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Determinants of Willingness to Purchase Organic Food: An Exploratory Study Using Structural Equation Modeling

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Abstract

The global organic food market has grown tremendously over the past decade. The present study investigated the determinants of willingness to purchase organic food among consumers in a Malaysian city, using a questionnaire survey. The Theory of Planned Behavior informed the research framework and hypotheses. Using structural equation modeling, attitude, subjective norms and affordability (behavioral control) were modeled to impact intention or willingness to pay (WTP) for organic food. WTP in turn predicted actual purchase. Attitude and subjective norms exerted significant positive effects on WTP while the effect of affordability was not significant. Attitude further impacted subjective norms and affordability, thus indicating that efforts to promote consumption growth should focus on influencing consumer attitudes.

Keywords: organic food, management, SEM

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Introduction

The consumption of organic food has grown remarkably, both in developed and developing countries. Food and Agricultural Organization (2009) estimated that the value of global market for organic food has reached $45 billion (USD) in 2007. Although organic food comprises only a small fraction of the food market, its rapid growth has generated much interest among consumers, businesses as well as researchers. In Asia, the demand for organic food grew by 15 to 20 percent annually during the last decade (Helga and Lukas 2009). Its growth can be traced, *inter alia*, to concerns over the negative environmental impact of conventional agricultural practices, as well as the potential long-term effects of consuming genetically modified food (e.g. Zepeda and Leviten-Reid 2004; Zepeda and Li 2007).

At present, the term organic food remains loosely defined along dimensions such as *biological, naturally produced, green, environmentally friendly, sustainable* and *limited use of artificial chemicals* (Klonsky and Tourte 1998; Goldman and Hylton 1972; Torjusen et al. 1999). Organically produced food is generally regarded as healthier, safer, better tasting and more nutritious than conventionally produced food (Perrini et al. 2009; Krystallis and Chryssohoidis 2005). In spite of these, the relatively higher prices of organic food, together with lack of availability, lack of awareness of the organic concept and uncertainty over the truthfulness of organic food claims are hindering more widespread consumption (Krystallis and Chryssohoidis 2005).

Previous studies on organic food consumption concentrated primarily in the United States and the European continent. Relatively little is known of consumers' perception of organic food in Asia (Roitner-Schobesberger et al. 2008). In particular, there is a paucity of studies on consumption trends in South-East Asian countries (i.e. Singapore, Thailand, Indonesia, Malaysia, Vietnam, etc.) even though the region represents some of the most promising markets for organic food.

Malaysia for instance, offers valuable case studies on how consumers in emerging economies are embracing the organic lifestyle. Although the country has a small population of 27.4 million, it is considered an upper-middle income country by the World Bank and viewed as among the most developed of the world's emerging economies. EIU (2010) estimated that annual private consumption per head in the country has risen by 43.3 percent between 2005 and 2009, to 3,395USD. The aspirations of the middle-income Malaysian consumers reflect those in other developed economies. However, differences in their purchase behaviors are likely to persist due to cultural influences.

The characteristics of the Malaysian culture offer insight into their purchasing behaviors in relation to organic food products. Hofstede (1991) described Malaysia as a collectivist society that is characterized by high uncertainty avoidance and high power distance. Consumers from a high uncertainty avoidance culture are more likely to be uncomfortable with trying unfamiliar products and deviating from established consumption habits. Due to the credence nature of organic food, Malaysians are likely to be more cautious and skeptical of the genuineness of organic food labels as well as their benefits. With a lower average spending power as compared

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to consumers in more developed countries, Malaysians are less likely to take risks in consuming organic food products if they are not assured of the benefits and genuineness of these products.

As a society with high power distance, Malaysians are also very conscious of their social ranks and tend to accord higher regard for individuals with higher social status or possessing expert knowledge in a domain. This implies that they may be more likely to consume organic food if they are advised to do so by experts or significant others. Likewise, they also tend to place higher trust on the quality of products that are accredited by agencies from more developed countries such as the United States, Australia and Japan.

The cultural traits of Malaysian consumers suggest that demand for organic food products may be more sustained and predictable. This is because the bulk of consumption are expected to be by consumers who are already convinced of the benefits and genuineness of organic food and are 'committed' to the organic lifestyle. They are also less likely to switch products due to their risk avoidance.

The Malaysian Agricultural Research and Development Institute which spearheads efforts to modernize the country's agricultural sector noted that the local organic food industry is still very small. More than sixty percent of organic food products are imported and these are required to carry a reliable label of "certified organic" from the exporting countries. Perception and understanding of organic production revolve mainly on the non-use of synthetic fertilizers and pesticides. In general, there is a lack of awareness among producers, retailers and consumers of the wider extent of organic production and processing standards in both local and international markets.

The primary objective of the present study was to investigate the main factors that influence the consumption of organic food among Malaysian consumers. Currently, little is known of the psychosocial and psychological factors that are associated with organic food purchase behavior. The results of the study can therefore provide insights for marketers on the key variables that could be used for promoting more widespread consumption in the country.

Theory and Hypotheses

A major theory that informs studies on consumer behavior is the Theory of Planned Behavior (Ajzen 1991). The theory argues that an individual's intention to perform a behavior is influenced by a combination of behavioral attitudes (i.e. a person's beliefs about the desirability of behaviors); subjective norms (i.e. a person's perceived relevance and importance of opinions of significant others); and behavioral control (i.e. a person's sense of control over behavior) (Ajzen 1991). These are elaborated as follows.

Attitude

An individual's attitude towards consuming a product is one of the most important antecedents for predicting and explaining consumers' choices across products and services, including food products (Honkanen et al. 2006). Jung (1971) defines attitude as a psychological construct which represents an individual's readiness to act or react in a certain way. It is a relatively enduring

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evaluation of an object against alternatives, and is based on an individual's thoughts (cognition), beliefs (values) and emotions (affection) towards the object (Hoyer and Maclnis 2004; Rokeach 1973; Dossey and Keegan 2009).

Previous studies have associated organic food consumption with behavioral attitudes such as health consciousness, environmental consciousness, trust of organic food claims and desirability of organic food attributes such as taste, texture, freshness (Hughner et al. 2007; Gil and Soder 2006; Thogersen 2006; Aryal et al. 2009).

A person who has strong health values is likely to accept the importance of exercise, maintain a healthy diet, refrain from smoking and consume moderate amounts of alcohol (Bephage 2000). As organic food is generally regarded as more nutritious and safer than conventionally-produced food, health-conscious individuals are more likely to develop positive attitudes towards the health enhancing attributes of organic food (Michaelidou and Hasson 2008). In First and Brozina's (2009) study on the impact of cultural differences on organic food consumption among consumers in West European countries, the researchers reported that while the impact of cultural dimensions varied among the consumers, all exclusively considered health as the prime motive for consumption. Likewise, Roitner-Schobesberger et al. (2008) found that health consciousness was a main motive to purchase organic food in Thailand, particularly when consumers are concerned with residues from synthetic chemicals used in agriculture. Environmental consciousness was a key determinant in a study (Honkanen et al. 2006) on Norwegian consumers. They investigated the ethical motives in consumers' choice of organic food and found that environmental and animal rights issues had a strong influence over attitudes towards organic food. Specifically, the more concerned consumers are about these issues, the more positive their attitudes will be and the more likely they will consume organic food.

Luhmann (1979) defines trust as confidence in one's expectations, where desirable conducts are viewed as certain while undesirable conducts are removed from consideration. Trust of organic food claims is a strong determinant of intention to consume due to the credence nature of organic food. Credence products are those for which consumers are not able to evaluate effectively as the benefits of consumption cannot be directly or immediately observed. Consequently, consumers may rely on product labeling, advertisements and certifications as signals of the trustworthiness of product claims. The extent that these engender consumer trust will therefore influence the intention to consume organic food. Perrini et al. (2009) found that Italian consumers were more likely to trust retailers of organic products if they believe the retailer is committed to respecting their rights and the environment.

In sum, a favorable attitude towards organic food is likely to strengthen an individual's intention to purchase or consume. It is therefore hypothesized that:

H1: Health & environmental concerns, trust on organic food claims and perceptions of organic food attributes together form the attitude towards organic food.

H2: A positive attitude towards organic food positively impacts willingness to purchase organic food.

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Subjective Norms

Subjective norms concern the perceived social pressures to undertake or not undertake a behavior (Ajzen 1991; O'Neal 2007). Individuals' subjective norms reflect their beliefs about how others, who are important to them, would view them engaging in a particular behavior. McClelland's (1987) theory of needs suggest that individuals tend to perform behavior that is deemed desirable by loved ones or referent group, due to their need for affiliation and group identification. In this vein, individuals' intention to consume organic food are likely to be strengthened if they believe that their loved ones expect them to do so, or they wish to be identified with other individuals who are consuming organic food (Chen 2007). It is therefore hypothesized that:

H3: Subjective norms will positively influence willingness to purchase organic food.

Behavioral Control

Perceived behavioral control concerns individuals' perceptions on the extent they are able to perform a given behavior (Ajzen 1991). Underlying such perceptions is their beliefs about the relative ease or difficulty in performing the behavior and the extent that performance is up to them (Ajzen, 2002, cited in Tarkiainen and Sundqvist, 2005). Where performance of a behavior is deemed to be relatively easy and within the means of the individual, intention to perform the behavior will be strengthened. A number of studies have operationalized affordability as a subset of behavioral control, in influencing behavioral intention (Thompson and Thompson 1996; Notani 1997; Oh and Hsu 2001). Affordability by conventional definition concerns the ability to bear the cost without serious detriment to the capacity for action. For consumers, affordability is intimately associated with monetary and search (convenience) costs. ACNielsen (2005) reported that higher monetary cost was perceived as the main barrier to organic food consumption for one third of respondents in Asia Pacific and over 40 percent of European and North American consumers. Likewise, limitations in supplies and distribution channels were seen as factors that increase the cost of sourcing for organic food. Cost and convenience are therefore, hypothesized as constituting the affordability construct in this study which may impact intention to purchase organic food.

H4: Cost and convenience form perception of affordability of organic food.

H5: High affordability positively impacts willingness to purchase organic food.

Methodology

A questionnaire survey was undertaken to gather data from a sample population of consumers in Kuching, the capital city of largest state in Malaysia. Target respondents were identified using the following criteria: (a) they are at least 18 years old; (b) are engaged in full-time employment or tertiary education; (c) are able to respond comprehensively to an English-language survey questionnaire and (d) have consumed organic food products for at least one year. An initial fieldwork had shown that English proficiency among consumers who made actual purchases of household groceries and organic food is low to moderate. Hence, to ensure the accuracy of

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responses, target respondents were selected using purposive sampling method where field assistants approached potential respondents and verified that the latter meet the sampling criteria before distributing a survey questionnaire.

Over a five-week period, 570 questionnaires were distributed and 421 responses were collected. A high response rate of 74 percent was achieved as most targeted respondents were requested to complete the questionnaire on the spot, aided by field assistants. A sample of 406 was retained for data analysis after deleting datasets with large missing values and for ensuring normality of distribution.

The survey questionnaire measures (1) demographic characteristics of respondents; (2) grocery purchasing behavior; (3) attitudes toward organic food; (4) perceived social expectations of organic food consumption; (5) perceived consumption cost and convenience while purchasing organic food; (6) concerns toward health and environment, and (7) willingness to pay (WTP) for organic food. These items are presented in Table 2 (see Appendix). Items were measured on a 5-point Likert scale where 1 is "strongly disagree" and 5 is "strongly agree". A pilot questionnaire was tested on 30 academic staff of a university, after which a final questionnaire consisting of 44 items was developed.

The demographics of the sample are presented in Table 1 (see Appendix). Majority of the respondents are female (60.1 percent) and most are between the ages of 25 to 44 (55.2 percent). They have obtained tertiary education qualifications at diploma, certificate or degree-levels (67.9 percent). The respondents are mainly medium sized households with three to six members (74.2 percent). Most of the respondents reported a combined household income of between Malaysian Ringgit (RM) 2,501 and RM5,000 (36.7 percent) and RM5,001 and RM7,500 (24.6 percent).

Data Analysis

Exploratory factor analysis (EFA) was undertaken to identify and confirm the factors under each construct. The results of EFA are shown in Table 2 (see Appendix). Oblique rotation was used due to high correlations between factors. Items with loadings smaller than 0.4 were dropped from further analysis. Likewise, an item that loaded on more than one factor was assigned to the factor where it achieved the highest factor loading. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy has a value of 0.963 while the Bartlett's test of Sphericity was significant, indicating that the data was suitable for factor analysis. Eight factors with eigenvalues greater than one were extracted. While several items were dropped due to low factor loadings, it is noted that most of the remainder items that were expected to measure a similar construct did indeed load on the same factor.

The Cronbach's alpha value for each factor was then computed in order to assess the reliability of the items in measuring the factor (see Table 2 in Appendix). Reliability was assured as the Cronbach's alpha values which ranged from 0.73 to 0.96 were higher than the minimum threshold of 0.70 (Nunally 1978). In addition, correlations among the factors ranged from 0.152 to 0.761, indicating that multicollinearity was not a problem (see Table 3).

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Table 3. Correlations of first order observed variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Trust of organic food claims	1.00							
Cost concerns	.552**	1.00						
Convenience concerns	.562**	.647**	1.00					
Subjective norms	.649**	.463**	.514**	1.00				
Health and environmental concerns	.719**	.506**	.518**	.684**	1.00			
Actual purchase	.184**	.284**	.257**	.339**	.152**	1.00		
Perception towards organic food attributes	.746**	.545**	.577**	.691**	.628**	.233**	1.00	
Willingness to pay	.742**	.583**	.581**	.761**	.616**	.340**	.628**	1.00

Note: ** Correlation is significant at 0.01 level

Testing the Latent Constructs

Structural equation modeling was used for exploring the impact of exogenous constructs on purchase intention. It allows for simultaneous testing of an entire model that consists of multiple separate hypothetical relationships (Hair et al. 1998). A two-stage approach was used, where a measurement model that comprised of latent constructs was assessed first, followed by a structural model that consists of all constructs and hypothesized relations (Anderson and Gerbing 1988).

Consistent with hypotheses H_1 and H_4, two latent constructs were formed from five observed variables (i.e. factors). The first latent construct attitude was formed based on three attitudinal variables, namely, health and environmental concerns; trust of organic food claims; and perceptions of organic food attributes. The second latent construct affordability was formed by two variables, namely, cost and convenience concerns. A measurement model which comprised of the two latent constructs was developed in order to test the validity and reliability of the latent constructs (see Figure 1).

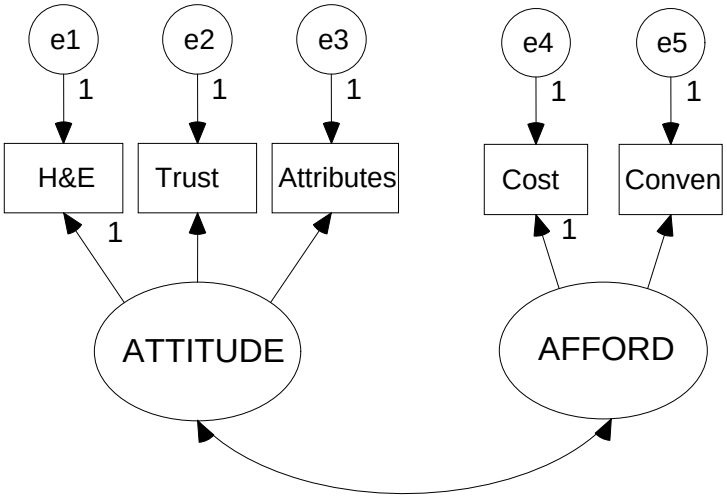


Figure 1. CFA Model: Testing the latent constructs
Note: H&E: Health & environmental concerns; Trust: Trust of organic food claims; Attributes: Perceived desirability of observable organic food attributes; Cost: Cost concerns; Conven: Convenience concerns; ATTITUDE: Attitude towards organic food; AFFORD: Affordability of organic food.

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Factor loadings for the latent constructs ranged from 0.787 to 0.926, indicating strong support for construct validity (see Table 4) (Hair, Anderson, Tatham and Black, 1998). Likewise, the average variance extracted (AVE) values for attitude (0.78) and affordability (0.65) were higher than Fornell and Larcker (1981)'s recommended benchmark of 0.50. Composite reliability coefficients for Attitude (0.91) and Affordability (0.79) were higher than 0.60, suggesting high internal reliability (Fornell and Larcker 1981). Goodness of fit statistics of the measurement model further demonstrated a good fit with the data (χ^2/df = 2.157; GFI = 0.984; NFI = 0.751; RFI = 0.621; IFI = 0.749; TLI = 0.629; RMSEA = 0.053).

Table 4. Results of confirmatory factor analysis of latent constructs attitude and affordability

Latent Constructs and Variables	Factor Loadings
Attitude (CR:0.913, AVE:0.778)	
Trust	0.824
Perceptions	0.926
Health & Environment	0.894
Affordability (CR:0.785, AVE:0.646)	
Convenience	0.821
Cost	0.787
Goodness-of-Fit (benchmarked values)	**Fit statistics**
χ^2/DF (1 to 4)	2.157
GFI (>0.90)	0.984
AGFI (>0.80)	0.940
NFI (>0.90)	0.963
RFI (>0.90)	0.908
IFI (>0.90)	0.980
TLI (>0.90)	0.948
RMSEA (<0.08)	0.053

Note: CR: Composite Reliability, AVE: Average Variance Extracted

Structural Model

A hypothesized structural model M1 was developed to test the impact of attitude, subjective norms and affordability on willingness to pay (WTP) and actual purchase (see Figure 2). Relationships among the constructs were depicted in Figure 2. Consistent with the TPB theory, the exogenous constructs were modeled to impact WTP directly, and actual purchase indirectly through WTP. Evaluation of model M1 indicated a poor fit as the indices were below the benchmarked levels (χ^2/df = 31.747; GFI = 0.751; NFI = 0.743; RFI = 0.621; IFI = 0.749; TLI = 0.629; RMSEA = 0.276). In order to improve model fit, model M^1 was recalcuated based on modification indices that were computed by AMOS. The resulting model M^2 (see Figure 3) consisted of two additional regression paths that linked attitude to subjective norms and affordability. A covariance path linking the error terms of health & environmental concerns and actual purchase were also added to further enhance model fit.

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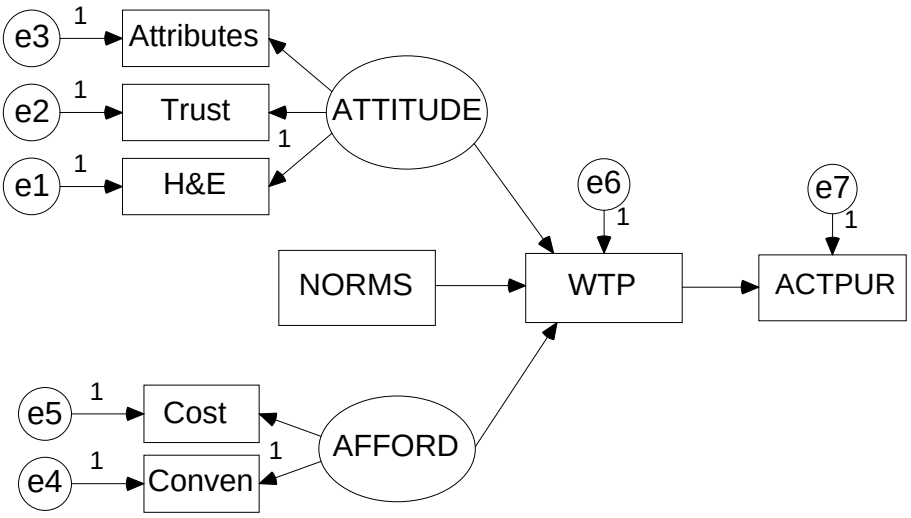


Figure 2. Structural Model M^1
Note: H&E: Health & environmental concerns; Trust: Trust of organic food claims; Attributes: Perceived desirability of observable organic food attributes; Cost: Cost concerns; Conven: Convenience concerns; ATTITUDE: Attitude towards organic food; AFFORD: Affordability of organic food; WTP: Willingness to pay; ACTPUR: Actual purchase

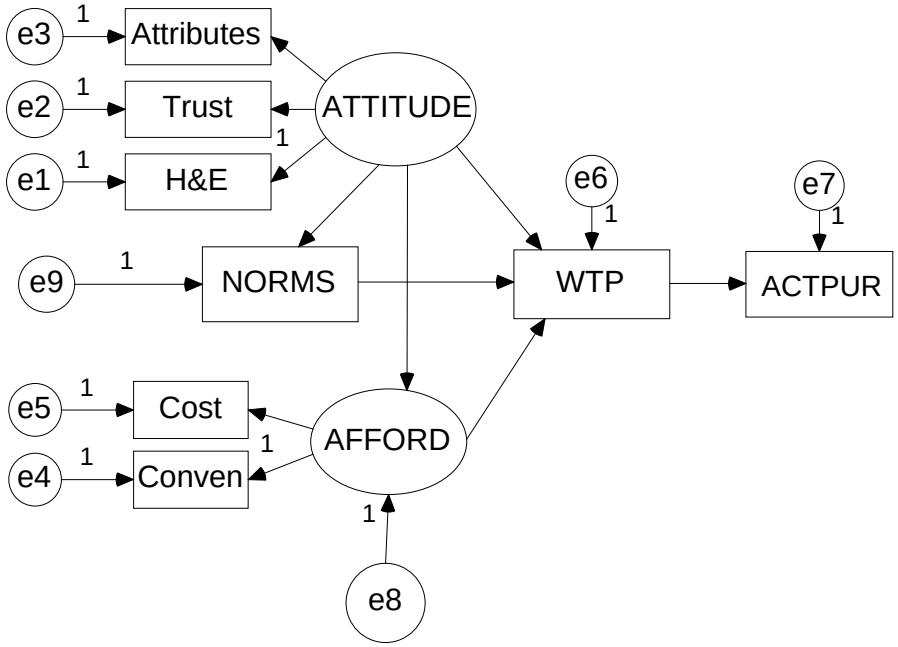


Figure 3. Revised Structural Model M^2
Note: H&E: Health & environmental concerns; Trust: Trust of organic food claims; Attributes: Perceived desirability of observable organic food attributes; Cost: Cost concerns; Conven: Convenience concerns; ATTITUDE: Attitude towards organic food; AFFORD: Affordability of organic food; WTP: Willingness to pay; ACTPUR: Actual purchase

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Model M^2 achieved significant improvements in terms of its goodness-of-fit indices as all suggested values were met (χ^2/df = 3.113; GFI = 0.971; NFI = 0.963; RFI = 0.979; IFI = 0.986; TLI = 0.974; RMSEA = 0.072). The model accounted for 83.8 percent of variance in WTP and 11.7 percent of variance in Actual Purchase. Results of structural equation analysis of model M^2 are reported in Table 5.

Table 5. Parameter estimates and goodness-of-fit statistics of Model M^2

Standardized Regression Weights			
NORMS	←	ATTITUDE	0.773***
AFFORD	←	ATTITUDE	0.768***
WTP	←	NORMS	0.141***
WTP	←	ATTITUDE	0.761***
WTP	←	AFFORD	0.52
TRUST	←	ATTITUDE	0.817
H&E	←	ATTITUDE	0.892***
Attributes	←	ATTITUDE	0.913***
Cost	←	AFFORD	0.796
Conven	←	AFFORD	0.813***
Actpur	←	WTP	0.343***
Correlations			
e1	↔	e7	-0.260***
Goodness-of-Fit (benchmarked values)			
χ^2/DF (1 to 4)			3.113
GFI (>0.90)			0.971
AGFI (>0.80)			0.936
NFI (>0.90)			0.979
RFI (>0.90)			0.963
IFI (>0.90)			0.986
TLI (>0.90)			0.974
RMSEA (<0.08)			0.072

Note: *** Coefficient values are significant at 5% level.

Attitude has a significant direct positive effect on WTP (0.761***). Hypothesis H_2 which proposed that a positive attitude towards organic food would positively impact willingness to pay could not be rejected. Subjective norms has a significant albeit weaker direct positive effect on WTP (0.141***). Therefore, hypothesis H_3 which proposed that subjective norms will influence willingness to pay for organic food could not be rejected. In contrast, the regression coefficient of the relationship between affordability and WTP is not significant (0.052). Therefore, hypothesis H_5 which proposed that high affordability will positively impact willingness to pay for organic food is rejected. WTP exerts a significant direct positive effect on Actual Purchase (0.343***). This is consistent with the TPB theory which proposes behavioral intention as an antecedent of actual behavior.

Structural analysis of model M^2 provided additional information on the nature of the relationships between the exogenous and endogenous constructs. Attitude not only affects WTP directly, but also indirectly through a direct positive effect on subjective norms (0.773***). The

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standardized total effect of attitude on WTP reported by AMOS is 0.911. Attitude also exerts a strong significant effect on affordability (0.768***) as positive attitudes are likely to reduce the perceived cost of sourcing for organic food. Attitude also impacts actual purchase indirectly through significant effects on subjective norms and WTP. The standardized total effect of attitude on actual purchase reported by AMOS is 0.312. Lastly, analysis of structural model M^2 revealed a significant negative correlation between the error terms of health & environmental concerns and actual purchase (-0.260***).

Conclusions and Implications

The present study validated a model that predicts the willingness to pay and actual purchase of organic food among Malaysian consumers. Consistent with the Theory of Planned Behavior, attitude and subjective norms were found to exert significant positive effect on willingness to pay, which positively affects actual purchase.

Health and environmental concerns together with trust of organic food claims and desirability of organic food attributes form Malaysian consumers' attitude towards organic food. The importance of health and environmental concerns reflect the growing affluence of Malaysian consumers. The rising educational levels of the middle-income consumers coupled with better access to worldwide communication and information channels have raised their awareness of health and environmental issues. These have driven strong demand for health-related products (Euromonitor 2009) and greater willingness to adopt more environmental-friendly lifestyles. The importance of trust of organic food claims and desirability of organic food attributes reflect the high uncertainty avoidance of Malaysian consumers. Although trust and observable organic food attributes are important factors affecting consumers in other countries, the greater tendency of Malaysian consumers in avoiding uncertainties is likely to strengthen the effect of these factors when making purchase decisions. Consumers are expected to rely heavily on product labeling, the media, reputation of producers and other observable attributes of organic food as measures of trustworthiness and quality.

The significant impact of subjective norms on willingness to pay reflects the high power distance culture that characterizes Malaysians. Consumers are therefore likely to be influenced by the advice or opinions of significant others, particularly those whom that they hold high regard for. Furthermore, as Malaysia is a highly collectivist society, consumers tend to conform to the consumption choices of significant others. This implies that those whom consumers hold high regard for, are able to influence the consumers both actively through their advice or opinions, as well as passively, through their own behaviors.

Contrary to the TPB theory, the impact of affordability as a subset of behavioral control on willingness to purchase was not significant. This raises questions about how behavioral control impacts the intention of Malaysian consumers. Hughner et al. (2007) offered insights on the relationship between cost and organic food consumption. They cautioned that consumers are likely to perceive cheaper organic food products as of lower quality and containing fewer benefits. Consequently, organic food may lose its differentiating feature and appeal among consumers. Affordability may be a concern for consumers who consume organic food occasionally or who are yet convinced of the benefits. For them, cost of consumption is likely to

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have a major influence over decisions to consume either higher priced organic food or cheaper conventional alternatives. However, consumers who have been convinced of the benefits of organic food and have adopted the organic lifestyle may be less likely to be deterred by the high cost. They seem to be able to accept a higher price tag on organic food.

Results from structural equation analysis further show that attitude impacts subjective norms and affordability. These suggest that a strong positive attitude towards organic food consumption will influence consumers' perceptions of subjective norms. Where the expectations of significant others are consistent with consumers' own attitudes toward organic food, they are more likely to comply with the expectations as doing so positively reinforces their own attitudes. In similar vein, a strong positive attitude increases perception of affordability. This is because consumers are likely to rationalize the high cost of consumption as a premium paid for the benefits and desirable attributes of organic food.

The negative correlations between health and environment concerns and actual purchase suggest that consumers' concern for health & environment decreases after consuming organic food. This implies that when consuming organic food, consumers are assuring themselves that they are making a 'difference' or 'doing their part' by 'acting responsibly'. Consequently, concerns about the impact of food consumption habits on health and the environment would decrease.

The findings from the study offer insights on promoting more widespread organic food consumption. Cost of consumption may need to be lowered in order to attract new consumers. At the same time, there is a need for differentiation through other means in order to sustain or increase consumption among existing consumers. Producers and marketers may extend their influence over contextual factors that shape consumer attitudes towards organic food. These factors include consumers' concerns over their health and environment, their perceived trustworthiness of organic food claims and observable attributes of organic food which were deemed desirable. A successful effort in these directions can impact consumers' affordability concerns and their readiness to comply with subjective norms. These inevitably contribute towards enhancing intention to consume.

South-East Asian countries such as Malaysia offer significant market potentials for organic food. Nevertheless, although consumers in emerging markets are becoming more affluent and more conscious about their consumption patterns, they tend to be less informed about organic food classification. When evaluating product options, their judgment is based mainly on product labels and the mainstream media, rather than on formal organic certifications. Both sources of information are subjected to manipulation by parties which attempt to exploit consumers' knowledge gap.

In Malaysia, the use of terms such as 'organic' and 'organically produced' are not strictly regulated, particularly among imported food products. Hence, a producer or importer can label a food product as organic even if it is not. Consumer vulnerability is further compounded by the fact that the health-promoting claims of organic food are difficult to validate in the short-term. Any well-publicized incident that calls into question the integrity of product labels is therefore likely to create distrust among consumers across all organic product categories (e.g. fresh, dried, frozen).

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Research Limitations and Future Directions

The absence of studies related to organic food attitude, purchase and consumption in Malaysia implies some inherent limitations in the present study. The findings from the present study need to be validated or compared with similar studies in order to enhance the generalizability of the findings.

Another limitation concerns the measurement of latent construct Attitude. Literature on consumer behavior research suggests three components of attitude, namely, cognitive, affective and conative. Most of the studies related to organic food are limited to studying only affective and cognitive components of attitude. This study faces a similar limitation as it has not measured the conative—"feelings and emotions" component of attitude.

Future researchers can aim to explore mediating variables between the present exogenous constructs and willingness to pay. Likewise, the relationship between willingness to pay (intention) and actual purchase may be further investigated. The TPB theory considers intention as a predictor of actual behavior. Researchers may focus on identifying factors that moderate and/or mediate the impact of intention on actual behavior.

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Appendix 1

Table 1. Sample Demographics

Gender	Frequency	Percent
Male	162	39.9
Female	244	60.1
Age		
18-24	75	18.5
25-34	130	32.0
35-44	94	23.2
45-54	68	16.7
55 or over	39	9.6
Education		
Others	2	0.5
Primary schooling	21	5.2
Secondary schooling	107	26.4
Diploma, certificate	98	24.1
Degree	178	43.8
Household members		
1-2	45	11.1
3-4	161	39.7
5-6	140	34.5
7-8	47	11.6
9 or more	13	3.2
Monthly Household Income		
RM1,000-2,500	89	21.9
RM2,501-5,000	149	36.7
RM5,001-7,500	100	24.6
RM7,501-10,000	30	7.4
RM10,001 or above	38	9.4

[1]RM denotes Malaysia Ringgit, the official currency of Malaysia.

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Table 2. Questionnaire items, factor loadings and Cronbach's Alpha

Factors and Questionnaire items	Cronbach's Alpha & Factor Loadings
Actual Purchase	**0.73**
How much have you spent on organic food in the past 7 days?	.809
RM0-25, RM26-50, RM51-75, RM76-100, More than RM100	
How much more are you willing to pay for organic food, compared to conventional alternatives?	.732
0-25%, 26-50%, 51-75%, 76-100%, More than 100%	
How many times have you consumed organic food in the past 7 days?	.825
0-1 time, 2-3 times, 4-5 times, 6-7 times, More than 7 times	
Trust	**0.944**
I trust that those selling organic food are honest about the organic nature of their products	0.936
I trust that local producers of organic food are practicing organic farming	.851
I trust the organic certification logo on organic food labels	.872
I trust the information on organic food labels	.817
Cost perceptions	**0.838**
Organic food is too expensive*	NA
Only consumers with higher income can afford organic food	.894
Organic food is beyond my budget	.862
Convenience Perceptions	**0.825**
Buying organic food is highly inconvenient	.534
Organic food is only available in limited stores/ markets	.777
The stores that I frequently shop do not sell a variety of organic food	.850
Subjective Norms	**0.862**
My close friends and family consume organic food	.699
Nowadays, organic food is widely regarded as a better alternative to conventional food*	NA
My loved ones expect me to purchase more organic food for them	.508
Health and Environment Concerns	**0.964**
I am concerned about the type and amount of nutrition in the food that I consume daily	.766
I am concerned about the presence of food additives	.789
I care about cholesterol and fat	.822
I keep a strict diet*	NA
I am concerned about how food is processed	.884
It frightens me to think that much of the food I eat is contaminated with pesticides	.820
The government is not doing enough to help control pollution of the environment	.807
I am greatly concerned about the harm being done to plant and animal life by pollution	.904
Environmental pollution is not a serious issue*	NA
Organic food tastes better*	NA
Organic food is more environmentally friendly*	NA
Organic food is good for health	.473

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Table 2. *Cont.* Questionnaire items, factor loadings and Cronbach's Alpha

Factors and Questionnaire items	Cronbach's Alpha & Factor Loadings
Attributes' Perception	**0.938**
Organic food is free from genetic modifications	.463
Organic food does not contain additives and artificial flavoring	.458
Organic food is free from pesticides	.545
Willingness to Pay	**0.955**
I'm willing to buy organic food even though choices are limited	.523
I'm willing to buy organic food because the benefits outweigh the cost	.512
Buying organic food is the right thing to do even if they cost more	.612
I don't mind spending more time sourcing for organic food	.627
I would still buy organic food even though conventional alternatives are on sale	.562

* Reverse coded items

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