Determinants of Willingness to Pay towards Malaysian Organic Food

Siddique Ahmed Chamhuri Siwar, A. S. A. Ferdous Alam, Basri Abdul Talib, Norshamliza Chamhuri, Nor Diana Mohd Idris

Abstract: ***Organic food market is very challenging in Malaysia. As the growth of this sector is consumer driven, a huge amount of studies conducted worldwide about consumer behavior towards organic food. The objective of this article is to investigate into the factors of consumers' purchase decisions regarding organic food in Malaysia. Research dealing with various aspects of WTP and Actual Purchase were reviewed and an initial conceptual framework has been developed to carry out research objectives. Data have been collected from Federal Territory and Selangor State of Malaysia. Structural Equation Modeling was employed to measure factors and test the research hypotheses. Results shows that about 58% of the variances of WTP for organic food can be explained by health concern, affordability, subjective norms and convenience and WTP has a significant impact on Actual Purchase. Perception has no impact on individual's willingness-to-pay for organic food. Based on these empirical findings a model for WTP and Actual Purchase has been proposed for organic food.***

Index Terms**: Keywords: Organic Vegetables and Fruits, Willingness-to-pay (WTP), Structural Equation Modelling (SEM), Malaysia.***

I. INTRODUCTION

Willingness to Pay (WTP) estimation has been remain in the long run debate in the field of Psychological Economics, Environmental Economics, and in the other field of socio-economic research; still unable to reach a generalization. From the beginning of the last two decades researchers concentrated their interests to this direction to find out how the organic product market can be boosted with the increased health and environmental concern of the global community. Food and Agricultural Organization (FAO) has given special emphasis on organic agriculture as a part of the sustainable development program of United Nations (FAO 2013). Although this sector is a tiny fraction of the global food market, the volume of sales of organic products are increasing day by day (Willer et.al, 2018). Up to 2016 organic market expanded to 178 countries with an estimated value of 90 billion US dollar (Willer et.al., 2018).

In recent years a rising trend in consumption of organic food has been observed due to consumers' increasing awareness of both health and environmental issues. This growth is expected to continue in the coming years in Malaysia as the country has entered into the group of upper middle income countries according to per capita GNI (UN, 2018). The growing demand for organic food in Malaysia is more than the local production (Mohammad et al., 2014; Ahmed et al, 2008) and about 60% or organic food products are imported (Somasundram et al, 2016). As the organic market is consumer driven, most of the studies focused on consumer behavior and preferences towards organic food by means of diverse methodologies including probit, tobit and logit analyses (Skuza et al, 2015; Owusu and Anifori, 2013, Irandoust, 2016; Campbell et al, 2014 etc.) and structural equation modeling (SEM) (Voon et. al, 2011).

In this context this article seeks to find the physiological and psychological factors of willingness to pay (WTP) and how WTP would affect the actual purchase behavior of the consumers towards organic vegetables and fruits. The result of the study therefore can provide insights to the organic producers, sellers and environmental policy makers on the key variables that could be used for promoting widespread acceptability of the organic products.

II. LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

Numerous empirical studies on consumer's WTP of organic food have been conducted and the topic range includes green product, GMO- free food, hazard free food, organic food etc. However, such tremendous amount of researches brings chaos in the related theories as well as doubts for decision-makers for different research objects, different samples, different research methods, and subsequently different results (Xia & Zeng, 2008). Almost all the studies are based on primary data collected through questionnaire survey. Among them some studies only restricted to the descriptive studies (Aguiar et al, 2017) and some used more sophisticated statistical procedure like probit, tobit and logit model (Kavoosi et. al, 2017, Vukasovic and Tina 2016, Teng et.al 2011, Ahmad 2010). A few studies used factor analysis and structural equation modeling (SEM)

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(Humaira and Handayati 2016, Aguiar et. al 2016, Ghosh et al 2016, Hassan et. al 2015, Chen and Lobo 2012, Voon et al 2011, Shaharudin et al 2010). In Malaysia majority of the studies are descriptive in nature with few exception.

Voon et al (2011) tried to identify the main factors influencing consumption of organic food using Structural Equation Modeling (SEM) and concluded that attitude and subjective norms have direct significant positive impact on WTP. WTP estimates are sensitive to consumer characteristics depending on their motivation to use the product and their socio-economic condition (Liu et. al 2017).

As one of the key factor of behavioral intension postulated in theory of planed behavior (Ajzen, 1991), the impact of Subjective Norms (SN) on human behavior whether monetary or not is proved significant by numerous researches (Effendi et. al 2015). However empirical support for significant positive impact is not universal (Davis, 1989; Kumar, 2012; Mathieson, 1991). Subjective Norms (i.e. social pressure) defined as a 'person's perception that most people who are important to him think he should or should not perform the behavior in question' (Fishbein & Ajzen, 1975, p. 302). In explanation of this effect Venkatesh and Davis (2000) said that 'people may choose to perform a behavior, even if they are not themselves favorable toward the behavior or its consequences, if they believe one or more important referents think they should, and they are sufficiently motivated to comply with the referents.' These referents may include family members, friends, media, government or any other individual or institutions that people perceived them to comply with. Social pressure may come to play if one or more household members do not like the product in question (Verbeke et. al, 2007). So we assumed that 'Subjective Norms' will positively impact the WTP.

Consumer perception or attitude of organic product is one of the most significant predictor of WTP as evidenced in different studies (Kumar, 2012; Laroche et. al, 2001). Perception help us define how we see an object or situation, how we behave toward the object or situation. A positive perception toward organic products will increase the WTP for it – this assumption will be examined as second hypotheses.

Health concern almost always been proved as a significant factor of consumer's food purchase behavior irrelevant of the regional differences of the studies (Effendi et al., 2015; Michaelidou & Hassan, 2008; Moser et. al, 2011) with a few exceptions (Michaelidou & Hassan, 2008). Although health benefits of organic products are not scientifically proved but it is widely acceptable perception that organic products have superior health benefit. To explore the Malaysian consumers' perception about the health benefits of organic products it is hypothesized that 'Health concern has a positive relationship with WTP of organic vegetables and fruits.

As affordability shapes the actual purchase behavior, consumers' choice under budget constraint does not always reflect their real preference. Due to high price of organic food, the people of middle to lower income group may not be able to buy organic. Affordability is depicted by individual's perception of the price of the product, consumer's income, provision for savings, family size and lifestyle. Measuring affordability is somewhat dubious as people prone not to disclose their financial ability to others. The cultural characteristics of Malaysian are very restricted in this matter. However indirect questionnaire has been proven effective regarding the matter. Hence, we hypothesize that 'high affordability will positively influence the WTP'.

Wide availability is still a problem in marketing of Organic vegetables and fruits. Consumers do not make their buying decision on environmental concern only rather they are influenced by other factors such as price, income, convenience, availability, and quality (Johri & Sahasakmontri, 1998; Rozin & Vollmecke, 1986). People buy most of their regular necessary foods from convenient shop as it is easily accessible but organic food is yet to be convenient. So we hypothesize that Convenience (ease of access) has a positive causal relationship with WTP for organic products.

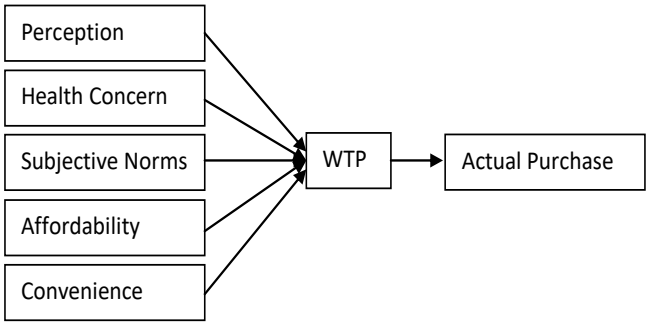

Fig. 1. Conceptual Model of WTP and AP of Organic Product

III. EMPIRICAL METHOD

A. Data Gathering

Self-selection sampling method was applied in this study. The study was conducted among the citizen of Federal Territory (Kualalumpur and Putrajaya) and some urban areas of Selangor state of Malaysia. Data was collected from June 2014 through August 2014. About 500 questionnaires were distributed. Among those 342 returned. The response rate was 68.4% with 330 useable questionnaires. The respondents who reside within approximately 5km radius of the organic shop or super shop selling organic vegetables and fruits are selected for getting response. For selecting sampling area some factors were considered such as urbanization, availability of shops selling organic vegetables and fruits and cost constraints. Some questionnaire were distributed and then collected and some data were collected through face to face interview. The participants were minimum adolescent and were solely or jointly responsible for the family's grocery shopping. The participants were informed of the purpose of the study and assured of confidentiality.

In this study, a closed-ended questionnaire was developed to find the consumers' willingness to pay (WTP) for organic vegetables and fruits using a 5 point Likert scale (where 1= strongly disagree and 5= strongly agree). The questionnaire was developed based on the existing literature review on WTP measurement. To suit the local context, in addition to English version, a Bahasa Melayu (Malay language) version was also developed. In addition to demographic items the questionnaire includes 45 items to measure the variables under study.

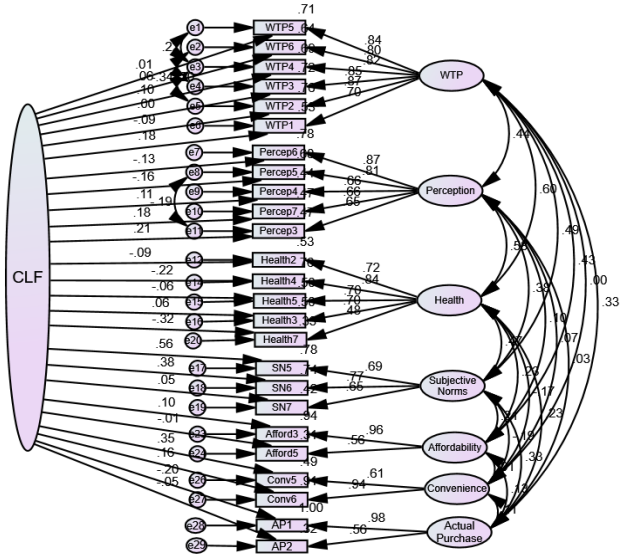

Fig. 2. the Measurement Model

B. Statistical Modeling

Instead of hybrid structural equation modeling (SEM) the analysis consists of two separate models i.e. the measurement model and the structural model. The measurement model ran through the 'maximum likelihood estimation' (Fig. 2). Harman's single factor test shows that only 23.338% of total variance has been extracted by a single factor with eigen value of 10.502. But due to many criticism of 'Harman's Method', common latent factor (CLF) test performed and result shows that some variables are affected by more than 10% of common method bias. So our measurement model includes an additional CLF construct (Jarvis, MacKenzie, & Podsakoff, 2003). The measurement model is a kind of confirmatory factor analysis (CFA) adopted to construct reliable factors that would subsequently utilized as an adjusted composite score in the structural model to test the hypotheses. Our 45 items successfully constructed 7 reliable factors or constructs dropping down 20 items. The analyses were done with the help of AMOS 22.

C. Validity, Reliability and Model Fit

Table I. CR: Composite Reliability; AVE: Average Variance Extracted; MSV: Maximum Shared Variance; ASV: Average Shared Variance and Factor Correlations of the Measurement Model

	CR	AVE	MSV	ASV	Conve.	WTP	Percep.	Health	SN	Afford.	AP
Conve.	0.765	0.630	0.035	0.013	0.794						
WTP	0.922	0.666	0.365	0.182	0.005	0.816					
Percep.	0.853	0.542	0.338	0.115	0.072	0.438	0.736				
Health	0.824	0.491	0.365	0.175	-0.167	0.604	0.581	0.701			
SN	0.746	0.496	0.236	0.130	-0.186	0.486	0.378	0.465	0.705		
Afford.	0.752	0.618	0.189	0.052	0.010	0.435	0.097	0.233	0.210	0.786	
AP	0.767	0.638	0.110	0.050	0.113	0.331	0.029	0.227	0.330	0.125	0.799

As shown in Table I, average variance extracted (AVE) for most of the constructs is greater than 50% indicating appropriate 'Convergent Validity'. For the constructs 'Health Concern and Subjective Norms (SN)' the AVEs are 49.1% and 49.6% respectively that is slightly less than the half of the total variance of the items of the constructs. We accepted the AVEs of these constructs considering their appropriate divergent validity and strong reliability. The AVE for all constructs is greater than the maximum shared variance (MSV) and the square root of AVE (diagonal of the correlation matrix) (see Table I) is greater than the inter-construct correlations indicating acceptable divergent validity. Composite Reliability coefficient for all constructs is >.7 ensures the internal reliability of the constructs (Raykov, 1997). Summary of the model fit is shown in Table .

Table II. Model Fit Indices for the Measurement Model

Indices	*df*	χ^2	χ^2/df	*P* - χ^2	CFI	NNFI	RMSEA	SRMR
Our model Score	226	404.251	1.789	.000	.956	.942	.049 (Min .041 & Max .057) Pclose : .578	.0482
Minimum threshold			1-3		>=.9	>=.9	<.08	<.9

D. Demography of the respondents

The demographic results show that 33.3% (n = 110) of the participants are male, while 66.7% (n = 220) are female. Their age range from 18 years to 68, 88.5% of them are between 20 to 50 years, .9% is less than 20 and 10.6% is greater than 50 years of age. 39.1% (n = 129) are single, 58.2% (n= 192) are married, 1.8% (n=6) are divorced and .9% (n=3) are widowed. In relation to nationality, 98% (n = 323) are Malaysian and remaining 2% (n=7) are from other countries. In matter of occupation 23.6% (n=78) are university teachers, 21.5% (n=71) are government officials, 32% (n=106) are engaged in private job, 12.7% (n=42) are self-employed, 8.2% (n=27) are in other jobs and 1.8% (n=6) did not mentioned their occupation. Of the respondents 39.7% (n=131) have completed or pursuing post graduate, 24.2% (n=80) are graduate, 12.4% (n=41) have trade diploma, 20.3% (n=67) completed secondary education and remaining 3.3% (n=11) completed primary level of education. The monthly income more than RM 10,000 (USD 3000) is earned by 6.7% (n=22) of the respondents followed by those earning RM 8000- RM 10000 (USD 2400 – USD 3000) are 5.8% (n=19), whilst 12.7% (n=42) of respondents have income range from RM 5000 to RM 8000 (USD 1500 – USD 2400), 19.7% (n=65) of respondents have income range from RM 3000 to RM 5000 (USD 900 – USD 1500), 32.7% (n=108) of respondents have income range from RM 1500 to 3000 (USD 450 – USD 900) and 22.4% (n=74) earn less than RM 1500 (USD 450).

IV. TEST OF HYPOTHESES AND DISCUSSION

Table III and Fig. 3 shows the summary of the hypotheses and

the tests results. We discuss below the effects of the factors of WTP chronologically. Health concern, affordability, subjective norms and convenience affect individual's WTP to buy organic food.

The first influential factor of WTP is the health concern. The hypotheses that the Health Concern would positively impact the WTP has been proved significant with highest standardized regression weight of .437. This implies that health issue is the most influencial predictor of WTP specially for organic food choice. Study of Gil et. al (2000) in Spain and et al (2015) in Trinidad found similar result.

The second influencial factor of WTP is affordability. The hypotheses that the affordability would positively impact the WTP proved significant with standardized regression weight of .283. This finding contradicts with Voon et al. (2011), whos study found no significant effect of affordability on WTP.

Table III. Hypotheses and Their Regression Test Results

Impact	Standardized Regression Weight	P - Value	Squared Multiple Correlation
Health Concern → WTP	.437	***	
Perception → WTP	.039	.428	
SN → WTP	.254	***	.58
Affordability → WTP	.283	***	
Convenience → WTP	.137	***	
WTP → Actual Purchase	.345	***	.12

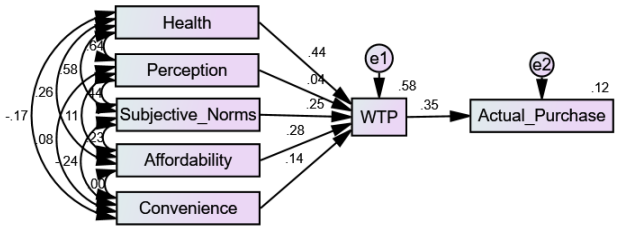

Fig. 3. the Structural Model

The third influencial factor of WTP is subjective norms. The hypotheses that the Subjective Norms (SN)would positively impact the WTP also been proved significant with regression weight of .254, implies SN also have significant positive impact on WTP. Based on item loading the SN constracted from friend, media and government. Impact of family members' influence on WTP has been dropped out of our analysis (low item loadings), indicating decreasing family bondings in Malaysian culture. In their timely studies Al-Swidi et. al (2014) observed similar findings that subjective norms significantly moderate the relationship between attitude and buying intention. They mentioned that 'as the role of subjective norms is significant in driving consumers toward organic food purchasing, the marketers need to target the opinion leaders who can utter positive word of mouth about organic food consumption.'

The forth influencial factor of WTP is convenience. The hypotheses that the convenience would positively impact the WTP also proved significant with standardized regression weight of .137.

The hypotheses that the Perception would positively impact the WTP was not confirmed. This implies that whether a consumer will pay for a specific product or not do not reflect his/her perception towards the product. There are some other motivators behind the WTP beside perception like affordability, subjective norms, health concern etc. As attitude is the behavioral outcome or menifestation of the perception, this finding contradict with the TPB in the sense that the assumption 'attitude toward behavior will positively impact the behavioral intention' is not hold true in matter of WTP (a monetary behavior). However many researchers found attitude as a significant predictor of WTP (Schniederjans & Starkey, 2014; Voon et al., 2011) but they included health concern as an indicator of attitude. In this study health concern is excluded from the indicator of attitude; and findings reveals that if we do not concider health, the other attributes of attitude is not strong enough to influence WTP.

The hypotheses that the WTP positively impact the Actual Purchase (AP) has been proved with standardized regression weight of .345 (r^2=.12) that is consistant with the Humaira (2016), Voon (2011), Kumar (2012), Mittal & Kamakura (2001) and Mazursky & Geva's (1989) studies. Using SEM the first 3 authors of them found that willingness to pay is a significant predictor of actual purchase on the other hand Mittal and Mazursky found similar result using other methods.

V. IMPLICATIONS, CONCLUSIONS AND RECOMMENDATIONS

This article attempts to explore the factors behind the WTP and Actual Purchase (AP) of organic food especially for vegetables and fruits in Malaysian market. The findings of this study add insight into consumers' attitude, perceptions and behavior towards organic food and WTP. The study propose a simple model for WTP and AP based on the analytical findings (see Fig. 4). The result of this study have implications for strategies for positioning the organic products, communicating the organic message to attract new consumers and direction of quality improvement of organic products. Further research should be concentrate on 'subjective norms' to investigate that who are the important others beside government, media and friends to motivate consumer buying behavior and on 'affordability' to see its role in moderating between willingness to pay and actual purchase.

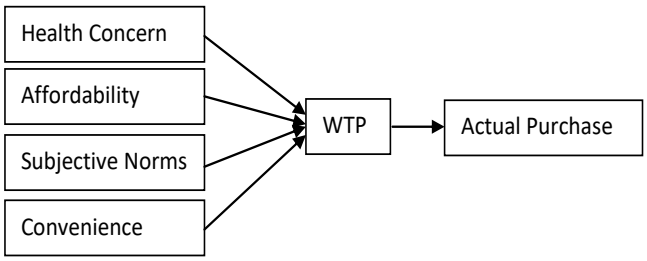

Fig. 4. Model for WTP and Actual Purchase

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