Research article

An Evaluation of Consumers' Preference for the Organic Rice Commodity in Thailand

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Abstract The objective of this study was to towards the growth of the Thai Organic rice industry: An evaluation of consumers' behavior and barriers to organic rice consumption in Thailand. The questionnaire was collected from 223 rice growers using simple random sampling by using the formula of Taro Yamane with 5% variation. The descriptive and inferential statistics were used to answer the research purpose, such as mean percentage, ANOVA statistical analysis. This research found that; confidence in the 'organic-label', cheaper price, quality, nutritional value, range of organic products, accessibility and availability are the key deciding factors to purchase organic rice by consumers. Lack of trust in the authenticity of organic products is a key barrier and farmers needs to understand the certification and quality assurance processes to help them overcome this hurdle. Price is a significant motivator to purchase, as such, initiatives to increase efficiency in production and encourage farmers to plant more pest-resistant/high yielding rice variety is critical. The government certification programme needs to be standardize and utilize innovative technologies including the creation of national 'kite-mark' which provides the ability by the consumers to trace the origin of rice products (e.g. QRcode, augmented reality) to build trust in organic rice products. The research presented underpin the relevance of understanding the extrinsic and intrinsic motivations of consumers' satisfaction to buy organic rice and how this can be used to better inform the development of Government policies.

Keywords organic agriculture, consumer preference, quality rice

INTRODUCTION

The Rice is the staple food for more than half of the world's population and its cultivation, processing, marketing, and its trade influences the livelihoods of billions of peoples around the world (Oyoshi, 2016). For over 700 million Asians who live on less than one (U.S.) dollar a day, rice accounts for nearly 70% of their food intake. In these countries, up to 40% of their income nationally is associated with rice production and trade and up to 80% in rural areas (Sangbuapuan, 2013). In most South-East Asian countries, for example, Thailand, the rice industry (farming, marketing, and trade) is a major employer and contributor to the national economy. As highlighted by the Mekong Common (2016) maximizing the benefits of rice production and trade is of paramount importance for local communities and individuals in Thailand (Mekong Common, 2016). The Thai government through its 20-year strategic plan (2017-2036) has recognized that rice production and trade is not only essential to maintain its economic wealth but is an integral component of ensuring national food security and sustainable rural economic growth (FAO, 2018). As such agriculture growth, especially rice production and trade continue to be one of the government's high priority national agenda according to the Office for Agriculture Economics's report (2017). One strategy to achieve agricultural growth is to increase the production of premium

rice and rice-products that attracts a higher farm-gate price that is of direct benefit local farmers increasing their income. Increasing the productivity of organic rice which is marketed as a premium product and attracts higher price is one the Thai government's strategies (Suwanmaneepong, 2020). As highlighted by the Office of Agriculture Economics (2020), the national agricultural strategy promotes; an increase in production using more sustainable practices, better food safety and enhance national economy through exportation. As a result, many provinces initiated new and large-scale organic food production and processing projects as part of the national agenda and to capitalize on financial incentive being offered by the government (Thanawong et al., 2014). However, understanding the demand for these organic rice products by the Thai public is poorly understood and the Thai government needs to gain a better understanding of consumers' behaviour and barriers to organic rice consumption to drive intervention strategies (Chuasuwan, 2018).

OBJECTIVE

The objective of this study was to towards the growth of the Thai Organic rice industry: An evaluation of consumers' behavior and barriers to organic rice consumption in Thailand.

METHODOLOGY

Data Collection

Data collection was undertaken in Surin province of North-eastern Thailand. The province was chosen as results of it being the leading organic rice-producing area as well as Jasmine rice production.

Data Analysis Descriptive statistics were applied to analyses percentage, arithmetic mean and standard deviation. To test the differences between opinions in organic products purchase and F-test statistics were conducted, after a test of normality was conduct and the conditions satisfied. A significance level of $p < 0.05$ was set for statistical significance. Analysis of variance (ANOVA) was used to determine the differences between annual incomes of focus groups. The goal of the analysis is to test for differences among the means of the levels and to quantify their differences. The dependent-samples t-test was used to determine consumer's difference in attitude, willingness and perception between the different factors. It compares the means of two variables, computes the difference between the two variables for each case, and examines to see if the average difference is significantly different from zero (Mcclave and Benson, 1988). Thematic analysis was done on the data collected using focus groups (Braun and Clarke, 2006).

RESULTS AND DISCUSSION

Table 1 highlights the demographic characteristic of all the respondents surveyed using the questionnaire. Approximately age of the respondents were 23%less than 31 years old, 37% between 31-40 years old, 30% from 41-50 years category and 10% were more than 50 years old. Comparatively, the total sample comprised 66% females and 34% males. The data is naturally skew towards more females, who traditional are the ones who are the main purchase decision-makers in households. Respondent's educational level was categorized into primary school, secondary school, college or university and others. Approximately 6% of respondents attended primary school, 15% secondary school, 73% have attended university/college and 6% fall into the last category of others. The respondents' range of income was categorized into four groups: Less than 15,000 Baht, 15,000-30,000 Baht, 30,001-50,000 Baht, and more than 50,000 Baht. About 26% of the respondents earned less than 15,000 Baht, 31% earned between 15,001-30,000 Baht, 19% 30,001-50,000 Baht and 24% earned over 50,000 Baht. The occupation category was divided into six categories; namely, business, private, housewife, retired, students and others. The results

showed that 33% of the respondents fell into the private job category, and 27% were housewives (Table 1).

Table 1 Demographic characteristics of respondents

1 USD = 30 THB

n =233

Attribute	Percentage (%)
Age	
Less than 31	23.0
31-40	37.0
41-50	30.0
more than 50	10.0
Mean 41.9, Max 56, Min 22	
Gender	
Female	66.0
Male	34.0
Education level	
Primary	6.0
Secondary	15.0
College/University	73.0
Others	6.0
Annual Income (Thai currency)[1]	
Less than 15,000	26.0
15,000-30,000	31.0
30,001-50,000	19.0
More than 50,000	24.0
Mean 48,465.23, Max 350,000 Min 4,500	
Job or profession	
Business	10.0
Private	33.0
House wife	27.0
Retired	11.0
Student	9.0
Others	10.0

Table 2 The reasons of the respondents for not buying organic products

Statement	Agree (3)	Disagree (2)	Don't know (1)
Unaware of organic food	7.1	28.6	64.3
Nothing beneficial to justify a higher price	10.0	10.7	79.3
Don't trust the label/don't think it is really a certified organic food	8.6	12.9	78.5
Non-organic food is hygienic/safe enough	12.9	11.4	75.7
Too expensive	10.7	7.9	81.4
Too difficult to get	15.0	10.0	75.0

On the other hand, the reasons for not buying organic products (Table 2) are as a result of lack of awareness or insufficient information which is perceived as an important issue. About 7.1% of the respondents agreed, over the lack of awareness of organic rice products while 28.6% disagreed and 64.3% said they don't know. Regarding the trust on certification labels or certified organic food, 8.6% agreed that don't trust the label/don't think it is really a certified organic food while 12.9% disagreed and 78.5% indicated "I don't know". On the respondent's response (either negative or positive) regarding health and environmental issues, approximately 10.7% disagreed with the statement and believed that there is nothing beneficial to justify a higher price against 10.0% who agreed on the same statement. 79.3% do not know. Non-organic food hygiene/safety-

related issues while 12.9% agreed. 11.4% disagreed Of the respondents, 10.7% agreed that it is too expensive to buy, but 7.9% disagreed and 81.4% responded: "don't know". About 15% agreed and 10% disagreed gave their reasons as too difficult to get or purchase (Table 2).

Table 3 summarizes consumers' perceptions and attitudes toward organic rice in our study. The results of analysis of variance (tests) revealed that those unaware of organic food group topped the six-point scale. This implies that the majority of males are comparatively unaware of organic food, nothing beneficial to justify a higher price, don't trust the label/don't think it is really certified organic food, non-organic food is hygienic/safe enough, too expensive, too difficult to get organic rice. Based on t-test equal variances not assumed, quasi Sig >.05 was not statistically significant all six point scale.

Table 3 Summary of consumers' perception and attitude towards organic rice

Statement	Gender				t	p
	Female		Male			
	$\overline{\chi}$	S.D.	$\overline{\chi}$	S.D.		
Unaware of organic food	2.924	0.965	3.088	0.933	0.814	0.418
Nothing beneficial to justify a higher price	2.287	0.855	2.176	0.833	0.622	0.535
Don't trust the label/don't think it is really certified organic food	2.863	1.135	3.205	0.977	0.494	0.138
Non-organic food is hygienic/safe enough	2.197	0.915	2.382	0.921	0.957	0.341
Too expensive	2.848	1.153	3.117	1.174	1.099	0.275
Too difficult to get	2.151	0.915	2.500	1.080	1.695	0.093

Notes: *p-values* (*p*) *are for the respective tests of standard deviation* (*S.D.*) *difference between consumer's perception and attitude towards organic rice*.

Table 4 Compare between income and consumers perception towards organic rice

Items	Income								F
	<15,000		15,000-30,000		30,001-50,000		> 50,000		
	$\overline{\chi}$	S.D	$\overline{\chi}$	S.D	$\overline{\chi}$	S.D	$\overline{\chi}$	S.D	
Less expensive	2.846	1.189	3.096	1.193	2.842	1.258	3.041	1.160	0.310
More widely available in the market	2.846	1.155	2.935	1.123	3.000	1.154	3.000	1.103	0.267
More assortment availability	2.923	1.092	3.032	1.139	3.052	1.129	2.875	1.191	0.192
Better appearance and taste	2.384	0.941	2.354	0.950	2.315	0.820	2.291	0.858	0.154
More trust to origin/ production	2.538	1.139	2.709	1.101	2.210	1.031	2.416	1.059	0.958
Good for health	3.000	1.095	3.032	1.196	2.894	1.328	2.750	1.293	0.668
Others	2.461	1.139	2.387	1.308	2.421	1.216	2.333	1.203	0.104

Table 4 The data in Table 4 indicates that consumers tend to purchase more organic food if it is less expensive, for the income group earning < 15,000 baht, between 15,000 and 30,000 baht; between 30,001 and 50,000 baht, and those earning > 50,000 baht, However, respondents with income are more the satisfaction to buy if the prices are less expensive which means higher price elasticity and between income and consumers perception towards organic rice. Based on F-test Equal Variances not assumed, quasi Sig >.05 was not statistically significant all items.

The data showed that private-sector employees constitute 33% of the respondents and housewives 27%. Most of the respondents (73%) have a college or university education. It should be noted that Surin town though a small rural provincial capital, is home to three universities. Similarly, a previously published study (Sangkumchaliang and Huang, 2012) showed that in the rural provinces of northern Thailand, most of the organic purchasers have college degrees or higher. This high-level awareness could be due to the fact that Surin province is one of the top organic farming areas in Thailand but also has quite well developed and organized organic marketing system. Hence, people support the organic farmers as much as they could afford as organic food is much more expensive than non-organic food. From the survey, their main motivating reasons for buying organic food are food safety, healthy, good taste and good nutrition. Consumer preference for organic food is based on the general perception that organic products have more desirable characteristics than conventionally grown alternatives (Tsakiridou et al., 2008; Magistris and Gracia, 2008). Numerous research (e.g. Bonti-Ankomah and Yiridoemm, 2006; Roitner-Schobesberger, 2006; Sangkumchaliang and Huang, 2012) highlighted that the main reason for buying organic foods is the perception that they are generally safer, healthier and environmentally friendly than conventionally produced food. Providing training to farmers on safe practices, certification, how to maintain organic status and marketing of the nutritional value of their rice will help keeping their business profitable. Extension officers helping farmers to better understand consumer preferences and attitude is key to help them market their product more effectively.

From this research the main grouses are that organic food is too expensive, and consumers are doubt full about the certifications and labelling. Bonti-Ankomah and Yiridoe (2006) suggested that the relatively high "price- elasticity" of organic products is because of consumers' high sensitivity to price changes, which predominantly contributes for them rejecting organic products. Government policies therefore needs to be developed to encourage more funding of the organic rice sector. In the short-term subsidizing the cost, equipment, strengthening local cooperatives and provide farmers with mechanism (for example setting-up of online market place/portals, warehousing facilities) to sell their product directed to market (reducing the number of intermediator channels) may be viable solution. In the long-term research in for example more "pest-resistance" strain of rice, "organic- friendly" weed control, smart-technologies to monitor and optimize production, improvement in harvesting technologies are essentials. Developing an extension strategy to address the use of technologies and more effective pest/week control are integral in reducing price of organic rice and increasing production (Nareerut et al., 2020; Nuttavuthisit and Thøgersen, 2017; Weisberg et al., 1996).

This research found that the four principal factors that boost the popularity of organic food are: (1) cheaper price, (2) sustaining the quality of the produce in accordance to good health and nutrition requirements, (3) production of a variety of organic products, and (4) increasing its accessibility and availability to be more competitive against conventional food products as similarly suggested by Bonti-Ankomah and Yiridoe (2006). By increasing the organic market share and hence stimulating bigger production volumes, the economy of scale kicks in to reduce the unit production cost and retail price even lower. This will create a multiplier effect to produce even higher quantities and greater varieties of organic food. There will be more wholesalers and retailers in the supply chain to make it cheaper and more widely available. This cannot happen without significant investment in the development of better pest resistant and high yielding variety. The failure of Thailand rice to win top awards for the development of more high yielding organic variety in recent years, is an indication of the research and development work require by the Thai agriculture ministry (Ploenpotea, 2019). Farmers, needs to be trained and make aware of the best way to use these varieties and utilise more innovative methods for example smart farming technology to increase efficiency and farms. The role of extension officers is key in providing this education and training, but these need increase in investment by government to facilitate this. As such, we recommend that government continues to invest and subside farms that wishes to switch to organic farming and put in place more research and development initiative to develop better rice variety to improve productivity and efficiencies that will encourage more farmers to take up organic farming, which some currently view as not being financially viable.

CONCLUSION

The consumption of organic food is steadily increasing because of concerns over environmental and health issues associated with food production. The higher consumer interest in organic food products is attributed to the growing demand for food free from pesticides and chemical residues. It is evident that organic food is popular and has excellent potential in Surin province. Most consumers agree that organic food has many advantages over conventionally grown food for reasons of food safety, chemical-free and better taste and nutrition. Many consumers in Surin province are aware of organic rice, and approximately 66% have purchased organic food before and still purchase it.

This research found that the principal factors that boost the popularity of organic food are; confidence in the 'organic-label', cheaper price, sustaining the quality of the produce in accordance to good health and nutrition requirements, production of a variety of organic products, and increasing its accessibility and availability to be more competitive against conventional food products. Government policies need to be better geared towards raising the awareness of the benefit of organic food products to a more diverse group beyond the typical consumers (female, with university education and high-income earners). Price is a significant constraint to consumer switching to organic rice purchase. Government policy (including availability of funding/loans, ability for farmers to purchase land, subsidies and education programme for farmers development better farm management practices) needs to be strengthened and continued in order to encourage more farms to switch to organic rice production. Extension programme will play a key role in educating famers and help them to better produce and market products suitable for the consumers. By stimulating bigger production volumes, the economy of scale kicks in to reduce the unit production cost and the retail price even lower. This will create a multiplier effect to produce even higher quantities and greater varieties of organic food. There will be more wholesalers and retailers in the supply chain to make it cheaper and more widely available. This research also highlights that trust in the 'organic rice' label is also a major barrier to purchase. Organic Rice is not only recognized and popular in the urban cities but also in the rural provinces with higher exposure to higher education, information and involved in organic production. More considerable attention, effort, resources and better policies from all stakeholders can popularize organic products to be more affordable, widely available and trusted to consumers.

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