CONSUMER AWARENESS TOWARDS
GENETICALLY MODIFIED (GM) FOODS

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ABSTRACT

The production of genetically modified (GM) foods is attracting the attention from the whole world. The debates on the topics of GM foods in terms of ingredients, functions, benefits, awareness, attitude and acceptance are increasing dramatically. The sample of this research is a total of 100 food consumers who are selected randomly from Klang Valley using a questionnaire survey. Information gathered from consumers includes their level of awareness towards GM foods and their attitude, perception and acceptance towards GM foods. This research also tried to identify if there are any differences in perception among genders, age groups, educational levels, and occupations on attitude, perception and acceptance of GM foods. The result shows that the respondents have a low awareness level towards GM foods. At the same time, majority of them hold negative attitude, perception and acceptance towards GM foods. This study also found that there are significant differences among age groups, genders and races in terms of their attitude and perception towards GM foods. The study recommends that consumer awareness towards GM foods should be increased by the government through promotion, establishing a voluntary GM food labeling system, and increasing media coverage about GM foods.

Keywords: GM foods, awareness, perception, attitude, consumers.

INTRODUCTION

Due to the innovation of latest technology and techniques, the use of gene technology in agriculture is dramatically increasing in the world (Bashir Ibrahim, Golnaz Rezal, Zainalabidin Mohamed & Juwaidah Sharifuddin, 2013). Gene technology is used to exclusively change the genes of one organism to another, resulting in sustainable food production to benefit the world's rapid growing population. Genetically modified (GM) foods consist of food producing plants and animals which have experienced gene manipulation. The overall concept of genetically modified food is changing the traits of genes in animals and plants in a way that results in higher production. This has enabled GM foods to become an emerging market segment and the most popular in food product development (Latifah Amin, Jamal Othman, Goh & Kamaruzaman Jusoff, 2011).

Some of the foods that we consume daily might have been genetically modified. For example, cotton, rice, soybean, tomato, corn, potato, papaya, meat, and many more have been genetically modified. According to International Service for the Acquisition of Agri-biotech Application (ISAAA) report 2012, the planting of GM crops in the world is increasing over the years, from 134 million hectares in 2009 to 170.3 million hectares in 2012. In Malaysia, the government is forecasted to be an active venture in the biotechnology industry by 2020. In fact, Malaysia imports a huge amount of GM foods from the United States, which is the market leader of GM foods with 69.5 million hectares of areas planted with GM crops.

This paper discusses the effects of product labeling, consumers' past purchasing experience, and exposure to mass media on genetically modified foods to consumers' awareness towards genetically modified foods in Malaysian market. This enables us to have a closer look at the areas of improvement for the policymaker to increase consumer awareness towards GM foods in Malaysia. This focus is important so that GM crops can develop in Malaysia and bring benefit to the society. If the awareness towards existing GM foods is low, it is predicted that the development of GM crops will become more difficult to succeed. In short, this study is essential as it investigates consumer awareness towards existing GM foods in Malaysia and its results help to facilitate the future development of biotechnology and GM crops in Malaysia.

The objectives of this study are: 1. to identify the level of consumer awareness towards genetically modified foods; 2. to determine consumers' attitude, perception and acceptance towards genetically modified foods; and 3. to identify if there is a mean difference between demographic groups in terms of their attitude, perception and acceptance of GM foods.

2. LITERATURE REVIEW

2.1 Genetically Modified (GM) Foods

GM foods are plants and animals that have already been genetically manipulated. The method of alteration of the trait of animals or plants was aimed to make them more productive (Kamariah Ismail, Khairiah Sechod, Saravathi Vivishana, Wafa Khurram & Syed Khurram Ali Jafri, 2012). For example, cotton, rice, soybean, tomato, corn, potato, papaya, meat, and many more have been genetically modified. The international environmental groups such as Greenpeace do not support the view that GM technology is safe for human or environment. Malaysia has undergone the genetic modification of plants since early 1990s, with the support from international bodies such as the Australian Centre for International Agriculture Research (ACIAR), International Service for the Acquisition of Agri-biotech Applications (ISAAA) and the Rockefeller Institute. It focuses on plants' disease resistance ability and post harvest quality. The latest effort includes identifying a set of molecular markers to differentiate the weedy and cultured rice (Latifah Amin, Jamal Othman, Goh & Kamaruzaman Jusoff, 2011).

In Malaysia, base on the research done by T. Nguye et al. (2008), out of 60 food and feed samples that contain soybean and maize, it was found that most of the soybean and maize contain GM components. This indicates that GM foods exist in Malaysia even though Malaysia does not produce genetically modified crops for these products. Malaysia was the first country in Southeast Asia that approved the import of a plant biotechnology product, i.e. Roundup Ready soybean. There are five approved transgenic crops available in Malaysia, namely Roundup Ready soybean, MON 810 maize, MON 863 maize, and NK 603 maize for food, feeding and processing purpose (Latifah Amin, Jamal Othman,

Goh & Kamaruzaman Jusoff, 2011). They also stated that genetically modified (GM) products have entered Malaysian market without labeling. 85 food samples such as tofu, fucuk and tempe were found positive to GM content testing.

2.2   Awareness towards GM Foods

Even though GM foods exist in Malaysia but previously these products entered the country gradually without being declared as genetically modified (GM) foods. Companies such as DuPont and Monsanto control 90% of GM foods in the United States. They supply soybeans and corn seeds to the whole world (Netto, 2000). However, Malaysian consumers have only a low level of awareness towards the existence of GM food in Malaysia. But, with advancement in technology and education, some consumers are already aware of the existence of GM foods. They try to increase the awareness of other consumers towards the same issues. This shows that there is a need to understand Malaysian consumers' awareness towards GM food products since there are growing concerns locally and globally about the effects of GM foods on human health, finance and environmental safety (Bashir Ibrahim, Golnaz Rezal, Zainal Abidin Mohamed & Juwaidah Sharifuddin, 2013).
The risk of GM foods is still debatable. There is a huge discrepancy from EU and Japanese consumers concerning the foods produced using GM methods after they are aware and have understood the concept of GM organisms. In Europe, the debate on the genetic modification issue has been vigorous and European consumers are unwilling to assume the risks associated with GM foods. Many retailers in Europe have promised that they will not sell food products that contain GM organisms. In the United States, consumer reaction to GMOs has been more muted. Some other surveys have shown that majority of Americans support the use of biotechnology (Grunert, Bredahl, & Scholderer, 2003).

There are many ways to improve consumer awareness of GM foods such as through labelling, mass media, and government information. Malaysians' awareness level about GM foods is still low. A lot of GM foods are available in the market but consumers fail to detect their appearance due to the lack of labeling in packaging lacking of information that affects their acceptance of GM foods. Normally, consumers who have sufficient information about GM foods are more concerned about the side effects of genetic change than the benefits from food. European Union, Japan, and New Zealand are the examples of developed countries that have implemented mandatory labeling policy. The Chinese government has also established a mandatory labeling regulation in 2002, stipulating that all products containing GM ingredients should be labeled after March 2002. The labeling regulation is more lax in the United States. The currently announced international labeling policies are relatively strict except in the United States and Canada, which coincides with the consumer acceptance in the two countries (Chen & Harris, 2006). Malaysia's Ministry of Health (MOH) recently posted new biotech labeling requirements. Those products containing not more than three percent of genetically modified organisms will not be required to such label on the packaging (Cottrell & Chang, 2010).

Mass media is another key factor that influences the awareness of consumers towards GM foods. Kimenju et al. (2005) studied 640 consumers in Kenya. They found that 38% of the respondents are aware or know about GM crops. Majority of them knew about it from the television, radio and newspapers. Some of them learnt about it in schools and 34% said they got to know about it from the newspapers. In China, television is the major information source concerning GM foods (Zhang et al., 2002).

2.3   Attitude towards GM Foods

Consumer attitude towards GM foods differ from one country to another. Majority of the consumers in Europe Union (EU) and Japan hold a negative attitude towards GM foods. On the contrary, the population of the United States are more willing to accept GM products. In Malaysia, a study done by Bashir Ibrahim, Golnaz Rezal, Zainal Abidin Mohamed and Juwaidah Sharifuddin (2013) found out that Chinese consumers have a positive attitude towards GM foods even though they possess only a little knowledge about them. Meanwhile Kamariah Ismail et al. (2012) studied 190 respondents and their result showed that consumers in Johor Bharu have a negative attitude towards GM foods and they are concerned about the risk attached to GM foods.

A study conducted by McCluskey et al. (2003) on 400 respondents found out that only 3% of the respondents are willing to purchase GM noodles at the same price of non-GM noodles. Another 17% of the respondents said that they would be willing to purchase GM noodles only if they are cheaper than non-GM noodles. The remaining 80% of them totally oppose GM noodles and would not purchase it even with a discount in price.

On the contrary, a study done by Kimenju et al. (2005) on 640 of Kenya consumers (2005) showed that 68% of the respondents hold a more positive attitude towards GM foods, and they accept and are willing to buy GM maize at the same price as their favorite maize brand. This shows that Kenya consumers have a high acceptance level towards GM foods.

2.4   Perception towards GM Foods

GM food products in other countries have slowly been declared as GM foods. This brought up an issue about the origin of products. As a result, there is a need to identify Malaysian consumers' perception towards GM foods because there are issues related to their impacts on health, finance and environmental safety (Bashir Ibrahim, Golnaz Rezal, Zainal Abidin Mohamed & Juwaidah Sharifuddin, 2013).

The perception and acceptance level of consumers towards GM foods is different among countries. European consumers place a much higher value on beef from cattle that have not been fed by GM corn compared to American consumers. From a survey in 2000, 97% of Japanese consumers showed a significant familiarity towards the term of "biotechnology". This shows that the awareness level of Japanese consumers has increased. The respondents in Hoban's (Boccaletti & Moro, 2000) perceived GM foods as risky to human health, but only 57% of them will totally rejected GM foods. Boccaletti and Moro (2000) conducted a survey on a sample of 384 people in Italy, and found out that 51.5% of the respondents know about the existence of GM foods in the market. 46% of them positively accept GM foods and 27.5% of them oppose. It is interesting whereby the result also shows that 21% of the respondents are willing to pay higher prices to purchase GM foods.

In Malaysia, a survey was conducted by Latifah Amin et al. (2011) in Klang Valley to determine the acceptance level of the consumers towards genetically modified (GM) foods. From the data collected from 1227 respondents, 56% of them have a negative perception towards GM foods and they will avoid to purchase GM foods.

3.   METHODOLOGY

This study used data collected from a questionnaire survey which was carried out in Klang Valley. A systematic random sampling method was used and the survey was conducted on 100 respondents by using a well-structured questionnaire which consists of four parts. The first part seeks to determine the personal information of the respondents. The second part of the questionnaire tries to evaluate consumer awareness towards GM foods in Malaysia. The third part of the questionnaire consists of a series of questions that evaluate consumer attitude towards GM foods. The fourth part aims to identify consumer perception towards GM foods in Malaysia. A Likert scale of 1 to 5 (1 represents strongly disagree and 5 represents strongly agree) was employed to measure consumer attitude and perception towards GM foods. The data collected for the study was analyzed using SPSS version 16.0. Descriptive statistics, cross-tabulation, T-test, ANOVA and Post Hoc test were employed to analyze the gathered data. The realibity is tested by using Cronbach's alpha.

4.   FINDINGS

4.1   Reliability Analysis

The reliability analysis was used in this study to measure the reliability of 15 variables on consumer attitude and perception toward GM foods by using the Cronbach's Alpha score on 10 respondents. The result shows reliability coefficient of 0.752, therefore the questionnaire consider reliable.

4.2.   Background of Respondents

The result shows that the number of female respondents is 51% meanwhile male is 49%. Chinese respondents contributed 44%, Malay 39% and Indian 17%. Mainly the respondents fall under the age group of 21-30 years old

(80%). Almost 2/3 of the respondents are single (66%) and the rest (34%) are married. In terms of education, 50% of them hold a degree, 24% of them have a diploma and another 23% of them have only secondary educational level. Finally, 26% of the respondents are academicians and 13% of them work under operation. Respondents with jobs related to marketing and administration are 12% respectively. The details are shewn in Table 1.

Table 1: Background of Respondents

Variable	Category	Total	
		Frequency (N)	Percent (%)
Gender	Male	49	49.0
	Female	51	51.0
Race	Malay	39	39.0
	India	17	17.0
	Chinese	44	44.0
Age	15-20 years old	1	1.0
	21-25 years old	26	26.0
	26-30 years old	54	54.0
	31-35 years old	8	8.0
	36-40 years old	8	8.0
	41 years old and above	3	3.0
Marital status	Single	66	66.0
	Married	34	34.0
Educational level	Secondary	23	23.0
	Diploma	24	24.0
	Bachelor Degree	50	50.0
	Master Degree	1	1.0
	PhD	2	2.0
Occupation	Human Resources	5	5.0
	Marketing	12	12.0
	Operation	13	13.0
	Administration	12	12.0
	Finance	8	8.0
	Customer Services	3	3.0
	IT	2	2.0
	Engineering	3	3.0
	Fashion	6	6.0
	Academic	26	26.0
	Others	10	10.0

4.3. Awareness towards GM Foods

As shown in Table, two third of the respondents (70%) said they do not know about genetically modified (GM) foods only 30% of them said yes.

Table 2: Awareness towards GM foods

No.	Question	Yes (%)	No (%)	Total (%)
1	Do you know what genetically modified (GM) food is?	30	70	100

4.4. Knowledge on GM Foods

Table 3 shows that 60% of the respondents said soybean contains GM component and   56.7% of them said corn contains GM component. 50% of the respondents said that GM foods are resistant to pest and to herbicides. It is interesting that only 16.7% of the respondents said rice contains GM component whereas 83.3% of them said no.

Table 3: Knowledge on GM foods (30 respondents)

No.	Questions	Yes (%)	No (%)
1.	Do you know that rice contains GM component?	16.7	83.3
2.	Do you know that potatoes contain GM component?	20	80
3.	Do you know that tomatoes contain GM component?	20	80
4.	Do you know that corns contain GM component?	56.7	43.3
5.	Do you know that soybean contains GM component?	60	40
6.	Do you know that GM foods are resistant to pests?	50	50
7.	Do you know that GM foods are resistant to diseases?	43.3	56.7
8.	Do you know that GM foods are resistant to herbicides?	50	50

Respondents were also asked how they obtain information about GM foods. All the respondents (100%) said they have never heard about GM from TV programs and the government but they have heard about it from someone else and from the internet (76.6% respectively), as well as from magazines (46.7%). With regards to label system, 76.6% of the respondents said Malaysia does not have a voluntary GM food labeling system and they do not see any product labeled as GM food or "Does not contain GM" or "GM free". Only 36.3% of them said that they pay attention to check whether the food is GM food or not before they buy. The details are presented in Table 4.

Table 4: Information on GM Foods (30 respondents)

No.	Questions	Yes (%)	No (%)
[1]	Have you ever seen any product labeled as GM food?	23.4	76.6
[2]	Have you see any product labeled as "Does not contain GM" or "GM free"?	23.4	76.6
[3]	Will you pay attention to check if the food is GM food before you buy it?	36.3	63.7
[4]	In the past 12 months, have you heard about GM foods from the media?	22.7	77.3
[5]	Have you ever heard about GM from any TV programs?	0	100
[6]	Have you ever heard about GM from someone else?	76.6	23.4
[7]	Have you ever heard about GM from the government information?	0	100
[8]	Have you ever read about GM from the Internet?	76.6	23.4
[9]	Have you ever read about GM from the newspapers?	23.4	76.6
[10]	Have you ever read about GM from magazines?	46.7	53.3
[11]	Does Malaysia have a voluntary GM food labeling system?	23.4	76.6

4.5.   Knowledge of Non-aware Respondents on GM foods

Almost all (98.6%) of the respondents said they have never seen any product labelled as GM foods and labeled as "Does not contain GM" or "GM free". All of them (100%) claimed that they have never heard about GM foods from any TV programs, from the government, from the internet, from newspapers and from someone else. They said insufficient government promotion (100%) and the unpopular trend of GM food, a lack of media coverage, and a lack of labeling on products are the reasons causing them not knowing about GM products. Almost all of them (98.6%) said they will seek more information on GM food after this survey.

Table 5 - Knowledge for non-awareness respondents (70 respondents)

No.	Questions	Yes (%)	No (%)
1.	Have you ever seen any product labeled as GM food?	1.4	98.6
2.	Have you ever seen any product labeled as "Does not contain GM" or "GM free"?	1.4	98.6
3.	In the past 12 months, have you heard about GM foods from the media?	2.8	97.2
4.	Have you ever heard about GM from any TV programs?	0	100
5.	Have you ever heard about GM from someone else?	1.4	98.6
6.	Have you ever heard about GM from the government information?	100	0
7.	Have you ever read about GM from the Internet?	1.4	98.6
8.	Have you ever read about GM from the newspapers?	1.4	98.6
9.	Have you ever read about GM from magazines?	2.8	97.2
10.	Is insufficient government promotion the reason why you don't know about GM foods?	100	0
11.	Is the unpopular trend of GM foods the reason why you don't know about GM foods?	98.6	1.4
12.	Is the lack of media coverage on GM foods the reason why you don't know about GM foods?	98.6	1.4
13.	Is the lack of labeling on products the reason why you don't know about GM foods?	98.6	1.4
14.	After completing this survey, will you seek more information about GM foods?	98.6	1.4

4.6   Awareness among Different Demographic Groups

Cross-tabulation analysis shows that male and female respondents have the same level of awareness about GM foods (both are 50%). At the same time, Chinese respondents (80%), single respondents (73.3%), and bachelor degree holders (60%) are more aware of GM foods. The details are shown in Table 6.

Table 6: Background perception toward awareness on GM foods

Gender	Aware (%)	Unaware (%)
Male	50	48.5
Female	50	51.5
Race	Aware (%)	Unaware (%)
Malay	0	55.7
Indian	20	15.7
Chinese	80	28.6
Others	0	0
Marital status	Aware (%)	Unaware (%)
Single	73.3	62.9
Married	26.7	37.1
Educational level	Aware (%)	Unaware (%)
Secondary	10	28.6
Diploma	26.7	22.9
Bachelor Degree	60	45.7
Master Degree	0	1.4
PhD	0.3	1.4

4.7   Attitude towards GM Foods

The findings show that the respondents hold negative attitude towards GM foods. All the respondents strongly disagreed (50%) and disagreed (50%) that GM foods worth a premium price and that they would purchase GM foods even though the price is higher than non-GM foods. More than 70% of them strongly disagreed and disagreed that it is wise to buy GM foods. On the other hand, more than 70% of them stated that they do not mind to pay a bit more to buy non-GM foods, that they would avoid eating GM foods, and that they would choose non-GM foods even though GM food is cheaper. At the same time, near to 70% of the respondents reported that they are reluctant to buy GM foods. The details are presented in Table 7.

Table 7: Attitude towards GM foods (100 respondents)

1- Strongly Disagree; 2 - Disagree; 3 - No Idea; 4 - Agree; 5 - Strongly Agree

No.	Questions	Percent (%)				
		1	2	3	4	5
1.	It would be wise for me to buy GM foods.	41	32	0	25	2
2.	I do not mind to pay a bit more to buy non-GM foods.	6	23	3	43	25
3.	I am reluctant to buy GM foods.	11	17	2	39	31
4.	I would avoid from eating GM foods.	7	19	0	42	32
5.	I would choose non-GM foods even though GM food is cheaper.	5	24	0	36	35
6.	I would choose GM foods even though the price is higher than non-GM foods.	45	55	0	0	0
7.	GM foods worth a premium price.	50	50	0	0	0

4.8. Perception of GM Foods

The results in Table 8 show that most of the respondents hold a negative perception about GM foods. All the respondents agreed and strongly agreed that the government must introduce a voluntary GM food labeling system in Malaysia (76% agreed and 24% strongly agreed), that they have the right to know the ingredients used in GM food production (69% agreed and 31% strongly agreed), and that the media should inform them about GM food (64% agreed and 36% strongly agreed). 82% of the respondents strongly agreed and agreed that GM food is unnatural. More than 70% of them strongly agreed and agreed that the development of GM foods is more about making money than making better food (73%), that GM foods have unexpected side effects (71%), and that GM food should forbidden in Malaysia (75%). Meanwhile, 95% of them stated that they have the right to full labeling of all GM foods.

Table 8: Perception towards GM foods

1- Strongly Disagree; 2 – Disagree; 3 - No Idea; 4 – Agree; 5 - Strongly Agree

No.	Questions	Percent (%)				
		1	2	3	4	5
1.	Genetically Modified (GM) food is unnatural.	0	0	18	41	41
2.	The development of GM food is more about making money than making better food.	5	21	1	51	22
3.	I belief that GM foods have unexpected side effects.	5	24	0	32	39
4.	The government must introduce voluntary GM food labeling system in Malaysia.	0	0	0	76	24
5.	I have the right to full labeling of all GM foods.	0	0	5	56	39
6.	I have the right to know the ingredients used in GM food production.	0	0	0	69	31
7.	The media should inform us about GM foods.	0	0	0	64	36
8.	GM food should be forbidden in Malaysia.	7	16	2	41	34

4.9. Differences among Age Groups, Genders, Marital Status and Educational Levels in Terms of Perception and Attitude towards GM Foods

In order to identify if there is a significant mean difference, the following hypotheses are used:

H1: There is a significant mean difference among age groups in terms of consumer attitude and perception towards GM foods in Klang Valley, Malaysia.

ANOVA analysis shows that there is no significant mean difference between among age groups in terms of consumer attitude and perception towards GM foods in Klang Valley. For age groups and attitude, the p-value is 0.495 (> 0.05). For age groups and perception, the p-value is 0.132 (> 0.05). Therefore, H1 is rejected.
H2: There is a significant mean difference between genders in terms of consumer attitude and perception towards GM foods in Klang Valley, Malaysia.

T-test analysis shows that there is no significant mean difference between genders in terms of consumer attitude and perception towards GM foods in Klang Valley. For genders and attitude, the p-value is 0.529 (> 0.05). For genders and perception, the p-value is 0.610 (> 0.05). As a result, H2 is rejected.

H3: There is a significant mean difference among races in terms of consumer attitude and perception towards GM foods in Klang Valley, Malaysia.

The analysis of variance (ANOVA) table shows that there is a significant mean difference between the attitude of Malays and Indians where the p-value is 0.001 (< 0.05) and between the attitude of Malays and Chinese where the p-value is 0.000 (< 0.05). This means that H0 is rejected and H1 is accepted. The result also shows that there is no

significant mean difference between the attitude of Indians and Chinese towards GM foods because the p-value is 0.093 (> 0.05).

Since there is a significant difference among races in terms of consumer attitude towards GM foods, further analysis is done using Post Hoc test to identify which attitude is the strongest among the three races. In term of perception towards GM foods, the study shows that mean attitude for Malay is the highest = 3.2051, followed by Indian = 2.7479 and the lowest is Chinese = 2.5422. It means Malays' attitude towards GM food is stronger if compared to Indians and Chinese. The details are reported in Table 9.

Table 9: Post Hoc Test
Multiple Comparisons

LSD

Dependent Variable	(I) Race	(J) Race	Mean Difference (I-J)	Std. Error	Sig.	Mean	Std. Deviation
avatt	Malay	India	.45723*	.13033	.001	3.2051	.19052
	India	Chinese	.20569	.12806	.111	2.7479	.59661
	Chinese	Malay	-.66292*	.09862	.000	2.5422	.53769
apperception	Malay	India	.26301*	.12596	.039	4.3365	.20907
	India	Chinese	.20989	.12377	.093	4.0735	.48424
	Chinese	Malay	-.47290*	.09532	.000	3.8636	.54574

*. The mean difference is significant at the 0.05 level.

5. DISCUSSION

In overall, the awareness level among the respondents towards GM food concept is still low. The findings show that 70% of the respondents do not know what GM foods are and are not aware of which products contain GM components even though they are aware about the existence of GM foods. Even though they said they are not aware but they are reluctant to try them and will avoid from buying and consuming them. For those who are aware about GM foods, they too do not support the purchase and consumption of GM foods.

Majority of the respondents have negative attitude towards GM foods. They feel that should be forbidden because they are unnatural and can bring unexpected side effects. They are willing to pay a premium price to get non-GM foods. The respondents are also concern about the labeling of GM products. There stated that they have the right to the full labeling of all GM foods and the ingredients used in GM food production. It is interesting that study found out mmale and female respondents have the same level of awareness towards GM foods.

The result of this study shows that respondents prefer non-GM foods even though the price of GM food is cheaper. This indicates that they are not willing to accept GM foods. In short, it can be concluded that the respondents have low awareness towards GM foods. Besides, they have a negative attitude and perception towards GM foods and are not willing to accept, consume or buy GM foods.

GM foods are an important aspect of future biotechnological industry. Since this study found out that most Malaysians are still unaware of GM foods, the government should take action to promote biotechnology in general and GM foods in specific to the general public. This can help to improve public awareness about the existence and importance of GM foods.

The government can promote GM foods by giving speeches, having campaigns, advertisement, and also by posting relevant information on government websites. Finally, the government must introduce a voluntary GM food labeling system. This enables consumers to differentiate between GM foods and non-GM foods. The voluntary GM food

labeling system should be implemented so that those companies which use imported GM ingredients can inform consumers of their products which contain GM ingredients. This can help consumers who wish to avoid from consuming GM foods to select the right products. Unclear food product labeling can create uncertainty and distrust among consumers towards GM food products.

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