

**MALAYSIAN PERCEPTION AND ATTITUDE TOWARDS GREEN CONCEPT  
AND GOING GREEN****Phuah Kit Teng**

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**ABSTRACT**

*Food is the basic need for all human being and consumers have the right to choose the good quality and safe foods. The series of food safety scandal, health consciousness, environmental and animal welfare issues have caused the consumers to increasingly aware about the food they consume. Consumers begin to search for green products in the market that supposedly produced under the friendly environment and green in nature. However, it is only the beginning of the development of the green concept in Malaysia. Thus the objective of this study is to determine the relationship between the socio demographic variables towards the consumers' attitude with regards to environmental protection, food safety concern, health consciousness and animal welfare concern. Descriptive analysis, Chi-square and binary logistic model were used to accomplish the objectives of this study. The result shows that selected socio-demographic variables such as education level, income, age and gender are significantly influence the consumers' attitude towards health, environmental protection, food safety and animal welfare concern. The results also indicate that subjective norm, education level, income, attitude towards health, food safety and environmental concern are the factors that influence consumers' attitude towards green concept.*

**Field of Research:** Binary logistic model, environmental, food safety, green concept, health, socio-demographic

## 1. INTRODUCTION

Malaysia's current population of 28.3 million is expected to grow steadily over the years. The changes in socio-demographic and economic structures have influenced the Malaysia food industry directly and indirectly in producing foods that are needed by the growing population. Similarly the paradigm shift in consumer lifestyle, taste and preferences, improved standard of living and affluent society along with high purchasing power and technical advancement in agriculture and marketing have led to increase the demand for manufactured food, convenience food and health food. Consequently the increase in the consumers' awareness of safety, quality, healthy and nutritious value of food has increased the demand for functional, organic, green and natural food. Given all these changes in demand for safe and natural food, there are great opportunities for significant growth of these kinds of food industry in Malaysia.

Food is the basic need for all human being to support life therefore; consumers have the right to choose good quality and safe foods for their own consumption. The three factors which are always considered by the consumers are food safety, protection of the environment and animal welfare (Fraser, 2001). From the public's point of view, these three factors link together (Blanford et al., 2002). It is natural that an improvement in the animal rearing methods will result in better, healthier, safer and friendlier to the environment and have better in animal welfare (De Passille and Rushen, 2005). There is also a tendency to assume that environmental concern and food safety is much more important than animal welfare (Sorensen et al., 2001). However, according to Yiridoe et al. (2005), the major concern on buying the food products includes food safety, environment impact, animal welfare, whereas commodity attributes included health, taste, freshness and packaging. According to 9<sup>th</sup> Malaysia Plan (2006-2010), there is an increase in using the chemical and hazardous substances in the agricultural sector. In Malaysia there are three main sources of air pollution which come from the agricultural activities (irresponsible open burning activities), motor vehicles and the industries (Department of Environment Malaysia, 2006). Therefore in a country like Malaysia, to reduce the environmental issues and increase the sustainable production and consumption pattern, immediate changes in human behavior and cultural practices are needed (Oskamp, 2000).

Every year millions of people suffer and die due to diarrhea, food borne or water borne disease. According to WHO (2000), almost 3 million children in developing countries die each year due to diarrhea and food borne disease. Hence in consumers purchase decision making, food safety has become increasingly important over the past two decades and it directly affect their buying behavior (Knight et al., 2007). Food safety is important to the food industry operators as consumers look for safe, high quality and wholesome food products. Consumers are gaining more information and knowledge about the pesticide, insecticide, fungicide and herbicide that being used in food production. They are becoming more concerned about the health and safe aspects of food products (Shawn, 2004). Example of stopping purchasing apple juice by American consumers due to the high amount of pesticides in apple and this led to an economic loses for apple growers and processors in 1999 can be one of the solid evidence to support the idea of increasing the importance of food safety among the consumers (Knight and Warland, 2006, Wagner, 1999). Similarly "Mad Cow Disease" and "Foot and Mouth Disease" have led to the destruction of millions of cattle in Britain which was dramatic economic loss for the beef industry across Europe (CNN, 2000). The phenomenon of food safety and green concept also affect the Malaysian consumers. Malaysian consumers are now looking for wholesomeness, safety, tastiness and healthier foods to have a healthier diet and lifestyle. Many Malaysian consumers are becoming more aware about the food safety while purchasing food products (Radam et al., 2007). Study by Abdul Rahim (2009) also indicates that the consumers are more likely to have a positive attitude toward green food when they are more concern about the environmental issues and health consciousness.

According to Europe Union survey, consumers concern on animal welfare is more compared to their concern for food safety, nutrition and environment while making purchasing decisions (De Passille and Rushen, 2005). Various acts of cruelty and abuse against the animals have been reported over the last decade. The practice of keeping pigs in an unbearably tiny cage which is only 2 feet wide is banned in Florida, United Kingdom and Sweden. The dish prepares by force- feeding the geese and ducks in a massive amounts of grain using a long, thick metal tube to push all the way downs it throat have cause thousands of people in France, Hungary and Bulgaria stop eating ducks. Harper and Henson (2001) found that consumers concern on animal welfare like other attribute such as food safety, nutritional benefits and quality directly impact their purchasing behavior. The place, process and the condition of animals being kept and slaughtered become very important to the consumers. Besides of environmental sustainability, food quality and human health issues, animal welfare appears to be one of the main reasons to consume green food products by consumers (Grunert et al., 2004).

Malaysian government has made strong commitments to strengthen sustainable development. In a country where sustainable economy growth depends on careful protection of environment, existence the Ministry of Energy, Green Technology and Water (KeTTHA) can help to improve Malaysian's environmental performance. This ministry promotes green technology and eco-friendly products and services to grow sustainable economy. Besides increasing the public knowledge about "going green" it also encourages and motivates public to perform green behaviors by consuming the resources efficiently. In 2011, government has started "No Plastic Bag Day" campaign on Saturdays for the major grocery retailers. All the hypermarkets, supermarkets and petrol station will practice "No Plastic Bag Day" and if consumers ask for it, that would add 20 cent on plastic shopping bags and direct the fund raised to education program publicizing the environmental costs and impact of plastic bag. (New Straits Times, 2011). In October 2010, government announced to grant full excise duty exemptions on Hybrid cars (Eugene Mahalingam, 2011). Hybrid car can help to improve the environment because oil is a limited resource that not only has to be refined from the environment but it also creates carbon emissions when burned. In 2 September 2008, Canon marketing Malaysia launched "goes green" campaign to create awareness on environmental issues. In 2011, Metrojaya department store has launched "go green" campaign which has been done by highlighting environmental friendly products in the store. HSBC Bank Malaysia Berhad had launched Green Campaign for its commercial banking customers in the bank's efforts to reduce paper usage amongst its customers by at least 90 percent (Malaysia SME, 2009).

### ***1.1 Literature Review***

Consumers who are increasingly aware and concerned about the essentials of environmental issues are known as green consumers (Soonthorsmai, 2007). According to Ottman (1992), consumers purchase green products when their primary needs and wants for quality, availability, convenience, performance, and affordability are met. Consumers also purchase green products when they realized that green products can help to solve the environment problems. Roberts (1996) indicated that environmentally conscious consumers and consumers who believe the specific ecological activities can improve the environment issues are more likely to perform green consumer behaviors.

Green products are known as environmental friendly products or ecological products (Tan and Lau, 2010). Shamdasani et al, (1993) define green products as the products that will not threaten the environment, deplore the natural resources, can be recycle, reuse packaging or use less toxic materials. The definition of green products is very broad; according to Peter (2011), green products are products that guarantee that they are produced in a more environmental friendly way that minimal the impact of the environment as opposed to their non-green or conventional equivalents.

Roach (1991), indicates that consumers are concerned about the food safety and quality, environment protection and animal welfare when they make purchasing decision. Consumers' also belief and attitude have become two factors that will affect their intention on green food consumption. Consumers who are more concerned about the environment will prefer to use environmentally sound and most likely they will refuse to buy products that will harm the environment. Chris (2008) also shows that today consumers are beginning to have a more sustainable life, become more environments friendly and be concerned about their health and they have a desire to eat food that is known as green.

Green food is gaining more popular in the whole world especially in China. According to a survey done by Zeng and Xia (2009) in Beijing, consumers generally show great consciousness on food and majority of the household are familiar with green food and green label. They also indicate that 60% of the consumers' belief that green food is safer than conventional foods and they have a good knowledge of green food as the concept. According to Franziska (2008), 70.5% of the respondents in his study believe that green foods which grow locally are slightly more important than organic foods. However, both education and race will influence perceived behavioral control. It also showed that attitudes, subjective norm and income are the factors that affect consumers' intention to dine at green restaurants. According to Phuah et al., (2011a), consumers who have higher education level, income and consumers who care for health consciousness and food safety were more intent to purchase green foods in the near future. On the other hand Shahrudin et al., (2010) shows that consumers have a low level of importance on food safety concern but they have a higher level of health consciousness in Malaysia. The results of the study indicated that out of four factors, only perceived value and health consciousness influenced the customer purchase intention towards organic foods in Malaysia. The major factors determining Malaysian consumers' green purchasing behavior are consumers' referent, knowledge towards green foods, purpose to purchase green foods, motivation to consume green foods, understanding towards green foods and product price (Phuah et al., 2011b). Furthermore, Abdul Rahim (2009) found that in Malaysia, consumers who are concern about their health and environment will most likely have positive attitude towards green foods. Similarly, Golnaz et al. (2011) shows that the consumers' educational level, income and other factors such as food safety and environmental friendliness significantly influence Malaysian consumers' green foods purchasing intention. According to Sudiyanti (2009), subjective norms is the most significant and found to be the primarily predictor of women purchase intention for green food products. External variables such as the selected socio-demographic variables like race, area, age, education level and income have strong relationship with consumers' awareness towards green concept (Phuah et al., 2011c).

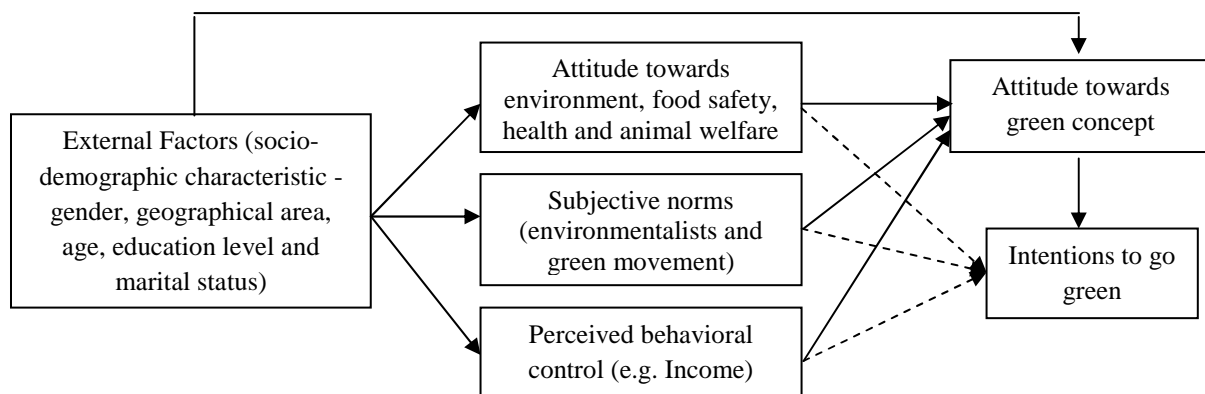
The concept of green is still very new to Malaysian people although many green campaigns have been carried out for quite sometimes. The market for green products in Malaysia is at the infancy stage. There is only a little knowledge about the consumers' green consumption pattern in Malaysia. Despite all the efforts from the governmental and private institutions, the issues here are, do the Malaysian consumers familiar with the green concept and being concern about the environment, health, food safety and animal welfare. Has these become an integral part of their daily life. The introduction of green food in the market and the growing health consciousness among Malaysian consumers has made a topic of interest in consumers' food purchasing behavior. The impact of consumers' perception and attitude towards green concept is important, as the dietary awareness of consumers caused them to seek for food products that promote health, food safety, concern about animal's welfare and environment. Green consumption has continuously increased during this decade in the world. This success is mainly due to the increasing awareness and popularity with health consciousness, food safety, environmental issues and animal welfare. However, there is need to determine the extent to which Malaysian consumers are actually aware of green concept and the underlying advantages come along with this concept.

## 2. METHODOLOGY

### 2.1 Conceptual Framework

This study will attempt the answer the research questions regarding the consumers' perception and attitude towards green concept by using the Theory of Planned Behavior (TPB). Theory of Planned Behavior was used to find the factors that affect consumers' perception and attitude towards green concept and the consumers' attitude towards environment, health, food safety and animal welfare. TPB assumes the attitude of consumers towards a particular behavior, subjective norms and perceived behavioral control which are three main conceptual independent determinants of the perception and attitude towards green concept. Figure 1 shows the conceptual framework of TPB with application towards green concept among the consumers in Malaysia.

The consumers' attitude towards environment, health, food safety and animal welfare are made up of their belief which they accumulate from their lifetime. Subjective norm of this study include environmentalists and green movement. In other words, subject norm mean how others or people who are important to the consumers can influence their attitude towards green concept. Perceived behavioral control is described as people's behavior or factors which will make the behavior easy or more difficult to perform (Ajzen, 1991). There are many control factors which may inhibit the consumers to performance a particular behavior. In this study, the perceived behavioral control is income. External factors such as socio-demographic profiles like age, geographical area, education level, gender and marital status will affect the consumers' attitude, subjective norms and perceived behavioral control. All this factors will built the consumers' confidence and trust towards green concept.



Source: Ajzen (2002) Theory of Planned Behavior (TPB)

Figure 1: Conceptual framework of TPB with application towards attitude of green concept among the consumers in Malaysia.

### 2.2 Sample and Questionnaire

This study used data collected from a survey which was conducted in Peninsular Malaysia from August 2010 until March 2011. Supermarkets such as Cold Storage, Jusco, Tesco, Ecosave, Giant, MyDin and Carrefour were chosen from each state and supermarkets are the most appropriate place to collect data because consumers from all walks of life shop at supermarkets. Randomized sample of 1355 respondents were interviewed by using the structured questionnaires to test their perception and attitude towards green concept. The questions were measure by using Likert scale of 1 to 7 (1 represent strongly disagree and 7 represent strongly agree



### 2.3 Method of Analysis

To accomplish the objective of this study, reliability test (Cronbach's alpha), descriptive statistic analysis, Chi-square analysis and binary logistic regression were performed. Descriptive analysis is use in this study to summarize the quantitative data into a simpler summary to make it easier to understand and measure. Reliability analysis is use to determine whether the Theory of Planned Behavioral items (perception, attitude, subjective norms and perceived behavior control) and the model that chose is fit for this study. Chi-square test of independence was use to examine the significant different between the selected socio-demographic characteristics and respondents' attitude towards environmental, health, food safety concern and animal welfare concern.

In addition, the logistic regression model was used to estimate the affect of the categorical explanatory variables on the consumers' attitude towards green concept. All the explanatory variables in this model have the value 0 or 1 (see Table 1). Dependent variable, Y is 'attitude towards the green concept' which has two categories such as 'Consumers have positive attitude towards green concept' coded as one and otherwise coded as zero. The variable  $X_i$  represents the attitude towards environment, health, food safety, green movement, environmentalist and animal welfare, subjective norm and demographic variables which influence the consumers' attitude towards green concept. In this regression model, the vectors  $X_i$  consist of the following variables; animal welfare, environmental protection, food safety, gender, age, marital status, education level and income. Specifically the binary logistic model can be stated as below:

$$\ln \left( \frac{\pi}{1 - \pi} \right) = \beta_0 + \beta_1 x_{gender} + \beta_2 x_{income} + \beta_3 x_{education\ level} + \beta_4 x_{marital\ status} + \beta_5 x_{age} + \beta_6 x_{area} \\ + \beta_7 x_{animal\ welfare} + \beta_8 x_{environmental\ friendly} + \beta_9 x_{health} + \beta_{10} x_{foodsafety} \\ + \beta_{11} x_{environmentalist} + \beta_{12} x_{green\ movement}$$

Table 1: Explanatory variables to measure the consumers' attitude towards green concept.

Explanatory Variables	Coding Systems
Gender	0. Male 1. Female
Income	0. Below RM 3000 1. Above RM 3001
Education level	0. Diploma and below 1. Above bachelor
Age	0. Below 40 1. Above 41
Marital Status	0. Single 1. Married
Geographical area	0. Urban 1. Rural
Environmental friendly	0. Negative attitude towards environment 1. Positive attitude towards environment
Animal welfare	0. Negative attitude towards animal welfare 1. Positive attitude towards animal welfare
Food Safety	0. Negative attitude towards Food Safety 1. Positive attitude towards Food Safety
Health consciousness	0. Negative attitude towards health consciousness 1. Positive attitude towards health consciousness
Environmentalist	0. Influence by environmentalist 1. Not influence by environmentalist

Green movement

0. Influence by green movement

1. Not influence by green movement

### 3. RESULTS AND DISCUSSION

The Cronbach's alpha value was determined by using reliability test for consumers' attitude, subjective norms and perceived behavioral control questions. The Cronbach's alpha was 0.946. This showed that there was consistency among the theory planned behavioral items or questions and the model is fit for this study.

#### 3.1 Descriptive statistic analysis

Demographic profile of the respondents is show in Table 2. The data values such as socio-demographic profile include age, income level, education level, gender, race, residential area, marital status and household size is analyze. In this study, more than 50 percent of the respondents are females 728 (53.7 percent). Only 627 (46.3 percent) are male. Majority of the respondents are Malays 774 persons (57.1 percent), followed by Chinese 415 persons (30.6 percent) and Indians 166 persons (12.3 percent). The numbers of respondents from urban and suburb area are 976 persons (72.0 percent) and 379 persons (28.0 percent) respectively. Almost sixty percent (823 persons) of the respondents are married and age is between 26-40 years (45.8 percent). The education level is categorized into three categories such as secondary (15.6 percent), tertiary (71.3 percent) and 13.1 percent are higher tertiary educated. In term of income distribution, this study found that 126 respondents (9.3 percent) earned RM 500 to RM 1,500, 468 respondents (34.5 percent) earned between RM 1,501 – RM 3,000 per month, 575 respondents (42.4 percent) earned RM 3,001 – RM 4,500 per month, 99 respondents (7.3 percent) earned RM 4,501 – RM 6,000 per month and a smaller percentage of respondents (87, 6.4 percent) had monthly income above RM 6,001. As can be seen in Table 2, there were 21.8 percent respondents have 1 to 3 household sizes, 62.0 percent respondents have between 4 to 6 household sizes, 16.2 percent of respondents have above 7 household sizes.

Table 2. Demographic profile of respondents (n=1355)

Characteristic	Percentage	Characteristic	Percentage
<b>Gender</b>		<b>Education level</b>	
Male	46.3	Secondary	15.6
Female	53.7	Tertiary	71.3
<b>Ethnic (Race)</b>		Higher tertiary	13.1
Malay	57.1	<b>Income</b>	
Chinese	30.6	500-1500	9.3
Indian	12.3	1501-3000	34.5
<b>Area</b>		3001-4500	42.4
Urban	72.0	4501-6000	7.3
Rural	28.0	Above 6001	6.4
<b>Marital Status</b>		<b>Household size</b>	
Single	39.3	1-3	21.8
Married	60.7	4-6	62.0
<b>Age</b>		7 above	16.2
Below 25	16.7		
26-40	45.8		
41-60	31.7		
Above 61	5.9		

### 3.2 Consumers' Perception towards Green concept

Table 3 shows the distribution (in percentage) of respondents' perception towards green concept. The analysis indicates that the respondents have positive perception towards green concept (Table 3). In their opinion, green concept can reduce global warming by using renewable energy sources and helps the environment. Moreover, they believe that consumers' education level is important in their perception towards green concept. Majority of the respondents agree that environmentalists and green movement makes them aware about the green concept and to respect the environment. Most of the respondents agreed that if they are being exposed to more green information, they are in favor to purchase green food.

Table 3. Respondents' Perception towards Green Concept in Malaysia

Statement	Likert Scale Score* (Percentage)							Mean
	1*	2*	3*	4*	5*	6*	7*	
1. Following Green Concept can reduce global warming by using renewable energy sources	0.3	2.2	3.1	10.4	22.7	39.5	21.8	5.59
2. Green concept helps environment, saves our planet and prevents global warming	0.6	1.4	2.8	9.5	24.4	36.5	24.8	5.64
3. To me, consumers' education level is important in their perception towards green concept.	0.7	2.1	3.0	10.1	19.0	37.6	27.5	5.67
4. If I am being exposed to more green information, I am in favor to purchase green products.	0.9	1.4	2.7	12.0	29.4	37.1	16.5	5.45
5. Environmentalists think that I should go green to respect the environment.	1.5	4.2	3.7	19.1	25.1	28.6	17.9	5.19
6. The green movement makes me aware of green concept	1.5	3.7	4.1	17.4	26.1	32.8	14.5	5.19

\*1 = Strongly Disagree; 7 = Strongly Agree

### 3.3 Chi-square Analysis

Consumers' attitude and perception towards green concept is different from country to country. Based on the previous studies, it is interesting to find out the relationship between the socio-demographic factors such as gender, geographical area, age, education level and income with the consumers' attitude towards environment, food safety, health and animal welfare were proposed.

Table 4 to Table 7 shows Chi-square analysis value of the consumers' demographic profiles towards environment, animal welfare, health and food safety. The results of Chi-square test indicate that the selected socio-demographic variables have significant relationship with consumers' attitude towards green concept in Malaysia. The socio-demographic variables that have been chosen in this study include gender, geographical area, age, education level and income.



Table 4 summarized the result of Chi-square test between respondent's demographic factors and their attitude towards environmental. It indicated that there is a significant relationship between the demographic factors such as gender, geographical area, income and education level with consumers' attitude towards environmental. Respondents who have higher education which is bachelor and above ( $\chi^2 = 42.425, p < 0.01$ ) have positive attitude towards environment than lower education respondents. In term of income, consumers who have higher income which is above RM 3,001 agree that doing something positive to environment is desirable so that they can help to improve the environment problem ( $\chi^2 = 9.279, p < 0.10$ ). Consumer who stay in urban area ( $\chi^2 = 11.517, p < 0.05$ ) and female ( $\chi^2 = 17.755, p < 0.01$ ) have positive attitude than the others.

Table 4. Chi-square Value and Respondents' Attitude towards Environment

Socio-demographic variable	$\chi^2$
Gender	17.755***
Geographical Area	11.517**
Age	4.410
Education Level	42.425***
Income	9.279*

\*\*\*Significant at 1% level \*\*Significant at 5% level \*Significant at 10% level

Information presented in Table 5 shows the Chi-square results in testing the relationship between socio-demographic variables and consumers' attitude towards food safety concern. The results shows that consumers who have the higher education level (Bachelor and above) ( $\chi^2 = 17.438, p < 0.05$ ) and higher income level (RM 3001 and above) ( $\chi^2 = 30.722, p < 0.05$ ) are willing to purchase food which are safe to be consume while purchase food products. In term of geographical area, respondents who live in urban area are willing to purchase foods which are safe when making purchasing behavior than the respondents live in rural area. ( $\chi^2 = 510.170, p < 0.05$ ). In addition, oldest respondents who are above 40 year old have positive attitude towards food safety concern than youngest respondent ( $\chi^2 = 10.170, p < 0.05$ ).

Table 5. Chi-square Value and Respondents' Level Attitude towards Food Safety Concern

Socio-demographic variable	$\chi^2$
Gender	6.870
Geographical Area	10.170**
Age	16.052**
Education Level	17.438**
Income	30.722**

\*\*Significant at 5% level

Similarly Table 6 summarized the result of relationship between respondents' demographics factors and consumers' attitude towards animal welfare concern when purchasing food products. The results show that gender, geographical area, education level, income and age have significant different with the level of concern towards animal welfare among the consumers. Respondents who live in urban area have higher concern towards animal welfare than respondents who live in suburb area ( $\chi^2 = 12.601, p < 0.05$ ). Information presented in Table 6 shows that respondents with higher education level have higher concern towards animal welfare while purchase food products than the lower education respondents ( $\chi^2 = 12.601, p < 0.01$ ). Furthermore, respondents' who have higher income have higher concern towards animal welfare concern than lower income respondents ( $\chi^2 = 26.649, p < 0.01$ ). Moreover, respondents who are female ( $\chi^2 = 15.495, p < 0.01$ ) and below 40 years old have higher concern toward animal welfare when making purchasing decision ( $\chi^2 = 8.832, p < 0.10$ ).

Table 6. Chi-square Value and Respondents' Attitude towards Animal Welfare Concern

Socio-demographic variable	$\chi^2$
Gender	15.495***
Geographical Area	12.601**
Age	8.832*
Education Level	33.335***
Income	26.649***

\*\*\*Significant at 1% level

Table 7 summarized the result of relationship between respondents' demographics factors and consumers' attitude towards health concern. The result show that female respondents have higher concern towards health when purchasing food products ( $\chi^2 = 8.27.707$ ,  $p < 0.01$ ). Respondents who are below 40 years old ( $\chi^2 = 18.132$ ,  $p < 0.01$ ) and have higher education (bachelor and above) have higher concern towards health when choosing food products. Table 7 also shows that consumer who have higher income (RM3001 and above) products ( $\chi^2 = 812.232$ ,  $p < 0.05$ ) and below 40 years old ( $\chi^2 = 18.132$ ,  $p < 0.01$ ) have higher concern towards health when choosing food.

Table 7. Chi-square Value and Respondents' Attitude towards Health Concern

Socio-demographic variable	$\chi^2$
Gender	27.707***
Area	7.530
Age	18.132***
Education Level	22.412***
Income	12.232**

\*\*\*Significant at 1% level \*\*Significant at 5% level

### 3.4 Results of the Binary Logistic Regression

Binary logistic model was used to find the extent to which selected socio-demographic characteristic, subjective norm and consumers' attitude towards environment, food safety, health and animal welfare affect their attitude towards green concept. The estimated parameters and the statistical significance levels were show in Table 7. The dependent variable was "attitude towards green concept" had two categories which are "have positive towards green concept" was coded as one and otherwise coded as zero.

The results of this study found that socio-demographic factors such as the education level, income and gender affect the respondents' attitude towards green concept. The finding indicate that the respondents' who have higher education level were 1.476 times have positive attitude towards green concept than the respondents' who have lower education level. A person with higher education level can think and judge whether the green concept give more benefit or not to the society or environment. The results also show that female respondents were 1.265 times more have positive attitude towards green concept then the male respondents. Consumers who have higher income were 1.562 times have positive attitude towards the green concept then the lower income consumers.

Of the environmental factors that significantly influenced consumers' attitude towards green concept is consumers' attitude towards environmental friendly, health and food safety. The results shows that the consumers who have higher concern on the aspect of the production of green food are more environmental friendly and

concern on health were 1.775 times and 1.607 times have positive attitude towards the green concept respectively. Furthermore, consumers' who have higher concern on food safety than conventional food were 1.659 times have positive attitude towards green concept. This implies that environmental concern, health and food safety concern related to food consumption is very important to make consumers have positive attitude towards the green concept. Furthermore, the subjective norms factor, such as environmentalists and green movements is an important determinant for consumers' attitude towards green concept and the effect is positive. Respondents who consider themselves to be environmentalists or supporters of promoting a green movements were estimated to have a 1.255 and 1.387 times have positive attitude towards green concept than other respondents respectively. In order to assess how well the model fits the data, Homer and Lemeshow test was developed. As shown in Table 6, the value for Homer and Lemeshow test was 0.291 which is not significant. A non-significant value shows that the model fits for this study.

Table 7. Estimates Logit model for Consumers' Attitude towards Green Concept

Variables	Estimated Coefficient	Standard Error	Significant Level	Exp(B)
Gender	0.235	0.124	0.058*	1.265
Income	0.446	0.156	0.004***	1.562
Education	0.389	0.154	0.011**	1.476
Marital status	-0.160	0.172	0.353	0.852
Age	0.198	0.172	0.249	1.219
Area	0.161	0.139	0.247	1.175
Animal welfare	-0.111	0.163	0.495	0.895
Environmental friendly	0.574	0.146	0.000***	1.775
Health	0.475	0.143	0.001***	1.607
Food safety	0.506	0.172	0.003***	1.659
Environmentalist	0.228	0.051	0.000***	1.255
Green movement	0.327	0.054	0.000***	1.387
Constant	-6.002	0.558	0.000	0.002
-2 Log Likelihood	1554.728	Nagelkerke R Square		0.232
Cox and Snell R Square	0.171	Hosmer and Lemeshow Test		0.184

\*\*\*Statistically significant at 0.01 level, \*\*at the 0.05 level and \*at the 0.10 level

#### 4. CONCLUSION

This study sought to estimate the consumers' attitude towards environment, health, food safety and animal welfare which will directly or indirectly influence the consumers' attitude towards green concept. Theory of Planned Behavior (TPB) was the most appropriate theory to investigate the consumers' perception and attitude towards green concept. The results of this study indicated that there are relationships between socio-demographic characteristic and green concept in different aspects. The major concerns come from the consumers' gender, education and income level which will influence the consumers' attitude towards environment, health, food safety and animal welfare. The results suggest that the consumers' who have higher education and income level have positive perception towards green concept.

Green concept are still very new in Malaysia but it can be very popular among the Malaysian consumers if the society is made more aware of the issues of concerns about environment, health, food safety and animal welfare. Therefore, improving the public awareness and perception towards green concept will increase consumer intention to purchase green food and willing to follow the green concept. The environmental friendly logo such as SOM, SALM and GAP can help the consumers to differentiate the food products that are according to green concept.

With more accessible information and responsible monitoring, consumers can be able to make a better choice while purchasing food products and have a better understanding of how green concept can impact their health, environment, food safety, society, trade and animal.

Due to the increasing awareness of consumers towards food safety, animal welfare issues, health consciousness and environmental issues, marketing strategy should be developed by the government or private organizations to encourage and to further enhance the green concept to the society. Individuals may want to purchase green foods because of the opinion of their reference group or market trends but they also need to be educated about the underlying advantages that come along with purchasing green products. Marketers in green industry should know the culture and lifestyle of the target consumers, for example where they do their shopping, what food products they most prefer to buy and how they get the information about food safety, animal welfare issues, health and environmental issues. This knowledge is important to identify the local marketing of green products and it can also be a guide for the private sector by providing accurate information on target consumers. When consumers consider purchasing green product, they need to evaluate what benefit they will receive in return.

The finding of this study is useful for helping the government and all players in the supply chain of food industries to assess the market potential for healthy and environmentally food products. Although the awareness of food safety, environmental issues, animal welfare and health consciousness is increasing, there are still a large group of consumers is not easy to understand the information provide by green concept. As a matter of fact, Malaysia government or related institutions should try to fulfill the needs and wants of consumers especially when it comes to food health management, food safety, environmental friendly and consumers' health requirements. Therefore, the use of recognized environmental friendly logo for all food items can require higher industry costs, government monitoring programs and educational programs that can encourage and improve the public awareness and willingness to pay for green food.

As recommendation, to increase the perception and attitude of green concept, government or institutes can carry out effective product awareness program in exhibitions, trade shows, campaign and seminar to introduce green concept to the markets. Frequency campaign or seminar can help to establish positive perception of consumers towards green concept. Private sectors also should play an important role in helping the government by following the rules and regulations of producing, processing and manufacturing the food products. The government has to control the products which concern about green as a solution to develop food products at international level. The food producers, processors and manufacturers should have enough knowledge and information about how to produce or process green products by following the rules and regulations of Malaysia and international norms. Consumers also should be aware and understand the importance of green product and how the green concept information can affect their future purchasing.

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