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Comparing Consumer's Awareness, Attitudes and Perceptions towards Genetically Modified Foods (GMFs)

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Abstrak

Genetically Modified Foods (GMFs) has been a matter considerable interest and worldwide public controversy. Due to the world's fastest growing recognition that addresses food safety issues and other uncertainties. In order to solve this problem, conducted research is appropriate to evaluate the consumers' awareness towards the existing of genetically modified foods in the urban and rural area in Sarawak. This study conducted to identify the level of awareness towards consumers because they had little knowledge on genetically modified foods and they also cannot assess genetically modified foods by themselves. Furthermore, this study will provide the firm's top management to more concern about genetically modified and also provides knowledge for the further research. A 46 structured questions consumer survey has been prepared with a total 351 respondents from urban and 100 respondents from rural had been collected emphasizing on awareness of the consumers about genetically modified foods, the acceptability of GMFs by consumers and legislations and information sources were assessed in the questionnaire. The results show that the level of genetically modified food in both urban and rural area is very low. Consumers failed to indicate or identify its appearance due to lack of labeling and information in packaging. The study showed that the consumers were not aware which products contain genetically modified despite living in urban or rural areas. Since GMFs will be merging in the future, there is need finding out the consumer's awareness, attitudes, and perceptions toward GMFs. This study will provide a better understanding of the company, marketer, and consumers on the level of consumers toward GMFs. Moreover, by identifying awareness, attitudes, and perceptions allow the companies and marketers to fulfill the needs and wants of consumers of difference segment as well preferences.

Keywords: consumer attitude; perception; genetically modified foods

1. Introduction

The production of genetically modified foods has been a matter considerable interest and worldwide public controversy. The development of genetically modified foods has involved scientists and regulator much more than economists. Recently, genetically modified foods have been growing recognition which that to address food safety issues and other uncertainties where expertise from other disciplines is deemed important (Appell, 2001).

GMF is a set of gene technology that makes changes in the machinery of such living organisms through recombinant DNA technology and the resulting organism is said to be "Genetically Modified (GM)", Genetically engineered" or Transgenic" (Bawa & Anilakumar, 2013). GMFs include plants and animals that have already undergone gene manipulation (Tanius & Seng, 2015). GMFs typically products that are consumed in daily life such as milk and tomato increase its complexity. There are several categories in which GMFs exist which include soybean, canola, potatoes, eggplants, strawberries, corn, lettuce and others, including medicines and vaccines, foods ingredients, feeds and fibers (Costa-Font, Gil, & Traill, 2008). According to Bawa and Anilakumar (2013), people will generally not consume foods associated with negative perceptions and uninformed concerns. Some even avoid GMFs associated with negative environmental impact in the production processes or agricultural practices, and perceptions that there is uncertainty associated with unintended human or animal health effects. Majority of British consumers think that GMFs are unsafe. Demands for them in most supermarkets in the UK have slowly phased them out. Meanwhile, European consumers demand minimum labelling, transparent and independent safety testing of all GMFs (Pusztai & Bardocz, 2011).

Biotechnology is the main technologies which could propel Malaysia towards developed nation by 2020. The activities are categorized into seven (7) namely food, animal, plant, bio – pharmacy, molecular biology, and industry or environment biotechnology (BIOTEK, 2008). The aim of this study is to identify the level of consumer's awareness, attitudes, and perceptions towards genetically modified foods between rural and urban consumers.

Awareness

There are many ways or tools to get the consumer awareness towards GMFs through mass media, labelling and government information. The knowledge about GMFs in Malaysia is still very low. Consumer failed to identify its appearance due to lack of labelling in packaging although there are lots of GMFs available in the market. Consumer's awareness and availability of information are interrelated and also will affect the acceptance of GMFs (Tanius & Seng, 2015). The key factor that influences consumer acceptance of GMFs is information and awareness. Consumers who are better informed about GMFs are more likely to perceive the risks of GMFs and they are also more likely to perceive the benefits (Kimenju, De Groote, Karugia, Mbogoh, & Poland, 2005). According to Amin, Azad, Gausmian, and Zulkifli (2014), with the technology advancement and education, some of the consumers have the awareness of the GMFs existence. There are needed to understand Malaysian consumer awareness towards GMFs products since there are growing concerns locally and globally related to their health, finance, and environmental safety. In addition, television is the major information source GMFs (Zhang, Huang, Qiu, & Huang, 2010), and consumer in Kenya was aware or know about GMFs more from television, radio, and newspaper (Kimenju et al., 2005). Therefore, mass media is another key factor that influencing the awareness of the consumers towards GMFs.

Attitudes

Attitudes can be used to explain why some people support particular social policies or ideologies. A person who favours a particular policy is said to hold positive attitudes towards it, whereas someone who opposes it would hold a negative attitude. Generally, the concept of attitudes provides the framework for social-scientific research in this area. Psychologists define an attitude as a tendency to evaluate a particular entity with a certain degree of favour or disfavour (Domingo & Bordonaba, 2011). Apart from that, UK consumer attitudes to GMFs in food and the extent to which these attitudes translate into the willingness to pay to avoid these products. Attitudes towards organic food are found very useful indicator if attitudes towards GMFs. Significant differences are found between attitudes to GMFs in which plants are modified by the introduction of genes from other plants and those in which plants are modified by the introduction of genes from the animals and plants (Burton, Rigby, Young, & James, 2001).

Besides that, mainly consumer in the Europe Union and Japan has negative attitude compare to the United States where the population willing to accept GMFs (Tanius & Seng, 2015). Meanwhile Chinese consumer in Malaysia have a positive attitude towards the GMFs even though they only have low knowledge about it. Therefore, in a demographic society where choicely exists, people will not consume foods that they associate with some negative attribute. Various factors may contribute to concerns. These include beliefs that there is potential for negative environmental impact associated with production processes or agricultural practices and perceptions that there is uncertainty associated with unintended human and animal health effects (Domingo & Bordonaba, 2011).

Perception

People's perceptions about food hazard are also considered. In other words, risk perception might be regarded as a specific form of an attitude towards a specific attitude object i.e., a potential hazard (Domingo & Bordonaba, 2011). The GMFs in Malaysia have slowly been declared and this brought up an issue that origin of the products that we used in daily life. There is a need to identify Malaysian consumers' perception towards GMFs because there related to it such as health, finance, and environmental safety (Siti Husmila, 2016).

On the other hands, in Klang Valley, Malaysia has determined the acceptance level of the consumers towards GMFs which from the data collected from 1227 respondents, 56% of them had a negative perception and totally reluctant towards the GMFs and them more unwillingness to purchase the GMFs (Amin et al., 2014). Thus, modern biotechnology has been given priority by the Malaysian government to spearhead the country's economy and also modern technology products from other countries are slowly coming in. The successful development and commercialization of modern technology products depend heavily on public acceptance (Amin et al., 2010).

2. Methodology

Convenience sampling was used, and surveys were conducted in Kuching and Mukah, Sarawak. A set of questionnaires survey was prepared, and data were collected via a self-administered survey that was distributed to people who agreed to participate in. A total of 351 and 100 respondents from Kuching city and Mukah district in Sarawak, Malaysia, respectively. A total of 44 questions were asked to participants in the survey, and seven of them related to the respondents' demographic characteristics such as gender, age, marital status, race, religion, residential area, and spending range

weekly. In addition to the demographic variables, the questionnaire also included main sections such as consumer's awareness, consumer's attitudes and consumer's perception towards Genetically Modified Foods (GMFs).

Each question was prepared as closed-ended to be fully answered by the respondents. Some questions 'No idea' option was used to prevent respondents from answering the questions that they did not know. Dichotomous and five-point Likert scale (1 indicates strongly disagree and 5 indicates strongly agree, vice versa) were used to compares consumer's awareness, attitudes, and perceptions towards genetically modified foods. SPSS (Statistical Package for Social Sciences) was used to process the survey results. Firstly, Cronbach-Alpha test used to check on the sensitivity and reliability of the instruments. Then using the descriptive analysis to fulfil the main aim of the study.

3. Results and Discussion

Sensitivity test has been carried out on the measurement tools and as a result, all the three variables have resulted strong significant, as shown in **Table 1**. Awareness with 0.803, attitudes 0.983 and perceptions 0.808 for the urban area in Kuching. Similarly after been repeated in the rural area with proper supervision, Mukah score 0.941 with awareness, 0.943 for attitudes and 0.908 in perceptions. In which proven the measurement tools was the strong to support the results of respondents and reliable to be used to represent the population.

Table 1: Sensitivity Analysis

Variables	Items	Cronbach Alpha Urban (Kuching)	Cronbach Alpha Rural (Mukah)
Awareness	20	0.803	0.941
Attitudes	9	0.983	0.943
Perceptions	8	0.808	0.908

A total of 351 respondents have been collected for Kuching and 105 respondents for Mukah filling the profile of their demographic which can be referred **Table 2**. With most respondents in Kuching are female, 29.1 percent male and 70.9 percent female. Meanwhile, Mukah has an equal portion with 49.5 percent male and 50.5 percent female. In comparison, respondents in Kuching are mostly in between age 31 till 40 years old with 28.49 percent. Mukah in another hand, 21 till 30 years old represent the most respondents with 36.2 percent. Most of the respondents are married with 71.2 percent and remaining 28.8 percent single in Kuching and 56.2 percent single and 43.8 percent married in Mukah. 37.9 percent of respondents are Malay, followed by 27.1 percent Iban, Bidayuh 13.4 percent, Chinese 9.7 percent and others 12 percent. With most respondents Melanau in which the district is known of, 45.7 percent are Melanau (others) followed by Malays 30.5 percent, 9.5 percent Iban, 7.6 percent Bidayuh, 6.7 percent and Chinese. Majority respondents are Muslim with 41.3 percent representatives in Kuching and followed 72.4 percent in Mukah district. Spending capabilities of the rural areas are lower than urban area as the respondents in urban spend around RM51 above weekly with 30.5 percent and rural area respondents with 38.1 percent average spend RM21 till RM30 weekly on their shopping.

Table 2: Demographic Analysis

	Kuching City		Mukah District	
Variables	No. of Respondents	Sample (%)	No. of Respondents	Sample (%)
Total	351	100	105	100
Gender				
Male	102	29.1	52	49.5
Female	249	70.9	53	50.5
Age				
20 and below	40	11.4	25	23.8
21 - 30	77	21.93	38	36.2
31 - 40	100	28.49	27	25.7
41 - 50	60	17.1	10	9.5
51 and above	74	21.08	5	4.8
Marital Status				
Single	101	28.8	59	56.2
Married	250	71.2	46	43.8
Race				
Malay	133	37.9	32	30.5
Iban	95	27.1	10	9.5
Bidayuh	47	13.4	8	7.6
Chinese	34	9.7	7	6.7
Others (Melanau)	42	12	48	45.7
Religion				
Islam	145	41.3	76	72.4
Christian	199	56.7	24	22.9
Buddha	2	0.6	5	4.8
Hindu	5	1.4	0	0
Others	0	0	0	0
Shopping Spend (Weekly)				
RM10 - RM20	119	33.9	10	9.5
RM21 - RM30	28	8	40	38.1
RM31 - RM40	28	8	27	25.7
RM41 - RM50	69	19.7	14	13.3
RM51 and above	107	30.5	14	13.3

Table 3 describes the level of awareness of the consumers, 1.50 mean score respondents answers toward NO for Kuching and for Mukah, is even higher nearly completely unaware of GMFs with 1.64 mean score respectively represent the local community. In addition, Attitudes mean score is slightly lower for Mukah with 3.34 compared to Kuching with 3.63 mean scores with significantly shows the consumer's attitudes in the city (Kuching) are more responsive towards GMFs rather than rural (Mukah) area consumers. But still, it shows the consumers really want to know about GMFs in their daily consumptions. Perceptions of the public consumers for Kuching and Mukah both shows the consumers are very keen to know more about GMFs from all the respective body and government agencies with a mean score of 3.92 for Kuching and 3.72 for Mukah. This level of response must be answered to not only informed the consumers on what they were eating or consume additionally government agencies involvement must step in to secure such matter in relatively regarding information on GMFs spread to the mass consumers in Sarawak as general.

Table 3: Mean Test

Variables	Urban (Kuching)	Rural (Mukah)
Awareness	1.50	1.64
Attitudes	3.63	3.34
Perceptions	3.92	3.72

4. Conclusions

Further investigation must be carried to explore more on the consumer awareness of the facts GMFs have its pros and cons as concluded on the studies, the majority of consumer is unaware of the GFMs existence in their marketplace. The comparative results from the consumers in this study shows the local respondents are very positive in term of how much they're aware the existence of GMFs in their daily market. With a very intriguing response from the consumers on their attitudes to know more as well their perceptions on the matters at hand to be handled seriously by the producers and government agencies. Possibilities consumers response otherwise if they knew of GMFs where consumers in Germany shows declined in consumption from 47 to 22 percent as they knew the product they consume are GMFs in between 1996 to 2010 (Gaskell et al., 2010)

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