Consumers' Intention to Purchase Green Foods in Malaysia

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Abstract. The green concept and green foods are developing and are still at their infancy stage in Malaysia. Therefore, there is a need to examine Malaysian consumers' attitude, perception and intention towards green food consumption. Thus, the objective of this study is to determine the extent to which selected socio-economic/demographic characteristics and attitudes influence the consumers' intention to purchase green foods in Malaysia especially since there are emerging global issues concerned with the environment, food safety and animal welfare. A survey was conducted in Peninsular Malaysia where 1,355 respondents were interviewed using structured questionnaires to gather important information on their perception and intention to purchase green food in Malaysia. A binary logistic model was used to obtain the coefficients applied to the calculations of the marginal effects and probabilities. The results indicate that educational level, income and other factors such as food safety and environmental friendliness significantly influence Malaysian consumers' green foods purchasing intention.

Keywords: green foods, consumers' intention, binary logistic model, demographic variables

1. Introduction

During the past decades, the food industry in Malaysia has experienced many significant changes. Malaysia is a multi-cultural society which consists of Malays, Chinese and Indians. This has resulted in a wide range of processed foods being produced to cater the needs and wants of the different ethnic groups. The changes in demographic and economic structures have also influenced the Malaysian food industry directly and indirectly in answering the question of what to produce and for which segment of the market to produce it for. Similarly, the steady changes in consumer lifestyle, tastes and preferences, the standard of living along with higher purchasing power and technical advancement in agriculture and marketing have led to an increase in the demand for manufactured food, convenience food and health food. An increase in the consumer awareness of the health and nutritious value of food has increased the demand for functional food, organic food, green food and natural food. Besides, studies have shown that the three most concerning factors of consumers in food consumption are food safety, the protection of the environment and animal welfare (Fraser, 2001). From the public's point of view, these three most concerning factors are linked together (Blanford et al., 2002). It is also natural for consumers to think that an improvement in animal rearing methods will result in better, healthier and safer food, which reduces the impact on the environment and improves the level of animal welfare (Passille and Rushen, 2005).

One good example that can be cited in this paper is a case which happened in early 1987 when Singapore rejected the import of vegetables from Malaysia due to the belief that they contained a high dithiocarbarnate residue (Ooi, 1992). Brunei also reacted in the same way towards vegetables from Sabah and Sarawak in 1993 (Jinius et. al, 2001). Thus producers have realized that consumers' purchasing behaviors have a strong relationship with environmental problems. Such events have shown that there is an increasing number of consumers' who are starting to seek and buy environmentally friendly products and are willing to pay more for the products (Laroche et al., 2001).

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In consumer purchasing decision making, food safety has become increasingly important over the past two decades (Knight et al., 2007). Today's consumers tend to focus on the food processing method, innovative food technologies and chemical substances which are contained in foods such as pesticides, toxins, food addictives and so on (Van Putten et al., 2007). There was an incident which happened in April 2008 where the Malaysian government 'self banned' its seafood export to the European Union (EU) because the EU found out that some Malaysian companies were lacking in health standards and practices that were set by the EU (CHT, 2008). Therefore, food safety should be an important agenda among food producers, processors, manufacturers and marketers since consumers are increasingly concerned about health, food safety and high food products as these factors can affect consumer behavior.

According to Passille and Rushen (2005) besides products like vegetables and fruits consumers also think that animal welfare is an important factor to consider while making their purchasing decisions. Animal welfare is used by most of consumers as an indicator of other product attributes such as food safety, nutritional benefits and the quality of food (Harper et al., 2001). Consumers are concerned about animal welfare especially the improvement of animal welfare in animal production, transport and slaughter (Raj, 2004).

1.1. The Green Concept and Food

Consumers who are increasingly aware of and concerned about the main environmental issues are known as green consumers (Soonthorsmai, 2007). These people are willing to change their purchasing and consumption behavior to a more environmental friendly way and are willing to pay more for the products. According to Ottman (1992), consumers purchase green products when their primary needs and wants which are quality, availability, convenience, performance, and affordability were met and when these consumers realized that green products can help to solve environment problem, food safety issues, animal welfare and are healthy to consume.

Green foods refer to foods that are safe to be consumed, are of fine quality, are concerned with humane animal treatment are nutritious foods and are produced under the principle of sustainable development (Liu, 2003). Green foods are becoming increasingly popular with consumers due to the humane animal treatment concern, environmental friendliness and the perception that green foods are healthier and safer to consume. Therefore, green food consumers are steadily increasing in number in the whole world. This can be seen by the increasing number of green food products or environmentally friendly food products sold in food markets. However, the green food concept can be more popularized among consumers in Malaysia if the society becomes more aware of the issues concerning food safety, health, animal welfare and the environment. Thus, the objective of this study is to investigate the determinants that are most likely to influence consumers' intention to purchase green foods in Malaysia.

2. Methodology

Various models have been used to explain consumer purchasing behavior towards food. The theory of Planned Behavior is a leading framework that has been used to examine consumers' behavior. It postulates that there are three independent determinants of behavioral intention which are attitude, subjective norms and perceived behavioral control (Ajzen, 2002). In this study, the theory of Planned Behavior (TPB) was used to assume the attitude of consumers towards a particular behavior, their subjective norms and perceived behavioral control in determining the intention of the consumers to purchase green foods. The attitudes of consumers to purchase green foods are made up of their beliefs and awareness towards the concept of green foods which they accumulate from their lifetime. Consumers' attitude and their buying behavior may also be based on external factors such as socio demographic profiles and influenced by their knowledge, information and awareness. All these factors will build up consumers' confidence and trust towards purchasing green foods and lead him or her to have a positive attitude in these food products (Figure 1).
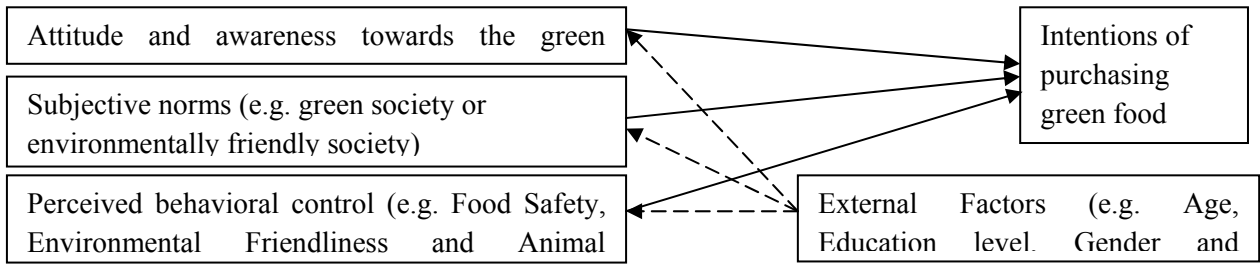
Source: Adapted model from Ajzen (2002)

Figure 1: Conceptual framework of the theory of planned behavior applied to green food consumption among consumers in Malaysia.

Randomized samples of 1355 respondents were interviewed by using a structured questionnaire to gather information regarding their perception and purchasing behavior towards green foods. A random sampling method was used and the survey was done in supermarkets such as Jusco, Tesco, Carrefour and Cold Storage because consumers' from all walks of life usually shop at supermarkets. The questionnaire was divided into two sections and contained straightforward questions. Respondents' socio-demographic characteristics were asked in the first section (e.g. gender, area, marital status, age, education level and income). The second section consisted of questions concerning the consumers' attitude, perception and intention towards green food consumption.

Descriptive statistics were used to identify the respondents' socio-demographic variables and a binary logistic model was used to determined the extent to which selected socio-demographic characteristic and attitudes influences consumers' intention to purchase green foods. In this model, all the explanatory variables have the value 0 or 1, in order to discover the effect of the categorical explanatory variables on the intention to purchase green foods (Table 1). The equation of the model is shown below:

$$logit\ (Y) = natural\ \log\ (odds) = In\ \left(\frac{\pi}{1-\pi}\right) = \alpha + \beta x$$

The dependent variable, Y represents the 'Intention to purchase green foods' which has two categories namely 'Consumers have intention to purchase green foods' coded as one and otherwise coded as zero. The variable χi represents the different attributes and demographic variables which influence the consumers' intention to purchase green foods. In this regression model, the vectors χi 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:

$$In\ \left(\frac{\pi}{1-\pi}\right) = \beta_0 + \beta_1 x_{animal\,welfare} + \beta_2 x_{environmental\,protection} + \beta_3 x_{food\,safety} + \beta_4 x_{gender}$$
$$+ \beta_5 x_{education\,level} + \beta_6 x_{income} + \beta_7 x_{age} + \beta_8 x_{marital\,status} + \varepsilon_i$$

Table 1. Explanatory variables to measure the consumers' intention to purchase green foods.

Explanatory Variables	Coding Systems
Gender	0. Male
	1. Female
Income	0. Low income
	1. Middle and high income
Education level	0. Diploma
	1. Tertiary
Age	0. Below 35
	1. Above 36
Marital Status	0. Single
	1. Married
Environmental protection	1. Green Foods are concerned about the environment
	0. Green Foods are not concerned about the environment

Animal welfare	1. Green Foods are concerned about animal welfare
	0. Green Foods are not concerned about animal welfare
Food safety	1. Green Foods are concerned about Food safety
	0. Green Foods are not concerned about Food safety

3. Results and discussion

3.1. Descriptive statistic analysis

Table 2 shows the respondents demographic profile. In this study, most of the respondents were females 728 (53.7 percent) as compared to male 627 (46.3 percent). The majority of the respondents were Malays (57.1 percent), followed by Chinese (30.6 percent) and Indians (12.3 percent) and the numbers of respondents from urban and suburban areas were 976 persons (72.0 percent) and 379 persons (28.0 percent) respectively. More than half of the respondents were married (60.7 percent) and the majority were aged between 26-40 years (45.8 percent). The education level of the respondents was categorized into seven categories. 1.5 percent of the respondents had never been to school, 2.9 percent had completed primary school, 11.4 percent were secondary school graduates, 25.5 percent of the respondents had completed a diploma, 45.8 percent of the respondents had graduated with a bachelor degree, 10.0 percent had completed their masters and 3.1 percent were PhD holders. About 42.4% of the respondents have an income between RM3,001- RM4,500 per month, and a smaller percentage of the respondents (6.4 percent) have incomes above RM6,001, while 9.3% of the respondents have an income between RM 500 - RM 1,500. As shown in table 2, most of the respondents were from a a household with between 4 to 6 people (62.0 percent) while only 2.2 percent were from a household with more than 10 people.

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

Characteristic	Percentage	Characteristic	Percentage
Gender		**Education level**	
Male	46.3	Never been to school	1.5
Female	53.7	Primary school	2.9
Ethnic (Race)		Secondary school	11.4
Malay	57.1	Diploma	25.5
Chinese	30.6	Bachelor	45.8
Indian	12.3	Master	10.0
Area		PhD	3.1
Urban	72.0	**Income**	
Suburb	28.0	Below 1500	9.3
Marital Status		1501-3000	34.5
Single	39.3	3001-4500	42.4
Married	60.7	4501-6000	7.3
Age		Above 6001	6.4
Below 25	16.7	**Household size**	
26-40	45.8	1-3	21.8
41-60	31.7	4-6	62.0
Above 60	5.9	7-9	13.9
		10 above	2.2

3.2. Respondents' perception and attitude towards green foods consumption

Table 3 shows the mean scores and percentages of the components included in the TPB framework using a seven-point scale (1 to 7). The results show that consumers are concerned about their food safety, the protection of the environment and animal welfare. Moreover, most of the respondents agree that green food is easy to access in Malaysia. The majority of the respondents state that the green movement makes them aware of the green concept in Malaysia. Overall, the analysis indicates that the respondents have a positive perception and purchase intention towards green foods in Malaysia.

Table 3. Respondents' Perception and Intention towards Green Foods Consumption in Malaysia

Statement	Likert Scale Score* (Percentage)							Mean
	1*	2*	3*	4*	5*	6*	7*	
1. I intend to purchase green foods because they are more concerned about food safety.	0.4	1.4	4.4	17.1	28.8	33.7	14.2	5.30
2. I want to purchase green foods because they are more environmentally friendly.	0.7	1.2	3.9	16.6	27.3	36.6	13.7	5.33
3. I plan to purchase green foods because I am concerned about animal welfare.	0.8	3.1	6.3	22.2	28.0	28.2	11.4	5.04
4. I believe green food is available and easy to access in Malaysia	3.0	11.6	16.6	16.6	24.4	17.9	10.0	4.41
5. The green movement makes me aware of the 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. Binary logistic regression

A binary logistic model was used to determine the extent to which selected socio-demographic characteristics and attitudes influence the consumers' intention to purchase green foods. The estimated parameters and statistical significance levels are shown in Table 4. The dependent variable; "intent to purchase green food" had two categories which are "respondents' intent to purchase green food" coded as one and otherwise was coded as zero. The result of this study found that out of the eight variables, four variables were positive and statistically significant. Thus, the socio-demographic factors and consumers' perceived behavioral control are relevant in explaining the consumers' intention to purchase green foods.

Based on the statistically significant coefficients, the level of environmental friendliness is an important determinant for consumer intention to purchase green foods and the effect is positive (Table 4). This finding indicates that consumers who have high environmental concerns were 1.625 times more intent to purchase green foods than consumers' who do not think that green food is concerned with the environment. The estimated coefficient for food safety is positive and significant at the 95 percent level of confidence. This shows that when the respondents are concerned more about food safety, the likelihood of level of intention increases 1.507 times compared to respondents who are less concerned about food safety. Education level and income were the only socio-demographic characteristics which had a positive sign and were significant at the 99 percent level of confidence. The results show that respondents who have a higher education level have 1.847 times more intention to purchase green foods than that of respondents who have a lower education level. Similarly, for the respondents who have a higher income, the likelihood of their level of intention to purchase green foods increases 2.665 times that of respondents with a low income. The logit model has three important determinants which are intention, subjective norms and perceived behavioral control. Perception towards green foods, subjective norms and perceived behavioral control (environmentally friendly and food safety) are the significant predictors of the consumers' intention to purchase green foods.

Table 4. Estimated Logit Model for Consumers' Intention to Purchase Green Foods

Variables	Estimated Coefficient	Standard Error	Significant Level	Exp(B)
Gender	-0.049	0.125	0.697	0.953
Age	-0.016	0.171	0.924	0.984
Marital status	0.088	0.174	0.613	1.092
Education level	0.614	0.160	0.000***	1.847
Income	0.980	0.160	0.000***	2.665
Environmentally friendly	0.486	0.190	0.011**	1.625
Food safety	0.410	0.184	0.026**	1.507
Animal welfare	0.265	0.175	0.129	1.303
Constant	-2.755	0.394	0.000	0.064

-2 Log Likelihood	1544.764	Nagelkerke R Square		0.169
Cox and Snell R Square	0.121	Hosmer and Lemeshow Test		0.524

***Statistically significant at the 0.001 level, **at the 0.05 level and *at the 0.10 level

4. Discussion and conclusion

The purpose of this study was to investigate the intention to purchase green foods among Malaysian consumers. Apparently, the intention to purchase food products is different among the various types of foods. The theory of Planned Behavior was used in this study to investigate the consumers' perception and intention to purchase green food in Malaysia. This study shows that the intention of consumers to purchase green foods is determined by having a positive perception, subjective norms (green movement) and perceived behavior control (green foods are concerned about the environment and food safety). However, the perceived behavioral controls like animal welfare do not influence the consumers' intention to purchase green foods. Animal welfare is still not the most important aspect which affects consumers' purchasing behavior towards food products in Malaysia. It is still only in the beginning stages where consumers are showing a concern for animal welfare when purchasing food products. Although animal welfare is not a significant   factor, it will become increasingly important in the future. Similar behavior was also found in the study by Issanchou (1996). Furthermore, as in Coddington (1993) the findings of this study indicated that external variables such as education level and income are significant socio demographic determinants of consumers' intention to purchase green foods. Consumers who have a higher income and education level are more likely to be concerned about the environment and therefore tend to purchase green products

In addition, green food is still a new concept in Malaysia but it can become more popular among Malaysian consumers if the society is made to be more aware of the issues concerning the environment, food safety and animal welfare. Therefore, improving public awareness and perception towards the green concept and green foods will increase consumers' intentions to purchase green foods. It is important for the food producers, food processors, food manufacturers or food marketers to understand consumers' behavior and intention towards purchasing green foods so that all of the business channels involved in the food industry can increase their awareness and knowledge on green foods in order to satisfy consumers' needs and wants.

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6. References

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