International Food Research Journal 24(2): 767-778 (April 2017)
Journal homepage: *http://www.ifrj.upm.edu.my*

Factors influencing purchase intention of organic meat among consumers in Klang Valley, Malaysia

Wong, S.S. and *Aini, M.S.

Department of Resource Management and Consumer Studies, Faculty of Human Ecology, Universiti Putra Malaysia, 43400 UPM Serdang Selangor, Malaysia

Article history

Received: 23 May 2015
Received in revised form: 8 April 2016
Accepted: 13 April 2016

Keywords

Organic meat
Consumers
Choice motive
Intention to purchase

Abstract

Multitude of factors such as concern for use of growth hormones, chemical additives in feed, animal welfare, human health issues and environmental impacts have led to the steady increase in the consumption of organic meat worldwide. The purpose of the study was to investigate the factors that influence the purchase intention towards organic meat based on the Theory of Planned Behavior (TPB) and organic meat choice motives. The influence of attitude, subjective norm, perceived behavioral control, safety, meat characteristic, health concern and price on the intention to purchase organic meat was analyzed. The study utilized cross-sectional research design using survey method. A total of 400 consumers responded to the survey using mall-intercept, with both genders equally represented and had an average age of 35 years. Results showed that the respondents seemed to be very concern about food safety (m=4.06) and meat characteristics (m=4.04) as compared to health (m=3.70) and price (m=3.36) was not a strong motivating factor (m=3.35). The level of attitude towards organic meat, subjective norm and perceived behavioral control was at moderate level. The findings showed that perceived behavioral control and personal norm towards organic meat of TPB and price and meat characteristic of the choice motives could explain 66.4 percent of the variance in the intention to purchase organic meat. As intention to purchase is an important indicator of future organic meat consumption, policy makers and marketers may draw on these results when attempting to promote and enhance acceptance of organic meat among the consumers.

Introduction

The increase of interest in organic food throughout the world is in response to concerns about the intensive agricultural practices and their effects on consumers' health and the environment (Yin *et al*., 2010). Consumers have become increasingly concerned by the health risks posed by food consumption (Lobb, 2007) and this is reflected in the growth of organic food market in recent years across all regions. The continuity of supply has improved and a wide range of organically produced food is now readily available in the market place. In China, as in other Asian countries, the rapid socioeconomic development accompanied by the modernization of organic food production has resulted in the increase in the sale of organic from USD 0.39 /RM1.69 billion in 2003 to USD 1.1/RM4.76 billion in 2006. It is expected that the organic food development in China market is likely to affect the global market of organic food development (Yin *et al*., 2010). Recent data from the Organic Trade association (2014) showed that sales of organic products in the United States has increased by 11.3% in 2014 from the previous year, totaling USD 39.1/RM169.11 billion. Similar positive growth of organic market was observed in the Asia-Pacific, Europe and North America and global organic food markets are projected to remain strong in the next five years (Australian organic market report, 2014). Similar trend is observed in the sales of organic meat. Approximately 7% of UK consumers purchase organic food regularly, and the trend of organic meat market is growing in the UK (Angood *et al*., 2008). It was forecasted that the consumption of meat worldwide would rise by 72% between 2000 and 2030 (Fiala, 2008) and consequently the intake of organic meat.

There are various factors that drive the growth of organic meat market. Firstly, it is with regards to how the animals are reared. For organic meat production, the standards prohibit the use of antibiotics and growth hormones. The animals have to be fed with 100% organic feed, and they need to have access to outdoor environment and to pasture on ruminants (Abrams *et al*., 2010). These aspects answer the consumers' food safety concerns as organic meat

*Corresponding author.
Email: *ainims@upm.edu.my*

tends to have lower residues, without the use of synthetic pesticides, no growth hormone ingredient, no antibiotic and no chemical content (Schobesberger *et al*., 2008). In addition, the perceived better animal welfare practices and lower environmental impact of the organic meat influence the consumers' choice (Loo *et al*., 2010).

Organic food products market is currently the second most important growing products in the South-East Asian region (Quah and Tan, 2009). According to Ong (2000), the organic product market growth in Malaysia had encouraged the Malaysian government to expand this industry. The government provides assistance of up to RM5,000 (USD1700) per hectare, a once only provision, for infrastructure development, such as farm roads, irrigation, drainage, electricity and water. Organic producers were also eligible for existing credit schemes. The government has also introduced an accreditation scheme for producers to promote and develop markets including the organic meat markets (DOA, 2010).

The high acceptance of organic foods is reflected in the rapid growth of the organic food chains in Malaysia especially in the big cities such as Kuala Lumpur, Pulau Pinang and Johor Bahru. In tandem with the rapid development of organic food industry, organic meat demand in the Malaysian market has expanded too. The market for organic food has gradually increased from year to year in the country as a result of the consumers having better understanding of the organic foods' features and benefits. The organic meat sector is still at its infancy stage, whereby a lot of encouragements and supports are needed to create consumer awareness, enhance acceptance of organic meat in order to stimulate organic meat purchase in the country. In this vein a study was conducted to investigate the factors that influence the purchase intention towards organic meat among the consumers who patron the organic specialty store outlets in the Klang Valley, based on the Theory of Planned Behavior (TPB) and organic meat choice motives.

Consumer food choice is the result of the quality expectations before and quality experience which include: search attributes such as color, price and characteristics; experience aspect which is verified during consumption; and credence dimension that mainly focus on the quality of the production process such as the quality-of-life issues, food ethics, environment and animal welfare (Mondelaers *et al*., 2009).

Previous studies have shown that there are myriads of factors influencing purchase intentions of organic foods. The factors include those related to its production method (Abrams *et al.*, 2010), quality attributes and perceived quality factors (Krystallis *et al*., 2007). With regards to organic meat preferences, the scholars examine the consumers' perceptions of the risks and safety of meat (Korzen *et al*., 2011), attitudes towards animal welfare (Latvala *et al*., 2012), meat characteristics and price (Frewer *et al*., 2005). Other psychological factors such as subjective norm and perceived behavioral control were also found to influence the intention of purchasing organic foods (Verbeke and Viaene, 1999; Chen, 2007).

One of the most prominent theories explaining the buying process is the Theory of Planned Behavior. The theory posits that an individual's performance of a specific behavior is determined by his or her intention to perform the behavior (Ajzen, 1991). The intention is influenced by three psychological variables namely attitude towards the behavior, subjective norm and perceived behavioral control.

The attitude towards the purchase of a product is similar to the perceptions of the personal desirability of performing a particular behavior (Stobbelaar *et al*., 2007). This attitude depends on expectations of and beliefs in the personal impacts on the outcomes resulting from that behavior. In other words, it focuses on the perceived consequences of a purchase. Knowing how someone feels about buying or using a product turns out to be more valid than merely knowing the consumer's evaluation of the product itself (Ajzen and Fishbein, 1973). Thus, the expectations of the critical outcomes resulting from that behavior are an important antecedent to a behavioral intention. Organic meats are perceived as much more healthy, natural, nutritious, and sustainable than conventional meat. Thus, the consumer's attitude towards organic meat purchase is naturally believed to be positively related to the attitude towards organic meat (Behrens *et al*., 2010).

An individual's attitude towards consuming a product is one of the most important experiences for explaining consumers' choices across products and services, including food products (Honkanen, 2006). Several studies have related 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 and freshness (Gil and Soler, 2006; Thogersen, 2006; Hughner *et al*., 2007; Aryal *et al.*, 2009). Moreover, according to the Theory of Planned Behavior (TPB), when a person's attitude towards engaging in a behavior is positive, he or she is more likely to engage in that behavior (Ajzen, 1991). In other words, when the consumer's attitude to organic meat is positive, the consumer is

more likely to have the intention to purchase organic meat in the market (Chen, 2007).

Subjective norm deals with a consumer's motivation to perform a behavior which is constructed to incorporate the expectations of important people in his or her life (e.g., family, friends, and significant others) (Aertsens *et al*., 2009). If consumers believe that those people who are important to them also think that organic meats are good, then their intention of purchasing the organic meat increases. To a certain extent, subjective norm is related to the perceived social pressures to undertake or not to undertake the behavior (Ajzen, 1991; O'Neal, 2007). Normally, an individual's subjective norm reflects his/her belief about how others who are important to them would view them engaging in a particular behavior. Theory of needs suggested that individuals tend to perform behavior that is considered desirable by loved ones or referent group, due to their need for relationship and group identification (Voon *et al.*, 2011). According to Verhoef (2005), norms in reference groups have been shown to have an important impact on consumer behavior. Thus, strong norms regarding the consumption of organic meat in one's reference group affect the consumers' purchase intention. Individuals' intentions 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). On the contrary, if consumers believe that those people important to them think organic meat is not so good, then they will have lower intention of purchasing the organic meat.

Perceived behavioral control refers to the consumer's perceptions of his/her control over what to buy and eat which he or she thinks influence the judgment of risks and benefits of the organic meat (Stobbelaar *et al*., 2007). For example, a consumer may not have the capability to readily identify organic meat labels, thus this influences his perceived behavioral control. According to Ajzen (1991), perceived behavioral control emphasized individuals' perceptions on the level they are able to perform a given behavior. Subsequently, underlying such perception is their beliefs about the relative ease or difficulty in performing the behavior and the extent of that performance is up to them (Tarkiainen and Sundqvist, 2005). Therefore, it is expected that if a consumer perceives more behavioral control of purchasing organic meat, the intention to purchase organic meat is higher. A study done by Chen showed that if a consumer perceives more difficulty in identifying organic meat labels, the intention to purchase organic meat is lower (Chen, 2007). A study by Voon *et al.* (2011) include cost and convenience as constituting the affordability construct which may impact intention to purchase organic meat.

In addition to attitudinal variables, other studies incorporated a mixture of self-interest behavior (food safety, health consciousness and price) and product interest (meat characteristic). Based on the literature, there are four main motives that were found to influence organic meat purchase namely meat safety, meat characteristics, health and price.

Food safety involves the safe handling of food or meat from the time it is grown/reared, packaged, distributed, and prepared to prevent food borne illnesses (Cerjak and Mesic, 2010). Food safety is the responsibility of those who handle and prepare food commercially for delivery to consumers and of consumers who prepare and eat food in their homes. Several studies have also analyzed consumers' needs for meat labeling schemes that assure quality and safety (Bernues *et al.*, 2003; Yeung and Yee, 2003). Recent evident supports the view on the importance of regulation and market-driven private actions on food safety performance in the meat and poultry industries (Ollinger and Moore, 2008).

Food safety and the way it affects health have become a growing concern in most parts of the world (Scarpa and Thiene, 2011). An international survey showed that the majority of people in 19 out of 35 countries felt that their food is less safe than it was 10 years ago (Ipsos-Reid, 2000). Furthermore, the recent intimidating event such as the Bovine Spongiform Encephalopathy (BSE) epidemic had highly enhanced the risk perception (Setbon *et al.*, 2005). Nowadays, consumers demand more reliable information about the food they purchase especially concerning the validity of meats which provides assurance of food safety (Verbeke and Viaene, 1999). In sum, a favorable food safety is likely to strengthen consumer's purchase intention towards organic meat.

Sensory appeal of foods has been proven to be the most important factor in food choice in several studies (Angood *et al*., 2008). Wang *et al.* (1998) showed that there were several differences in the types of meat demanded by consumers in China, the United States and Europe. In other words, consumer will look at the sensory appeal of the meat in order to make the meat choices. Krystallis and Arvanitoyannis (2006) concluded that consumers also relate the quality of meats based on the taste, tenderness, juiciness, freshness, leanness and the bright red color.

Normally, a food product like organic meat is a complex combination of characteristics, which can be described via sensory properties, such as the taste, smell, odor, appearance and texture of the meat. These

sensory properties influence how the consumers experience a food product. In interaction with the food, for example while eating, the food senses are stimulated which brought out certain sensations or feelings (e.g. a juicy taste, a pleasant moment) (Krystallis and Arvanitoyannis, 2006). A study Keisuke *et al.* (2011) found that meat characteristic is one of the main predictors of the purchasing intention among Japanese consumers. As such this study hypothesized that meat characteristics will influence purchase intention of organic meat among Malaysian consumers.

The intention to purchase can also be explained by habitual consumption of foods, availability and labeling information. An establishment of a national label for organic products could help establish a profile for organic products and communicate a clear message of their benefits to the consumers (Abrams *et al*., 2010). Due to the production methods, organically produced vegetables and meat tend to have lower pesticides and hormones residues and these are also the health concerns of consumers (Lacaze, 2009).

The view that organic foods are 'healthier' than conventional foods appears to be based on the perception that organic foods have better sensory attributes, contain lower levels of pesticides or synthetic fertilizers and have higher levels of nutrients and protective photo chemicals (Williams, 2002). However, according to Hwang *et al.* (2005), the majority of consumers are probably unaware that from the health perspective, growth hormones, one of the top perceived food risks in the United States, are prohibited in meat and poultry production. The presence of food additives and preservatives also influence an individual's decision in making their daily food choice.

The increasing concern for health and the impact of the food production on the environment has influenced the trend in food consumption. This indicates that consumers nowadays expect not only healthy foods but also environmentally sustainable food products. It is believed that consumers who are more concern about their health and environmental protection will be more likely to have a positive attitude towards organic foods (Michaelidou and Hassan, 2010; Hjelmar, 2011). Chinnici *et al.* (2002) described that one of the most common reasons for purchasing organic products was health concern as it was perceived that organic products are healthier than conventional ones. The findings of Schifferstein and Ophuis (1998) showed that health related issues are important determinants of the consumption of organic products. According to a study done by Musdiana *et al.* (2010), health consciousness was one of the influential factors on customers' purchase intention of organic food.

In general, price and value of a product relate to the purchase expenditure. According to Anders and Moeser (2008), price and expenditure impact the decision on organic meat choice. There was a willingness to pay a premium price for organic products inclusive of organic meat among the middle and higher income consumers in Buenos Aires, Argentina (Lacaze, 2009). It means that price is not an issue in the purchase of organic meat and consumers will pay for the meat if they perceive that the price is reasonable.

As previous findings showed that the factors discussed above do exert some influence on consumers purchase decision, the present study would like to explore whether all the factors expounded by the Theory of Planned Behavior and the four choice motives are predictors of organic meat purchase intention among Malaysian consumers.

Methodology

Procedure and respondents

This study used a cross-sectional research design using a survey method. The population of the study was consumers who patron the organic shops that were located within the Klang valley area. It covers the capital city of Malaysia, Kuala Lumpur and a few satellite towns in the state of Selangor such as Petaling Jaya, Klang, Gombak and Hulu Langat. The Klang Valley region encompasses an area of 2,843.42 square kilometres or 1,097 square miles and, as of the year 2010, it had a population of about 6.0 million (about 21.4 per cent of the total population of Malaysia) (Mohd Faris Dziauddin *et al*., 2013) and estimated to be nearly 7.0 million in 2013 (ETP Annual Report, 2014). The rationale for choosing the Klang Valley because sales data from Philip (2005) showed that 75% of the organic meat sale in the country was attributed to the consumers in the Klang Valley. At the onset of the study, the Department of Veterinary Services under Ministry Of Agriculture was approached to obtain the list of organic shops in the country. As there is no available information, internet search yielded a list of organic shops in Klang Valley available at *http://www.betterdietislam.com/orgmeat.html*. A total of 17 organic shops were listed. From 17 listed shops, personal visits indicated that only seven outlets were selling organic meat on a regular basis plus other organic food products. The others only sell it upon orders from the customers. Thus only the seven outlets that sell comprehensive organic food products were chosen using purposive

sampling as they were selected based on the shop category of interest to the researcher (De vaus, 2002).

As there was no specific sampling size of organic consumers in the Klang valley, the sample size as suggested by Krejcie and Morgan (1970) for more than 1 million populations is 384. A total of 550 questionnaires were given to respondents and 400 questionnaires were returned giving a response of rate 72.73 %. The participants were recruited in seven retail organic shops of various sizes using convenient sampling method. The respondent was approached as he/she exited the shop and a questionnaire was given if he/she consented to participate in the study. Data was collected within a three months' time period. Only those who were willing to participate in the study were given the questionnaires. Some of the participants completed their questionnaires on the spot while some brought home and sent them back to the respective organic shops later. The respondents were aware that the study was done with their consent and that they had the rights to withdraw at any stage. They were also given the guarantee that the research would not harm them. Assurance of confidentiality of the response was highlighted to the respondents in order to avoid bias such as the inaccurate disclosure of information by the respondents.

Instrumentation

The questionnaire consisted of two main parts. The first part consisted of demographic of the respondents and purchase pattern of organic food. Demographic of respondents included questions related to respondents' gender, age, marital status (single, married, divorced), educational background (primary, secondary, diploma/certificate, degree), employment status (part-time, fulltime, retired, housewife, student), personal monthly income (range of salary; household monthly income), household size and lastly the number of children in the household. Purchasing pattern of organic food included type of organic food purchased, frequency of purchasing, place to purchase, and history of purchasing, monthly expenses for organic foods and channels of information.

The second part of the questionnaire consisted of questions in relation to the seven independent variables and one dependent variable. The dependent variable was intention to purchase organic meat. Four independent variables were related to organic meat choice motives (food safety, meat characteristics, health conscious and price). The other three independent variables related to TPB which were attitude towards organic meat, subjective norm and perceived behavioral control.

Food safety was measured using items adopted from the instrument used by Mohd Rizaimy *et al.* (2010) and Annet *et al.* (2011) which comprised of five items. A total of 7 items were used to measure meat characteristics using a scale was adapted from Keisuke *et al.* (2011). Seven items were used to examine the respondent's views on health motives. The items were adapted from Cerjak and Mesic (2010) and Mohd Rizaimy *et al.* (2010). Price was measured using the instrument adopted from Anders and Moeser (2008), which examined the respondent's perception of value of money attached to organic meat. All the items measuring the four aspects of choice motives used a five point-Likert Scale with response categories ranging from 5 (Strongly agree) to 1 (Strongly disagree).

Attitude towards organic meat comprised questions related to respondents' feeling towards organic meat. There were a total of six questions in this section which was adapted from Voon *et al.* (2011) and Ho *et al*. (2008). Subjective Norms comprised of five questions adopted from Ho *et al.* (2008). There were five questions pertaining to perceived behavioral control adapted from Mohd. Rizaimy *et al*. (2010). All the questions pertaining to these variables used a five point-Likert Scale response categories ranging from 5 (Strongly agree) to 1 (Strongly disagree).

Intention to purchase organic meat was measured using six items adopted and adapted from previous studies (Dodds *et al*., 1991; Sweeney *et al.*, 1999; Mohd. Rizaimy *et al*., 2010). The response used was a five point type Likert Scale with response categories ranging from 5 (Very likely) to 1 (Very unlikely).

The questionnaire was pre-tested among 30 respondents. It was pre-tested in order to identify any ambiguity, misunderstanding or other inadequacies (Ary *et al*., 1996) in addition to test for its reliability. A few minor modifications were made to the questionnaire after pre-testing. The reliability co-efficient of the variables were 0.592, 0.897, 0.79, 0.722, 0.824, 0.698., 0.786 and 0.92 for food safety, meat characteristics, health consciousness, price, attitude, subjective norm, perceived behavioral control and intention to purchase respectively. The Cronbach's Alpha value of for all the variables are of acceptable value of 0.5 and above (Cuieford, 1965).

Results and Discussion

Descriptive statistics of the organic meat choice motives

Of the 400 respondents who participated in the study, females were slightly overrepresented (51.8%).

Table 1. Distribution of items measuring organic meat choice motives (n=400)

Items	SD %	D %	N %	A %	SA %	M	SD
Food Safety (mean=4.05)							
1. Organic meat is safe	0.2	0.8	24.0	56.0	19	3.92	0.69
2. I am concerned about safety of meat for consumption	0	0.5	16.7	53.3	29.5	4.12	0.69
3. I am concerned about animal diseases such as bird flu and influenza H1N1	0	1.7	17.5	41.3	39.5	4.18	0.78
4. I am concerned about the amount of chemical residues in meat	0	0.5	13.8	51.0	34.8	4.20	0.68
5. Organic meat is free from chemicals, antibiotic and growth hormones	1.0	3.7	24.8	52.0	18.5	3.83	0.80
Health (mean=3.70)							
1.Health is important in my life	0	0.5	4.7	31.8	63.0	3.64	0.68
2.Meat choice is important in my daily meal	0	2.5	26.7	49.3	21.5	3.64	0.71
3.Organic meat is good for my health	0.2	1.3	22.7	56.5	19.3	3.76	0.71
4.I consider myself very health conscious person	0	1.0	20.0	57.5	21.5	3.81	0.69
5.I am prepared to pay for healthy food	0	0.2	24.0	52.3	23.5	3.64	0.71
6.When buy organic meat, I will read the product information label to ensure it is genuine	0	2.0	20.2	54.3	23.5	3.66	0.75
7.In general, organic meat is healthier than conventional meat	0	1.0	27.2	52.5	19.3	3.81	0.75
Meat Characteristics (mean=4.04)							
1.Organic meat has better appearance	0	1.7	42.0	46.8	9.5	4.57	0.61
2.Organic meat smells better	0	3.2	40.0	46.3	10.5	3.90	0.76
3.Organic meat has more freshness	0	2.0	34.5	49.2	14.3	3.93	0.70
4.Organic meat has better quality	0	2.0	29.2	54.5	14.3	4.00	0.68
5.Organic meat has better texture and juicy	0	2.5	42.0	44.7	10.8	3.99	0.70
6.Organic meat has better taste	0	3.0	42.0	41.5	13.5	3.99	0.72
7.Organic meat has more nutritional value than conventional meat	0.3	3.5	27.3	53.0	16.0	3.90	0.70
Price (mean=3.36)							
1.Organic meat price is reasonable	0.5	10.5	46.2	38.5	4.3	3.36	0.75
2.Organic meat is value for money	0	5.0	46.5	40.5	8.0	3.52	0.72
3.Organic meat price is affordable	0	10.0	46.0	40.0	4.0	3.38	0.72
4.I am willing to pay for organic meat	1.7	19.0	45.8	28.2	5.3	3.16	0.85

Scale: SD=Strongly Disagree; D=Disagree; A=Agree; SA=Strongly Agree

The mean age of the respondents was 35.4 years with a range of 17 to 72 years. The respondents consisted of the three main ethnic groups of Malaysia namely Malays/Bumiputra (42.2%), Chinese (49.8%) and Indians (8%) but this figure does not represent the ethnic distribution in the country as 2010 census from the Department of Statistics Malaysia showed that the proportion was 67.4%, 24.6% and 7.3% of Malays/Bumiputra, Chinese and Indians respectively. Education-wise, 44% had tertiary education, 37% finished college and the rest completed their secondary education (equivalent to GCE O and A level) with 1.8% of the respondents did not have schooling at all. About 40% of the respondents had a monthly household income of above RM6000 (~USD 1370) per month. The average monthly household income of Malaysians in 2014 was at RM6141 (USD1403) (Statistics of Department, 2016). The mean of household size of the respondents was four which closely resemble the average number of children per household (2) in the country and giving a total of four inclusive of both parents.

Data indicated that a high number of respondents purchased organic fruits and vegetables (78%) as compared to other categories. The other popular organic foods that are also purchased include meat, supplements and beverages. Almost half of the respondents indicated that they (45.5%) are already purchasers of organic meat at the time of the survey.

Sources of information regarding organic food seemed to vary from word of mouth, mass media (television and radio) and printed media (newspapers, magazines and books) to internet. Word of mouth particularly from friends and family members appeared to be a popular channel for organic food information.

The descriptive statistics for organic choice motive variable are as shown in Table 1. As reflected in the mean of item score, the respondents seemed to be very concern about food safety (m=4.05) and meat characteristics (m=4.04) as compared to the other two motives which are health (m=3.70) and lastly price (m=3.35).

Table 2 and 3 shows the descriptive statistics of

Table 2. Distribution of items measuring attitude, subjective norm and perceived behavioral control towards organic meat (n=397~400)

Items	SD	D	N	A	SA	Mean	Std. Dev.
Attitude	%	%	%	%	%		
1.Healthy for me and my family	0	0.5	15.6	58.2	25.7	4.09	0.65
2.Fresher than conventional meat	0	1.8	25.9	55.7	16.6	3.87	0.70
3.It is good for the environment	0	0.8	26.4	59.7	13.1	3.85	0.64
4.Caring for the welfare of the animals	0	2.5	40.3	47.4	9.8	3.64	0.70
5.It is a green (environmental friendly) purchasing	0	1.5	32.2	52.9	13.4	3.78	0.69
6.Value for money	0.7	4.3	41.6	43.6	9.8	3.57	0.76
Overall Mean =3.80							
Subjective norm							
1.My family influences me to buy organic meat	2.4	7.3	50.5	33.5	6.3	3.34	0.80
2. People around me think that I should buy organic meat.	2.0	12.7	51.0	30.5	3.8	3.21	0.79
3. I feel good if many people consume organic meat.	0.5	5.0	40.7	46.5	7.3	3.55	0.72
4. My friends encourage me to buy organic meat.	1.5	13.0	47.2	32.0	6.3	3.29	0.83
5. My friends think that I should buy organic meat.	3.0	11.5	50.2	29.5	5.8	3.24	0.84
Overall Mean=3.33							
Perceived behavioral control							
1.I decide myself to consume organic meat	0	1.2	33.5	52.5	12.8	3.77	0.68
2.If I see organic meat options, I will choose organic meat first	0	5.5	33.0	47.0	14.5	3.71	0.78
3.I strongly believe that organic meat is good	0	2.2	29.5	56.3	12.0	3.78	0.68
4.I feel good if consuming organic meat	0	2.7	37.0	50.8	9.5	3.67	0.68
5.I am willing to pay for organic meat although it is more expensive	2.5	6.5	45.2	38.8	7.0	3.41	0.82
Overall Mean= 3.67							

SD=Strongly Disagree; D=Disagree; A=Agree; SA=Strongly Agree

the other independent variables which are attitude towards organic meat, subjective norm and perceived behavioral control and the dependent variable namely intention to purchase organic meat in the future, respectively. All the mean score of the variables is at moderate level (mean value ranges from 3.3 to 3.8). The attitude towards organic meat is fairly positive. The influence of the respondent's social environment on organic meat consumption/purchase (subjective norm) was fair and the respondent's perception on the ease of the purchase of organic meat was moderate. The intention to purchase organic meat in the future was also moderately likely.

Relationship between independent and dependent variables

A Pearson correlation analysis was conducted to test the relationships among the independent and the dependent variables. From Table 4, data indicates that all the seven independent variables had significant positive relationship (at 0.001 significant levels) with the dependent variable. The strength of relationship varies from 0.715 to 0.417. According to De Vaus (2002), coefficient value of 0.70 -0.89 indicates a very strong linear relationship while a value of 0.30 to 0.49 0.50-0.69 shows a medium strength and large relationship respectively. Based on the findings, food safety and health consciousness are moderately correlated with intention to purchase organic meat while meat characteristics, price, attitude and subjective norm have strong relationship with the dependent variable while perceived behavioral control has a very large/strong relationship. The findings therefore indicated that an individual's perceptions of personal control over what to purchase, relative ease of performing the behavior is the biggest influence of intention to purchase organic meat as compared to the other six dependent variables of the study.

The findings indicate that independently, all the food choice motives significantly influence intention to purchase organic meat rather strongly. Of the four motives, the highest correlation was found for the price variable. At the particular juncture, the price of organic meat in Malaysia is substantially higher for example for organic chicken, it is almost double that or inorganic ones. Other studies have similarly shown that price is an influential factor and consumers would buy organic food if the price is

Table 3. Distribution of items measuring intention to purchase organic meat (n=400)

Items	VU	U	ML	L	VL	Mean	Std. Dev.
	%	%	%	%	%		
1. I plan to eat organic meat	0.7	7.3	38.5	41.2	12.3	3.57	0.83
2. I expect to eat organic meat	0.7	9.8	36.7	39.5	13.3	3.55	0.87
3. I will purchase organic meat	0.7	9.5	41.3	37.5	11.0	3.49	0.84
4. I will order organic meat at restaurant	2.5	19.5	46.5	23.5	8.0	3.15	0.91
5. I am willing to drive around in order to buy organic meat	5.2	22.3	42.0	23.7	6.8	3.05	0.97
6. I am willing to pay for organic meat	1.2	10.0	48.3	32.5	8.0	3.36	0.82
Overall Mean= 3.36							

Scale: VU=Very Unlikely; U=Unlikely; ML=Moderate Likely; L=Likely; VL=Very Likely

reasonable and competitive to the inorganic (Zhuang and Abbott, 2007; Quah and Tan, 2009; Yin, 2010). Meat quality which includes meat characteristics such as appearance, texture, taste and nutritional value also seems to also influence purchase intention. Other studies reported similar findings (Annet *et al*., 2011; Scarpa, 2011) where the consumers consider organic meat to have good characteristics and would influence their purchase decision. It also expected that people who are concern about health and food safety would be attracted to consume organic meat as interest in organic food worldwide increase in response to food safety crisis (Lobb *et al.*, 2007) and concerns on environmental impacts (Yin *et al*., 2010), animal welfare practices and human health issues (Loo *et al*., 2010).

The three psychological variables as proposed by the Theory of Planned Behavior had overall high correlation values of 0.590, 0.664 and 0.749 for attitude, subjective norm and perceived behavioral control respectively. The influence of attitude was similarly found in studies by Chen (2007) and Honkanen *et al.* (2006). Subjective norm which reflects the influence of people around them was found to correlate moderately strong with intention to purchase organic meat. The data seems to indicate that family and friends were the main influencers. The strongest relationship was found between perceived behavioral control and intention to purchase which indicate that availability and ease to buy the organic meat would increase the probability of purchasing it.

Predictors of intention to purchase organic meat

A multiple regression analysis was performed using stepwise selection method. Table 5 shows the results of multiple regression of intention to purchase organic meat as dependent variable while food safety, meat characteristics, health consciousness, price, attitude towards organic meat, perceived behavioral control, subjective norm served as independent variables.

Table 4. Correlation coefficients between dependent variables and intention to purchase organic meat

Variables	*r*
Food safety	.410*
Meat characteristic	.567*
Health consciousness	.472*
Price	.654*
Attitude towards organic meat	.590*
Subjective norm	.644*
Perceived behavioral control	.749*

*Correlation is significant at the 0.01 level (2-tailed)

Table 5. Predictors of intention to purchase organic meat

Variables	*b*	*Beta*	*p*
Intercept	-1.813		.055
Perceived behavioral control	.596	.387	.0001
Subjective norm	.355	.257	.0001
Price	.467	.262	.0001
Meat characteristic	.148	.137	.015

F =66.084 R =.815
Sig. =.0001 R^2 =.664 Adj. R^2 = .654

Four variables contributed significantly to predicting intention to purchase organic meat with adjusted R^2=0.664, F (7,234) =66.084, p<0.01. Two variables of the Theory of Planned Behavior namely perceived behavioral control and subjective norm and two from meat choice motives (meat characteristics and price) had significant regression coefficients. Taken together, 66% of the variance in intention to purchase organic meat was explained by these four variables.

Of the four significant predictors, perceived behavioral control was found to have the strongest impact as indicated by the highest Beta value of 0.387, followed by price (0.262), subjective norm (0.257) and lastly the meat characteristics (0.137). Comparing the Beta value, perceived behavioral control towards organic meat has the greatest impact as compared to the subjective norm, price and meat characteristics to intention to purchase organic meat. We would therefore expect that if the organic meat is easily accessible and available, the willingness to purchase organic meat for their daily consumption would increase. In addition, price is another factor that would enhance organic meat purchase intention and thus it is anticipated that if its price is comparable and reasonable to inorganic ones, it would lure the consumers into organic meat consumption. Similarly,

improving the general outlook of the meat which would reflect the quality of the product is important to entice the consumers. From the results, it appears that variables of the TPB and food choice motives could both partially explain the intention to purchase organic meat among the Malaysian consumers.

Conclusion and policy implication

The main purpose of the present study is to determine the main factors influencing the intention to purchase organic meat among the consumers in Malaysia. It is of particular interest to identify whether motives or psychological variables independently and jointly explain the intention to purchase organic meat. Understanding of these factors is important in order to derive educational and intervention strategies in promoting the purchase intention of organic meat which in turn would influence its consumption. Enhancing organic meat acceptance and consumption is paramount as production of organic meat benefits the environment and its consumption brings good heath to the consumers.

Of the seven variables examined, two variables of the food choice motives (price and meat characteristics) and two of the TPB (personal norm and perceived behavioral control) were significant predictors of intention to purchase organic meat. Theoretically, the results of the present study show that purchase intention behavior is influenced by both psychological variables and individual's motives for the choice of organic meat consumption. Independently, all the variables of the study that comprise of three psychological variables namely attitude, subjective norm and perceived behavioral control are correlated relatively strong with intention to purchase. Similar findings are noted for the food choice motives which include the meat characteristics, price, concern for safety and concern for health.

Based on results of the study, it is recommended that retailers should consider taking several initiatives in order to encourage the organic meat consumption among Malaysians such as providing more information about the benefits of organic meat to safety and health of both the consumers and the environment. Improvement in the display and presentation of the products so as to depict the good characteristics of the organic meat would also induce the purchase of the organic meat. It is observed during the study that outlets that sell organic meat products were very limited although the data is collected in the most urban part of the country which is the Klang Valley. Easy accessibility would enhance purchase as perceived behavioral control which measures the ease of obtaining the product is strongly related to purchase intention. Here, it is postulated that intention to purchase would directly impact purchase and consumption as purchase intention relates closely to actual behavior (Ajzen and Fishbein, 1973).

One of the greatest impediments is how to regulate the price of organic meat so as to make it competitive to the purchasers. From the marketers' perspective, one of the promotion strategies that can be adopted to enhance consumers' acceptance of organic meat is through lowering the price of the organic meat in the market so as to be competitive to the inorganic meat. However, this approach may not be viable and profitable as the organic meat production and retailing is at its infant stage and it incurs high capital cost. The Ministry of Agriculture and Agro-Based Industry Malaysia had provided some fiscal incentives to assist organic farmers by providing assistance of up to RM5, 000 per hectare, a once only provision between 2001 and 2005. This inducement scheme or some other incentive tax exemption could be continued further particularly to the organic meat farmers so as to assist and encourage the growth and development of organic meat farming in the country. This would cater for the growing demand of organic meat in the country in tandem with the growth of organic products and foods in general. As an initiative, the Government could reduce the price of organic meat through tax exemption to the retailers so as to make the price of the organic meat becomes competitive to the non-organic ones.

The findings would be useful for policy and program development of organic meat industry in the country especially to related authorities such as the Ministry of Agriculture. Encouragement to consumers to eat and purchase organic meat instead of conventional meat should be made by the relevant authorities and agencies. As the consumption of organic meat in the country is at an infancy stage, there is a need to improve communication efforts by showing consumers the benefits and advantages of organic meat in order to increase their awareness and positive attitude towards organic meat consumption. Formal channels of information about organic meat need to be increased as the present study indicated that information regarding organic meat is mainly obtained through word of mouth. Suitable awareness and promotional programs could be developed based as this is in line with the government's policy in encouraging individual citizen to adopt a healthy lifestyle and the adoption of sustainable farming by the farming community. Advertisements on organic meats in health-related magazines, newspapers, television and other mass media campaigns and press

coverage of organic agriculture needs to be made more frequent. Besides dealers' hand-outs, posters and newsletters, public seminars could be held now and then, especially in conjunction with events such as world food or environment days. With these marketing awareness strategies, the consumers would be able to discern and comprehend the differences in terms of the quality, characteristics, and benefits to individuals and environment between the organic and non-organic meat. This would entice the consumers to have organic meat in their diet rather than the conventional ones.

For the organic meat labeling and certification, currently there is no local organic certification body or specific regulation on the labeling of organic meat in the country. Local organic meat is mostly sold directly by the producer to consumers or retailers, both loose as well as packed without certification. Most organic meats are imported as finished packed products. Retailers generally purchase from producers they trust and consumers buy from dealers they trust. Imported organic meats are normally of certified origin, verified through copies of certificates, or on the finished labeled organic meat itself. As the market works based on trust, credibility is crucial for success and discouraging fraudulent behavior (Ong, 2000). Attention must be given to proper organic certified labeling, disclosures that are easy to understand, comprehensive, accurate and more useful in enabling consumers to understand the benefits, costs and to compare the organic meat products with conventional ones. Enforcement of certified labeling of organic meat that is produced locally would address some of the concerns regarding the quality, price of organic meat and strengthen the overall acceptance of the consumers.

The present study has some limitations, specifically with respect to the generalization of the findings. The respondents were only those that reside in most urban part of the country who generally have higher income level and education and mostly have a more modern lifestyle as compared to the rural consumers. They were intercepted at organic specialty stores and consumers of chain supermarkets and local traditional markets were excluded from the study. The respondents were already the patrons of organic shops. Future studies could include wider segments of the society and also explore other motives such as religion, environmental protection, convenience, mood and animal welfare.

References

Abrams, K.M., Meyers, C.A. and Irani, T.A. 2010. Naturally confused: consumers' perceptions of all-natural and organic pork products. Agric Hum Values 27(3): 365-374.

Aertsens, J., Verbeke, W., Mondelaers, K. and Van Huylenbroeck, G. 2009. Personal determinants of organic food consumption: a review. British Food Journal 111(10): 1140-1167.

Ajzen, I. 1991. The theory of planned behaviour. Organizational Behaviour and Human Decision Process 50: 179-211.

Ajzen, I. and Fishbein, M. 1973. Attitude towards organic meats and normative beliefs: factors influencing behavioral intentions. Journal of Personality and Social Psychology 21:1-9.

Anders, S. and Moeser, A. 2008. Assessing the demand for value-based organic meats in Canada: a combined retail and household scanner-data approach. International Journal of Consumer Studies 32: 457-469.

Angood, K.M., Wood, J.D., Nute, G.R., Whittington, F.M., Hughes, S.I. and Sheard, P.R. 2008. A comparison of organic and conventionally-produced lamb purchased from three major UK supermarkets: Price, eating quality and fatty acid composition. Meat Science 78: 176-84.

Annet, H.C., Luning, P.A, Weijzen, P., Engels, W., Kok, F.J. and Graaf, C.D. 2011. Replacement of meat by meat substitutes. A survey on person-and-product-related factors in consumer acceptance. Appetite 56: 662-673.

Ary, .D, Jacobs, L.C. and Razavieh, A. 1996. Introduction to research in education. Orlando, Florida: Harcourt Brace College Publishers.

Aryal, K.P., Chaudhary, P., Pandit, S. and Sharma, G. 2009. Consumers' willingness to pay for organic products: a case from Kathmandu valley. The Journal of Agriculture and Environment 10(6): 12-22.

Australian organic market report 2014. Downloaded from *http://austorganic.com/wcontent/uploads/2014/11/AO_Report_2014_web.pdf*

Behrens, J.H., Barcellos, M.N., Frewer, L.J., Nunes, T.P., Franco, B.D.G.M., Destro, M.T. and Landgraf, M. 2010. Consumer purchase habits and views on food safety: A Brazilian study. Food Control 21: 963-969.

Bernues, A., Olaizola, A. and Corcoran, K. 2003. Labelling information demanded by European consumers and relationships with purchasing motives, quality and safety of meat. Meat Science 65: 1095-1106

Borzelleca, J.F. 1996. A proposed model for safety assessment of macronutrient substitutes. Regulatory Toxicology and Pharmacology 23(1 II): 15-18.

Cerjak, M. and Mesic, Z. 2010. What motivates consumers to buy organic food: Comparison of Croatia, Bosnia Herzegovina, and Slovenia? Journal of Food Products Marketing 16: 278-292.

Chen, M.F. 2007. Consumer Attitude towards organic meats and purchase intentions in relation to organic foods in Taiwan: Moderating effects of food-related

personality traits. Food quality and Preference 18: 1008-1021.

Chinnici, G., D' Amico, M. and Pecorino, B. 2002. A multivariate statistical analysis on the consumers of organic products. British Food Journal 104(3/4/5):187-199.

Cuieford, J.D. 1965. Fundamental statistic in psychology and education. New York: McGraw–Hill.

Department of Agriculture (DOA). 2010. Skim Organik Malaysia. Downloaded from http://www/doa.gov.my

Department of Statistics (DOS) Malaysia. 2010. Basic population characteristics by administrative districts. Putrajaya: Department of Statistics Malaysia.

Department of Statistics (DOS) Malaysia 2015. Report of household income and basic amenities survey 2014. Downloaded from *https://www.statistics.gov.my*

Dodds, W.B., Monroe, K.B. and Grewal, D. 1991. Effects of price, brand and store information on buyers' product evaluations. Journal of Marketing Research 28: 307-319.

Economic Planning Unit (EPU). 2013. Malaysian well-being report 2013. Putrajaya: EPU.

ETP annual report 2014. Downloaded from *http://etp.pemandu.gov.my/annualreport2014/upload/03_NKEA01_ENG_GKL.pdf.*

Fiala, N. 2008. Meeting the demand: An estimation of potential future greenhouse gas emissions from meat production. Ecological Economics 67: 412-419.

Frewer, L.J., Kole, A., van de Kroon, S.M.A. and de Lauwere, C. 2005. Consumer attitudes towards the development of animal-friendly husbandry systems. Journal of Agricultural and Food Ethics 18: 345-367.

Gil, J.M. and Soler, F. 2006. Knowledge and willingness to pay for organic food in Spain: Evidence from experimental auctions. Food Economic 3: 109-124.

Honkanen, P., Verplanken, B and Olsen, S.O. 2006. Ethical values and motives driving organic food choice. Journal of Consumer Behaviour 5: 420-430.

Hjelmar U. 2011. Consumers' purchase of organic food products. A matter of convenience and reflexive practices. Appetite 56: 336-344

Ho, H.T., Olsen, S.O, Duong, T.T. and Nguyen Thi, K.A. 2008. The role of norms in explaining attitude towards organic meats, intention and consumption of a common food (fish) in Vietnam. Appetite 51: 546-551.

Hughner, R.S., McDonagh, P, Prothero, A., Shultz, C.J., and Stanton, J. 2007. Who are organic food consumers? Compilation and review of why people purchase organic food. Journal of Consumer Behaviour 6: 1-17.

Hwang, Y., Roe, B. and Teisl, M.F. 2005. An empirical analysis of United States consumers' concerns about eight food production and processing technologies. AgBioForum 8: 40-49.

Ipsos-Reid. 2000. Food safety a growing concern in most of the world. Downloaded from http://www.ipsos-na.com/news/pressrelease.cfm?id=1195.

Keisuke, S., Hideo, A., Michiyo, M., Hideyuki, O. and Tomoyuk, K. 2011. Impression and purchasing intentions of Japanese consumers regarding pork produced by 'Eco feed', a trademark of food-waste or food co-product animal feed certified by Japanese government. Animal Science Journal 82: 175-180.

Korzen, S., Sandøe, P. and Lassen, J. 2011. Pure meat-public perceptions of risk reduction strategies in meat production. Food Policy 36: 158-165.

Krejcie, R.V. and Morgan, D.W. 1970. Determining sample size for research activities. Educational and Psychological Measurement 30: 607-610.

Krystallis, A. and Arvanitoyannis, I.S. 2006. Investigating the concept of meat quality from the consumers' perspective: The case of Greece. Meat Science 72: 164-176.

Krystallis, A., Chryssochoidis, G. and Scholderer, J. 2007. Consumer-perceived quality in 'traditional' food chains: The case of Greek meat supply chain. Appetite 48: 54–68.

Lacaze, V. 2009. Sustainable food consumption in Argentine: An estimation of willingness to pay for fresh and processed organic food for consumers in the case Buenos Aires's consumers. Food Science and Technology Abstracts Revista Agroalimentaria, 15(29): 87-100.

Latvala, T., Niva, M., Mäkelä, J., Pouta, E., Heikkilä, J., Kotro, J. and Forsman-Hugg, S. 2012. Diversifying meat consumption patterns: Consumers' self-reported past behaviour and intentions for change. Meat Science 92: 71-77

Lobb, A.E., Mazzocchi, M. and Traill, W.B. 2007. Modelling risk perception and trust in food safety information within the theory of planned behavior. Food Quality and Preference 18: 384-395.

Loo, E.V., Caputo, V., Nayga, R.M., Meullenet, J.F., Crandall, P.G. and Ricke, S.C. 2010. Effect of organic poultry purchase frequency on consumer attitudes toward organic poultry meat. Journal of Food Science 75: 384-397.

Michaelidou, N. and Hassan, L.M. 2008. The role of health consciousness, food safety concern and ethical identity on Attitude towards organic meats and intentions towards organic food. International Journal of Consumer Studies 32: 163-170.

Michaelidou, N. and Hassan, L.M. 2010. Modeling the factors affecting rural consumers' purchase of organic and free-range produce: A case study of consumers' from the Island of Arran in Scotland, UK. Food Policy 35: 130-139.

Mohd Faris Dziauddin, Seraphim Alvanides &Neil Powe. 2013. Estimating the Effects of light rail transit (LRT) system on the property values in the Klang Valley, Malaysia: A hedonic house price approach. Jurnal Teknologi Sciences and Engineering 61(1): 35-47

Mohd Rizaimy, S., Jacqueline, J.P., Suhardi, W.M., Shamsul Jamel, E. and Daing Maruak, S. 2010. Purchase intention of organic food in Kedah, Malaysia: A religious overview. International Journal of Marketing Studies 2(1): 96-103.

Mondelaers, K., Verbeke, W. and Van Huylenbroeck, G. 2009. Importance of health and environment as quality traits in the buying decision of the organic

products. British Food Journal 111(10): 1120-1139.
Ong, K.W. 2000. Organic Asia. Regional market survey report and directory, IFOAM.
Organic Trade Association (OTA). State of the industry. Downloaded from *http://www.ota.com/resources/market-analysis*.
Musdiana, M.S., Siti Meriam, A., Etty Harniza, H., Muna, A.J. and Mohd Rizaimy, S. 2010. Consumer's perception and purchase intentions towards organic food products: Exploring attitude among academician. Canadian Social Science 6(6): 119-129.
Ollinger, M, and Moore, D.L. 2008. The economic forces driving food safety quality in meat and poultry. Review of Agricultural Economics 30(2): 289-310.
O'Neal, P.W. 2007. Motivation of Health Behaviour. Ed. New York: Nova Science Publishers Inc.
Philip, M. P. 2005. Asia & the Middle East. The 2006-2011 world outlook for organic meat. Downloaded from http://www.icongrouponline.com.
Quah, S.H. and Tan, K.G. 2009. A Heckman sample selection approach to the demand for organic food products: An exploratory study using Penang data. Journal of Food Products Marketing 15: 406-419.
Scarpa, R. and Thiene, M. 2011. Organic food choices and protection motivation theory: Addressing the psychological sources of heterogeneity. Food Quality and Preference 22: 532-541.
Schifferstein, H.N.J. and Ophuis, O.P.A.M. 1998. Health related determinants of organic food consumption in the Netherlands. Food Quality and Preference 9: 119-133.
Setbon, M., Raude, J., Fischler, C. and Flahault, A. 2005. Risk perception of the Mad Cow disease. Risk Analysis 4: 813-826.
Sweeney, J.C., Soutar, G.N. and Johnson, L.W. 1999. The role of perceived risk in the quality-value relationship: a study in a retail environment. Journal Retail 75(1): 77-105.
Stobbelaar, D.J., Casimir, G., Borghuis, J., Marks, I., Meijer, L. and Zebeda, S. 2007. Adolescents' attitudes towards organic food: a survey of 15- to 16-year old school children. International Journal of Consumer Studies 31: 349-356.
Tarkiainen, A. and Sundqvist, S. 2005. Subjective norms, attitude towards organic meats and intentions of Finnish consumers in buying organic food. British Food Journal 107(11): 808-822.
Thogersen, J. 2006. Predicting consumer choices of organic food: Results from the CONDOR project. In Andreasen CB, Elsgaard L, Sondergaard S, Sorensen L, Hansen G. (Eds). Proceedings of European Joint Organic Congress, p30-31. Odense Denmark.
Verbeke, W. and Viaene, J. 1999. Consumer attitude towards organic meat to beef quality labeling and associations with beef quality labels. Journal of International Food and Agribusiness Marketing 10: 45-65.
Verhoef, P.C. 2005. Explaining purchases of organic meat by Dutch consumers. European Review of Agricultural Economics 32(2): 245-267.
Voon, J.P, Ngui, K.S. and Anand, A. 2011. Determinants of willingness to purchase organic food: An exploratory study using structural equation modeling. International Food and Agribusiness Management Review 14(2): 103-120.
Wang, Q., Fuller, F., Hayes, D. and Halbrendt, C. 1998. Chinese consumer demand for animal products and implications for U.S. pork and poultry exports. Journal of Agricultural and Applied Economics 30: 127-140.
Williams, C.M. 2002. Nutritional quality of organic food: Shades of grey or shades of green? Proceedings of the Nutrition Society 61: 19-24.
Yeung, R.M.W. and Yee, W.M.S. 2003. Risk reduction: and insight from the UK poultry industry. Nutrition and Food Science 33(5): 219-229.
Yin, S., Wu, L., Du, L. and Chen, M. 2010. Consumers' purchase intention of organic food in China. Journal Science Food Agric. 90: 1361-1367.
Zhuang, R. and Abbott, P. 2007. Price elasticity of key agricultural commodities in China. China Economic Review 18: 155-169.