Exploring influential dimensions towards intention to purchase green food products among Malaysian consumers

(Meneroka dimensi berpengaruh terhadap niat untuk membeli produk makanan hijau di kalangan pengguna Malaysia)

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Abstract

The intention to purchase a product may be driven by the motivational dimensions in terms of knowledge, attitude, subjective norm and socio-economic background of the consumers. Producers, marketers and policy makers need to be more sensitive with the Malaysian consumers' needs and wants to enhance their confidence level in purchasing green food products. This paper aims to explore the motivational dimensions that influence the Malaysian consumers' intention behaviour to purchase green food products using the modified Theory of Reasoned Action (TORA) model. A total of 1,763 respondents were interviewed using structured questions. They were asked to rank their scale of the statements given in the questionnaire to identify the representative variables of knowledge, salient beliefs, evaluation from the outcomes, salient referents, and motivation to comply, which influence their intention to purchase green food products. Exploratory Factor Analysis was used to determine the underlying dimensions of knowledge and other variables that exist in influencing the intention to purchase green food. The General Knowledge about Pollution (GKP) dimension from Knowledge, Food Safety (FS) dimension, from Attitude and Non-Family (NF) dimension and from Subjective Norm have been identified to be the most positively correlated dimensions with intention to purchase the green food products. Moreover, NF dimension showed the highest significant relationship with behavioural intention.

Introduction

The changes in decision making in the purchase of food among Malaysian consumers have brought about a new dimension in Malaysia's food industry. The changing interest from conventionally produced food products to environmentally friendly food products should be seen as a manifestation of the increasing awareness about the environment among the people who demand for safer foods and green food products. People tend to use the term 'organic food products' rather than 'green food products' or 'environmentally friendly food products'. Respectively, the advantages of organic food products are similar with the advantages of the green food products. Roitner-Schobesberger

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et al. (2008) reported that the main reason for consumers to purchase organic food products is due to their perception towards organic food products as healthier and more environmentally friendly. Consumers also perceive the superior quality of the organic food products because of the known criteria for organic production such as the use of natural raw materials, welfare-oriented animal husbandry, environmentally friendly land use and processing techniques (Midmore et al. 2005). Starting from 1 January 2010, the Malaysian government had prepared a budget worth RM1.5 billion under the 2010 Budget for loans with interest rates of 2% to any company that implements the green technology in order to enhance and promote that sector. Furthermore, MARDI has developed a product to substitute the use of poison or pesticide in agriculture. The product GenKimo used 100% of local organic material. In April 2010, the state government of Perak promoted the use of environmental friendly plastics which can easily biodegrade to protect the environment. The frequent events that have already shown their impacts related to the use of green products have made consumers to be more aware about the benefits of being green and being more careful before putting their trust on the conventionally produced food products. This has created a trend in the behaviours among the consumers who are concerned about environmental issues such as pollution in food production and consumption. However, a few other factors have also been identified as the motivational factors in determining the green purchasing behaviour among the people, such as attitude, subjective norm and the 'green' knowledge.

Attitude can be described as hypothetical construct that represents an individual's degree of like or dislike for an item. Attitude is generally the positive or negative view of a person, place, thing or event, which is often referred to as the attitude object. One can also be conflicted or ambivalent towards an object. In the context of green food products, it means that the person simultaneously possesses both positive and negative attitudes towards the green food products. Some studies (Bell et al. 1996; Padel and Foster 2005) found that attitude is a good predictor for intention behaviour as most developed countries believe on the impacts of individual action in preserving the environment. The changes in attitude and consuming pattern are fundamentally influenced by the awareness about the environment in those countries and their food consumption pattern. Chern et al. (2003) described such changes as "Westernisation" where the Asian people are consuming similar foods and food quantities like the Western countries. On the other hand, the normative factor, or subjective norm, represents another major determinant that has been considered in the context of environmentally responsible behaviour. Norms are basically discussed in terms of motivation of an individual to visibly comply with the group norm and behaviour in order to achieve rewards or avoid punishment (Park and Lessig 1977).

Researchers have found that normative influences have positive impact on green purchasing behaviour. For example, Deci and Ryan (1990) defined social norms as the motivation that comes from external sources such as monetary rewards or recognition. Cialdini et al. (1982), Minton and Rose (1997) and Soonthonsmai (2001) also reported the usefulness of social norms in predicting and explaining behaviour. Another important determinant based on the underlying theory is knowledge. As mentioned by Kouris et al. (2001), as the information age progresses, consumers will become more health-literate and health-professional. The green consumers always consider the effects to the environment when purchasing a product. Environment and health address the questions of "consumerism" and its influence on human health, and on the long term maintenance of the planet's resources (Silverstone 1993). Wardle et al. (2000) carried out

a study to find the relationship between nutrition knowledge and food intake, which significantly showed the association between knowledge with healthy eating behaviour more than other demographic factors. The knowledge or information provides the guide to consumers in making the decision when purchasing a product. The consumption of food products with knowledge dependability contributes to the optimal order between producers and consumers for efficient equilibrium of supply demand determination in the market.

Malaysian consumers are still not quite familiar with the green concept and the environmentally friendly food products or green food products. The understanding about the benefits and impacts of consuming green food products to the environment may change the consumers' purchasing behaviour – from conventional products to green food products. According to Ottman (1992), consequently, consumers accepted the green food products when their primary needs for performance, quality, convenience, and affordability are met, and when they understand how green food products could help to solve environmental problems. The demand for food attributes such as freshness, environmentally friendly or green attribute, healthfulness, and convenience is rising. A study by Ahmad Hanis et al. (2012) indicated that Malaysian consumers are willing to pay premium prices for the food attributes such as green and safe. The shift in consumption patterns would affect future food choices in the country, and the response of the agricultural food system to such shift is vital to ensure a sustainable growth of the agro-food industry in Malaysia. Rezai et al. (2011) have shown that educational level, income, food safety and environmental friendliness significantly influence Malaysian consumers' intention in purchasing green food. This study therefore, attempts to explore the motivational dimensions that may influence the Malaysian consumers' intention towards purchasing green food products.

Materials and methods
Applications of the Theory of Reasoned Action (TORA)

The Theory of Reasoned Action (TORA) has been widely used especially in the context of social science in order to determine the behavioural intention and behaviour. In the context of TORA, behaviour is determined by behavioural intention, intention is determined by attitude and subjective norm, attitude is determined by beliefs about the consequences and evaluations of these consequences, and subjective norm is determined by beliefs about the norms of significant others and motivation to comply. The theory basically posits that for behaviour under full volitional control, attitudes are developed from beliefs, behavioural intentions from attitudes, and behaviour from the intention. Behaviour is also determined directly by one's intention to perform the behaviour; intention, in turn, is influenced by attitude (i.e. one's positive or negative evaluation of performing the behaviour) and by subjective norm (i.e. the perceived social pressure to perform or not to perform the behaviour) with intention as the mediating mechanism. Many researchers have reviewed the applications of the Theory of Reasoned Action (TORA) developed by Fishbein and Ajzen (1975) in the environmentally-related behaviours in their studies such as Pieters (1991), Goldenhar and Connel (1992), Bell et al. (1996), Jones (1996) and Montano and Kasprzyk (2008). External variables including demography, personality and lifestyle, locus of control, and knowledge are said to have indirect effects on behaviour, operating directly on the evaluation component in attitudes and normative factor. Furthermore, the consistency of the relationship between attitude and behaviour has been reported to increase under such high involvement situations as personal relevance.

Instrument developments

The initial stage of exploratory study is to provide the lists of attributes or factors based on the underlying theories to be included in the questionnaire. This can be done by reviewing literatures, organising focus group discussions, and interviewing expertises to gather information. Reviewing literature and organising focus group discussions has been used in this study as the method to define the most appropriate questions to be asked in order to achieve the objectives of the study.

In order to conduct the analyses, the knowledge items have been rated using six-point Likert scale, namely, 1 = Definitely do not know, 2 = Quite do not know, 3 = Slightly do not know, 4 = Slightly know, 5 = Know and 6 = Definitely know. Knowledge items in the questionnaire consists of 10 questions that is related to the knowledge which is scrutinizing the environmental issues such as the use of bio-diesel, water pollution, recycling the waste products and the effects of hazardous chemicals in food ingredients or the related products to the food consumption. A few other issues related to the green food product and the knowledge about the improvement systems and requirements in food industry's production and marketing procedures also have been highlighted in the questionnaire.

Based on the modified TORA model, attitude is divided into two major components, namely, salient beliefs and evaluation of the outcomes. Both attitude components in the questionnaire consists of 10 questions that are related to the consumers' attitude towards environmental issues such as the quality, taste and price of green food products. A few other issues such as the avoidance of poisonous or hazardous food ingredients, allergic effects of green food products and the convenience in purchasing the green food consumption are included as well in the questionnaire. In order to conduct the analyses, 10 salient belief items have been rated using six-point

Likert scale, namely, 1 = Definitely disagree, 2 = Quite disagree, 3 = Slightly disagree, 4 = Slightly agree, 5 = Quite agree and 6 = Definitely agree. While obtaining the evaluation of the outcomes, another 10 items have been rated using six-point Likert scale, namely, 1 = Definitely unimportant, 2 = Quite unimportant, 3 = Slightly unimportant, 4 = Slightly important, 5 = Quite important and 6 = Definitely important. The other important measurement is the intention items that have been rated also using six-point Likert scale, namely 1 = Definitely not to purchase, 2 = Most likely not to purchase, 3 = Unlikely to purchase, 4 = Likely to purchase, 5 = Most likely to purchase and 6 = Definitely purchase. Synonymously, the two major components of subjective norm namely salient referents and motivation to comply also have been measured by the six-point Likert scale of agreement and importance. The subjective norm components basically consists of questions that are related to the influence of certain segments of society such as family, lecturers, friends and politicians towards respondent's decision in green food purchasing behaviour.

The intention variables have been measured based on five questions designed to know the intention to purchase green food products on the next shopping trip with certain conditions and differences such as:

1) If the price of green food products is decreased by 10%, which response best reflects your intention to purchase for the purpose of helping to protect the environment on your next shopping trip?
2) Which response best reflects your intention to purchase a green food product for the purpose of helping to protect the environment on your next shopping trip?
3) If the price of green food product is increased by 10%, which response best reflects your intention to purchase it for the purpose of helping to protect the environment on your next shopping trip?
4) If the price of green food products is 10% higher than conventionally

produced food products, which response best reflects your intention to purchase it for the purpose of helping to protect the environment on your next shopping trip?

5) If the price of green food products are the same as conventionally produced food product, which response best reflects your intention to purchase it for the purpose of helping to protect the environment on your next shopping trip? Values resulting from the sum of all items in intention represent the intention variable value in further analysis of correlation in determining the correlation between the attitudinal dimensions with intention to purchase the green food products.

Data collection procedures

A total of 2,100 respondents from the capital cities of all states in Malaysia were interviewed using stratified random sampling. However, only 1,763 completed questionnaires were analysed (84% from the total number of respondents) after data conditioning and data screening processes. The cities covered were Kuantan, Kuala Terengganu, Kota Bharu, Ipoh, Kangar, Alor Setar, Georgetown, Shah Alam, Johor Bahru, Seremban, Melaka, Kota Kinabalu and Kuching. The target population was adults more than 18 years old. The survey was conducted from July 2011 to September 2011. The determination of respondents was determined from the significant assessment of the appropriate sample size in performing the exploratory factor analysis used in this study, which summarized and provided a crude yardstick for determining the sample size as proposed by Sudman (1976). Due to the multiracial population of Malaysia, the respondents of this study were selected among Malays, Chinese, Indians and other races including of Bumiputra from Sabah and Sarawak. The proportion of races and other socio-economic profiles was based on the statistics prepared by the Department of Statistics, Malaysia.

Results

Profiles of respondents

Almost 66% of the respondents were females and 63.1% of the respondents were Malays. The results also indicated that 48.7% of the respondents' ages were between 22 – 30 years. The average age of the respondents was about 27 with a standard deviation of 8.609. The results also indicated that 65.7% of the respondents were single, 45.5% had between 4 – 6 family members and 49.4% did not have family members below 12 years. The results also found that 50.7% of the respondents had passed secondary school, 50.3% were in the private sector and 23.6% earned a monthly household income between RM1000 – RM1999.

Dimensionality

Kaiser-Mayer-Olkin (KMO) and Bartlett's Test of Sphericity   The results in *Table 1* show that the correlation among the variables is significant at 1%. The results indicated that knowledge is statistically significant, $x^2 = 7166.13$, p = 0.000. The Kaiser-Mayer-Olkin measure of sampling adequacy is 0.853. The results also showed that Salient beliefs and Evaluation of the outcomes are statistically significant, $x^2 = 6056.17$, p = 0.000 and $x^2 = 12600.27$, $p = 0.000$, respectively. The Kaiser-Mayer-Olkin measures of sampling adequacy are 0.860 and 0.888. The results also states that Salient referents and Motivation to comply succeeded the requirement of sampling adequacy $p = 0.874$ and $p = 0.730$ respectively. These two variables are statistically significant, $x^2 = 10565.18$ and 3707.10, respectively, while $p = 0.000$ for both variables.

The KMO measure provides a value between 0 and 1. Small values for the KMO indicate that a factor analysis of the variables may not be appropriate, since the correlations between variables cannot be explained by the other variables (Norusis 1993). The values that are higher than 0.6 are considered satisfactory for

Table 1. Kaiser-Mayer-Olkin (KMO) and Bartlett's Test of Sphericity

Variables	Kaiser-Meyer-Olkin Measure of Sampling Adequacy	Bartlett's Test of Sphericity and Significance
Knowledge	0.853	7166.13 p = 0.000
Salient beliefs	0.860	6056.17 p = 0.000
Evaluation of the outcome	0.888	12600.27 p = 0.000
Salient referents	0.874	10565.18 p = 0.000
Motivation to comply	0.730	3707.10 p = 0.000

Note: The Bartlett's Test of Sphericity show that the correlation matrix is at an appropriate level to perform factor analysis on the data for each scale, with all scales reaching a significance level of $p < 0.00$

factor analysis. There are certain criteria or requirements to be set as priori in Exploratory Factor Analysis. The items are retained when the loading is greater than 0.40 and the difference of cross loading is greater than 0.50. The purposes of using factor analysis are to form variates or factors to maximize the explanation of the entire variable set, and to identify representative variables from a much larger set of variables for use in subsequent multivariate analysis (Hair et al. 2006).

In this study, all the variables satisfied the requirement of Exploratory Factor Analysis. Rotation method of varimax with Kaiser Normalisation was purposely selected to reduce from a larger number of items that represent a variable to a few set of uncorrelated dimensions for subsequent use. The major advantage of varimax normalisation is that the mathematical relationship of the key factors remains stable, which means that the total eigenvalue and the percentage of total variance of the principle dimensions have not been affected because the rotation does not change the angle of each factor. The results of Exploratory Factor Analysis with varimax rotation yield three dimensions of Knowledge and two dimensions for each of Salient beliefs, Evaluation of the outcome, Salient referents and Motivation to comply as shown in *Table 2*.

Knowledge dimensions

Three components of factors emerged from the Knowledge variable namely General Knowledge of Pollution (GKP), Knowledge of Quality Control and Management (KQCM) and Knowledge of Green Food Products (KGFP) as shown in *Table 3*. GKP was recognised as the first factor. This factor consisted of 4 items and had a total variance of 25.51%. The results of this factor suggested that consumers' general knowledge of pollution had a relationship with intention to purchase the green food products. KQCM was recognised as the second factor. This factor consisted of 2 items and had a total variance of 7.85%. The results of this factor suggested that the knowledge of any system implementation on managing the green food products in a sustainable manner had a relationship with intention to purchase the green food products. KGFP was the third factor, which had a total variance of 6.98% and comprised 2 items. The information about the green food products itself had a relationship with intention to purchase the green food products.

Table 2. The Underlying Dimensions Emerged from the items

Variables		Items	Component		
			1	2	3
Knowledge		Water pollution caused by throwing away the waste into the river and canals	0.821		
		Recycling of waste products can help protect the environment	0.811		
		Do you know that some chemicals in food ingredients can cause hazards or negative effects to the consumers and environment	0.670		
		Consumption of pesticide free vegetables and fruits can help protect the environment	0.626		
		Have you heard about the Hazards Analysis Critical Control Point (HACCP) system which is a preventive system assuring the safe production of food products?		0.872	
		Do you know about the Intergrated Pest Management (IPM) which always address issues of environmentally sustainable crop production and phytosanitary compliance		0.860	
		Green label products, are environmental friendly products			0.883
		Use of green food products can help to protect the environment			0.828
Attitude	Salient beliefs	The quality of green food products is equivalent to conventionally produced food products		0.812	
		The taste of green food products would be as pleasant as conventionally produced food products		0.842	
		Green food product is likely to be the same price as conventionally produceed food products		0.755	
		Purchasing green food products will help to protect the environment	0.673		
		Purchasing green food products will avoid the hazardous/ poisonous food ingredients	0.753		
		Purchasing green food products will help you save money	0.492		
		Purchasing green food products will help you save the food products usage	0.602		
		Purchasing green food products will prevent you from food products allergy	0.751		
		Purchasing green food products is likely to be better than conventionally produces foods	0.821		
		Purchasing green food products is easy and convenient	0.610		
	Evaluation of the outcomes	The price of green food products is …		0.799	
		Save money by purchasing food products is …		0.847	
		Save the food products usage is …		0.607	
		Helping to protect the environment by purchasing green food products is …	0.729		
		The quality of green food products is …	0.720		
		The taste of green food products is …	0.537		
		Being confident of the food safety by purchasing green food products is …	0.664		
		Prevent you from food products allergy is …	0.700		
		Purchasing green food products is likely to be better than conventionally produced food products	0.710		
		Easy and convenient to purchase green food products is …	0.637		

(*cont.*)

Table 2. (*cont*.)

Variables		Items	Component		
			1	2	3
Subjective Norm	Salient referents	My friends think that I should purchase green food products		0.814	
		My parents think that I should purchase green food products		0.932	
		My family thinks that I should purchase green food products		0.917	
		My relatives think that I should purchase green food products		0.795	
		Government thinks that I should purchase green food products	0.859		
		Environmentalists think that I should purchase green food products	0.839		
		My teachers or professors think that I should purchase green food products	0.791		
		Mass media thinks that I should purchase green food products	0.840		
		Politicians think that I should purchase green food products	0.769		
	Motivation to comply	The advice of my friends often influences my decision to purchase green food products is …		0.709	
		The advice of my parents often influences my decision to purchase green food products is …		0.917	
		The advice of my family often influences my decision to purchase green products is …		0.894	
		The advice of my relatives often influences my decision to purchase green food products is …		0.631	
		The advice of the government often influences my decision to purchase green food products is …	0.836		
		The advice of the environmentalists often influences my decision to purchase green food products is …	0.827		
		The advice of my teachers or professors often influences my decision to purchase green food products is …	0.824		
		The advice of mass media often influences my decision to purchase green food products is …	0.769		
		The advice of politicians often influences my decision to purchase green food products is …	0.874		

Rotation Method: Varimax with Kaiser Normalisation, rotation converged in 3 iterations.

Attitude dimensions

Salient beliefs: Two components of factors emerged from the Salient beliefs variable namely Food Safety (FS) and Green Food Attribute (GFA) (*Table 3*). FS was recognised as the first factor which consisted of 7 items and had a total variance of 4.47%. The results of this factor suggested that salient beliefs in food safety aspect had a relationship with intention to purchase the green food products. GFA was the other factor that had a total variance of 3.87% and comprised 3 items. The green food attribute in salient beliefs had a relationship with intention to purchase the green food products.

Evaluation of the outcome: Two components of factors emerged from the Evaluation of the outcome variable, namely, Green Food Quality (GFQ) and Price Attribute (PA). GFQ was recognised as the first factor which consisted of 7 items and had a total variance of 3.62%. The results of this factor suggested that green food quality in evaluation of the outcome from beliefs had a relationship with intention to purchase green food products. PA was the other factor that had a total variance of 3.00% and comprised 3 items. The evaluation of the outcomes from belief in green food attribute

Table 3. Dimensions' eigenvalue and variance explained

Dimensions	Eigenvalue (>1)	Variance (%)
General Knowledge of Pollution (GKP)	13.520	25.510
Knowledge of Quality Control and Management (KQCM)	4.162	7.852
Knowledge of Green Food Products (KGFP)	3.699	6.980
Food Safety (FS)	2.366	4.465
Green Food Attribute (GFA)	2.050	3.868
Green Food Quality (GFQ)	1.918	3.618
Price Attribute (PA)	1.588	2.997
Non-Family (NF)	1.345	2.537
Family (F)	1.168	2.204
Non-Family Influence (NFI)	1.087	2.050
Family Influence (FI)	1.008	1.902

Note: Eigenvalue >1.0 and total variance >60% are considered satisfactory

aspect had a relationship with intention to purchase the green food products.

Subjective norm dimensions

Salient referents: Two components of factors emerged from the Salient referents variable, namely, Non-family (NF) and Family (F). NF was recognised as the first factor which consisted of 5 items and had a total variance of 2.54%. The results of this factor suggested that non-family in salient referents variable had a relationship with intention to purchase the green food products. F was the other factor which had a total variance of 2.20% and comprised 4 items. The family in salient referents variable had a relationship with intention to purchase the green food products.

Motivation to comply: Two components of factors emerged from the Motivation to comply variable. The Non-family Importance (NFI) was recognised as the first factor. This factor consisted of 5 items and had a total variance of 2.05%. The results of this factor suggested that non-family influence in motivation to comply variable had a relationship with intention to purchase green food products. The Family Importance (FI) was the other factor which had a total variance of 1.92% and comprised 4 items. The family influences in motivation to comply variable had a relationship with intention to purchase the green food products.

Eigenvalue and variance explained

The Principal Component Analysis or Exploratory Factor Analysis in data extraction performed eleven sub-factors by all of the factors listed that were above 1.0 and total variance explained of 63.984%. Eigenvalue is the column sum of squares for a factor; it also presents the amount of variance accounted for by a factor (Hair et al. 2006). Hence, eigenvalues of greater than 1.0 were considered significant and a total variance of greater than 60% was also considered satisfactory.

The results explain that the extracted factors explained a specified amount of variance. In order to achieve the value of total variance for all the factors, the extraction method took in all the items although certain items had already been classified.

Relationships of the dimensions

Knowledge *Table 4* shows that the coefficient of correlation between GKP and intention was 0.355. Based on the t-statistics value and 1-tailed test, the null hypothesis can be rejected at the 0.01 significance level ($r = 0.355$, $p = 0.000$). This showed that there was a positive correlation between the consumers' general knowledge about

Table 4. Correlation coefficients and significance between dimensions and intention

Variable	Coefficients	p-value
General Knowledge about Pollution (GKP)	0.355**	0.000
Knowledge about Quality Control and Management (KQCM)	0.222**	0.000
Knowledge about Green Food Product (KGFP)	0.254**	0.000
Food Safety (FS)	0.488**	0.000
Green Food Attribute (GFA)	0.301**	0.000
Green Food Quality (GFQ)	0.409**	0.000
Price Attribute (PA)	0.055*	0.001
Non-Family (NF)	0.593**	0.000
Family (F)	0.351**	0.000
Non-Family Influence (NFI)	0.538**	0.000
Family Influence (FI)	0.235**	0.000

Notes: **Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 (2-tailed)

pollution and their intention to purchase green food products. The other dimension from knowledge KQCM also showed a coefficient correlation of 0.222 with intention. Based on the t-statistics value and 1-tailed test, the null hypothesis can be rejected at the 0.01 significance level ($r = 0.222$. $p = 0.000$). This showed that there was a positive correlation between the consumers' knowledge about quality control and management with their intention to purchase green food products. There was also a positive correlation between the consumers' knowledge about green food products with their intention to purchase the green food products. A coefficient of correlation between KGFP and intention was 0.254. Based on the t-statistics value and 1-tailed test, the null hypothesis can be rejected at the 0.01 significance level ($r = 0.290$. $p = 0.000$). Therefore, based on the results, all of the dimensions basically had positive correlations with the intention to purchase green food products.

Attitude The coefficient of correlation between FS and intention was .0488. Based on the t-statistics value and 1-tailed test, the null hypothesis can be rejected at the 0.01 significance level ($r = 0.488$. $p = 0.000$). This showed that there was a positive correlation between the consumers'

attitude towards food safety dimension with their intention to purchase green food products. The coefficient of correlation between GFA and intention was 0.301. Based on the t-statistics value and 1-tailed test, the null hypothesis can be rejected at the 0.01 significance level ($r = 0.301$. $p = 0.000$). This showed that there was a positive correlation between the consumers' attitude towards green food attribute with their intention to purchase green food products. The coefficient of correlation between GFQ and intention was 0.409. So, the null hypothesis can be rejected at the 0.01 significance level ($r = 0.409$, $p = 0.000$). This showed that there was a positive correlation between the qualities of green food products with their intention to purchase the green food products. The results also indicated that the coefficient of correlation between PA and intention was 0.055. However, the null hypothesis can only be rejected at the 0.05 significance level ($r = 0.055$, $p = 0.001$) but failed to be rejected at the 0.01 significance level. So, at the 0.01 significance level, there was no positive correlation between the consumers' attitude towards price attribute dimensions with their intention to purchase green food products.

Subjective norm

There was a positive correlation between the consumers' salient referents of non-family dimension and their intention to purchase green food products. The coefficient of correlation between NF and intention was 0.593. Based on the t-statistics value and 1-tailed test, the null hypothesis can be rejected at the 0.01 significance level (r = 0.593, p = 0.000). The coefficient of correlation between F and intention was 0.351. Based on the t-statistics value and 1-tailed test, the null hypothesis can be rejected at the 0.01 significance level (r = 0.351. p = 0.000). This showed that there was a positive correlation between the consumers' salient referents of family with their intention to purchase green food products. As the coefficient of correlation between NFI and intention is 0.538, the null hypothesis can be rejected at the 0.01 significance level (r = 0.538, p = 0.000). This showed that there was a positive correlation between the consumers' salient referents of non-family importance with their intention to purchase green food products. The results also indicated that the coefficient of correlation between FI and intention was 0.235. The null hypothesis can be rejected at the 0.01 significance level (r = 0.235, p = 0.000). This showed that there was a positive correlation between the consumers' salient referents of family importance dimension with their intention to purchase green food products.

Discussion

Prior to the results of the study, knowledge dimensions played an important role among the consumers in their intention to purchase green food products. As can be seen from the results, GKP, KQCM and KGFP had positive relationships with intention as the general knowledge about pollution, which suggested that the spreading of information about environmental issues or pollutions may basically appear to positively actuate and motivate the consumers to perform the environmental behaviour. Moreover, the

knowledge about green food products has been proven to have a positive relationship with intention to purchase the green food products. The knowledge may define the characteristics of the green food products, such as the use of environmentally friendly materials and the use of harmless materials to the environment in farming activities of the green food products. Other than that, the knowledge about the quality control and management system is also positively correlated with intention as the proposition that this kind of information may enhance the understanding and acquirement among consumers towards the green food products.

This study found positive relationships between attitude dimensions; Food Safety (FS), Green Food Attributes (GFA), Green Food Quality (GFQ) and Price Attribute (PA) with intention to purchase green food products. Based on Padel and Foster (2005), in most developed countries, people are more aware about the environmental issues and showing their concern or belief through their attitude and action. However, the price attribute dimension was only found positively correlated to the intention at the 0.05 significance level. Could it be that Malaysian consumers are currently in the transition process in line with the increase in per capita income and lifestyle that resembles the developing countries (Chern et al. 2003)? Obviously seen in the findings, the price attribute, which is known as the main significant parameter to influence the intention behaviour for many decision making processes to purchase products, did not have relationship with the consumers' intention to purchase green food products. As the consumers involve in the environmental preservation (purchasing the green food products), they will surely enjoy the benefits of clean environment but they have to pay the price (trade-off in monetary value). However, there are segments among the consumers that enjoy the benefits without sacrificing anything or can be categorised as "free rider" consumers. Dimensions which emerged

from attitude showed that the targets, which are the consumers, are easily persuaded to change their attitude towards green food products with certain specific dimensions or factors that have been studied. In terms of food safety, the use of green food products was found to be highly significant due to the positive correlation with the intention among the consumers to purchase the green food products. The quality dimensions of green food products also indicated a high value of coefficient correlation with the intention to purchase the green food products. These two factors, namely, FS and GFQ represent both aspects of emotional and physical attraction to the consumers' process of decision making to purchase green food products. The belief about the significant benefits gained from purchasing the green food products – in terms of safety, health and positive impacts to the environment – contribute to the highly positive correlation with the intention of the consumers. However, the most positively correlated underlying dimensions have been identified and clearly related to the safety of the food products and their qualities, even though they represent physical conditions with invisible positive benefits or importance when purchasing the green food products.

The normative dimensions, Non Family (NF), Family (F), Non Family Influence (FI), and Family Influence (FI) were found to be positively correlated with intention to purchase green food products. This study identified that the relationships between subjective norms dimensions with the intention to purchase green food products were positive, as proposed by Warren and Warren (1977) and Gill et al. (1986). These two early conclusions can be accepted based on the findings in hypothesis-testing analysis. Two basic determinants that represent subjective norm with sub-factors existed as significant factors or underlying dimensions in determining the intention among Malaysian consumers to purchase the green food products. From the results, NF, which represented the salient referents,

was identified as the highest factor that had positive relationship with the intention to purchase green food products. The NFI, which is the representative of motivation to comply dimension, also showed some high correlation to the intention. In both of the normative determinants, namely, salient referents and motivation to comply, the roles of family in influencing the intention to purchase green food products positively correlated to the intention, but in a weaker manner when compared with the non-family determinant. The strength of the normative influence of the consumers' family and social groups is undeniable in changing the intention-behavioural and decision making among consumers (Pickett-Baker and Ozaki 2008). However, all of the dimensions existed as normative factor determinants, which were considered satisfying in determining the norms that have the positive relationships with intention among Malaysian consumers to purchase green food products. These findings yielded the same results with the previous norm-intention relationship research in the area of environmental responsible behaviour which found that the normative factors were the more important determinants of environmental responsible behaviour using the Theory of Reasoned Action (TORA) model. Derksen and Gartrell (1993) concluded that the social context alone is sufficient to produce the behaviour. Consistent with the results of this study, the preferences from the normative dimensions positively correlated to the intention to purchase green food products. The highly visible, widespread, and socially desirable nature of the programme means that on a neighbourhood basis, the norm for recycling probably changed. People with positive attitudes towards environmental concern will recycle if given the opportunity, but more importantly, the results showed that the people who were not concerned about the environment but lived in the strong recycling community were reported to have high involvement in recycling.

Accordingly, Malaysian consumers' actions are depending on the environment or the people surrounding them and belonging to a certain group. In other words, their intention to purchase green food products are more influenced by the collectivism activities as represented by the level of mental programming, which is shared with some people. In this case, the supposition of the interaction between the people in a group to gain knowledge and information is high.

Conclusion

The determination of relationships between knowledge dimensions with intention to purchase green food products in this study suggests an improvement in the understanding of the information about green food products and environmental issues to a new level, which can encourage Malaysians to be more environmentally friendly prior to making decisions on their food consumption. The consistent results gained from the factor analysis in defining the underlying dimension or latent structure of knowledge and the correlation test that revealed the existence of relationships between knowledge dimensions with intention are useful, which could enhance the intention level among Malaysians to purchase the green food products.

Undeniably, the Government's efforts in promoting environmentally friendly attitudes among Malaysians can be seen through the implementation of regulations and practices such as Hazardous Analysis Critical Control Point (HACCP), Integrated Pest Management (IPM), and Good Manufacturing Practices (GMP). However, from this study, it has been identified that the knowledge dimensions also play a major role in enhancing consumers' intention to purchase green food products. Therefore, the media such as television and Government agencies should be more supportive of the Government's visions and objectives to encourage the environmentally friendly attitudes among Malaysians. Such continuous advertisement and information

about green food products through the media will surely affect the food consumption behaviours and pattern among Malaysians. The implementation of knowledge dissemination could change consumers' preferences from the common food consumptions, which are the conventional food products, to the alternative food consumptions, which are the green food products.

Based on the findings of the study that has accomplished the objectives, which are to identify and determine the relationships between attitude dimensions and intention behaviour, there are a few theoretical and practical suggestions. Theoretically, attitudes that are based on green food quality and food safety lead an individual change of intention behavioural towards the green food products. These two dimensions, however, are more likely to be close to the interpretation of subject (green food products) in more unseen beneficial effects. Practically, the direct persuasion through advertisement and informative medium can be used by the Government to show the efforts of promoting green food products that are environmentally friendly and harmless to the environment. Such continuous advertisement and information about green food products through these media can surely affect the attitudes among Malaysians to change from using conventional food products to green food products and eventually to maximise the use of the green food products on a daily basis. The principles for implementing green specifications have been discussed based on literatures related to food production. Economically, the implementation of green specifications in food production should internalise the social welfare concept that directly benefits the consumers by providing healthier and safer food products. From the factor analysis, two factors from the salient referents determinant, namely, "Family" and "Non-Family" were found as important success factors, and two factors from motivation to comply determinant, namely,

"Family Importance" and "Non-Family Importance" were found as important success factors as well.

This study has identified that involvement by non-family factor of normative dimensions among the consumers was the most important factor for the enhancement of intention to purchase green food products. The importance of influence level among underlying dimensions that came from normative determinant may trigger some changes in consumers' practice and intention. Surprisingly, the findings showed high positive correlation between non-family dimensions with intention to purchase green food products as compared to the family factors. With contribution from different levels of society – from relatives to politicians - the success of green food consumption among Malaysian consumers shall be enhanced depending on how these people play their characters to achieve a greener and healthier society – a society that will undoubtedly conserve and take good care of the environment.

References

Ahmad Hanis, I.A.H., Jinap, S., Mad Nasir, S., Alias, R. and Muhammad Shahrim, A.K. (2012). Consumers' demand and willingness to pay for rice attributes in Malaysia. *International Food Research Journal* 19(1): 363 – 369

Bell, S.J., Erwin, P.J. and McLeod, C.S. (1996). Attitudes, norms and knowledge: Implications for ecologically sound purchasing behaviour. In *Marketing theory and application* p. 348 – 356. Chicago: AMA

Chern, W.S., Ishibashi, K., Taniguchi, K. and Yokoyama, Y., (2003). Analysis of food consumption behavior by Japanese households . FAO Economic and Social Development

Cialdini, R.B., Petty, R.E. and Cacioppo, J.T. (1982). Attitude and attitude change. *Annual Review of Psychology* 32: 357 – 404

Deci, E.L. and Ryan M.R. (1990). A Motivational approach to self: Intergration in personality. In *Perspective in motivation* (Richard, D. ed.) p. 237 – 286. Nebraska Symposium of Motivation

Derksen, L. and Gartrell, J. (1993).The social context of recycling. *American Sociological Review* 58: 434 – 442

Fishbein, M. and Ajzen, I. (1975). *Belief, attitude, intention and behavior*. Reading MA: Addison-Wesley

Gill, J.D., Crosby, L.A. and Taylor, J.R. (1986). Ecological concern attitudes, and social norms in voting behavior. *Public Opinion Quarterly* 50: 537 – 554

Goldenhar, L.M. and Connel, C.M. (1992). Understanding and predicting recycling Behavior: An Application of the Theory of Reasoned Action, *Journal of Environmental Systems* 22(1): 91 – 103

Hair, J.F., Black, W.C, Babin, B.R., Anderson, R.E. and Tatham, R.L. (2006). *Multivariate data analysis* (6th edition). New Jersey: Prentice Hall

Jones, A. (1996). The psychology of sustainability: what planners can learn from attitude research. *Journal of Planning Education and Research* 16: 56 – 65

Kouris-Blazos, A., Setter, T. and Wahlqvist, M. (2001). Nutrition and health informatics. *Nutrition Research* 21(1 – 2): 269 – 278

Midmore, P., Naspetti, S., Sherwood , A., Vairo D., Wier, M. and Zanoli, R. (2005). Consumer attitudes to quality and safety of organic and low input foods: a review retrieved from http://www.unctad.org/trade_env/ itforganic/meetings/misc/QLIF_Review_ Reanalysis200509.pdf

Minton, A. P. & Rose, R. L. (1997). The effects of environmental concern on environmentally friendly consumer behavior: an exploratory study. *Journal of Business Research* 40: 37 – 48

Montano, D. E. and Kasprzyk, D. (2008). Theory of reasoned action, theory of planned behavior, and the integrated behavioral model. *Health Behavior and Health Education: Theory, Research, and Practice* p. 67 – 92. San Francisco, CA: Jossey-Bass

Norusis, M.J. (1993). *SPSS for windows: professional statistics*, Release 6.0. p 47 – 82. Chicago, IL: SPSS Inc.

Ottman, J. (1992). Sometimes, consumer will pay more to go green. *Marketing News*, 26(25): 13

Padel, S. and Foster, C. (2005). Exploring the gap between attitudes and behaviour: Understanding why consumers buy or do not buy organic food. *British Food Journal* 107(8): 606 – 625

Park, C.W. and Lessig, V.P. (1977). Students and housewives: differences in susceptibility of reference group influence. *Journal of Consumer Research* 4: 102 – 110

Pickett-Baker, J. and R. Ozaki (2008). Pro-environmental products: marketing influence on consumer purchase decision. *Journal of Consumer Marketing* 25(5): 281 – 293

Pieters, R.G.M. (1991). Changing garbage disposal patterns of consumers: motivation, ability, and performance. *Journal of Public Policy and Marketing* 10: 59 – 76

Rezai, G., Mohamed, Z., Shamsudin, M.N. and Teng, P.K. (2011). Demographic and attitudinal variables associated with consumers' intention to purchase green produced foods in Malaysia. *International Journal of Innovation Management and Technology* 2(5): 401 – 406

Roitner-Schobesberger, B., Darnhofer, I., Somsook, S. and Vogl, C.R. (2008). Consumer perceptions of organic foods in Bangkok, Thailand. *Food Policy* 33(2): 112 – 121

Silverstone, R. (1993). Organic Farming: Food for the Future?. *Nutrition and Food Science* Vol. 5: 10 – 14

Soonthonsmai, V. (2001). predicting intention and behavior to purchase environmentally sound or green products among Thai consumers: An application of the theory of reasoned action. Pro Quest Information and Learning, p. 70 – 117

Sudman, S. (1976). *Applied Sampling* p. 87. New York: Academic Press Thogersen, J. (1996). Recycling and morality. *Environment and Behavior* 28(4): 536 – 558

Wardle, J., Parmenter, K. and Waller, J. (2000). Nutrition knowledge and food intake. *Appetite* 34(3): 269 – 275

Warren, R.B. and Warren, D.I. (1977). *The neighborhood organizer's handbook*. Notre Dame: University of Notre Dame Press

Abstrak

Niat untuk membeli produk boleh didorong oleh motivasi dari segi pengetahuan, sikap, norma subjektif dan latar belakang sosioekonomi pengguna. Pengeluar, pemasar dan pembuat dasar perlu lebih sensitif dengan pengguna Malaysia dan perlu meningkatkan tahap keyakinan mereka untuk membeli produk makanan hijau. Artikel ini bertujuan untuk meneroka dimensi motivasi yang mempengaruhi tingkah laku pengguna Malaysia untuk membeli produk makanan hijau menggunakan model 'Theory of Reasoned Action' (TORA) yang diubah suai. Seramai 1,763 responden telah ditemu bual menggunakan soal selidik berstruktur. Mereka telah diminta untuk menyatakan skala pilihan mereka untuk setiap kenyataan yang diberikan di dalam borang soal selidik untuk mengenal pasti pemboleh ubah yang mewakili pengetahuan, kepercayaan penting, penilaian daripada hasil, perujuk utama dan motivasi untuk mematuhi, yang mempengaruhi niat mereka untuk membeli produk makanan hijau. Tinjauan Analisis Faktor digunakan untuk menentukan dimensi asas pengetahuan dan pemboleh ubah lain yang wujud dalam mempengaruhi niat untuk membeli makanan hijau. Pengetahuan Umum Mengenai Pencemaran (GKP) dimensi daripada Pengetahuan, Keselamatan Makanan (FS) dimensi daripada Sikap dan dimensi Bukan Keluarga (NF) dari Norma Subjektif telah dikenal pasti untuk menjadi dimensi-dimensi yang paling positif terhadap niat untuk membeli produk makanan hijau. Selain itu, dimensi Bukan Keluarga (NF) menunjukkan hubungan signifikan yang tertinggi dengan niat tingkah laku.