



UNIVERSITI PUTRA MALAYSIA

***CONSUMER AWARENESS, PERCEPTION, ATTITUDE AND
WILLINGNESS-TO-PAY FOR ORGANIC RICE
IN KLANG VALLEY, MALAYSIA***

OLUSOLA OLUGBENGA IBITOYE

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By

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**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in
the Fulfilment of the Requirements for the Degree of Master of Science**

June 2015

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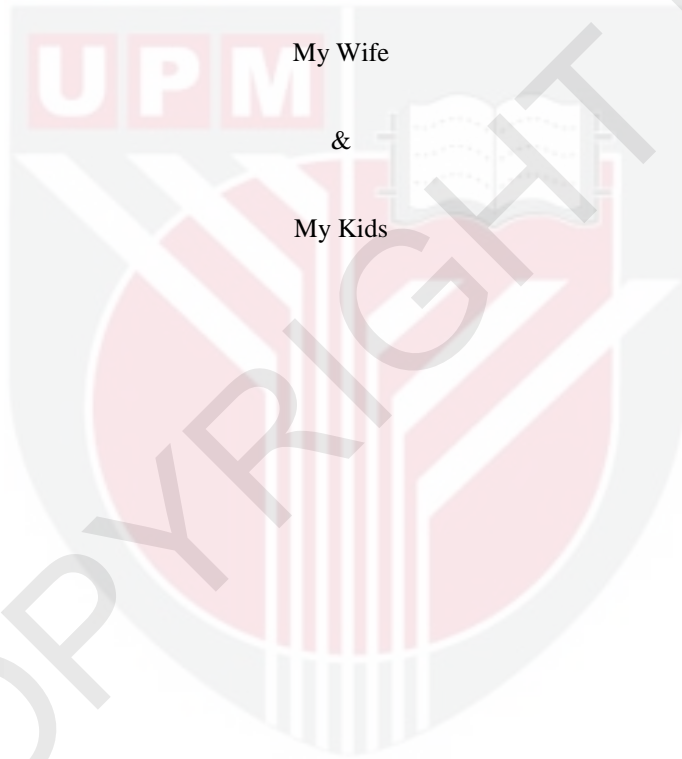
DEDICATION

This thesis is dedicated to my beloved ones

My Wife

&

My Kids



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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirements for the degree of Master of Science

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June 2015

**Chairman : Nolila Mohd Nawi, PhD
Faculty : Agriculture**

Consumers are now aware about their health, food safety and environment as they are worried about the presence of the negative consequences of chemical residues occasioned by conventional production methods. People are now willing to pay increasing premium price for organic product since its production process is without the use of chemical inputs. As a result, markets for organic products are rapidly increasing as it is recognized as one of the contributors to a healthy and sustainable lifestyle. Although, the demand for organic food in Malaysia is growing, local supply is not enough to meet up with this demand. Despite this shortfall, it is been foreseen that organic food demand would continue to rise in Malaysia as consumers become more health and environmentally conscious. One of these organic food is organic rice. Demand for organic rice consumption is reported to have increased in Malaysia and there is a need to understand consumers' behaviour toward organic rice. Hence, the study investigated Malaysian consumers' awareness, factors influencing their purchase decision and willingness-to-pay (WTP) or no willingness-to-pay (nWTP) towards organic rice.

The sample size was 834 respondents obtained from well completed structured questionnaires. Survey was done using primary data collected through mall intercept technique from selected shopping malls in Klang Valley. The study was conducted in Klang Valley because of its features of varying socio-demographic characteristics among potential consumers. The questionnaire was classified into four sections: Section 1 was based on questions related to awareness and attitudinal characteristics of respondents. Section 2 asked questions related to perception of respondents while section 3 attempted to understand respondents' WTP and to determine their percentage premium price WTP responses by bid value for organic rice. Finally, section 4 was on information to determine respondents' socio-demographic characteristics. Descriptive analysis, cross-tabulation technique using chi-square analysis, correlation analysis, factor analysis, binary logistic regression and Contingent Valuation Method (CVM) were employed in the analysis of the data.

The result revealed majority of respondents had heard about organic rice with varying levels of awareness. Majority of respondents indicated plan to consume organic rice in

future. Findings showed awareness dependent on gender, race and education of respondents. Majority of the respondents perceived organic rice as healthier, followed by more expensive, safer to consume and environmental friendly. Based on factor analysis, four factors were identified as influencing intention to purchase (ITP) organic rice namely: *Institution intervention*, *knowledge and awareness*, *market*, and *packaging*. Binary logistic regression was employed to predict which mostly impacted on the likelihood of respondents' ITP among the four factors. Of these four factors, three significantly predicted ITP. The analysis depicted that *Market* had the highest prediction on ITP followed by *Institution Intervention* and *Packaging* respectively. Binary logistic regression also used to examine the effect of socio-demographic characteristics on the likelihood of respondents' WTP or nWTP of organic rice. Research findings revealed some of the parameters made a unique statistically significant contribution in predicting respondents' WTP towards organic rice. They were age (40-49yrs, 50-59yrs, >60yrs), gender, race (Malay and Chinese), and monthly household income categories (except RM2001-RM4000 income category). This implies that potential consumers with these statistically significant socio-demographic profiles could be targeted by marketers as these identified socio-demographic profiles showed statistically significant probability or likelihood of increasing respondents' WTP towards organic rice.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

**KESEDARAN, PERSEPSI, KELAKUAN, DAN KESANGGUPAN UNTUK
MEMBAYAR PENGGUNA BAGI BERAS ORGANIK DI LEMBAH KLANG,
MALAYSIA**

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Pengguna hari ini lebih peka terhadap kesihatan mereka, keselamatan makan dan persekitaran kerana mereka menyedari kesan negatif yang diakibatkan oleh sisa bahan kimia dalam kaedah pengeluaran konvensional. Masyarakat kini sanggup membayar harga yang lebih tinggi untuk mendapatkan produk organik kerana proses pengeluaran yang tidak menggunakan input berasaskan bahan kimia. Hasilnya, pasaran bagi produk organik meningkat dengan lebih pesat malah produk ini diakui sebagai salah satu penyumbang utama kepada gaya hidup sihat. Walaupun permintaan untuk makanan organik di Malaysia semakin bertambah, namun ianya tidak dapat dipenuhi oleh pembekal tempatan. Namun yang sedemikian, permintaan bagi makanan organik di Malaysia dijangka akan terus meningkat kerana pengguna kini lebih peka terhadap kesihatan dan persekitaran mereka. Beras organik merupakan salah satu daripada produk organik. Permintaan bagi beras organik di Malaysia dilaporkan semakin meningkat dan adalah perlu untuk memahami gelagat pengguna terhadap beras organik. Maka, kajian ini adalah untuk mengenalpasti kesedaran pengguna, faktor-faktor yang mempengaruhi keputusan pembelian dan kesanggupan untuk membayar (WTP) atau ketidak sanggupan untuk membayar (nWTP) beras organik oleh pengguna di Malaysia.

Seramai 834 responden diperoleh sebagai sampel menggunakan soal selidik berstruktur. Kaji selidik bagi data primari dibuat di sekitar kawasan pusat membeli-belah terpilih di dalam kawasan Lembah Klang dengan menggunakan teknik 'intercept'. Lembah Klang dipilih sebagai kawasan kajian kerana mempunyai ciri-ciri sosio demografik yang pelbagai dikalangan pengguna yang berpotensi. Soal selidik dibahagikan kepada empat bahagian: Seksyen 1 adalah soalan berkaitan dengan kesedaran dan ciri-ciri sikap pengguna. Seksyen 2 menekankan soalan berkaitan dengan tanggapan responden manakala seksyen 3 adalah untuk memahami kesanggupan responden untuk membayar dan untuk menentukan peratusan harga premium yang sanggup dibayar oleh responden bagi nilai beras organik. Akhir sekali, seksyen 4 adalah untuk mengetahui ciri-ciri sosio demografik responden. Analisis deskriptif, teknik penjadualan silang menggunakan chi kuasa dua, analisis korelasi, analisis faktor, analisis regresi logistik berganda dan kaedah penilaian kontinjen digunakan dalam proses menganalisis data.

Hasil kajian mendapati kebanyakan responden pernah mendengar tentang beras organik dengan tahap kesedaran yang berbeza. Majoriti daripada responden bercadang untuk mengambil beras organik pada masa akan datang. Keputusan kajian menunjukkan bahawa tahap kesedaran berkaitan dengan jantina, kaum, dan juga taraf pelajaran responden. Kebanyakan daripada responden menganggap beras organik adalah lebih sihat, diikuti dengan lebih mahal, selamat untuk dimakan, dan mesra alam. Berdasarkan keputusan analisis faktor, empat faktor utama telah dikenalpasti mempengaruhi niat untuk membeli (ITP) pengguna iaitu “Campur Tangan Institusi”, “Pengetahuan dan Kesedaran”, “Pasaran” dan “Pembungkusan”. Analisis logistik berganda digunakan bagi meramalkan antara empat faktor tersebut, yang manakah yang paling memberi kesan dalam mempengaruhi niat untuk membeli (ITP) pengguna. Daripada ke empat faktor tersebut, tiga faktor yang signifikan dalam mempengaruhi niat untuk membeli (ITP). Keputusan kajian menunjukkan “Pasaran” mempunyai pengaruh yang tinggi diikuti oleh “Campur Tangan Institusi” dan “Pembungkusan”. Analisis logistik berganda juga digunakan untuk menguji keaslian ciri-ciri sosio demografik terhadap kemungkinan responden dalam kesanggupan untuk membayar (WTP) atau ketidak-sanggupan untuk membayar (nWTP) beras organik. Hasil kajian telah menunjukkan sebahagian dari parameter memberi sumbangan unik dalam statistik untuk meramal tahap kesanggupan responden untuk membayar beras organik. Peringkat umur mereka adalah (40-49tahun, 50-59tahun, >60tahun), jantina, kaum (Melayu dan Cina), dan pendapatan hasil rumah bulanan (kecuali kategori pendapatan RM2001-RM4000). Ini menunjukkan bahawasanya pengguna yang memenuhi profil sosio demografik ini berpotensi untuk dijadikan sasaran oleh agen pemasaran kerana profil sosio demografik ini telah dibuktikan secara statistik dapat meningkatkan kesanggupan responden untuk membayar beras organik.

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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Master of Science. The members of the Supervisory Committee were as follows:

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LIST OF ABBREVIATIONS

CVM	Contingent Valuation Method
DNA	Deoxyribo Nucleic Acid
DV	Dependent Variable
H ₁	Alternative Hypothesis
H ₀	Null Hypothesis
HP	Hedonic Pricing
IV	Independent Variable
KMO	Kaiser-Mayer-Olkin
nWTP	No Willingness-To-Pay
PAC	Percentage Accuracy in Classification
PBC	Perceived Behavioural Control
PPMC	Pearson Product Moment Correlation
r _{pb}	Point-biserial Correlation
SSL	Self-Sufficiency Level
SOM	Malaysia Organic Scheme
SPSS	Statistical Package for the Social Sciences
TCM	Travel-Cost Method
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
WTA	Willingness-To-Accept
WTB	Willingness-To-Buy
WTP	Willingness-To-Pay

CHAPTER ONE

INTRODUCTION

The first chapter of this study discusses the background information on Malaysia, the rice industry in Malaysia, issues on organic rice versus conventional rice, organic food consumption and motives for its buying or purchasing. Pragmatic challenges and gaps to be addressed were discussed in the section for problem statement. The general and specific objectives were been annotated in this chapter. This is followed by significance and justification of the study.

1.1 Background Information on Malaysia

Malaysia consists of three Federal territories and 13 states. It is located in the central Southeast Asia. The country lies on latitudes 1^o and 8^oN of the equator and between longitudes 99^o and 120^o E with a land mass of 329,847 km² (127,350 sqmi). Malaysia's population is estimated as 29.2M (CIA World Factbook, 2013), with a density of about 87/km². It is separated by the South China Sea into two regions, the Peninsular Malaysia and Malaysia Borneo (West and East Malaysia respectively). It shares land bordered with Indonesia in the south and west, Brunei in the east and Thailand in the north. It has existing maritime borders with Singapore, Vietnam and the Philippines. The climate of Malaysia is a tropical one with high temperature (average temperature of 30^oc) and high humidity (70-80 percent) all through the year, with very cool nights and very warm days. The east coast experiences humidity and heavy rains between November and February. This is brought about by the south-western monsoon and rainfall is about 120 inches a year. Heavy rains are experienced in August though varying depending on the prevailing monsoon winds at the period in the west coast. This variation in precipitation and climate have been found out to be having significant effects on the production and yield of paddy and other crops in Malaysia (Toriman et al., 2013).

1.2 Rice Industry in Malaysia

Rice is a predominant staple food for 17 countries in Asia and the Pacific, nine countries in North and South America and eight countries in Africa. It provides 20 percent of the world's dietary energy supply, while wheat supplies 19 percent and maize 5 percent (FAO, 2003). Rice ranks third after wheat and maize in terms of its world consumption and production respectively (El-Bassam, 2010). Over 95 percent of the world's rice production comes from developing countries with China and India ranking first and second producing 194.3 million tonnes and 148.3 million tonnes respectively. This is about 50 percent of the world total production (FAO, 2002). Malaysia ranks 25th position producing about 2.4 million metric tonnes (Akinbile, El-Latif, Abdullah, & Yusoff, 2011). Nearly 24 percent (7,605,000 ha) of Malaysia's land area is composed of land dedicated to agriculture of which 674,548 ha is planted with rice (Nation Master Malaysia Agriculture, n.d.) which remained fairly constant since the 1980's (Sung, 2012). It is grown on the Malaysia Peninsular and on Borneo Islands. About 190,000 hectares of land is dedicated to rice production in Northern Borneo while 300,500 hectares of the Peninsular is dedicated to rice production (Bahiah, Haris, Hamzah, Krauss

& Ismail, 2013). Rice is a strategically important and indigenous industry in Malaysia having different types of methods for its planting and uses (Omar, 2008). Different types of preparation and or cooking also accompany rice as some use it for religious and or cultural purposes. It is considered as Malaysia's basic staple and political crop (Wong, 2007) despite its contribution of less than one percent to the nation's Gross Domestic Product (GDP) (Vengedasalam, Harris & MacAulay, 2011).

In Malaysia, rice cultivation is the major food crop after oil palm, rubber and coconut as the country is one of the 25 rice producing countries of the world producing about 2.51 million metric tons per year (FAOSTAT, 2009). Rice cultivation in Malaysia was closely associated with the rural population and traditional farmers (Man & Sadiya, 2009). Its cultivation practices changed over the years from transplanting of the crop using animal power to mechanical transplanting and direct seeding (Omar, 2008). Developing new rice cultivars, mechanization using irrigation system brought about this change, which led to its transformation to a commercial crop in the last 30 years. The once subsistence farming is now highly regulated and subsidized. For the past 40 years, Malaysia only managed to double its rice production to 2.23 million metric tons in 2005 compared to 1.09 million metric tons in 1961 (Nawi, 2012). Presently, domestic rice production can only cater for about 60-65 percent of Malaysia's consumption requirements (Abu, 2012) making the country a major importer of the crop. Malaysia's rice import has risen from one million tonnes to 1.1 million tonnes in 2013-2014 from the previous year (Lyddon, 2014). Rice productivity has been increasing every year from 2.1 ton/ha in 1961 to 3.6 ton/ha in 2008 with an annual increase of 2.0 percent per year or about 28,000 tonnes per year even though the land area for rice production has remained rather constant. With an average consumption of 80 kg per person a year, Malaysia continues to import rice from other countries (DOS, 2008). Low-cost major exporters neighbouring countries like Thailand and Vietnam, Indonesia and Cambodia are Malaysia's major suppliers of rice (Komentar, 2011), while India and Pakistan majorly supply basmati and or speciality rice, which are the most expensive (Tobias, Molina, Valera, Mottaleb, & Mohanty, 2012). Self-sufficiency has not in any way been guaranteed as over 700,000 tonnes or 30 percent of its rice needs were being imported annually (Akinbile et al., 2011).

1.2.1 Paddy Production in Malaysia

Malaysia's paddy production does not enjoy a comparative advantage as the production process is susceptible to changes in climate and impending natural calamities. These phenomena quirks have influenced the government of Malaysia in rolling out and sustaining a protectionist regime on its rice industry self-sufficiency since 1973 aimed at achieving food security. These are being achieved using comprehensive market interventions in form of subsidies on inputs and outputs, production programmes, import monopolies, price controls and other forms of restriction in the market. The regime focused on attaining reasonable production levels geared towards achieving self-sufficiency in rice production, improving rice farmers' income, ensuring high quality rice and price stability (Arshad, Alias, Noh, & Tasrif, 2011). The production of paddy in Malaysia has consistently be guarded by policies geared at ensuring three prominent goals: food security; price stability; and equitable income distribution (Daño & Samonte, 2002). Table 1.1 shows estimates of Malaysia's paddy planted area and production figures respectively.

Table 1.1: Estimate of Malaysia's Paddy Planted Area and Production (2004-2013)

Year	Planted Area ('000 ha)	Production ('000 MT)
2004	667,310	2,291,352
2005	666,823	2,314,378
2006	676,034	2,187,519
2007	676,111	2,375,604
2008	656,602	2,353,036
2009	674,928	2,511,043
2010	677,884	2,464,831
2011	687,940	2,578,519
2012	684,545	2,599,382
2013	674,332	2,615,845

Source: Paddy Statistics of Malaysia (2014)

From the table, the land area planted with paddy is fairly constant as shown between the year period 2004 to 2013. The table also shows that production increased by about 300 million metric tonnes between the year period 2004 and 2013.

1.2.2 Rice Importation and Consumption in Malaysia

The current Malaysian Government's policy on import supports the nation's self-sufficiency policy in the production of local rice. This policy is spelt out into attaining a prominent and reasonable self-sufficiency level (SSL) in local rice production, which is used as an index to food security in the country (Tey, 2010).

In the 3rd National Agricultural Plan (1998-2010), SSL was put at 65 percent (MOA, 2010) as the volume of local rice produced largely determines the volume of rice imported. About 30 percent to 40 percent of Malaysia's domestic rice demand is imported by BERNAS annually as to fully meet the rice requirement of the country. The volume of import by BERNAS is designed to cover shortfalls in demand that local rice production cannot meet. This is done after the locally produced rice product gets to the market as to protect the local rice farmers (BERNAS, 2014). Special rice varieties that cannot be produced locally like basmati and fragrant rice are also imported by BERNAS to cater for the various types of culinary tastes of our multi-racial society. Total rice consumption is estimated to have increased from 2.7 million metric tonnes to 4 million metric tonnes between the period 1985 and 2009 (Arshad et al., 2011). Consumption of rice is also stated by another estimate to increase from approximately 2.3 million metric tonnes to a projection of about 2.69 million metric tonnes between the period 2010 and 2020 (MOA, 2011). Per capita rice consumption reduced to 79kg from 87kg between 1990 and 2008 as a result of the per capita income increase as well as changes in preference for food (Arshad et al., 2011). However, rice consumption figure is shown to have dropped between the year period 2008 and 2013 according to the information provided by Paddy Statistics of Malaysia (2014). They also showed the per capita rice consumption to have reduced from 94.1 kg/person/year to 85.5 kg/person/year between the year period 2008 and 2013. Table 1.2 shows Malaysia's rice importation and consumption estimates according to the Paddy Statistics of Malaysia 2014.

Table 1.2: Estimates of Rice Importation and Consumption, Malaysia 2008-2013

Year	Import('000 MT)	Total Consumption ('000 MT)	Population (Million)	Consumption Per Capita (Kg/person/year)
2008	1,093.8	2,610	27.54	94.1
2009	1,084.3	2,704	28.08	96.3
2010	930.0	2,518	28.59	88.1
2011	1,030.7	2,692	29.06	92.6
2012	1,005.0	2,680	29.52	90.8
2013	876.1	2,561	29.95	85.5

Source: Paddy Statistics of Malaysia (2014)

1.3 Organic Rice versus Conventional Rice

According to Hammitt (1986), food production accounts for close to half of the more than one billion pounds of chemicals used in farming. Intensive use of high-inputs in modern agriculture has led to greater yields in agricultural productivity to the detriments of very high environmental and social cost. As a result, sustainability to a greater level becomes more of the guiding principle in agricultural production as organic farming is more getting to the awareness of policy makers, consumers and farmers (De cock, 2005). One of the possibilities to farm in a more sustainable way is the practising of organic rice farming (Neeson, 2000). The use of synthetic fertilizers, pesticides or growth regulators are prohibited in growing organic produce of all kinds as organic sources of elements are only required in the growing process.

Organic produce are perceived by consumers as safer and healthier, and expected to have greater nutritional value (Anderson, Wachenheim, & Lesch, 2006). Although, overall organic foods may not be safer than conventionally grown alternatives as there are perceptions that it is associated with less or no chemical residues (Lo & Matthews, 2002). This is sometimes questioned because of the potentials for contamination during processing, possible environmental contamination and possibility that organic produce might be carrying higher risk of microbial contamination. This is often because of the increased use of organic manure than in-organic manure in organic agriculture. Hence, the perception of an increasing incidence of contamination of pathogens like *Escherichia coli* and *Salmonella* species. There is also possibility of mixing conventional products and the organic products in the food distribution chain (Schmidt, 1999).

Ie (2011) reported that organic rice seems to convey to the consumers the perception of better tasting, fresher, safer and healthier alternative as compared to traditionally or conventionally produced rice. Organic rice is a product of a production process that has not used any chemical or synthetic fertilizer or any pesticide in any of its growth phase (Davis, 2005). With respect to rice, some discernible advantages for the environment and farmers from growing rice organically have been found by Agricultural researchers. This includes improving the quality of soils by using organic methods (Mendoza, 2004). Improved soil quality, defined as looser, deeper mud, made it easier to prepare paddies and control weeds. Improvement to the higher levels of soil organic matter in organically managed rice paddies was attributed to as a result of farming practices such as application of animal manure and crop residue recycling (Mendoza, 2004). Adoption of organic rice farming had impressively led to increase productivity in yield as against the conventional

rice cultivation (Yamota & Tan-cruz, 2007). However, scientists found fewer differences than purchasers might expect in comparing other qualities of organic rice and conventionally grown rice (Champagne, Bett-Garber, Grimm, & Mcclung, 2007). In the study of US Department of Agriculture's Research's Service (2006), less protein was found in organically grown rice than rice grown with inorganic fertilizer while there starch and mineral contents do not differ. This implies an health benefit since high protein diets have been found to be damaging to liver and kidneys, because they are responsible for filtering the wastes from protein intake (Nall, 2011).

Researchers however found that organic rice contains more iron than conventional rice (Worthington, 2004) and less copper than conventional rice (Daniells, 2006). Iron is a component of haemoglobin in red blood cells, associated with strength, which is also essential for oxygen transport, synthesis of DNA and a host of other processes in the body (Sardi, 2012). Iron deficiency is more common than many people think as only 65-70 percent of all Americans meet their daily recommended intake according to an estimate (Noelcke, 2011). Studies showed that high serum level of copper in the body is associated with increased risk of death from all-causes (Daniells, 2006). Notable of serious concern is the consumer report study that found high levels of cancer causing inorganic arsenic in conventional rice (Kresser, 2012). According to Consumer Reports Analysis of Federal Health data, people that ate rice had arsenic levels that were 44 percent greater than those who had not (Durell, 2012). Naturally, arsenic is adjudge as one of the most common elements on earth occurring in nature in rocks, soils, water and air (Saldivar & Soto, 2009). Inorganic arsenic is considered a carcinogen, and the chemical has been shown to cause a variety of cancer in humans (Neale, 1958). Table 1.3 shows the summary of the nutritional benefits of organic rice over conventional rice as discussed above.

Table 1.3: Nutritional Benefits of Organic Rice versus Conventional Rice

Organic Rice	Conventional Rice
Contains less protein as high protein diet may be damaging to liver and kidney (Nall, 2011).	Contains higher level of protein.
Contains more iron (Noelcke, 2011).	Contains less of iron.
Contains less copper as high serum level of copper is associated with increased risk of death from all-causes (Daniells, 2006).	Contains higher level copper.
Does not contain in-organic arsernic (Durell, 2012)	Contains in-organic arsenic (a type-1 carcinogen)

1.4 Organic Foods Consumption

In the past decade, organic food market has rapidly grown as they are increasingly becoming available and affordable in grocery stores and supermarkets (Smith, Huang, & Lin, 2009). With the advancement of science and technology, knowledge and education have exposed humans more to the benefits and advantages of organic products than ever before (Hui, May, Wei, & Li, 2013). People now become more aware and sensitive to the surroundings and their environment as consumers all over the world are increasingly concern about their health as well as the environment's sustainability. Thus a quality and healthy lifestyle in this modern generation have become a kind of necessity.

Consumers are now worried about the presence of the negative consequences of chemical residues on their health and on the environment in conventional production methods. As a result, markets for “green” and eco-friendly products are rapidly increasing (Canavari, Ghelfi, Olson, & Rivaroli, 2007) as it is consumed among others and recognized as one of the contributors to a healthy and sustainable lifestyle. Organic consumers are characterized as being affluent, well-educated, concerned about health, and quality of product (Richter, Schmid, Freyer, Halpin, & Vetter, 2000). Organic agriculture includes all agricultural systems that dramatically reduce the use of chemo-synthetic fertilizers and pesticides and instead allow local soil fertility and natural capacity of plants and animals to increase both agricultural yields and disease resistance (IFOAM, 2003). Words commonly associated with organic products are: crops grown in “natural” environment, chemical free foods, food “not intensively” produced (Davies, Titterton, & Cochrane, 1995). “Chemical-free” is the most associated word used for organic products in the U.S.A followed by “natural” or “home grown”, “healthier” and “earth friendly” (Raab & Grobe, 2005).

According to Elzakker, Parrot, Chonya, and Adimado (2007), provision of food and income through the roles of organic agriculture is now gaining wider recognition. As the number of people willing to eat organic food and pay premium price increases, the market for organic products is growing. Rising demand in healthy lifestyle and organic food in both developing and developed countries are not just a passing fad as consumption of food patterns are changing as a result of environmental and health issues. Interest in organically produced food is increasing throughout the world. The demand globally for organic products remain robust, with increasing sales by over five billion US dollars a year (Willer & Kilcher, 2009). In 2012, statistics showed a healthy growth in the global organic market with over 64 billion U.S Dollars expended in the consumption of organic foods and drinks (Willer, Helga, & Lernoud, 2014). Lohr (2000) also stated that the demand for organic food market is expanding globally growing at a rate of 15-30 percent per annum especially in the US, Japan and in the European countries. Likewise in the Malaysian context, organic food consumption is on the rise as the Malaysian consumers are becoming more health conscious regarding food intake (Ibrahim, Razak, Shariff, Abas, & Ruslan, 2013) as well as the growth of the organic agricultural industry in the country (Mohamad, Rusdi, & Hashim, 2014). Figure 1.0 shows the trend for organic food and drink global market growth between 2001-2012.

Figure 1.0 shows the trend for organic food and drink global market growth between 2001-2012.

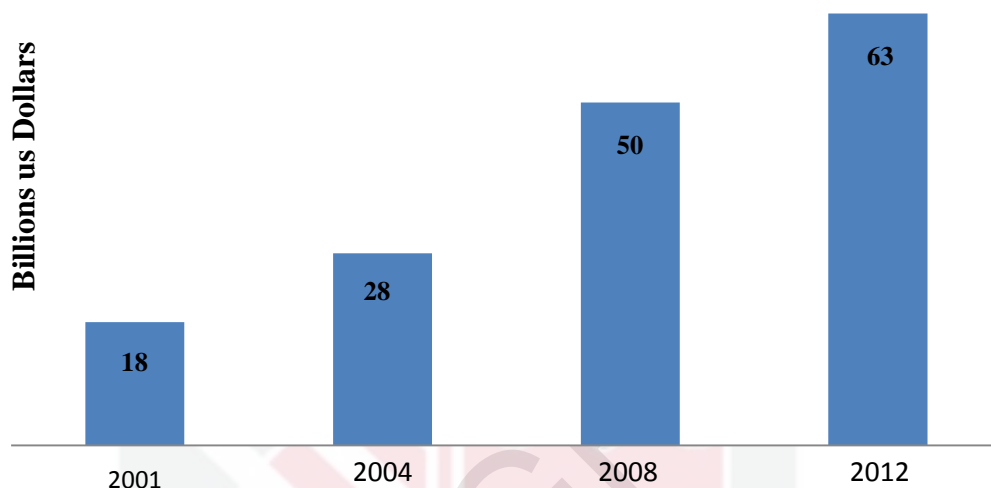


Figure 1.0: The Global Market for Organic Food & Drink: Market Growth 2001-2012

Source: The Global Market for Organic Food & Drink (Organic Monitor), 2014

Organic rice and other organic products are in high demand by health-conscious consumers because they are considered as premium goods (Pratruangkrai, 2011). The future of organic rice to a large extent will depend on consumers' demand and their motive for paying extra price for organically grown rice. Thus, a consumer-oriented approach will be important to understanding the market and for pursuing better management of organic rice farming. It is also important to understand consumer decision-making regarding organic rice produced and seek strategies about how consumption can be enhanced. Strategies for production and marketing can be determined through understanding consumers' attitudes and beliefs response to organically grown rice and their willingness to pay (WTP) a premium price. This is because organic products are credence goods, consumers may not know whether a product is produced using conventional or organic methods unless they are told so (Giannakas, 2002). Thus knowledge and awareness about organically produced rice will be critical to consumers' attitude and WTP.

Price premium for organic rice exists because of the low supply of organic rice by few rice farmers as they do not engage in organic rice farming due to high cost, especially labour costs. More so, the challenges of transition from conventional to organic farming (Vetter & Christensen, 1996). The biggest challenge is changing the thinking of these farmers, access to organic agronomic resources, growing and harvesting techniques that would bring about high yielding output among others could pose as challenges (N/A, 2006). High production cost is incurred at the initial stage of shifting

feature added to organic rice. According to Ballo (2008), (as cited in Cerna, 2010) premium price in organic rice being sold in the market is essential for the rice farmers to be assured that they can have profit if they go into organic rice production, thus serve as an incentive to them. Typically, a significant premium price is offered to organic farmers which offsets lower output yield because of their greater exposure to risk since they would not be using standard agricultural chemicals (McClung et al., 2009).

1.5 Motives for Buying Organic Food Products

The origin of food and the context of its production are less transparent today and consumers have been distanced from them. This affects how consumers perceive their food and can be seen as part of the great demand for locally and organically produced foods. However, perception is defined as the process by which an individual selects, organizes and interprets stimuli into a meaningful and coherent picture of the world (Schiffman & Kanuk, 2004). Buying certified organic products can be seen as a way of dealing with the complex modern food system and its perceived risks as certified organic food products are controlled and bear information about their production (Torjusen, Lieblein, Wandel & Francis, 2001). According to Pedersen (2003), the perception of organic products choice as a risk-reducing strategy explains only a part of the decision processes and demand for organic food products. Socio-demographic characteristics such as age, education, income, gender and others are also found to affect consumers' perception (Rahman, 2012). No single motive exists for buying organic products, often there are several reasons working together. Although consumers are not able to determine food safety before purchase, they are willing to pay higher prices for "healthy products" as they seek food safety and hope to obtain greater utility level and at the same time reducing health risks (Gil, Gracia, & Sanchez, 2000). This is considered an important constraint to economic efficiency in food safety production and marketing. Determining consumers' WTP for safer and better quality food is a commonly applied method to estimating food safety benefits (Goldberg & Roosen, 2005).

Sanders and Richter (2003) indicated the presence of children and income level as factors influencing buying decision for organic products. High income earning consumers have a wider range of motives for purchasing organic food and their reasons are more hedonistic and altruistic, while medium and lower income classes have health and animal welfare as their main concerns. Households with children also have a wider range of motives, with animal welfare and environment as the main reasons for buying organic products. Contrary to other studies, the health of children and responsibility for the family are the only minor arguments in Switzerland for buying organic (Sanders & Richter, 2003). Health and nutrition are mentioned before taste and environment as reasons for purchasing organic food by consumers in the United States (Hartman Group, 2002). Organic products are valued by consumers as more tasty, healthy, environmentally friendly, and nutritious than conventional ones (Saba & Messina, 2003).

1.6 Problem Statement

The market for organic product is growing with an annual average growth rate of 20-25 percent, not only in Europe and North America but also in many other countries (IFOAM, 2003). This market is growing because more people are willing to eat and pay increasing premium price for organic food (Aryal, Chaudhary, Pandit, & Sharma, 2009). Food and

income provision through organic agriculture is now also gaining wider recognition (Elzakker et al., 2007). In 2001, only 131 hectares (ha) of land in Malaysia were organic farms but have increased to more than 2,400 ha in 2007 (Rezai, Mohamed, & Shamsudin, 2011). Out of this 2,400 ha, 962 ha are perhaps certified organic, as surveyed by the Swiss Research Institute of Organic Agriculture (FiBL) and the Foundation Ecology & Farming (SOEL), Germany, in 2007 (Sung, 2012). Compared to other countries in the region, Malaysians are among the most knowledgeable in organic food and their health benefits. A study conducted in Malaysia showed that over 90 percent of its respondents were aware and understood all about organic product. It although revealed that the level of awareness among Malaysian consumers toward Malaysian Organic Scheme (SOM) was low (Dardak, Zairy, Abidin, & Ali, 2009). These respondents associated organic products with been natural, healthy foods and free of chemicals while about 55 percent have consumed organic foods; with more than half consumed them occasionally.

The Chinese remains the major consumers of organic food in Malaysia, the younger Chinese generation (mid-thirties and forties) have started to take keen interest in organic food, unlike in the past where it was mostly the older Chinese generation. Other races such as the Malays and Indians have also started to try organic food, although their numbers still make up a small fraction of Malaysian consumers (Sung, 2012). Nonetheless, organic agriculture and food are facing several challenges in Malaysia. Although the demand for organic food in Malaysia is growing, the supply of local organic produce is not enough to meet up with the increasing demand. Local supply can fall by as much as 50 percent in certain periods of the year. Besides the inconsistent supply, the varieties of local organic food are also limited while consumers have low level of awareness towards the Malaysia Organic Scheme (SOM) (Dardak et al., 2009). Consequently, Malaysia still needs to heavily import organic produce from other countries, especially from Australia, U.S.A, and New Zealand (Sung, 2012). Another problem facing organic food consumers in Malaysia is the price difference between organic and conventional food. Although, organic food is well known to be more expensive than conventional food, their price difference in Malaysia is particularly substantial. This is by as much as 100 to 300 percent, compared to only 25 to 30 percent price gap in the U.S.A and E.U. Despite the higher price and limited variety of organic food in Malaysia, it is been foreseen that organic agriculture and food would continue to rise rapidly in Malaysia as Malaysians become more health and environmentally aware (Sung, 2012). One of these organic products is organic rice.

The demand for organically grown rice has increased with increasing demand for organic food (Champagne et al., 2007). According to Winfried Scheewe, adviser to the Cambodian Organic Agriculture Association (COAA), several ASEAN countries, including Cambodia, have witnessed a growing demand for organic rice that local producers cannot satisfy. Demand for organic rice is on the rise, especially in the Philippines, Malaysia and Singapore, but also outside ASEAN such as in Hong Kong and Phnom Penh, there is also more demand (Renzenbrink, 2012). With this increasing market for organic rice, Malaysia needs continue to import organic rice products to satisfy demand. Then, one might be provoked to ask why does Malaysia import organic rice despite the huge market potential for its domestic demand? With the per capita income growth of Malaysians, it has generally empowered consumers to have more purchasing power, more choices for food, health consciousness and demand for more nutritional values of their food intake (Hanis, Jinap, Nasir, Alias, & Muhammad, Shahrin, 2012). This may explain their increasing demand for organic rice. Motivated by the changes in Malaysian consumers' food choice coupled with arsenic health issues

recently observed in conventional rice among other concerns, this study investigated Malaysian consumers' awareness towards purchasing organic rice and their WTP premium price for organic rice. While study on marketing of organic products (organic rice inclusive) is still lacking in Asia as well as in Malaysia (Dardak et al., 2009), the findings of this study will fill the gap and contribute to the body of knowledge in the area of marketing of organic rice products in Malaysia.

1.7 Research Questions

In this study, three specific research questions were addressed. The entire research questions were developed based on consumers' awareness, perception, attitude and WTP towards organic rice.

1. What is consumer's awareness regarding organic rice?
2. What are the factors affecting consumers' intention to purchase organic rice?
3. How much additional percentage of the price of conventional rice will consumers be willing to pay for organic rice?

1.8 Objectives of the Study

The main objective of this study was to determine consumers' awareness and WTP for organic rice in Malaysia.

The specific objectives of the study were:

1. To determine consumers' awareness towards organic rice;
2. To identify factors affecting consumers' intention to purchase organic rice;
3. To determine consumers WTP towards organic rice.

1.9 Significance of the Study

This research hopefully will provide theoretical contribution that will enhance knowledge and understanding on consumers' behaviour toward organic rice consumption and their purchase decisions. The research is required to obtain information in describing consumers' awareness, perception, attitude and their WTP price premium towards organic rice as compared to conventionally produced rice in Malaysia. Information obtained will be significant to the following group:

1.9.1 The Consumers

People from both developed and developing countries prefer organic rice over conventional rice, owing to the innumerable health benefits of organic rice as organic rice has a far greater quality, as compared to conventional rice (Anuradha, 2001). Thus, this study will attempt to determine what consumers prioritize in terms of purchases between conventional rice and organic rice with higher price premium. Thus, helping consumers have understanding of what they actually prioritize prior to the purchase or consumption of organic rice.

1.9.2 The Producer and Marketer

Many studies on agriculture have given much focus on the production aspect of agricultural commodities, including the technology and processes involved, thus revealing possible improvements on this aspect without giving similar attention to the demand aspect (Concepcion, 2005). This study focuses on identifying and understanding consumers' awareness, perception, attitude, factors influencing their intention to purchase and their WTP for organic rice in Malaysia, which is the demand side of organic rice agribusiness. This will assist all related parties who are involved in the organic rice industry such as farmers, wholesalers, retailers, department of agriculture, and others to have better in-depth knowledge of consumer behaviour as it pertains to organic rice consumption. This study's findings are expected to support and facilitate both present and intending farmers to have more confidence in the potential market for organic rice demand and supply. More so, the study aims to advance their knowledge about the agribusiness market for organic rice in Klang Valley and Malaysia as a whole.

1.9.3 The Societies/General Public

Organic rice is produced without the use of chemicals, pesticides and other inorganic inputs. Its production processes are in harmony with nature and our environment thus can control and reduce the pollution, providing a better environment-friendly surrounding to the societies as a whole. Hence, the society/general public would have gotten in-depth understanding on the impact of consuming organic rice and organic products generally as the production processes is being environment friendly.

1.9.4 The Government/Policy Makers

The knowledge and information garner from the findings of this study will also help policy makers and Government in making right policies and market plans that could possibly help in the drive of organic rice industry and the organic food industry as a whole. Thus facilitating production of organic rice would not only fulfil the demand of Malaysians and self-sufficiency, but would also help channel money put into importation of organic rice to other rational economic activities.

1.10 Structure of the Thesis

Chapter one gives brief information regarding rice industry in Malaysia, motives for buying and consuming organic food and consumers' behaviour towards organic products while chapter two provides a review of literatures relevant to this study and the theoretical framework adapted for the study. Chapter three reviews the methodologies adopted in previous but similar studies, namely: descriptive analysis; cross-tab analysis using chi-square; correlation analysis (including point-biserial (r_{pb}) correlation), factor analysis; binary logistic regression and contingent valuation methods (CVM). Chapter four presents the analysis and findings of the study, while Chapter five provides summary and conclusions relevant to the study.

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