

## Factors Influencing Consumers' Purchasing Behaviour towards Organic Rice in Malaysia

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**Abstract:** Although certain insights have been gained from past studies on the factors influencing consumers' purchasing intention towards organic food, not much effort have been made to understand their purchasing intention towards organic rice. This study aimed to explore the factors influencing consumers' intentions towards the purchase of organic rice. A structured questionnaire using 5-point Likert scales were administered to 334 randomly selected consumers. Data collected were analysed using descriptive analysis and exploratory factor analysis. The result showed *health, food safety and environmental benefits* as the most important factor influencing consumer's preferences towards organic rice followed by the other three factors namely *organizational interventions, market and packaging*. This finding would help stakeholders in the organic rice industry to understand the underlying pattern of consumer behavioural intention and decision towards purchasing organic rice in Malaysia.

**Key words:** Organic rice • Purchase intention • Behavioural intention • Malaysia

### INTRODUCTION

In the past two decades, growing awareness about environmental issues and food safety concerns have led to the questioning about conventional agricultural practices [1] as organically produced food is regarded generally as safer, more nutritious, better tasting and healthier than conventionally produced food [2]. The increasing interest in the demand for organically produced food, perceived to be healthier, safer and more environment-friendly is a response to this concern about conventional agricultural practices throughout the world [3]. There have been a wide spread effort in many countries to promote sustainable farming through a shift from the conventional method of farming to the organic method of farming [4]. Many Western developed countries have improved on their organic agricultural production efforts, while such improvement is just beginning to take effect in most developing countries of the world [5]. There has been a well-known intimate link between good human health and organic farm products consumption. This link is also known to be between human health and their perceived environment-friendly

impacts of practising organic agricultural production method [6]. Malaysia, a developing country has been experiencing a continuous development of environmental concern behaviour among her people. This is expressed in the Malaysian's people increasing demand for safety food choices and environment-friendly food products. It is suggested that this resulted from changes in their lifestyle and their purchasing power consequent upon the improving performance of Malaysia's economy [7].

Organic production can be defined as "an ecological production management system that enhances and promotes biodiversity, biological cycles and activities of the soil fauna and flora" [8]. It is based on the management practises and minimal use of non-synthetic inputs that restore, enhance and maintain ecological harmony. The regulations of the United States of America require that you grow organic foods without the use of synthetic inputs like chemical fertilizers, sewage sludge, synthetic pesticides, antibiotics, growth hormones and modern genetic engineering techniques, such as the genetically modified crops [8]. Many different terms such as biological, free of pesticides, natural, unsprayed, alternative, ecological and environment-friendly produced

are used interchangeably to denote organic foods [3]. At present, the term remains defined loosely along dimensions such as green, naturally produced, sustainable, limited use of artificial chemicals, environmentally friendly and biological [9]. The uncertainty over the truthfulness of organic food claims, lack of awareness, lack of availability, together with relatively very high price of organic food products are preventing its wide spread consumption [10].

A number of organic food consumption studies concentrated on consumers in the United States of America and the European continents. Thus far, we have no sufficient information about the consumption trend of organic food in Asia as compared to these industrialized countries (U.S.A, Europe, Australia and New Zealand) [11]. There is only little research studies available about the purchase of organic food or the consumers' perception towards organic food in South East Asia [12]. Organic rice is a product whose production process did not involve the use of pesticides, chemicals or synthetic fertilizers in any of its growth phase [13]. Scheewe reported that demand for organic rice is on the rise in Singapore, Malaysia and the Philippines, while local producers cannot meet such demand [14]. This suggests a growth in the market as more people are willing to consume [15]. Moreover, organic food information provided by the government or food industry in Malaysia is still lacking [16]. Hence, it is hard to find information regarding organic rice market size. It is worthy to note that all decisions of marketing are based on the knowledge and assumptions of consumers behaviour towards a product or service [17]. To understand the market for the organic rice industry, there would be a need to determine and understand potential Malaysian consumers' attitude and their decision choices toward organic rice. Thus, this study seeks to explore the factors influencing the purchasing of organic rice by consumers in Malaysia.

**Literature Review:** As early as the 1960's, studies on consumers' attitude towards agricultural products containing chemicals were carried out [18]. From these earlier studies, it was found out that there are a number of factors influencing consumers' choices for organic food products as well as barriers. These factors influencing decisions to buy or not to buy organic food products could be grouped according to general and commodity-specific concerns [19]. Hansen [20] also found that organic food characteristics that would enter the consumer utility function can be grouped into these general and commodity-specific concerns. According to

him, the general attributes or concerns relate to lower environmental effects, farm animal welfare, healthiness, food safety and closeness (the term meaning that small farms are better than big foreign farms simply because they are small and local). While the commodity-specific attributes relate to visual appeal, nutritional value, taste, freshness etc. In contrast to these findings, five broad food quality attributes were identified by [21], namely production process, package, nutrition, safety and value. Consumers are not always able to know that a product is organic when they are not informed so [22]. This is because organic products are credence goods and consumers are not able to identify the presence or absence of organic characteristics. That is, they are not able to know whether a product is produced using conventional or organic methods, even after they may have repeatedly consumed or purchased such products [22]. Hence quality signals, such as product labelling, product information and certification can help transform credence characteristics into search attributes, which would enable consumers to more easily assess product quality [23]. According to Lancaster, consumers are seeing as buying characteristics, which are what he/she values [24]. Consumers buy organic food products as inputs that will generate the characteristics they value. He further said goods, which does not possess all the characteristics desired by the consumers cannot be dominant goods no matter how low their price might be. Lancaster [24] also stated that goods that have all the characteristics not possessed by any other goods will come to dominance no matter how high their prices. Cue utilization theory also posits that the quality of a product is assessed by consumers using either the direct indicators (physical attributes) or the indirect indicators (price of product) [25]. Making informed consumer's choices require consumers' awareness and knowledge about competing products and services, which in turn have direct and indirect effects on consumers' attitude and preference toward a product or service [26].

## **MATERIALS AND METHODS**

The primary data used in this study was collected through a face-to-face survey using structured questionnaires. The survey was carried out in the Klang Valley area, Malaysia. Klang Valley was chosen as the study area because most shopping malls and supermarkets are located here and consumers from all walks of life also did their shopping here. Furthermore, about 65% of organic market sizes are located in Klang

Valley [16]. The structured questionnaire was designed to determine the factors influencing consumers' perceived demand towards organic rice through personal interview of selected respondents at malls earlier identified to be selling organic food products using random sampling technique. To ensure the questionnaire was easy to comprehend and acceptable by the respondents, a pre-test was first carried out on 50 respondents. The pre-test survey showed that the measures displayed preliminary reliability and validity. Before commencement of data collection, the enumerators were trained on how to carry out the survey and on the purpose of the questionnaire administration. Participation in the survey was totally voluntary as the respondents were made to understand. Respondents were asked to answer 34 prepared statements using 5-point Likert scales where 1 is strongly disagree and 5 is strongly agree. A total of 334 questionnaires were thoroughly filled and returned, with about 15 minutes spent on interviewing each respondent.

Collected data were analysed using descriptive analysis and exploratory factor analysis (EFA). Descriptive analysis was used to describe the characteristics of the population in terms of frequencies and percentages. Exploratory factor analysis using principal component analysis approach was used to determine the most important variables from the large number of variables in the set of data that influence consumers' perceived demand for organic rice. This is done by reducing the large number of variables to a smaller and more manageable level so that the basic underlying dimensions or factors can be found. In the EFA approach, researchers do not have hypothesis as the number of factors to be estimated in the reduction method is not specified from the beginning of the research process [27]. He is only exploring the relationship among the variables to identify the underlying pattern. It could only be determined later based on what the data is showing.

## RESULTS AND DISCUSSION

### Socio-Demographic Characteristics of Respondents:

Descriptive statistics was used to analyse the study population. Table 1 shows the distribution of socio-demographic profiles of the respondents.

Most of the sample respondents are below the age of 30 (44%), followed by ages 30-39 years (28.1%) while age 60 years (3.6%) upwards are the least. Majority of the sample respondents are females 178 (53.3%) as against

Table 1: Socio-demographic Profiles of Respondents

Socio-demographic	Frequency (n=334)	Percentage
Age		
20-29	147	44
30-39	94	28.1
40-49	44	13.2
50-59	37	11.1
≥60	12	3.6
Gender		
Female	178	53.3
Male	156	46.7
Race		
Malay	122	36.5
Chinese	143	42.8
India	43	12.9
Others	26	7.8
Household Income (RM)		
≤2,000	20	6
2,001-4,000	78	23.4
4,001-6,000	89	26.6
6,001-8,000	77	23.1
8,001-10,000	36	10.8
10,001-12,000	12	3.6
>12,000	22	6.6
Level of Education		
Never been to school	10	3
Primary	23	6.9
Secondary	46	13.8
College/University	255	76.3

Table 2: Reliability Statistics, Kaiser Meyer-Olkin (KMO) & Bartlett's Test

Cronbach's alpha (No. of items = 34)		0.948
Kaiser-Meyer-Olkin		
Measure of Sampling Adequacy.		0.925
Bartlett's Test of Sphericity	Approx. Chi-Square	4277.638
	df	153
	Sig.	.000

males 156 (46.7%). The Chinese (42.8%) are the highest number captured in the study sample. This is followed by Malays (36.5%), Indians (12.9%), while other races captured accounted for 7.8% of the sample. Household monthly income range of RM4,001 to RM6,000 is received by about 26.6% of the sample respondents, 6.6% of the respondents received above RM12,000, while 6.0% received RM2,000 and below. Majority of the respondents had university education (76.3%), about 13.8% already completed secondary education, 6.9% had only primary education, while 3% had never gone to school before.

### Factors Influencing Purchasing of Organic Rice:

Exploratory Factor analysis using principal component analysis (PCA) was conducted with the aim to determine the factors influencing organic rice purchase decision by

Table 3: Factors influencing consumers' purchasing intention towards organic rice

Item	Factor Loadings			
	F1	F2	F3	F4
Health, Safety and Environmental Benefits				
Production of organic rice prevents environmental pollution	.825			
Organic rice has no chemical residue side effect	.803			
Organic fertilizer and biological control in organic rice production are very good	.781			
Organic rice is safer to consume compare to conventional rice	.753			
Chemical residue cases in conventional rice due to its excessive use	.722			
The product attributes influence purchase of organic rice	.679			
Health benefit important when purchasing organic rice	.662			
The perceived attributes influence purchase organic rice	.632			
Organizational Intervention				
Government has to control price of organic rice in the market		.844		
Government has to give subsidy to producers of organic rice		.821		
Campaign to consume organic rice need be done by Government		.756		
Information about organic rice must be disseminated by both Private		.755		
Advertisements about benefits of organic rice easy to get on print		.608		
Market				
Organic rice has huge market potential in Klang Valley			.875	
Organic rice has huge market potential in Malaysia			.829	
Organic rice easy to buy in the market in Klang Valley			.788	
Packaging				
Packaging material to package products an important factor				.879
Packaging an important factor in consuming organic rice				.841
Eigenvalue	10.350	1.783	1.471	1.102
% of variance	49.439	9.609	7.922	5.971
Cumulative % of variance	49.439	59.049	66.971	72.941
Cronbach's alpha	0.929	0.893	0.829	0.911

the consumers. Prior to further analysis, in order to ensure the internal validity of the items used, a reliability analysis was conducted for each of the items. For this study, the overall Cronbach's alpha value for all the items is 0.948 as shown in Table 2. This shows an excellent consistency in the instrument measurement indicating a very good reliability [28]. PCA was conducted on a total of 34 items or variables related to the factors affecting consumers' perceived demand for organic rice with orthogonal rotation (varimax).

The Kaiser Meyer-Olkin (KMO) is used to measure sampling adequacy and to assess the factorability of the items or variables. This is based on correlation and partial correlation index ranging from 0 to 1. A minimum index of 0.6 is suggested for a good factor analysis [29]. The result revealed that KMO's value was 0.925 indicating an excellent inter-correlation between the factors. Bartlett's test of sphericity  $\chi^2 (153) = 4277.638$ ,  $p < .05$  considered appropriate and significant for factor analysis to be performed. The result reveals that it is statistically significant at a p-value less than 0.05, indicating that correlations between items were sufficiently large for PCA.

An initial analysis was conducted to obtain eigenvalues for each component in the data. Four components had eigenvalues over Kaiser's criterion of one and are considered significant, which in combination explained a cumulative of 72.941% of the variance (Table 3). Those with eigenvalue less than one are considered insignificant and therefore discarded. Thus, this factor solution in the data reduction mechanism goes with an information loss of about 27.059%. As shown in Table 3, 18 items or variables were extractable from the analysis along with their initial eigenvalues, the percentage of variance attributed to each factors and the cumulative of the factors. Four factors were identified from the 18 items as well as their factor loadings, eigenvalues and variance. The factor loadings of the uneliminated standardized items in this study were in the range of 0.608 to 0.879.

Accordingly, Factor 1 was labelled Health, safety and Environmental Benefits as all the variables contributing to it emphasized health, environmental and food safety concerns in relation to consuming organic rice. The first factor component had eight significant variables all of which were positively correlated and the

eigenvalue was 10.350. The total variance explained was 49.439%. This result therefore implied that one of the major considerations of a consumer in purchasing organic rice is the health, food safety and environmental benefits to be derived. The finding is supported by Sangkumchaliang's findings. He reported that the main reasons for purchasing organic foods are in expectation of a healthier, environmentally friendly production processes [30].

Factor 2 was represented by *Organizational Intervention*, consisting of five significant variables with an eigenvalue of 1.783, which accounted for 9.609% of the variance. Since all five items were concerned with interventions by both Government and Non-government organization, we could infer that their interventions on price controls, subsidy to organic rice producers, campaign and sensitization on organic rice consumption and advertisement could play significant role in influencing consumer behaviour towards organic rice consumption. This finding is in consonant with Meyer-Hofer's findings in Chile that government interventions in the form of policies supporting growth of the organic food sector exerts influence on consumers' intention to consume organic food [31].

Factor 3 was renamed *Market* with three significant variables underlying the same component, which accounted for 7.922% of the variance with an eigenvalue of 1.471. Consumers' decision choices can be influenced when there are sustainable market potentials with ease of accessibility and availability of organic rice. According to Paul and Rana [32], market availability and accessibility is recognized to be having significant impact on influencing consumer's purchase intention towards organic food.

Factor 4 was labelled *Packaging* consisting of two significant variables, accounting for 5.971% of total variance with an eigenvalue of 1.102. The variables are "packaging an important factor in consuming organic rice" and "packaging materials used to package products is an important factor in purchasing organic rice". This suggests that packaging technique or materials used can influence consumer's willingness to purchase organic rice. This finding is supported by Dickieson and Arkus [33] findings, where they found out that appropriate presentation and packaging of organic food help to enhance consumer's purchasing intentions. Finally, the cronbach's alpha values for all the four factors were over 0.70 ranging in between 0.829 to 0.929 indicating that all the factors derived from the analysis were reliable by having sufficient internal reliability.

Table 4: Responses to Consume Organic Rice if Readily Available in the Market

Responses	Frequency	Percentage
Yes	216	64.7
No	118	35.3
Total	334	100.0

Earlier in this study, majority (64.7%) of these respondents indicated their readiness to consume or purchase organic rice if it is readily available in the market (Table 4). It is suggested that their readiness to consume organic rice could be as a result of their understanding that it is safer, healthier to consume and environmental friendly in its production processes. This argument could be supported by findings discussed in this paper.

## CONCLUSION AND RECOMMENDATIONS

The purpose of this study was to determine the factors that influence consumer's choices for purchasing organic rice in Malaysia. Understanding consumer's behaviour and decision making towards organically grown products has been found out to be consistent with the notion that consumers economically demand characteristics inherent in such products. This is because the characteristic quality of organic food serves as inputs into a demand function for consumer's improved (human) health and overall well-being. The result of this study showed that health, food safety and environmental concerns were the most important factors predicting consumer's attitude and preference towards purchasing organic rice. The next important factor was interventions from the government and non-government organizations in the areas of controlling prices, giving subsidies to the producers of organic rice, advertisement and campaign towards organic rice consumption. The result of the study also revealed the availability of the market and extrinsic cues like packaging can influence consumer's preferences and choices for purchasing organic rice.

This research thus provides vital information that could help develop and put the organic rice industry in favourable business positions. Perceived demand provides the threshold of entering a market, which is a step before actual purchasing [34]. Findings from this study would help stakeholders in the organic rice industry to understand the underlying pattern of consumers' choices towards purchasing organic rice, which would further enhance their marketing decisions and strategies. Also from the findings of the study, the Government of Malaysia has an important role to play in the areas of encouraging producers through giving of

subsidies and enforcing policies that would create conducive environment for the organic rice industry to thrive. Moreover, as information about organic food provided by the government and organic food industry in Malaysia is still lacking [16], it is crucial for them to work closely together not just to ensure awareness but also to be able to transform consumers' perceived demand into actual demand for organic rice.

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