



UNIVERSITI PUTRA MALAYSIA

***CONSUMER PREFERENCE FOR SPECIFIC BEEF ATTRIBUTES IN
PENINSULAR MALAYSIA***

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PENINSULAR MALAYSIA**

By

SITI HAWA BINTI JAMIL

**Thesis Submitted to the School of Graduate Studies,
Universiti Putra Malaysia, in Fulfillment of the
Requirements for the Degree of Master of Science**

June 2015

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DEDICATION

This paper is dedicated to my parents JAMIL BIN NGADIMIN and NORYATI BINTI SARIB, who have always stood by my side and supported me through my studies toward a Master's Degree. I have always been proud to be your daughter. This work is also dedicated to my husband, Mohamad Norhalim, who has been a constant source of support and encouragement during the challenges of graduate school and life. I am truly thankful for having you in my life.



Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the degree of Master of Science

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By

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June 2015

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Faculty: Faculty of Agriculture

Recent food industry trends have driven changes in the Malaysian food consumption. By increasing the consumer concerns over food safety, they are able to purchase food products not only to serve their basic needs but also for fulfil their various goods quality standards needed. In Malaysia beef has only recently gained popularity and given the changing nature of the availability of food and preferences, the Malaysian people are becoming more health conscious with their food choices and their beef preference has been tracking on a variety of attributes. Food safety, quality, health, price and the impact of the country of origin on beef choice have been widely examined and have revealed to be the relatively dominant attributes. The preference for beef has caused respondent to become more aware on how to get the best quality of beef for consumption. Thus respondents are searching for beef preferences that are safe to consume and close to their main choices. Nowadays Malaysians are experiencing dramatic changes in their lifestyles which impact the ways they purchase food. In line with the growing affluence and urbanization, Malaysian respondents are exposed to different types and parts of beef like the main cut known as chuck, rib, sirloin, short loin, round, flank, short rib and also leg in many food outlets, fast food restaurants, supermarkets, night markets, and also farmers markets. Each respondent may have his or her own preference and it may vary depending on the form of preparation, texture, taste, color, freshness and also the country of origin. However, the market for preference for specific beef attributes in Malaysia is still at its infancy though people are giving it a very positive response. Beef preference refers to the attributes which make this type of food safe for consumption and provide a fine quality after it goes through a hygienic process during production.

The objective of this study is to determine the preferences of the Malaysian consumers for specific beef attributes. A survey was conducted in Peninsular Malaysia where 1164 respondents were interviewed through a structured questionnaire to gather information on their preferences, attributes and attitudes towards beef preference. A Food Choice Model is applied in this study. Descriptive statistics, chi-square, factor analysis and hierarchy regression were used to analyze the collected data.

The results indicate that there is a significant association between the consumers' demographic profiles and their beef preference. Overall, the majorities of consumers consume beef regularly; prefer local fresh and tender beef which they usually purchase at traditional markets. Thus, the study indicates that there has been a relationship between consumers' socio-demographic variables such as gender, age, education and income level and consumer preference for beef consumption in terms of preference for local beef, freshness, tenderness and also that which is purchased at a traditional market. Based on the factor analysis, seven factors have been identified that can influence the consumer preference for specific beef attributes. These factors are as follow: consumer sensory attributes, society influence, price, attitude, quality, country of origin, and safety concern. In addition, the results of the hierarchy regression model show that not only the attributes, price, country of origin and society play a role in determining beef choice and preferences among Malaysians, but attitude also influences the relationship between these factors and beef preference. Some of the factors have not shown any significant relationship with beef preference such as price and society. However by adding attitude as moderator, the relationship either improves or becomes significant. This shows the important role of attitude in moderating the relationship between the factors and product preference.

Due to the increase in beef consumption in Malaysia, there is a need for relevant marketing strategies to be developed by the government or private organizations to increase in beef production. Based on these results it is suitable to segment the respondents according to their preferences and develop a different marketing strategy for each segment of the market. In this study the main concerns of consumers are attributes and country of origin therefore marketers are able to determine the core value of beef consumption for the consumers in order to develop future market strategies. Consumers also value local beef more, therefore, policy makers can take this into consideration by providing greater facilities for cattle farmers or developing and adopting better farm systems to improve beef industry in Malaysia.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

**KECENDERUNGAN PENGGUNA TERHADAP PEMILIHAN CIRI-CIRI
TERTENTU DAGING LEMBU DI SEMENANJUNG MALAYSIA**

Oleh

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Industri makanan telah mendorong perubahan dalam penggunaan makanan di Malaysia. Melalui peningkatan kesedaran pengguna terhadap keselamatan makanan, pengguna boleh membeli produk makanan bukan sahaja untuk memenuhi keperluan asas mereka tetapi juga untuk mendapatkan pelbagai tahap kualiti. Sejak kebelakangan ini, Daging lembu di Malaysia telah mendapat permintaan yang tinggi. Memandangkan sifat perubahan terhadap ketersediaan dan pilihan makanan, rakyat Malaysia kini lebih sedar terhadap kesihatan dalam pemilihan makanan dan keutamaan dalam pemilihan ciri-ciri daging lembu. Faktor-faktor seperti keselamatan makanan, kualiti makanan, kesihatan, harga dan keluaran negara asal dalam pemilihan daging lembu telah dikaji secara meluas dan didedahkan sebagai satu sifat yang agak dominan. Pelbagai keutamaan dalam pemilihan daging lembu yang menjadikan pengguna sedar untuk mendapatkan kualiti daging lembu yang terbaik. Oleh itu pengguna sedang mencari daging lembu yang selamat untuk digunakan dan menepati ciri-ciri pilihan utama mereka. Rakyat Malaysia kini mengalami perubahan dramatik dalam gaya hidup mereka, yang mana ianya memberi kesan kepada cara pembelian makanan mereka. Selaras dengan tahap hidup yang meningkat, pengguna di Malaysia terdedah kepada jenis dan bahagian daging lembu yang berbeza seperti potongan utama dikenali sebagai daging bahu (*chuck/shoulder*), daging loin pendek (*short loin*), daging batang pinang (*sirloin*), daging peha (*round*), otot perut (*flank*), tulang rusuk *ribs*, tulang rusuk pendek (*short rib*) dan bahagian kaki yang terdapat di pelbagai kedai makan, restoran makanan segera, pasar raya, pasar malam, dan juga pasar tani. Setiap pengguna akan mempunyai pilihan mereka sendiri dan ianya mungkin berbeza-beza dari segi penyediaan, tekstur, rasa, warna, kesegaran dan keluaran negara asal. Walau bagaimanapun, pasaran untuk keutamaan ciri-ciri tertentu daging lembu di Malaysia masih di peringkat awal tetapi rakyat Malaysia memberi maklum balas yang sangat positif untuk mendapatkan produk daging lembu. Keutamaan ciri-ciri daging lembu

merujuk kepada makanan yang selamat untuk dimakan, mempunyai kualiti yang baik dan dihasilkan dengan cara yang sangat bersih.

Objektif kajian ini adalah untuk menentukan ciri-ciri utama pemilihan daging lembu di Malaysia. Kajian telah dijalankan di seluruh semenanjung Malaysia di mana 1164 responden telah ditemubual melalui soal selidik berstruktur untuk mengumpul maklumat mengenai pilihan mereka, sifat dan sikap terhadap keutamaan daging lembu. Model Pilihan Makanan telah digunakan dalam kajian ini. Statistik deskriptif, analisis chi-square, analisis faktor dan analisis regresi hierarki telah digunakan untuk menganalisis data yang dikumpul.

Hasil kajian menunjukkan bahawa terdapat hubungan yang signifikan antara profil demografi responden dan keutamaan daging lembu. Secara keseluruhan, kebanyakan pengguna menggunakan daging lembu dengan kerap, lebih suka kepada lembu segar tempatan dan daging lembu yang lembut yang mereka beli secara kerap di pasaran tradisional. Oleh itu, kajian ini menunjukkan bahawa terdapat hubungan antara pembolehubah sosio-demografi responden seperti jantina, umur, pendidikan dan tahap pendapatan dan pilihan pengguna untuk penggunaan daging lembu dari segi pilihan keutamaan untuk daging lembu tempatan, kesegaran, kelembutan dan juga membeli di pasar tradisional. Berdasarkan analisis faktor, tujuh faktor telah dikenal pasti yang boleh mempengaruhi pilihan pengguna untuk ciri-ciri tertentu daging lembu. Faktor-faktor ini adalah seperti berikut: ciri-ciri deria pengguna, pengaruh masyarakat, harga, sikap, kualiti, keluaran negara asal, dan kebimbangan keselamatan. Di samping itu, keputusan regresi hierarki model menunjukkan bahawa bukan sahaja sifat, harga, negara asal dan masyarakat memainkan peranan dalam menentukan pilihan daging lembu dan pemilihan keutamaan antara pengguna Malaysia, tetapi sikap juga mempengaruhi hubungan antara faktor-faktor ini dan keutamaan daging lembu. Beberapa faktor tidak menunjukkan apa-apa hubungan yang signifikan dengan pilihan daging lembu seperti faktor harga dan masyarakat. Walau bagaimanapun dengan menambah sikap responden sebagai moderator, hubungan menunjukkan bahawa ianya sama ada meningkatkan atau signifikan. Ini menunjukkan bahawa pentingnya peranan sikap responden sebagai moderator dalam hubungan antara faktor-faktor dan pilihan produk.

Disebabkan oleh peningkatan dalam penggunaan daging lembu di Malaysia, pelbagai strategi pemasaran perlu dibangunkan oleh kerajaan atau organisasi swasta. Berdasarkan keputusan kajian, ianya sesuai untuk digunakan dalam membahagikan responden dengan corak penggunaan. Pengkelasan mengikut pilihan keutamaan boleh menjadi alat yang berguna untuk membangunkan strategi pemasaran yang berbeza bagi setiap segmen pasaran. Dengan cara ini, didapati bahawa kecenderungan utama pengguna adalah sifat-sifat dan negara asal oleh itu pemasar dapat menentukan nilai teras penggunaan daging lembu kepada pengguna dalam usaha untuk membangunkan strategi pasaran masa depan. Responden juga lebih memilih daging lembu tempatan. Oleh itu, pembuat dasar boleh mengambil kira dengan menyediakan lebih banyak kemudahan untuk penternak lembu atau membangun dan mengguna pakai sistem ladang yang lebih baik untuk meningkatkan industri daging lembu di Malaysia.

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I certify that a Thesis Examination Committee has met on 21 OGOS 2014 to conduct the final examination of SITI HAWA BINTI JAMIL on her thesis entitled “**CONSUMER PREFERENCE FOR SPECIFIC BEEF ATTRIBUTES IN PENINSULAR MALAYSIA**” in accordance with the Universities and University College Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U. (A) 106] 15 March 1998. The Committee recommends that the student be awarded the degree of Master of Science.

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TABLE OF CONTENTS

	Page
ABSTRACT	i
ABSTRAK	iii
ACKNOWLEDGMENTS	v
APPROVAL	vi
DECLARATION	viii
LIST OF TABLES	xiii
LIST OF FIGURES	xv
LIST OF ABBREVIATIONS	xvi
CHAPTER	
1 INTRODUCTION	
1.1 Introduction	1
1.2 Malaysia Beef Industry	1
1.3 Self-sufficiency of Beef Production	3
1.4 Self-sufficiency of Beef Product	4
1.5 Import Value Of Beef And Live Cattle	5
1.6 Livestock Industry And Recent Improvement	9
1.7 Beef Demand In Malaysia	9
1.8 Beef Preference	10
1.8.1 Method Of Beef Processing	11
1.9 Problem Statement	13
1.10 Objective Of The Study	14
1.11 Significant Of The Study	14
1.12 Organization Of The Thesis	14
2 LITERATURE REVIEW	
2.1 Introduction	15
2.2 Definition Of Consumer	15
2.3 Consumer Preference For Meat Attributes	15
2.4 Beef Attributes	16
2.5 Price Factor And Beef Consumption	19
2.6 Consumer Attitudes And Beef Preference	20
2.7 Safety Concern	21
2.8 External Factor	22
2.9 Model Of Consumer Behavior	23
2.10 Summary Of The Chapter	28

3	METHODOLOGY	
3.1	Conceptual Framework	29
3.2	Source Of Data	32
	3.2.1 Primary Data	32
	3.2.2 Secondary Data	32
3.3	Data Collection	32
	3.3.1 The Questionnaire	32
	3.3.2 Sampling Frame And Techniques	33
3.4	Pilot Study	34
3.5	Analysis Of Data	33
	3.5.1 Descriptive Analysis	34
	3.5.2 Reliability Test	34
	3.5.3 Chi- Square Analysis	35
	3.5.4 Factor Analysis	36
	3.5.5 Hierarchy Regression Analysis	37
3.6	Summary	39
4	RESULTS AND DISCUSSION	
4.1	Introduction	40
4.2	Analysis Of Socio Demographic Profile Of Respondents	40
	4.2.1 Socio Demographic Profile Of Respondents	41
	4.2.2 Reliability Test	43
	4.2.3 Consumers General Information	43
	4.2.4 Consumer Meat Preferences	46
	4.2.5 Consumer Preferences In Beef Consumption	47
	4.2.6 Preference Towards Beef Attribute	54
	4.2.7 Attitude Towards Beef Preference Consumption	61
4.3	Analysis Of Malaysian Preference In Specific Beef Attribute	65
	4.3.1 Cross-Tabulation With Chi-Square Analysis	65
	4.3.1.1 Testing Significant Difference Between Demographic Profile And The Regularity Of Beef Consumption	66
	4.3.1.2 Testing Significant Difference Between Demographic Profile And Preference For Local Beef	67
	4.3.1.3 Testing Significant Difference Between Demographic Profile And The Freshness Of Beef As The Main Attribute When Purchasing Beef	68
	4.3.1.4 Testing Significant Difference Between Demographic Profile And The Tenderness Of Beef As The Main Attribute When Purchasing Beef	69
	4.3.1.5 Testing Significant Difference Between Demographic Profile And The Regularity Consumer Purchase From Traditional Market	70

4.4	Factor Analysis	71
4.4.1	Measure Of Sampling Adequacy	71
4.4.2	Communality	72
4.4.3	Varimax Normalization	73
4.4.4	Eigenvalue Criteria	73
4.4.5	Dimension Of Beef Preference Among Consumer	73
4.4.6	Variance Explained	78
4.4.7	Reliability Test (Factor Analysis)	78
4.5	Hierarchical Regression Analysis	79
4.5.1	Attitude Between Attribute Variable And Product Choice Preferences	79
4.5.2	Attitude Between Price Variable And Product Choice Preferences	80
4.5.3	Attitude Between Country Of Origin Variable And Product Choice Preferences	81
4.5.4	Attitude Between Society Variable And Product Choice Preferences	81
4.6	Summary	82
5	SUMMARY, CONCLUSION AND RECOMMENDATIONS FOR FUTURE RESEARCH	
5.1	Introduction	84
5.2	Summary and Conclusion	84
5.3	Marketing and Policy Recommendations	86
5.4	Research Limitation	88
5.5	Recommendation for Future Research	88
	REFERENCES	R1
	APPENDICES	A1
	BIODATA OF STUDENT	B1
	LIST OF PUBLICATION	L1

LIST OF TABLES

Table		Page
1.1	Statistics On Investments In The Agriculture Sector In 2011	1
1.2	GDP According To Economic Activity, RM Million, Malaysia	1
1.3	Malaysia Consumption Of Livestock Products, 2005-2012	3
1.4	Per Capita Consumption Of Buffalo Meat/Beef Products In Malaysia 2003-2012	3
1.5	Malaysia Self-Sufficiency In Livestock Products (%), 2005-2012	4
1.6	Export Of Indian Buffalo Meat To Malaysia	6
1.7	Fresh, Chilled And Frozen Beef Price/Kg	7
1.8	Average Commodity Price Of Beef, 2012	8
1.9	Price Of Imported Beef According To The Type For Wholesaler, 2013	8
1.10	Consumption Of Beef (Ton) According To Consumer Sector	10
1.11	Malaysia Beef Cuts Imported From Year 1997-2001 (Quantity In Tones)	11
3.1	Typical Sample Size For Social Studies Of Human Behavior (Population More Than 20 Million)	34
4.1	Distribution Of Respondents Based On Location	40
4.2	Socio Demographic Profile Of The Respondents	41
4.3	Respondents General Information On Their Health, Lifestyle And Consuming Beef	44
4.4	The Different Respondent's Living Lifestyles	45
4.5	Respondents' Current Health Condition	45
4.6	Respondents' Meat Preference	46
4.7	Respondents' Consumption Based On Beef Preference	47

4.8	The Respondents' Preferred Beef Purchasing Regularity	53
4.9	Respondents' Preference Towards Beef Attributes	55
4.10	External Factor Influencing Respondents' Attitude Towards Beef Preferences	60
4.11	Respondents Attitude Towards Beef Preference Consumption	62
4.12	Respondents Attitude Towards Beef Product Choice	64
4.13	Significant Difference Between Demographic Profile And The Regularity Consumer Consume Beef	66
4.14	Significant Difference Between Demographic Profile And Preference For Local Beef	67
4.15	Significant Difference Between Demographic Profile And The Freshness Of Beef As The Main Attribute When Purchasing Beef	68
4.16	Significant Difference Between Demographic Profile And The Tenderness Of Beef As The Main Attribute When Purchasing Beef	69
4.17	Significant Difference Between Demographic Profile And The Regularity Consumer Purchased From Traditional Market	70
4.18	KMO And Bartlett Test	71
4.19	Communalities	72
4.20	Results Of Factor Analysis	75
4.21	Results Of Variance Explained	78
4.22	The Result Of Reliability Test (Factor Analysis)	78
4.23	Attitude Between Attribute Variable And Product Choice Preferences	80
4.24	Attitude Between Price Variable And Product Choice And Preference	80
4.25	Attitude Between Country Of Origin Variable And Product Choice And Preference	81
4.26	Attitude Between Society Variable And Product Choice And Preference	82

LIST OF FIGURES

Figure		Page
1.1	Malaysia's Beef Import And Export (RM Million)	5
1.2	Import Of Indian Buffalo Meat In Malaysia (2010-2013)	6
1.3	The Various Meat Cuts Practiced In Malaysia	12
2.1	Simple Model Of Consumer Behavior	23
2.2	Black Box Model Of Consumer Buying Behavior	24
2.3	Factor Influencing Consumer Purchasing Behavior Towards Products And Services	25
2.4	Model Of Food Choice: Some Factors Affecting Food Choice And Intake	26
2.5	Factors Influencing Food Preferences And Choice	27
2.6	Consumer Choice Theory	28
3.1	Conceptual Framework Of Food Choice Theory With Application Towards Preference For Specific Beef Attributes Among The Consumers In Malaysia	31
3.2	Diagram Of Food Choice Theory With Application Towards Preference For Specific Beef Attributes Among Consumers In Malaysia	31

LIST OF ABBREVIATIONS

AFTA	Asean Free Trade Area
AIMMAF	Asean-India Ministerial Meeting On Agriculture And Forestry
DSM	Department Of Statistic Malaysia
DVS	Department Of Veterinary Services
DV	Dependent Variable
EFA	Explanatory Factor Analysis
ETP	Exchange Traded Product
FAMA	Federal Agriculture Marketing Authority
FAO	Food And Agriculture Organization
GDP	Gross Domestic Product
GNI	Gross National Income
IFAMA	International Food And Agribusiness Management Association
KMO	Keiser-Meyer-Olkin
MAFTA	Malaysia-Australia Free Trade Agreement
MARDI	Malaysian Agricultural Research And Development
MIDA	Malaysia Industry Development Authority
MOA	Ministry Of Agriculture
MSAP	Malaysian Society Of Animal Production
NAP	National Agricultural Policy
WHO	World Health Organization

CHAPTER 1

INTRODUCTION

1.1 Introduction

This section is critically important which contain situation beef industry in Malaysia and the purposes of the study is and explain the study's significance. The significance is addressed by discussing how the study adds to the theoretical body of knowledge in the field and the study's practical significance for communication professionals in the field being examined. The problem statement will contain a definition of the general need for the study, and the specific problem that will be addressed.

1.2 Malaysia Beef Industry

The global food demand is expected to increase by 10 percent between 2010 and 2015 though both production and supply will only increase by a mere 1.6 percent (Economic Transformation Programme, ETP, 2012). Thus there will be a shortage of food in years to come if no action is taken to mitigate this problem. Similarly in Malaysia the deficit balance of trade for food is widening every year and something needs to be done to boost the domestic production of agricultural produce. The Malaysian agriculture sector contributes 7.3 per cent to the GDP and is growing at an estimated 3 per cent annually (Treasury Department Malaysia, 2012). The Ministry of Agriculture and Agro-based Industry (MOA) which oversees the activities in crop production, livestock and fisheries has formulated the National Agro-food Policy (DAN, 2011-2020) emphasizing on food production as means to reduce imports and also as a food security agenda (Era consumer, 2010). Currently, Malaysia is self-sufficient in the production of poultry, pork and eggs, but imports about 80 and 90 % per cent of its beef and mutton respectively (MIDA, 2012). As can be seen in Table 1.1 statistically, Malaysia has invested heavily (Table 1.1) in the agriculture sector after the plantation and commodities sectors.

Table 1.1: Statistics On Investments In The Primary Sector In 2013

Sub-Sector	Investment/billion
Mining	RM 18.8 billion
Plantation and Commodities	RM 330.6 billion
Agriculture	RM 558.8 billion

Source: Malaysia Investment Performance Report, 2013

The agriculture sector is expected to grow by 2.03% (2013-2020) and contribute 4.90% to the economy within this period (Department of Statistics Malaysia, 2012). In summary, the GDP of the agricultural sector increased from RM 54.8 billion to RM 56.9 billion in 2013 (Table 1.2).

Table 1.2: GDP according to economic activity, RM Million, Malaysia

Sector	2012		2013	
	RM bil	% growth	RM bil	% growth
Agriculture	54.8	1.0	56.9	4.0
Mining and Quarrying	63.4	1.4	66.4	5.0
Manufacturing	186.7	4.8	195.9	4.9
Construction	26.5	18.1	29.3	15.9
Service	410.0	6.4	431.2	5.5

(Source: Ministry of Finance and Department of Statistics, 2013)

Overall Malaysia's economy has faced a rapid growth over the last decades and it is expected to grow at an even faster. Malaysia is a multicultural country, where the majority of the population is Malay, followed by the Chinese and the Indians. Per capita income range was from US\$9755 in 2010 to US\$9693 in 2011 (Prime Minister's Department Malaysia, 2012). Due to the fact that Malaysia's population has been growing constantly food consumption has been on the increase as well.

According to FAO (2014), the world's beef production in 2013 was 67.7 million tons and increased to 68.0 million tons in 2014. In the livestock sub-sector, Malaysia is the 3rd largest producer of poultry meat in the Asia Pacific region (MIDA, 2013) and the beef production has the potential of being developed to ensure the country's food supply and reduce beef imports. There are issues and challenges for the beef industry, among which are the lack of quality breeding stock, high feed prices, expertise and manpower which stem from a shortage of private investors in this area.

Livestock sub-sectors are an important and integral component of the agriculture sector by providing gainful employment and producing useful animal protein food for the population (FAO, 2004). This is consistent with the increasing trend in meat consumption over the years (Zainal et al, 2013). Meat is an important component of the Malaysian diet (Maria, 2006) and about 25% of the total protein intake of Malaysians is estimated to be from various types of meat (Muhammed and Abdullah, 1987). With rapid population growth and improved per capita income, as well as lifestyle changes resulting from urbanization, it is predicted that there will be a further increase in the demand for meat products in the country.

The development of the Malaysia beef production remains slow compared to the non-ruminant subsectors. The ruminant subsectors which include the local beef cattle operations have not been able to respond to the rising demand for animal protein in the country in line with the growing affluence resulting from urbanization. Statistically, per capita consumption of beef increased from 5.18 kg to 5.75 kg between 2003-2012 (DSM, 2012). Malaysian's beef consumption is the second highest after its pork consumption which showed an upward trend until the year 2012 (Table 1.3).

Table 1.3: Malaysia's Consumption of Livestock Products, 2007-2012

Commodity	2007	2008	2009	2010	2011	2012
Beef (M. Ton)	144,732	135,529	149,256	154,402	167,388	173,815
Mutton (M. Ton)	17,498.2	19,013.0	19,309.4	19,669.3	23,387.9	24,522.5
Pork (M. Ton)	202,688	198,337	211,953	245,390	244,272	248,409
Poultry Meat ('000. Tan)	1,048.59	1,117.90	1,146.90	1,227.45	1,266.61	1,348.63
Milk (Mil. Liters)	975.81	889.05	650.83	708.83	789.23	538.18

(Source: Department of Statistics Malaysia, 2013)

The slow growth rate of the local beef supply in relation to its growing demand is a major problem facing the local beef industry. In Malaysia, a study on productivity of beef production in both feedlot and plantation integration systems showed that the technical efficiency of beef production in both systems were low (MARDI, 2009). Beef cattle production in the country is still on small scale production and efforts have been made by the government to boost the industry. Despite this it still cannot cope with the increasing demand for beef and beef products made by the population. Table 1.4 shows the total consumption of buffalo meat/beef in Malaysia, between the years 2003 and 2012. The Malaysia's per capita consumption of meat from poultry, fish and beef/buffalo is about 35kg per person per year, thus red meat accounts for about 15% (5.5kg).

Table 1.4: Per Capita Consumption of Buffalo meat/beef Products in Malaysia, 2003-2012

Commodity	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Buffalo meat/beef (kg)	5.18	5.81	5.32	5.49	5.33	4.89	5.35	5.45	5.86	5.75

Source: Department of Veterinary service, Malaysia (2013)

Malaysia's local beef industry is highly subjugated by imports, as the local production is unable to provide for the current as well as the projected increasing demand of beef. MARDI (2012) has stated that the small based cattle population and low production efficiency of the existing breeder animals has been blamed in the past for the poor performance of the beef industry. Further, the traditional system of beef production which still remains the largest contributor of beef supply in this country lacks stratification and commercial orientation and becoming a barrier to the growth of the beef industry.

1.3 Self-Sufficiency of Beef Production

Malaysia is an example of one of the many countries where food self-sufficiency is decreasing year by year (ERA Consumer, 2010). This situation also includes the beef industry in Malaysia. Under NAP3, it was expected that the Malaysian beef sub-sector would fulfill 30% self-sufficiency by the year 2010. The small population of breeding

cows still remains the single most important factor that hinders the expansion of the local beef industry today. Production of beef grew by only 1.9% a year, which was not in line with the increase in consumption (ERA Consumer, 2010). It is strongly suggested that efforts should be made to invest in importing large numbers of breeding cows into this country and the import figures will depend on how fast policy makers would want to increase the self-sufficiency rate for beef in Malaysia. Based on the 2003 beef consumption figures, it is estimated that the country would need to import more than 2.5 million heads of breeding cows in order to achieve the 100% self-sufficiency rate. This figure is also based on achieving 80% annual calving rate and 10% annual calf mortality rate for the national population herd size (MARDI, 2006).

Complimentary efforts also should be made parallel to modernizing the traditional production system and making it into a more commercialized entity. Commercializing the traditional system would mean a positive effort to regulate the extraction (harvesting) rate of beef cattle from the population herd (MARDI, 2006). When both of these steps are taken then the tools for productive improvements and efficient production system such as intensified cow-calf production system could be implemented to further develop the industry.

1.4 Self-Sufficiency of Beef Product

The livestock sub-sector is one of the most dynamic agriculture sectors in Asean countries and contributing to the overall economic growth by providing employment and ensuring food security, as well as being a major source of income and mode of providing savings for the rural poor (MSAP, 2013). Poultry and swine production dominate the local livestock scenario with an excess production for the exports, but self-sufficiency in ruminant products has been declining with imports accounting for more than 80% of requirement for beef, mutton and milk. The highest rate of product self-sufficiency was for poultry meat commodity and mutton is the lowest (Table 1.5).

Table 1.5: Malaysia Self-sufficiency in Livestock Products (%), 2007-2012

Commodity	2007	2008	2009	2010	2011	2012
Beef (M. Ton)	24.17	28.22	28.26	30.12	29.17	29.50
Mutton (M. Ton)	10.17	10.30	11.20	12.13	11.73	12.87
Pork (M. Ton)	98.73	98.35	97.20	95.36	94.57	93.87
Poultry Meat (*000. Tan)	104.90	104.00	104.72	105.55	105.36	101.92
Milk (Mil. Liters)	5.74	8.68	8.79	8.49	13.17	9.28

(Source: Department of Statistics Malaysia, 2013)

With the rise of an affluent society in Malaysia, the consumption of beef is increasing and statistics in 2012 showed that beef was consumed at 5.97 kg/person/year.

Nearly 30 years ago, Malaysia embarked on a policy to achieve total self-sufficiency in beef and up to 20% self-sufficiency in milk within 20 years. The failure to achieve the target can be attributed to many factors, including lack of incentives, uneconomic

production systems and inadequate marketing strategies. The most damaging factor to local beef production is the policy of free market access for beef exporters from India. The cheap beef imported from India enables the Malaysian consumers to buy Indian beef at almost half the price of locally produced beef, thus reducing demand for the latter. It is unlikely that, in the near future, Malaysia can be self-sufficient in ruminant products, but there is a great potential to reduce dependency on imports through greater exploitation of its feed and genetic resources.

1.5 Import Values of Beef And Live Cattle

Before the mid 1970's, less than 20 percent of total beef consumption in Malaysia was imported (Tey, 2010). However this number increased dramatically to more than 70 percent in 2007. The Ministry of Agriculture has assured that beef imports in this country are derived from accredited and certified Halal abattoirs (Utusan, 2013). Malaysia has limited domestic agricultural production which has led to an increase in the demand for many products, especially food products including beef. In the Ninth Malaysian Plan (2006-2010), the government targeted to increase the production of beef in order to reduce the dependence on its imports which have been a major source of the country's food supply. This has mainly created opportunities for the importers of Indian and Australian beef. It is worth noting that in Malaysia 70 percent of beef in 2013 was imported and only 29 percent was from local producers (DVS, 2013). Needless to say that imports have increased faster than exports as shows in the figure 1.1.

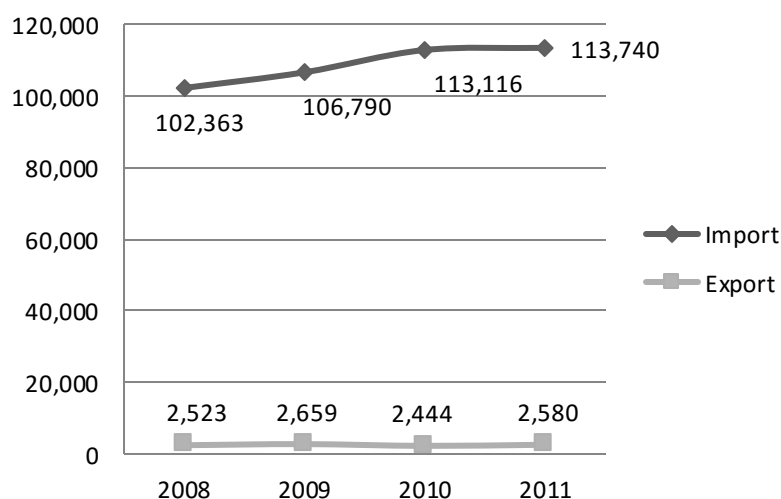


Figure 1.1: Malaysian beef import and export (RM million)
(Source: DVS, 2013)

There are 2 countries supplying beef to Malaysia. India holds the top spot with about 80 percent of the share of imports, followed by Australia (16 percent) and other countries (4percent) including New Zealand, Uruguay, Argentina and Brazil (DVS, 2013). The Indian buffalo meat is exported worldwide to countries such as Malaysia, USA, Jordan, Oman and UAE. In 2013 Malaysia was India's third largest beef importer of its carabeef after Thailand (Meat Trade News Daily, 2014). In April 2012, Malaysia

imported 24% more beef from India, with Indian buffalo meat representing 82% of the total beef imports (MOA, 2012). Despite the dominant market share, Indian carabeef was mainly sold through traditional markets and offered at low-end foodservices. In contrast, Australian beef was served at high-end foodservices and modern retail outlets in Malaysia (Meat trade news daily, 2011). Many local food manufacturers have used imported buffalo meat (from India) as the main component of their products because it is readily available at low cost compared to local beef (Abdul and Chempaka 1995). India's buffalo meat is traditionally sold through retail, with a smaller proportion in foodservices (The cattle site, 2011). Figure 1.2 shows the total import of Indian buffalo meat in Malaysia (2010-2013) showing an increase year by year.

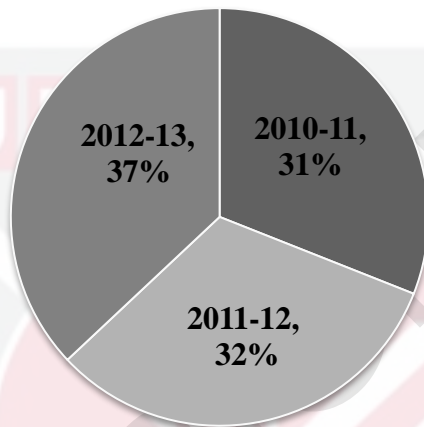


Figure 1.2: Import of Indian Buffalo Meat in Malaysia (2010-2013)
(Source: APEDA, (2013))

One of the main advantages of India's beef is its health status. India has been free from mad cow disease and another reason is its lean character and near organic nature. Due to the certainty of its Halal compliance and hygiene nature, India is the favourite choice of Muslim countries for their meat imports. Besides that, its low price plays an important role in creating its high demand (RM 13/kg) even though the quality is not as high as the Australian beef (Alisher, 2013). The majority of the Malaysian population is made up of low and middle class Malays, making the consumption of Indian beef relatively high. India's buffalo slaughter capacity continues to expand in order to supply the growing buffalo meat export market. According to the Government of India (GOI), there were three new export-oriented slaughter units created in 2011, bringing the total number to 33 (APEDA 2013). Current estimates indicate that there are approximately 100 million buffaloes in India. Industry sources state that buffalo population is robust and they do not expect any supply issues over the next 10 years. The total export of Indian buffalo meat to Malaysia is shown in Table 1.6.

Table 1.6: Export of Indian Buffalo Meat to Malaysia

	2010-11	2011-12	2012-13
Malaysia (Qty)	94,360.76	99,704.82	1,15,222.85

(Source: APEDA, 2013)

On the other hand, about 40 million cows were imported from Sudan in November 2012 to cover 30 to 40 per cent of the quantity demanded in the Malaysia beef market (News Strait Times, 2012). Sudan is Africa's largest meat supplier with 110 million heads of cattle in its private sector. The meat from Sudan would provide competition for meat from Australia and would give more options to the local market. However, Sudan currency exchange rate makes it a little bit expensive but they believe that consumers do not mind paying more for quality meat. Furthermore, each year Malaysia imports 15,000 heads of cattle to meet the increased demand in conjunction with the Muslim ritual at Aidiladha (AIMMAF, 2013).

In a recent development Malaysia is currently the eighth largest customer of agricultural exports from Australia, worth around \$1 billion in trade (MAFTA, 2013). Besides that, Malaysia has changed its policy and does not only depend on imports from Thailand and Vietnam but it is also importing from other countries such as Myanmar and Cambodia (MOA, 2014). About 20,000 live cattle is imported from Myanmar each year and this is while discussions for imports from Cambodia are being considered (Bernama, 2014).

Table 1.7: Fresh, Chilled and Frozen Beef Price/Kg

Fresh Beef	Fresh beef (RM/KG)	Frozen beef (Buffalo)	Frozen Beef (RM/KG)
Minced Beef	RM18.00	Minced buffalo (India)	RM12.00
Solid Beef	RM24.00	Solid buffalo (India)	RM15.00
Sirloin	RM35.00	Chilled beef	
Ribs	RM20.00	Chilled beef (RM/KG)	
Carcass Beef	RM17.50	Australia beef (Chill)	RM27.00

Source: Department of Veterinary Service, DVS (2013)

Table 1.7 shows the price level for fresh, chilled and frozen beef per kg in Malaysia in 2013. Fresh beef is from local beef and the most expensive cuts are from sirloin with RM35.00 per kg. Frozen beef is imported from India with solid buffalo beef being more expensive compared to minced or ground buffalo meat with RM 15.00 per kg and RM 12.00 per kg respectively and there is only chilled Australian beef available with RM27.00 per kg.

Table 1.8: Average Commodity Price of Beef 2012

Sales location	Beef (RM/kg)		
	Frozen Imports	Local (Solid)	Local (Sirloin)
Night Market	14.00	20.18	22.80
Farmers markets <i>PasarTani</i>	-	22.20	25.71
Super/Hypermarket	12.97	24.78	43.60
Public Market	14.02	22.46	24.96

(Source: Department of Veterinary Service, DVS 2012)

According to the Department of Veterinary Services the price level will change followed by time in the festive season for the purpose of slaughter ritual. Table 1.8 shows the average commodity price of beef in 2012. The cheapest value comes mostly from night markets with RM 20.18 for local solid beef to RM22.80 for local sirloin beef. While for frozen import, super or hypermarkets were offering the cheapest prices compared to the other markets with RM12.97 per kg.

Table 1.9: Price of imported Indian beef according to the type for wholesaler 2013

Beef cuts	Beef (RM/kg)
Striploin	12.00
Chuck tender	13.70
Topside/knuckle	12.70
Rump steak	12.00
Slice	9.60
Chuck	10.80
Brisket	10.80
Tenderloin	16.80
Cube roll	10.80
Blade	11.40

(Source: Nusantara R S Enterprise, 2013)

Table 1.9 shows the imported beef prices from one of the enterprises in Malaysia. They supply and deliver in the whole of peninsular Malaysia with a minimum of 350 boxes or 7 tons of beef. The price level is much cheaper compared to local beef.

1.6 Livestock Industry and Recent Improvements

Consumer demand for imported beef has been growing at the rate of 10 per cent per annum. Malaysia aims to reduce its imports and improve its self-sufficiency, which is at a low of 28 per cent and focus on integrating and consolidating its downstream processing (World livestock, 2011). Malaysia is expanding its feed letting industry by setting up satellite farms. These farms are expected to contribute RM182 million (A\$27.8 million) to the GNI (<http://www.austrade.gov.au>). It would provide

opportunities for the Australian businesses in beef cattle and genetics, vocational training, machinery and abattoir set-ups, and animal feed and nutrition.

Malaysia has genetically improved the growth performance of beef. In the developing world, population growth, urbanization and income growth is fueling a massive demand for food of animal origin. This phenomenon is called the Livestock Revolution (Delgado et al., 1999) and in Malaysia it will require the farming of increasing more efficient animals to meet the ever increasing demand for livestock products. Beef cattle will need to grow faster and more efficiently, yielding larger carcasses. Coupled with these challenges caused by the changing consumer demand, there are also challenges resulting from changes in climate and the environment. Breeding better Kedah-Kelantan cattle helps to withstand harsher climates and the environment will ensure the sustainability of our beef industry. Hence Kedah-Kelantan cattle would have to be genetically improved to meet both market demands for beef and to ensure its long-term relevance and survivability.

1.7 Beef Demand In Malaysia

Beef demand is projected to increase from 132,000 metric tons in 2010 to 232,000 metric tons in 2020 with a growth of 2.6 percent per annum (The agro-Food Policy, 2011-2020). Malaysia may still have to import 60,000 cattle breeders worth about RM180 million per year to help meet 40 percent of its beef needs locally by 2015 from the current 20 percent (DVS, 2013). Beef is mainly consumed during the holidays and the festive season. A total of 7,000 cattle were brought in from South Australia to meet the needs of fresh beef during the celebration (Bernama, 2013). Cattle from Australia are capable of producing an average of approximately 3,000 metric tons of meat. As well as importing cattle from Australia, Malaysia still had to get the supply from local cattle and 6,000 heads of cattle from Thailand to accommodate the needs of Malaysians who require an average of about 14,000 heads of cattle in the festive season.

The best breed of cattle is considered to be from Australia, Argentina, Brazil, Sudan and Kenya. Malaysia will need a total of 610,000 heads of female cattle breeders to help produce 62,300 tons of beef locally by 2015, the year that will also boast a population of 1.65 million heads of cattle (The Cattle Site, 2013).

Federal agricultural marketing authority shows that factories have the highest number for consumption of beef per ton according to consumer sector which is they are doing for meat processing and production. It is followed by institutions sector such as restaurants, hotels, schools and also hospitals and the less consumption is from households sector (Table 1.10).

Table 1.10: Consumption of Beef (Ton) According To Consumer Sector

Region	2004	2005	2006	2007	2008	2009	2010
Households	58,422	59,942	61,499	63,099	64,740	66,423	68,150
Factories	101,377	116,584	134,072	154,183	177,312	203,909	234,496
Institutions	72,729	83,640	96,187	110,617	127,210	146,293	168,239

(Source: Federal Agriculture Marketing Authority, FAMA 2010)

Factory sector consists of production, and the rising feed costs related to the increasing corn demand for both natural and artificial feeding are destroying at least some of the beef's supply chain despite the population growth (Bernama, 2011).

1.8 Beef Preference

Making healthy choices can direct people to eat meat as part of a healthy and balanced diet (<http://www.patient.co.uk>). Other factors that drive consumer meal selection include convenience and nutrition. Since the animal's legs and neck muscles do the most work, they are considered to be the toughest. Different parts give different choices and preferences to consumers according to their tenderness, color, texture, flavor, appearance, juiciness, price, quality and country of origin. Several attributes that are stated by MARDI (2008) and related to the eating quality of meat include tenderness, juiciness color, odor and taste.

Taste, flavor, tenderness and leanness are all meat attributes that can be directly influenced by livestock producers through breeding and diet. Some consumers will be more concerned with price than with physical attributes of meat, but other consumers will be willing to pay a premium for specialized meat attributes. Those attributes they provide valuable information for meat producers wishing to niche market their products. For example, consumers who emphasized the importance of fresh meat may not realize that locker beef is aged between two and four weeks to improve the flavor of the meat. This is the sort of information producers can pass on to their customers when direct marketing their product.

In terms of beef tenderness, the meat becomes tender as distance from hoof and horn increases (ZainurAlsmi and Wanzahari., 2005). The tenderness of meat varies depending on which part of the animal the cut comes from. The area around the ribs and loin (back) of the animal provides the tenderest cuts. The rear end of the animal (thigh or leg) produces cuts of medium tenderness, while the toughest cuts come mostly from the front end (flank, shank, breast, shoulder, neck and the ends of the ribs). The older the animal, the less tender the meat will be. Different countries and cuisines have different cuts and names, and may even use the same name for a different cut (MARDI, 2005). The most common are called chuck, rib short loin, bottom sirloin, top sirloin, sirloin, tenderloin, round, brisket, plate, flank and shank.

1.8.1 Method of Beef Processing

The carcass is split into 2 divisions via the spinal column. Each side is then divided again into two more divisions at rib number twelve or thirteen (MARDI, 2005). In terms of common local market cuts, the meat is classified into 3 types which include the tender meat, the course meat and the "cincang" or remnant meat. The tender meat is from the sirloin, filet and the thigh areas, while the rest is classified as coarse meat. The last category, the "cincang" falls into the remnant of meat left after cutting the two other cuts. This also includes meat from the feet and bones.

The local beef entrepreneur should exploit specialized meat cuts according to their respective area. Returns from special cuts are much higher than from the common local market cuts. At the moment, special cuts for hotels or restaurants are imported. Out of the total beef imports in the year 2001, prime cuts of high quality beef represented about 10 percent of the quantity imported (MARDI, 2005). As the country continuous

to industrialize and urbanize, the customer preference for high quality food products increases. Table 1.11 shows the trends of the importation of high quality beef cuts

Table 1.11: Malaysia Beef Cuts Imported From Year 1997-2001 (quantity in tones)

Items/years	1997	1998	1999	2000	2001
Prime cuts (cube-rolls, strip loin, tenderloin and rump)	8,327	6,428	8,696	12,606	10,742
Others cuts (blade, round, topside, knuckles and offals [liver, lung, spleen, tails and tripes])	75,522	63,942	73,618	92,472	91,839

(Source:MOA 2001)

However, in times of an unfavorable foreign exchange, this practice of importing special cuts would be economically non feasible. With our local animals, it is also possible to develop a less elaborate pattern of meat cuts than that of Australia or other western cuts. The potential local cuts (Figure 1.3) include the blade or chuck, shank, ribs, short ribs, short loin, flanks, sirloin and round. Nevertheless, for the production of these special cuts, the meat has to be lean, tender and processed in a very hygienic manner approved by the meat inspection of the veterinary services. At the same times, the entrepreneurs will also have to secure contracts with the respective hotels and restaurants.

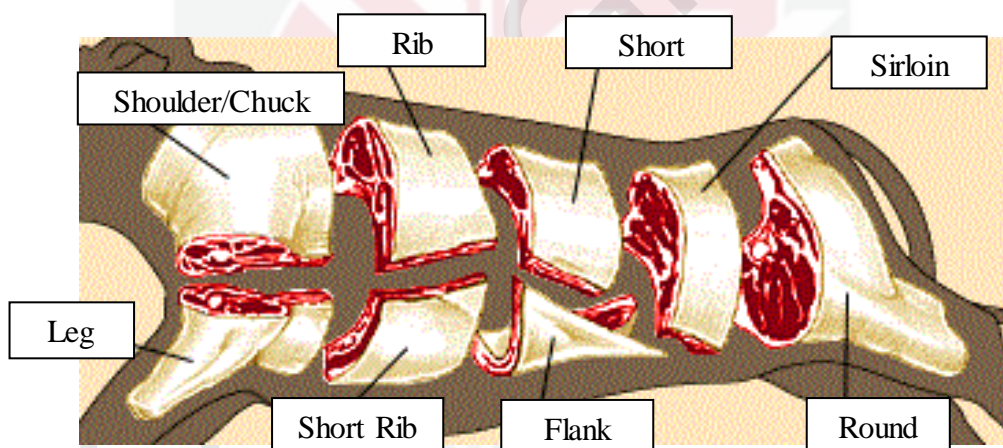


Figure 1.3: The various meat cuts practiced in Malaysia

(Source: MARDI, 2005)

In the development of other meat products, research in MARDI has shown that the usage of local crossbred animals are better for making sausages, cold cuts and burgers than the imported yearlings. This is due to the slightly tougher nature and the less fat content of the local animals, which make them easier for processing and compacting. This factor together with the Halal nature of the meat will make the development of downstream products a lucrative business for the local beef entrepreneurs.

Meat storage is done through two processes of chilling and freezing. For the chilling process the meat is kept in storage at temperature between 0-4 °C. the purpose of this storage is to reduce bacterial activity. However the Pseudomonas species are still active

in temperatures less than 20°C. While for freezing method the meat is kept at temperatures less than 0°C. It has been recorded that the lower the freezing temperature the longer the meat will last.



1.9 Problem Statement

Given the changing nature of availability of foods and preferences, Malaysian consumers are becoming more health conscious towards food choice preferences has been tracking on variety of attributes. Food safety, quality, hygiene, price and the impact of the country of origin on beef choice has been widely examined and revealed to be relatively dominant attributes. Consumers are now more aware on what kind of food they consume. The preferences for beef has caused consumers to become more aware and get the best quality of beef for their consumption. Texture was the most important attribute for red meat as it contributed 48.12% in relative importance as compared to freshness and packaging. The main reason why consumers are less concerned with freshness and preferences when purchasing meat is associated with food preparation. Thus consumers are searching for beef preferences that are safe to consume and closer to their main choices.

Nowadays Malaysians are experiencing dramatic changes in their lifestyles, which impact the way they purchase their food. In line with growing affluence and urbanization these consumers are exposed to different types and parts of beef like main cuts known as chuck, rib, sirloin, short loin, round, flank, short rib and also leg in many food outlets, fast food restaurants, supermarkets, night markets, and farmers markets. They also care for food safety, the environment, and fair trade and as a result they have become more health and moral conscious. Each consumer may have his or her own preference and it may vary from preparation, texture, taste, color, freshness and also the country of origin. Food safety and food hygiene have also become important factors for beef attributes and preferences by consumers.

At the same time it is essential to consider that beef attributes are credence goods and therefore cannot be checked directly by consumers, consequently the process of consumer decision-making is largely influenced by the level and quality of information possessed and supplied in the market. In other words, as consumers are exposed to beef products with a greater variety of features and attributes that are preferred, they will certainly show a greater attitude for those characteristics they value. There is some existing evidence from a recent study that shows consumer attitudes are significantly and positively related to preferences. So attitude has been proven to influence choice or increase the intention to purchase a product. This it suggests that there is a need for more investigation on whether attitude can influence, create or enhance the relationship between beef attributes and consumer preferences for beef consumption.

There is much change in the consumer patterns in Malaysia. Some people may be very familiar with beef because of the environment and the society while they may also be concerned with health issues regarding beef products. The amount of imported beef is increasing in Malaysia even though the government itself is trying to have its own cattle farms and production facilities. The people are also giving a very positive response to beef products creating a need to explore factors which are likely to influence the beef choice and people preferences such as appearance, texture, color, juiciness, freshness and tenderness.

1.10 Objective Of The Study

The general objective of this study is to determine the preferences of the Malaysian consumers for specific attributes in beef.

The specific objectives are:

- i. To determine the importance of beef attributes which are most preferred by consumers;
- ii. To explore the latent factors that may influence consumers' beef choices and preferences;
- iii. To identified the impact of attitude as moderator on the relationship between external factors (society and environmental influence) and product factors (product attributes, price, and country of origin)to product choice and preferences.

1.11 Significance of The Study

Beef preference and choice is meaningful to gain insight into beef consumption patterns. With rapid population growth and improved per capita income, as well as lifestyle changes resulting from urbanization, it is predicted that there will be further changes in demand for beef products and related preferences in the country. The study will benefit the local marketers by diversifying beef consumption patterns and beef market potential in Malaysia. The aim of this study is to gain knowledge about consumer preferences and their attitudes in consuming beef. Thus this study hopes to fill the gap of Malaysian consumer preferences and their attitudes influencing beef consumption in the existing literature.

1.12 Organization of The Thesis

The thesis is divided into five chapters. Chapter one discusses the background of the study and the formulation of problem. All the definition and terms used in this study are listed in this chapter. Chapter two displays a review of literature on previous studies and findings related to the health concern, issues, food safety, beef preferences and attributes, and consumer attitudes. Chapter three explains the methodology and tools of analysis for this study. Each variable and determinant is theoretically explained and sample procedure and data collection procedure is discussed. Chapter four discusses the analysis and findings of the study. Lastly, chapter five explains the findings of this study. This chapter also includes recommendation, limitations and the conclusion for the study.

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