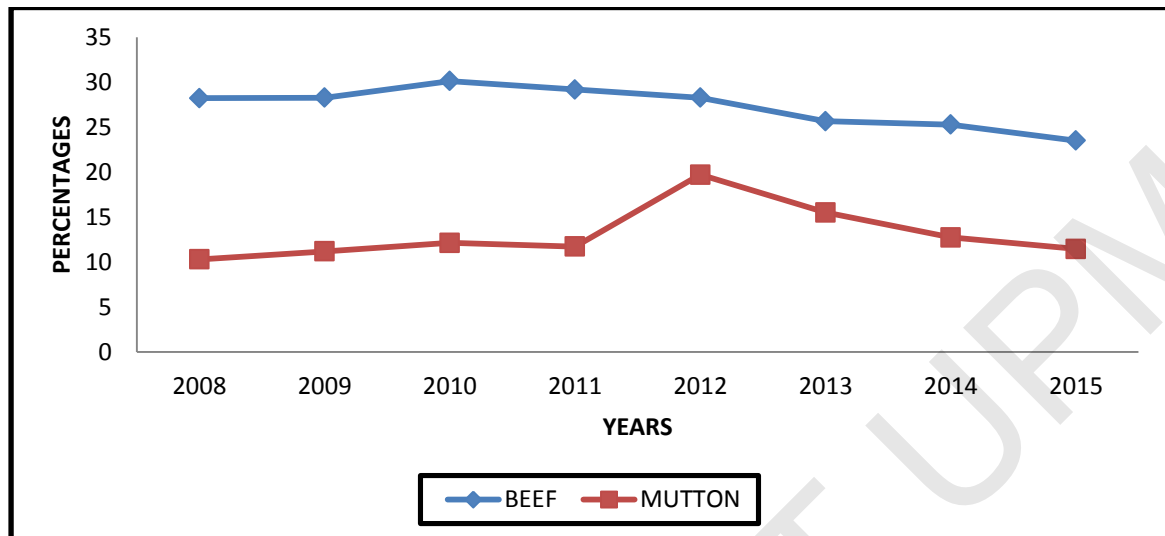
Figure 1.0: Self-sufficiency level for poultry meat and eggs from 2008 until 2015
 Source: Department of Veterinary Services Malaysia, 2016



In ruminant sector, the self-sufficiency level still at minimum rate from years 2008 until 2015 as shown in Figure 2.0. Beef shows a higher self-sufficiency level than mutton in average of 12% in year 2015. However, both of ruminant livestock still at low self-sufficiency level in order to fulfil the demand as increase in population and changes of lifestyle.

Figure 2.0: Self-sufficiency level for beef and mutton from 2008 until 2015

Source: Department of Veterinary Services Malaysia, 2015



In 2013, Malaysia imports value for livestock and livestock product was RM 6,137.59 million while exporting RM 2,456.41 million for livestock. The value of imported life animal was RM 265.56 million, meat for RM 2,581.19 million and dairy product and eggs for RM 3290.84 million with changes 5.12%, 15.56% and 22.97% respectively.

1.4 Beef Background

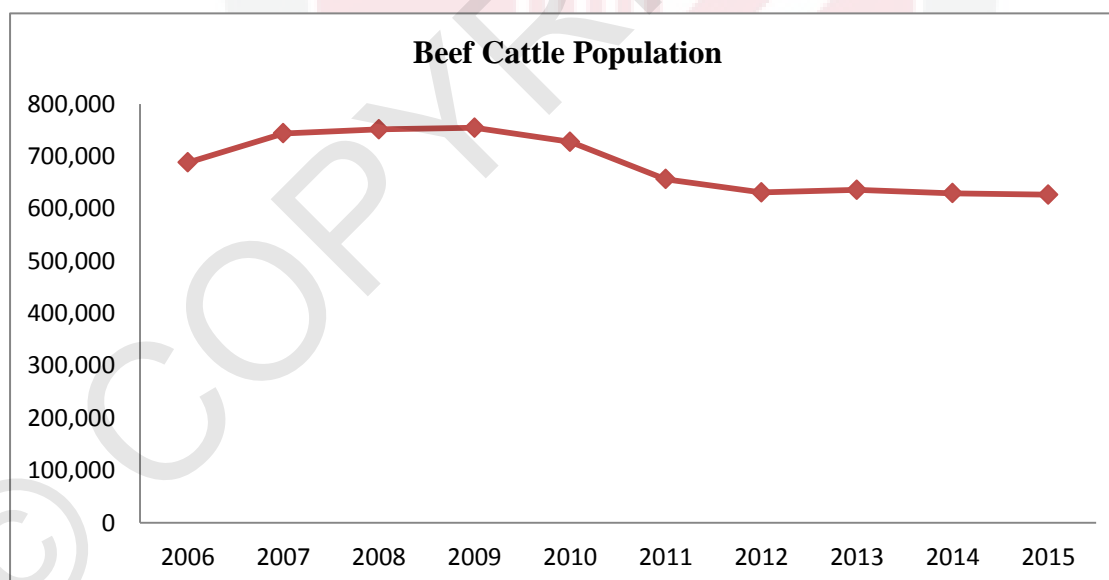
Beef is the culinary name that is used for meat from bovines, especially domestic cattle. Beef can be harvested from cow, bulls, helpers or steers. Beef is a good source of protein and minerals such as zinc, selenium, phosphorus, iron and B vitamins. Beef is commonly native from less distinct origin such as Ankole-Watusi from Egypt, Wagyu from Japan and Longhorn Zebu from India and Pakistan. Basically, beef is widely used for their meat and also for religious purpose to honor the person or god concerned.

In Malaysia, beef is the important food protein source for their community. There are many types of cattle that used for meat consumption in Malaysia such as Kedah Kelantan, Brahman, Local Indian Dairy, Draughtmaster and Mix of Frisian Sahiwal (Mafriwal).

1.4.1 Production of beef in Malaysia

Malaysia have target to increase about 50% beef self-sufficiency by 2020. Therefore, they need to increase the population of beef cattle and buffalo population. However, beef cattle and buffalo numbers have actually dropped between 2013 and 2015, according to latest available data from Malaysia's Department of Veterinary Services.

Figure 3.0: Beef Cattle Population from 2006-2015 in Malaysia
Source: Department of Veterinary Services, Malaysia



The agro-based industry minister Ahmad Shabery Cheek told local press it was cheaper for Malaysia to import beef instead of breeding cows for meat consumption.

According to a research study by the Institute of Agricultural and Food Policy Studies at the Universiti Putra Malaysia, and the Department of Agro Product Processing Technology at Bangladesh's Jessore University of Science and Technology, they stated that the continued growth of Malaysia's beef cattle production capacity depends on supplier profitability, which in turn is influenced primarily by the availability of cattle feed that constitutes a large proportion of the cost of production. According to the research, two factors could help boost Malaysia's cattle population, the development of grazing and fodder areas and genetic improvement. The research findings support the idea that importation of animals for breeding, minimised rate of beef cattle mortality, increased fertility and the conduct of training in feed efficiency management are the best policies to reach Malaysia's 50 percent beef self-sufficiency target by 2020.

1.4.2 Consumption of beef in Malaysia

In Malaysia, 60% of population consumed beef as their important source of protein. Table 2 show the Malaysia per capita consumption for livestock product from 2006-2015. From the data, it clearly shows that the beef consumption per capita is increasing throughout the 10 years with a slight decreased on year 2008. This shows the changes of beef demand in Malaysia population. The factors that affecting in beef consumption is development of meat processing industry, augmentation mode of the national economy and increasing abundance of the middle class level. There are many dining outlets have been established by the entrepreneurs as well as the production of food process products in order to meet the demand for arising of animal protein consumption like beef. Besides that, the higher level of education resulting more people to have stable economic condition, thus increasing the purchasing power for high quality food item. In addition, there are many employment

opportunities will be available to Malaysians as the national economy is expected to expand further as seen in the rising of Gross Domestic Product, from RM 545.42 billion in 2006 to RM 1,242.357 billion in 2014 (EPU,2015) and later help in further boost of national economy.

Table 2: Malaysia per Capita Consumption of Livestock Products 2006 to 2015
Source: Department of Veterinary Services, Malaysia

Year	Beef (kg)	Mutton (kg)	Poultry Meat (kg)	Pork (kg)
2006	5.49	0.67	31.11	8.23
2007	5.33	0.64	38.59	7.46
2008	4.89	0.69	40.32	7.15
2009	5.35	0.69	41.11	7.6
2010	5.45	0.69	43.32	8.66
2011	5.76	0.69	43.58	8.41
2012	6.15	0.83	44.4	7.65
2013	6.74	1.01	46.49	7.5
2014	6.91	1.18	49.83	7.52
2015	7.05	1.25	50.67	7.48

Since 1990, Malaysia has achieved self-sufficiency level for non-ruminant product like poultry meat and eggs. Table 3 shows the self-sufficiency of poultry sector in Malaysia that grown exceedingly with 104.48% in 2015 and was dominated by large industry. But, for ruminant industry like beef and mutton, there are still at low self-sufficiency level with only 23.50%,11.46% and for milk only 6.99% in year 2015. Mohamed (2007) stated that the ruminant sector like beef , dairy cattle, dairy buffaloes, sheep and goats are still raised in small scale. This show that Malaysia ruminant sector is still lagging behind due to the high cost of feed, cheaper import substitutes, lack of land resources and poor private sector involvement (Shanmugavelu,2014), lack of quality breeds, expertise and workforce (National Agro-food Policy 2011-2020) and disease prevention and control (Mohamed,2007). Malaysian government desires to be 40% self-sustainable in the beef production by 2015. The

question arises on the ability of Malaysia to produce extra 10% by 2015 when currently the local beef production can only fulfill 30% demand.

Table 3: Malaysian self-sufficiency level, 2008 to 2015 (%)

Source: Department Veterinary Services, Malaysia

Year	Beef	Mutton	Pork	Poultry Meat	Eggs	Milk
2008	28.22	10.30	98.35	104.00	119.38	8.68
2009	28.26	11.20	97.79	104.72	117.53	8.79
2010	30.12	12.13	95.25	105.55	114.63	8.49
2011	29.17	11.73	101.95	105.36	115.35	7.22
2012	28.26	19.71	96.74	104.88	118.17	6.92
2013	25.66	15.51	96.94	104.85	119.35	7.64
2014	25.28	12.74	95.66	104.30	113.79	7.07
2015	23.50	11.46	94.62	104.48	113.55	6.99

1.5 Problem Statement

Economy theory states that demand of market is related to supply market; prices of beef is related to production of beef. Therefore, changes of quantity of production may change the price of beef. Thus, price of beef has a very relationship with the demand of this meat, because high demand of certain product will attract more attention from public to enter the livestock sector to extend the local production capacity.

However, Malaysia faces a decreasing trend of local production of beef meat starting from 2011 to 2015. This fall cannot fulfill the demand of local beef meat that increasing of consumption each year. The increasing consumption trend due to increase of the population, income of consumer, changes of lifestyle and any other variable that may have relationship towards it.

This pattern of consumption do affect the quantity of imported beef meat into country. As domestic supply only can fulfil consumption of beef of local consumer around 12%. In order to cut this shortage, Malaysia need to imported beef meat especially from India and Australia.

As stated before, consumption of beef in Malaysia shows an increasing trend over the years. Even though the price of beef meat is rise every year, trend of consumption that increase shows that it's have not effect on changes of price in the market. This may due to higher income group that give consumer availability to consume beef meat. Income do have relationship with consumer purchasing power.

Rising demand for beef and decreasing pattern of production on beef for previous years in the country, it is not wrong to say that beef meat is going to be even a more expensive food in times to come if its limited domestic supply not compensated by importation.

These changes give some kind of sensitivity towards consumer demand behaviour. Sensitivity can be affect by “ how sensitive is the demand with changes of price of beef”, “ how sensitive is the demand of beef with changes of other product prices” and “ how sensitive is the demand of beef with the changes of income”.

1.5 Objective of study

The general objective of the study is to determine the demand of beef and its elasticity in Malaysia.

1.6 Specific objectives

- I. To study the current market growth and meat consumption in Malaysia
- II. To estimate elasticity of demand namely price elasticity, cross elasticity and income elasticity for beef in Malaysia

1.7 Significance of study

The analysis on demand of beef in Malaysia is important. This is because, nowadays the beef industry has low domestic supply. The production lagged demand leads to growing import. This study is to update the knowledge about the current market growth and consumption of meat product in Malaysia. The results obtained from this study would given information for industry player and researcher about the current market growth of meat product in Malaysia.

1.8 Limitation of study

This study only depends on secondary data, which is collected by Department of Veterinary Services and World Bank's website. Not only that, various factors may have influence on demand of beef. For example, others price of substitute such as price of chicken, and price of mutton.

In addition, demand of beef also affect by imported beef meat. The changes of lifestyle and preferences does give more or less effect towards consumption of beef in Malaysia. Therefore, the effectiveness of this study is need to be confirm by having survey on taste and preferences of consumers.

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