

## The preference and consumption of chicken lovers with race as a moderator – An empirical study in Malaysia

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### Article history

Received: 7 May 2012  
Received in revised form:  
3 July 2012  
Accepted: 13 July 2012

### Keywords

Chicken lovers  
poultry  
race  
health concern

### Abstract

Chicken meat is widely consumed and it is the most common and popular poultry species in the world. The preference and consumption of chicken meat have been tremendously increasing in Malaysia. About 120 respondents who took part in the study were classified into four groups namely routine chicken eaters, chicken likers, chicken lovers with a health concern and real chicken lovers based on their preference and consumption of chicken meat. It is worthwhile to mention that the taste, price, and easy to cook were statistically significant between the four groups. In addition, race moderates the relationship with Malays dominating the chicken lovers' category. It is interesting to observe that Malays prefer chicken meat with chilies, Chinese prefer chicken meat with sauce and Indians prefer chicken meat with salad. The findings of the study are useful to the broiler plants and agencies that are responsible in selling chicken meat. Further, the results may be used as a guide to the selection of chicken meat, and also to the restaurant owners in the selection of food to be offered to their consumers.

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### **Introduction**

The preference and consumption of chicken meat can be considered as a universal phenomenon and chicken meat is greatly accepted by consumers worldwide as compared to the other meat consumption. According to Norimah *et al.* (2008) chicken meat is one of the most consumed food in Malaysia amongst the urban and rural residents. The upward trend of chicken meat consumption is seen in Malaysia from 36 to 39 kgs of per capita consumption from 2000 to the year 2011. The increase of chicken meat consumption is due to the versatility of the meat, relatively low cost in comparison to other meat, the acceptance of the chicken meat to all religions and increase in the household income. Nestle (1999) indicated that meat consumption is viewed as a reflection of favorable economic conditions. In the case of Malaysia, the country has experienced rapid economic growth over the past few decades which contributed significantly to the changes of food habits and food consumption patterns. The population of Malaysia consists of many ethnic groups with diverse religions and beliefs; therefore food consumption differs from one religion to another. Meat consumption in particular is

determined by the religions where pork is forbidden to Muslims and beef is prohibited to Hindus, which makes poultry meat highly consumed due to its religious acceptance amongst the meat commodities. Poultry production and consumption in Malaysia is projected to increase by 24% in 2013. This is due to the increased demand from consumers with higher incomes and the perceptions that poultry meat is healthier than other meats. Despite the growth of chicken meat consumption in Malaysia, there is a lack of research on identifying the factors influencing chicken meat preference and consumption. Further, there is no literature available which discusses on chicken lovers with race as a moderator. Tey *et al.* (2008) conducted a study on the consumers' preference for beef quantity, quality and lean beef and analyzed that the consumption behavior among different races in Malaysia. Hence, the present study is conducted to identify the factors influencing chicken lovers in Malaysia and to determine whether race moderates the relationship between these factors and chicken lovers.

### *Overview of poultry industry in Malaysia*

According to the Federation of Livestock Farmers'

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Associations of Malaysia (2011), in the year 2010, there were three grandparent stock farms supplying 90.6% of the parent stock chicks needed by the parent stock farms. There are 25 parent stock farm companies in the Peninsular Malaysia which produced more than 548 millions broiler day-old-chicks in the year 2010. The major breeds were Cobbs and Ross which accounts for 96.2% of utilization. Approximately, in the year 2010, there were 3200 broiler grower farms producing 523 million birds, in which 43 million live birds were exported to Singapore. About 30% of broilers are channeled through modern processing plants and sold in supermarkets. The remaining is sold as live or dressed birds in wet markets. The most well known poultry operations in Malaysia is Leong Hup Holdings Berhad (LHH) which was incorporated in 1979. LHH produces 130 million day-old chicks per annum, capturing approximately 22.53% of the day-old chick market and becomes the biggest broiler distributor by distributing approximately 3 million broiler chickens per month. Pricing of chicken meat has increased from year to year and has risen from RM7 per kilo in 2010 to about RM7.80 in 2011 and the whole chicken could cost around RM14 (Carvalho, 2011). The rise in chicken price was caused due to the local and external factors ranging from the increase in prices of day-old chicks and the global prices of maize, the main food for chicks. Malaysia is known as an exporter of poultry livestock and meat namely chicken, turkey and duck to the neighboring Asian countries. Malaysia has gained approximately RM 2.7 billion worth of export which contributed significantly to the country's economic growth (Ministry of Agriculture and Agro-based Industry Malaysia, 2011).

#### Literature review

The ingredients added to the food such as herbs and spices contribute to the food quality and variety of ingredients are widely used by people around the world. Marinating prior to cooking has been used frequently for meat products which bring effects to sensory qualities, nutrient content of meat, yield processing and antimicrobial action (Dong *et al.*, 2011). In the context of chicken meat, it is so versatile and could easily be prepared. Chicken meat can be consumed on its own although some perceived it as tasteless without any mixture of ingredients or may be used as a base ingredient for other dishes (Kennedy *et al.*, 2004). For instance, chicken meat can be used as a pizza topping (Singh and Goyal, 2011). The convenience and versatility of chicken meat can also be enhanced by the wide range of pre-prepared sauces which enables the creation of a different chicken dish

each day and this contributes to the high consumption of chicken meat. A taste evaluation is an attribute which is experienced after using the product (Ford *et al.*, 1990). Consumers give priority to food taste as part of the quality (Min and Min, 2011). Glanz *et al.* (1998) indicate that taste is the most important influencing factor in food choices, followed by price. In the context of chicken meat, it is preferred over mutton or beef because of its great taste. Consumers look for important quality aspects of meat such as the good and tender taste, juicy, fresh, lean, healthy and nutritious (Grunert, 1997). While mutton has lesser consumption due to its strong smell and harder meat, chicken meat on the other hand has tender and a soft texture. It is also known that consumers prefer food which is tastier and easily available. Freshness also plays an important role in determining consumers' selection of meat.

Malaysia is a multi racial and religious country. Chicken meat is the most common dish serves during the festive season for the Malays, Chinese or Indians communities. For the Malays, among the famous chicken dish served during the Eid Festival is serunding which is the desiccated meat, chicken or fish fried with chili (Anon, 1995). While the Chinese celebrate the Chinese New Year festival, duck or chicken is served during this festive celebrations (Lee, 1986). A wide variety of traditional spicy food are served such as chicken tandoori during the Deepavali festival (Shari *et al.*, 2005). The rise in the habit of purchasing and cooking chicken meat is not only observed in Malaysia, but it is true in other countries. In Ethiopia, the religious festivals periodically shifted local demand and prices of poultry (Aklilu *et al.*, 2007). Chicken meat is also served during Christmas festival and one of the unique dishes served in India during this season is chicken Manchuria (Rao *et al.*, 2005). The rise in chicken meat demand is also observed in Myanmar during festive seasons. According to Henning *et al.* (2006), at the time of major festivals, chickens are in demand, hence higher prices have to be paid by the middlemen to the farmers in Myanmar in order to fulfill the demand. According to Guerrero-Legarreta and Hui (2010), chicken meat remains as the most available and cheapest source of animal protein as compared with beef, pork and mutton. Demand for chicken meat is also increasing especially for the food-service industry, institutional and fast-food sectors. These demands are not only for fresh chicken meat but also for products such as frozen chicken meals, precooked meals and chicken burgers. Besides, poultry cuts are sold directly to markets, hotels, restaurants and supermarkets as it is the cheapest protein source. Yeung and Morris

(2001) indicated that chicken meat has been the most popular meat in the UK partly because it has become relatively inexpensive. Thus, easy to cook is predicted to influence chicken lovers in Malaysia.

Maintaining good health throughout the entire Lifecycle of human being is partly driven by healthy diet and nutrition. Both Bansback (1995) and Becker *et al.* (2000) have noted that reducing the impact of price on meat consumption behavior and suggested that health, convenience and quality issues are more important and influencing on behavior. However, not the entire world population is fortunate to be consuming healthy food. Poverty and injustice are the root causes of malnutrition (WHO, 2003). The food consumption of higher income population varies in animal proteins and fats, which include poultry, meat and dairy products. Poultry consumption is the fastest to grow. According to FAS (2001), poultry meats increasingly in demand in developing countries because of its lower price and consumer's perception of healthy and safe as compared to other meat. Consumers in developed countries such as America are consuming a lesser amount of red meat such as beef and more non-red meats such as poultry meat (Rimal, 2002). According to Slattery *et al.* (1998), consumer replaced red meat with poultry to reduce risk for colon cancer aside from other food substitutions. A preference study for different items of meat among university students in northern Poland proven that chicken ranked as the highest since young adults preferred low-fat meat (Babic-Zielinska, 1999). However, there are side effects of consuming too much chicken and chicken is already known to have its own diseases such as Avian Coccidiosis, Marek's disease, fowl typhoid, Newcastle disease and fowl coryz (Mwale *et al.*, 2005). The usage of antibiotic in food-producing animals contributes to human drug resistance and this caused mixture responds from the scientific community, animal health experts and consumer advocates as to whether it brings benefits to the human society (FMI, 2011). The chicken meat's vulnerability to bacterial infections such as Salmonella enteric could cause Gastroenteritis or gastric flu to human. Fearnley *et al.* (2011) conducted a study in South Australia on 94 human cases which resulted in the Salmonella infection outbreak is linked to food containing chicken meat and eggs. Preserving chicken meat for long days would lead to health issues as well. It could destroy the natural nutrients of the food and would provide negative flavors to the food which in turn will create health hazards.

Race is a cultural characteristic which may influence people in their food selection or nutrition consideration (Rimal and Fletcher, 2003). The taste

Table 1. Food calories and nutrients

Meat (100 g)	Protein (g)	Fat (g)	Calories (kcal)	Cholesterol (mg)
Beef (top sirloin, separable lean and fat, trimmed to 1/8" fat, choice, pan-fried)	28.77	21.06	313	98
Lamb ( frozen, leg, whole (shank and sirloin), separable lean and fat, roasted)	24.81	15.56	246	101
Pork (cured, bacon, broiled, pan-fried or roasted)	37.04	4.1.78	541	110
Chicken (roasting, light meat, meat only, roasted)	27.13	4.07	153	75
Chicken (broilers or fryers, breast, meat only, stewed)	28.98	3.03	151	77
Whitefish (mixed species, cooked, dry heat)	24.47	7.51	172	77

and smell of food prepared by different races as well as the judgment on sentiment and taste would represent the racial identities (Slocum, 2010). The study conducted by Morland and Filomena (2007) in Brooklyn, New York indicated that the availability and variety of fresh produce is associated with a neighborhood racial composition which contributed to differences in intake among residents. In Malaysia, food consumption and restrictions on food items are guided through race, culture and most importantly religion. Religion influences consumer attitude and behavior in general (Musaiger 1993; Delener, 1994; Pettinger *et al.*, 2004) and food purchasing decisions and eating habits in particular (Mennell *et al.*, 1992; Steenkamp, 1993; Steptoe *et al.*, 1995; Shatenstein and Ghadirian, 1997). However, the chicken meat is deemed acceptable by all races in Malaysia with Muslims consume the halal chicken meat. Malay, Chinese and Indian populations consume chicken meat in their everyday routine life whereas there are some religious restrictions on other meats such as pork and beef. Globally, minimal number of studies have been undertaken to identify the factors influencing the preference and consumption of chicken meat. The purpose of this study is to examine how the variety of factors including, ingredients, taste, easy to cook, price and health concern affect consumers' food choices. Race is treated as the moderator for this study which is a new attempt. The calories and nutrients of various meats are listed in Table 1. Compared to other meat types, chicken is perceived as healthier in terms of fat content. Chicken and in particular chicken breast fillets perceives as a lean, low-fat food (Kennedy *et al.*, 2004).

## Research methodology

The present study is conducted in Malaysia by distributing the questionnaire electronically through emails from the available data base. The list of items in the questionnaire is provided in Appendix. In order to increase the trustworthiness of the study, data for this research was obtained through questionnaire survey received from the respondents during the two month survey period from April 2011 to May 2011. On the whole, 500 questionnaires were sent

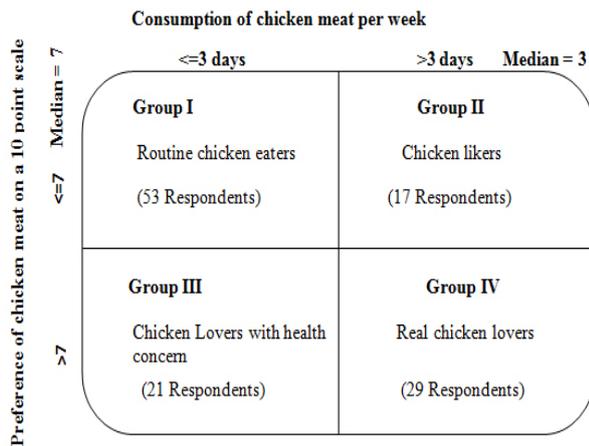


Figure 1. Four groups of chicken eaters

through emails and 167 (33.4%) were responded. The questions used in the questionnaire survey are self constructed since there is no research on the present study in Malaysia. The questionnaire survey has gone through the pilot study of 30 respondents to measure its face validity and reliability. The pilot study sample of 30 respondents was considered from the list of experts among poultry industry in Malaysia. Since the feedback from the pilot study sample demanded more corrections in the questionnaire, the sample was excluded for the main study. Based on the responses and opinions from the pilot study, the appropriate amendments were made to the questions in the questionnaire. The respondents of the study were asked to answer two questions namely:

- 1) Have you consumed chicken meat in Malay, Chinese and Indian restaurants? Yes/No
- 2) If yes to question (1), have you tasted all dishes of chicken meat? Yes/No

Those respondents who have said 'Yes' to both the questions were included as the sample for the study. The above two questions were appeared in the beginning of the questionnaire and served as the filtering questions to make the research more scientific at the same time to gather quality data from the respondents. At the outset, 120 (71.9%) respondents fulfilled the inclusion criteria and 47 (28.1%) were eliminated from the study in the first filtering stage. Thus, a total of 120 respondents took part in the study and their responses were used for the statistical analysis. Female respondents dominated the survey in 81 (67.5%) and 39 (32.5%) were male respondents. The age of the respondents ranged from 16 years to 60 years. 60 Malay respondents (50%) dominated the survey, followed by Chinese with 42 respondents (35%) and 18 Indian respondents (15%). The majority of the respondents (38.6 %) earns the

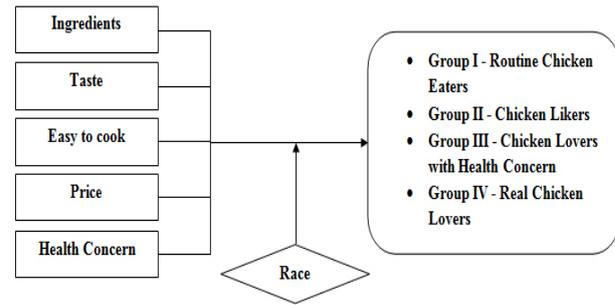


Figure 2. Research framework

salary between RM3000-RM 6000.

The study investigates the effects of five factors namely ingredients, taste, easy to cook, price and health concern on four groups of chicken eater which is derived from median scores of preference rating and consumption of chicken meat per week. The five factors are measured on a Likert scale 1-5 with 1 stands for strongly disagree, and 5 stands for strongly agree. The moderator, race is the nominal variable. The variable preference of chicken meat is measured in an ordinal scale from 1-10, 1 being the least favorable and 10 being the most favorable. The two dependent variables namely chicken preference rated on a 10-point scale and the number of days of consumption of chicken meat per week are considered for identifying groups. The respondents are categorized into four groups namely routine chicken eaters, chicken likers, chicken lovers with a health concern and real chicken lovers. The groups were derived from the median scores of preference rating and consumption of chicken meat per week. The median value is 7 for chicken preference and 3 for the number of days of consumption per week. Respondents who consumed chicken meat for 3 days or less per week and rated 7 or less for preference are categorized as Group I namely Routine Chicken Eaters. Group II consists of respondents who consumed chicken meat for more than 3 days in a week but rated 7 or less towards likeness for chicken meat and are categorized as Chicken Likers. Group III is categorized for those respondents who consumed chicken meat 3 days or less in a week but rated more than 7 and this group is identified as Chicken Lovers with Health Concern. The respondents who consumed chicken meat more than 3 days in a week and rated their preference of chicken meat for more than 7 is categorized as Real Chicken Lovers. These groups are illustrated in Figure 1.

Among the 120 respondents, 53 (44.2%) respondents fall under Group I, 17 (14.2%) respondents are categorized under Group II, 21 (17.5%) respondents fall under Group III and 29 (24.1%) respondents are in Group IV. In terms of

race segregation among these four groups, chicken lovers are dominated by the Malays, followed by Chinese and Indians. Malay dominated the chicken lovers' category as they have limited choices of meat, whereas Chinese have plenty to choose and Indians can opt for vegetarian food as an alternative option. Figure 2 depicts the research framework of the present study.

#### *Hypothesis development*

Ingredients were important in enhancing the flavor and contribute to the quality aspect of the food (Giusti *et al.*, 2008). Marinating meat products are a frequent method in flavoring food particularly in meat (Dong *et al.*, 2011). The use of ingredients such as the mixture of herbs and spices provides the delicious taste of chicken meat (Peter, 2004). Chicken meat is easily prepared and versatile as it can be used as the base ingredient for other dishes and it can be mixed with pre-prepared sauce to enhance the taste (Kennedy *et al.*, 2004). Accordingly, this study hypothesizes that:

H1: The preference of ingredients used in chicken meat is significantly different among the four groups of chicken eaters.

The taste of chicken meat is deemed to be important as it influences the chicken lovers to continuously consume chicken meat. Kennedy *et al.* (2004) have indicated that consumers prefer corn-fed chicken meat as it is tastier, more tender and fresh. The findings by Muhamad Sori (2009), proves that the taste of chicken has contributed to the tremendous consumer acceptance forecasted the minimum raw chicken requirements of two million birds a month for Kentucky Fried Chicken Holdings. Accordingly, this study hypothesizes that:

H2: The preference of taste of chicken meat is significantly different among the four groups of chicken eaters.

Compared to other meat, chicken meat is easier to prepare and may be served at a quicker phase during festival seasons. The convenience may be considered as an important determining factor in consumer behavior towards food products (Candel, 2001). Accordingly, this study hypothesizes that:

H3: The views on easy to cook chicken meat differs among the four groups of chicken eaters.

Price is an important factor in determining consumers' product selection. Relatively, when the price of a product increases, it contributes to

decrease in demand. However, consumers have a positive response towards consuming chicken meat although there is an increase in price as it is consumed globally (Memon *et al.*, 2009). According to Guerrero-Legarreta and Hui (2010), chicken meat remains as the most available and cheapest source of animal protein as compared to beef, pork and mutton. Chicken meat is still considered cheaper than mutton which makes it more favorable among consumers (Wadud, 2006). Accordingly, this study hypothesizes that:

H4: The price of chicken meat is a concern among the four groups of chicken eaters.

Chicken has its own nutrition and this certainly influences chicken lovers. Consumers in developed countries are consuming a lesser amount of red meat such as beef and more non-red meats such as poultry (Rimal, 2002). Consumer replaced red meat with poultry to reduce risk of suffering ill health (Slattery *et al.*, 1998). Chicken meat is also preferred by young adults who seek for low fat meat (Babicz-Zielinska, 1999). However, chicken meat has its own side effects such as Avian Coccidiosis, Marek's disease, fowl typhoid, Newcastle disease and fowl coryz (Mwale *et al.*, 2005) and Salmonella infection outbreak (Fearnley *et al.*, 2011). Accordingly, this study hypothesizes that:

H5: The health concern matters a lot among the four groups of chicken eaters.

The availability and variety of fresh produce is associated with a neighborhood racial composition which contributed to differences in intake among residents (Morland and Filomena, 2007). In Malaysia, food consumption and restrictions on food items are guided through race, culture and most importantly religion and chicken meat is accepted by all religions. Accordingly, this study hypothesizes that:

H6: The race moderates the relationship between the characteristics of eating behavior and the four groups of chicken eaters.

#### *Significant findings and results*

According to Sekaran and Bougie (2010), univariate statistical technique has been used to examine the relationship between two attributes. Chi-square test for independence of attributes has been applied to study the association between race and chicken meat parts and also the association between race and side dish for chicken meat. Six common chicken meat parts were included in the

Table 2. Race verses parts of chicken

Preference of chicken meat part	Yes			No			Statistical Significance
	Malay	Chinese	Indian	Malay	Chinese	Indian	
Legs	15	12	5	45	30	13	$\chi^2=0.175, p=0.916, NS$
Wings	31	21	13	29	21	5	$\chi^2=2.808, p=0.246, NS$
Breast	26	20	11	34	22	7	$\chi^2=1.755, p=0.416, NS$
Thigh	39	27	14	21	15	4	$\chi^2=1.182, p=0.554, NS$
Liver	7	5	2	53	37	16	$\chi^2=0.008, p=0.996, NS$
Neck	10	3	3	50	39	15	$\chi^2=2.143, p=0.343, NS$

NS: Not Significant

Table 3. Preferences of side dishes by chicken eaters

Preference of side dishes	Yes			No			Statistical Significance
	Malay	Chinese	Indian	Malay	Chinese	Indian	
Sauce	36	32	8	24	10	10	$\chi^2=6.042, p=0.049, Sig.$
Chilies	45	25	15	15	17	3	$\chi^2=4.701, p=0.097, Sig.$
Vinegar	1	3	1	59	39	17	$\chi^2=1.958, p=0.376, NS$
Soy Sauce	17	17	3	43	25	15	$\chi^2=3.701, p=0.157, NS$
'Belacan' Paste	16	18	5	44	24	13	$\chi^2=3.167, p=0.205, NS$
Salad	14	7	8	46	35	10	$\chi^2=5.351, p=0.069, Sig.$
Rice	42	22	11	18	20	7	$\chi^2=3.290, p=0.193, NS$

NS: Not Significant ; Sig.: Significant

questionnaire namely legs, wings, breast, thigh, liver and neck. The respondents are requested to answer this question and can select as many chicken parts as they prefer. From Table 2, the most consumed chicken part is thigh followed by breast and the least favored chicken part is liver and neck. It is concluded that the race and the preference of parts of chicken are not associated as Chi-square statistic values are not statistically significant. It implies that the three major races in Malaysia, namely, Malay, Chinese and Indians consume in equal ratio the different parts of the chicken.

Chicken meat can either be consumed alone or with different side dishes. It is so unique that chicken meat goes along with almost all common side dishes like sauce, chilies, vinegar, soya sauce, belacan paste, salad and rice (Table 3). The respondents are given the choice to choose more than one side dish based on their consumption and preference. It is worthwhile to mention that Chinese prefer sauce as the side dish for chicken and is found to be significant ( $\chi^2 = 6.042, p=0.049$ ). Malay respondents prefer chilies more than other side dishes although it is significant at the 10% level ( $\chi^2 = 4.701, p=0.097$ ). As far as the Indians are concerned, they like salad as a side dish for chicken meat ( $\chi^2 = 5.351, p=0.069$ ). This information may be vital to the restaurants and hotels to strategize their business activities.

### Factor analysis and reliability analysis of independent variables

Factor analysis and reliability analysis were used to test the goodness of data (Table 4). The questions of the five independent variables, ingredients, taste, easy to cook, price and health concern were included for the factor analysis to find whether their subjective measurements in the Likert scale (1 to 5) are actually converging to their respective domains. The rotated component matrix of the factor analysis split into two factors for health concern which are categorized as health concern-1 and health concern-2. Health concern-1 is pertinent to the negative impact of consuming chicken whereas health concern-2 is connected to the positive side. Of the 23 questions considered for the five independent variables, three questions (B3, E1, E3) were dropped because the factor loading is below 0.5. Since fried tandoori (B3) is mostly preferred by Indians there was disagreement among races. With regard to the price of chicken, Malaysians feel not so economical as compared to other meats (E1). In addition, the respondents do not agree that hawker shops chicken stuff is cheaper than chicken meat sold at restaurants (E3). In fact, the quantity provided in hawker shops is much more than in the so called restaurants and hence no difference in price. All other questions were retained for further data analysis. For reliability, Cronbach's Alpha was used to determine whether the measurements of the constructs were consistent. Cronbach's Alpha values of the independent variables are above 0.5 and fulfill as per Hair *et al.* (1998).

### Multivariate analysis of variance (MANOVA)

Table 5 provides the mean  $\pm$  standard deviation of the four groups of chicken eaters. Invariably, the average scores are above 4 on a 5-point scale in the real chicken lovers group for all independent variables. The real chicken lovers prefer ingredients, taste, easy to cook and least concerned on price, health concern-1 and health concern-2. However, the average score is also above 4 on a 5-point scale for health concern-2 among all groups since the respondents realized the fact that chicken meat as healthy food. It shows that the grouping of respondents into four categories given in Figure 1 is highly justified and it is clearly evident that the data is authentic.

MANOVA analysis has been applied to study the factors influencing chicken lovers in Malaysia and the results are shown in Table 6. Two models have been constructed with model-1 tests the influence of the independent variables (IVs) on the dependent variable (DV) while model-2 tests whether the race moderates the relationship of IVs on DV. Out

Table 4. Rotated Component Factor Loadings and Cronbach's Alpha for Independent variables (n=120)

Construct	Items	Factor Loading				
Ingredient	B2. Prefer chicken meat cooked in broast	0.777				
	B1. Prefer chicken meat cooked with gravy	0.777				
Taste	C2. Like the tender/soft taste of chicken meat		0.756			
	C1. Like the texture of chicken meat		0.74			
	C3. Give importance to taste of chicken meat		0.72			
	C4. Prefer chicken meat than any other meat		0.667			
	C5. Prefer chicken meat cooked in sate style		0.574			
Easy to cook	D4. Chicken dish is easy to be prepared during any festivals			0.832		
	D3. Chicken meat is a common dish to be served in any festivals			0.761		
	D1. Prefer cook chicken dish for my guests			0.705		
	D5. Cook chicken meat because it can easily be purchased			0.628		
	D2. I only cook chicken dish during special occasion			0.575		
Pricing	E4. Home-made chicken dish is less costly than outside				0.819	
	E2. My consumption of chicken meat depends on the price				0.819	
Health Concern-1	F6. Cooked chicken meat without proper cleaning leads to some health problem					0.87
	F5. Consuming half cooked chicken leads to some health problem					0.85
	F4. Preserving chicken meat for more days leads to some health problem					0.84
	F3. Too much of chicken meat leads to health problems					0.72
Health Concern-2	F1. Chicken meat is not injurious to health up to certain consumption					0.83
	F2. Chicken meat has good protein as compared to red meat					0.82
KMO		0.5	0.747	0.654	0.5	0.73
Bartlett's test of Sphericity		5.548, p<0.05	122.2, p<0.01	171.7, p<0.01	15.36, p<0.01	258.419, p<0.01
Total Variance Explained		60%	48%	50%	67.04%	45.76%
Cronbach's Alpha		0.51	0.703	0.718	0.53	0.679

of the six independent variables in model-1, three variables taste, price and easy to cook are found to be statistically significant. Understandably, the chicken lovers were choosy on taste, ready to pay any price for chicken meat and also opinioned that chicken meat may be easily cooked compared to other meats. Interestingly, ingredients, health concern-1 and health concern-2 are not significant between the four groups as chicken eaters were expressing the same concern on these variables. In model-2, the race highly moderates the relationship between IVs and DV. This may be due to the fact that Malays have a lesser meat choice compared to other races in Malaysia. Race-1 (Malay) and race-2 (Chinese) give more importance to the taste of chicken meat (F=2.708, p < 0.05).

Table 5. Mean ± standard deviation of study variables

Groups	Ingredients	Taste	Price	Easy to cook	Health concern-1	Health concern-2
Routine Chicken eaters (n <sub>1</sub> =53)	3.53±0.77	3.55±0.64	3.59±0.80	3.52±0.64	3.70±0.49	4.07±0.83
Chicken likers (n <sub>2</sub> =17)	3.59±0.81	3.79±0.42	4.09±0.60	3.79±0.43	3.87±0.50	4.21±0.56
Chicken lovers with health concerns (n <sub>3</sub> =21)	3.83±0.73	3.74±0.44	3.83±0.58	4.05±0.67	4.10±0.61	4.40±0.51
Real Chicken lovers (n <sub>4</sub> =29)	4.02±0.81	4.13±0.68	4.14±0.78	4.07±0.68	4.16±0.70	4.21±1.14

Table 6. Significant findings of MANOVA

Variables	Model-1: IVs on DV		Model-2: IVs+MV on DV	
	F	Sig.	F	Sig.
Ingredients	0.003	1	0.021	0.996
Taste	2.868*	0.039	2.708*	0.048
Price	2.823*	0.042	2.256	0.086
Easy to cook	2.674*	0.05	2.216	0.090
Health concern-1	2.236	0.087	1.982	0.121
Health concern-2	2.507	0.062	2.385	0.073
Race-1	-	-	4.124**	0.008
Race-2	-	-	6.984**	0.000

\* p < 0.05; \*\* p < 0.01

In comparison with beef and mutton meat, chicken meat is tender and has soft texture which makes it edible by all ages of people. Besides, chicken meat has less fat than red meat and is easier for food digestion. Grunert (1997) indicated that the tender taste, juicy, fresh, lean, healthy and nutritious meat is an important aspect for consumers in determining their choice of meat. In the present study, the respondents favor chicken meat as the most common dish served during special occasions, functions and festivals since chicken meat is healthy and nutritious. According to Guerrero-Legarreta *et al.* (2010) and Yeung *et al.* (2001), chicken meat is the most available and cheapest source of animal protein as compared to beef, pork and mutton. Based on the present study, respondents do not perceive ingredients as an important factor to influence chicken lovers. The respondents do aware of the positive and negative health effects of consuming chicken meat. The positive effect of consuming chicken meat is that it is the source of protein that the human body requires (Rimal, 2002). Consuming chicken meat to the limited level will not cause bad effects to health. However, frequent chicken meat consumption may lead to health problems (Jensen *et al.*, 1998) such as antibiotic residues, cholesterol and salmonella bacteria (Fearnley *et al.*, 2011). Besides, if chicken meat is not properly cleaned and cooked may also lead to potential health hazards.

**Conclusions**

The upward trend in the consumption of chicken meat is seen in Malaysia over the last one decade as per capita consumption has gone up from 36 kgs to 39 kgs. The present study identifies the factors influencing chicken lovers in Malaysia with race as the moderating variable. The study has succeeded in determining four groups of chicken meat eaters who are classified under routine chicken eaters, chicken likers, chicken lovers with a health concern and real chicken lovers based on the preference and the consumption of chicken meat. It is worthwhile to mention that Malays dominate the chicken lovers category among the three major races (Malay, Chinese and Indians). The selection of meat is limited to Malays as they consume halal food and chicken meat has no religious restrictions to the Muslims. Whereas for Chinese, besides consuming chicken meat, they have plenty of other meat choices including pork. Indians on the other hand, can opt for vegetarian food as an alternative to meat. There is no association between race and preference of chicken meat parts as all races consume an equal ratio of all parts. In terms of the side dishes, Malays prefer chicken meat with chilies, Chinese consumes chicken meat with sauce and Indians prefer salad with the chicken dish. This information is useful for restaurants to plan the marketing strategy to attract customers of all races in Malaysia. The soft and tender taste of chicken meat distinguishes it from beef, mutton, pork and it contributes to the level of preference and consumption of chicken meat. Consumers are well aware of the positive and negative side effects of consuming chicken meat. Although it is a great source of protein, too much consumption, preserving the meat for too long, improper cleaning and cooking will lead to health issues. Meanwhile, there is a high rate of health consciousness on chicken meat eaters in the preference of ingredients and the preparation of chicken meat. Chicken lovers prefer the taste, ready to pay any price for chicken meat and also feel that chicken meat may be easily cooked compared to other meat. The ingredients do not play much role in influencing chicken lovers. The findings and results of this article are beneficial to the broiler plants to know whether the significant factors drive consumers to continuously consume chicken meat and to find the criteria of consumers in purchasing the meat. Information such as the price fluctuations of chicken meat and the taste is useful to agencies which are responsible in managing broiler plants. With the available information provided in the article, Federal Agriculture Marketing Authority (FAMA) can set targets and product standards to meet customer's demand, monitor performance, and to develop

Appendix: Constructs of the questionnaire items measured on a 5-point Likert scale

Independent variables
<b>B. Ingredients</b>
B1. I prefer chicken meat cooked with gravy.
B2. I prefer chicken meat cooked in broast (broiling and roasting) method.
B3. I prefer fried tandoori style of chicken dish.
<b>C. Taste</b>
C1. I like the texture of chicken meat.
C2. I like the tender/soft taste of chicken meat.
C3. I give importance to taste of chicken meat.
C4. I always prefer chicken meat than any other meat.
C5. I prefer chicken meat cooked in sate style.
<b>D. Easy to cook</b>
D1. I always cook chicken dish when I invite guests to my house rather than other meat.
D2. I only cook chicken dish during special occasion.
D3. Chicken meat is a common dish to be served in functions or any festivals.
D4. Chicken dish is easy to be prepared during functions or any festivals.
D5. I cook chicken meat because it can easily be purchased.
<b>E. Price</b>
E1. Price of chicken meat is economical than other meat.
E2. My consumption of chicken meat depends on the price.
E3. Price of chicken dish in hawker shop is much cheaper than restaurant.
E4. Home-made chicken dish is less costly than outside.
<b>F. Health concern</b>
F1. Chicken meat is not injures to health up to certain consumption.
F2. Chicken meat has good protein as compared to red meat.
F3. Too much of chicken meat leads to health problems.
F4. Preserving chicken meat for more days leads to some health problem.
F5. Consuming half cooked chicken leads to some health problem.
F6. Cooked chicken meat without proper cleaning leads to some health problem.

marketing strategies for Malaysian agricultural products particularly in the poultry industry. The present study analyzes race as the moderating variable and it provides unique distinction from the existing literatures. The result highlights the difference in preference of side dishes among the three major races in Malaysia and similarity in the consumption of chicken meat parts. This information will be useful to food based businesses as to plan the right strategy in attracting multiracial customers. For instance, while halal meat is important in the daily consumption for the Malays, the preference of chilies as the side dish would be beneficial to Malay restaurant owners. This type of information may be extended to the agricultural sector as an effort to increase the chilies plantation and production. The present study is significantly contributing some directions to the broiler plants in Malaysia and to the government agencies in the decision making process particularly to balance the demand and supply situations of chicken market.

### Acknowledgements

The authors wish to thank the reviewers and the editor Professor Dr. Son Radu for their valuable comments and suggestions which have really improved the quality of our research article.

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