GENETICALLY MODIFIED FOOD AND CONSUMER PURCHASE INTENTIONS: A STUDY IN JOHOR BAHRU

Kamariah Ismail
Management Department
Faculty of Management and Human Resource Management
Universiti Teknologi Malaysia
Malaysia

Khairiah Soehod
Faculty of Management and Human Resource Management,
Universiti Teknologi Malaysia
Malaysia

Sarasvathi Vivishna
Management Department
Universiti Teknology Malaysia
Malaysia

Wafa Khurram

Syed Khurram Ali Jafri
Ph.D. student
Universiti Teknologi Malaysia
Malaysia

Mohummad Khairudin bin Ramily
Ph.D. Scholar
Universiti Teknologi Malaysia
Malaysia

Abstract

The technological thrust is driving change in the course of action of the policy makers, industry, market and the consumers all at the same time. Bio-technological advancements are playing key role in the uplift of many developed economies of the world. It has helped coping with the dilemmas of divergence between availability and consumption of resources. This descriptive study is an effort to see the effect of these advancements in terms of introduction of Genetically Modified Food (GMF) and the related consumers' purchase intentions in Johor Bahru. The effect of perceived quality, perceived risks and social norms was analyzed to assess consumers' purchase intentions for GMF. The sample of 392 respondents was collected from two renowned departmental stores in Johor Bahru. Simple random sampling technique had been used for data collection. Findings revealed that the consumers consider perceived quality as the most important factor in determining their purchase intentions towards GMF. Limitations and implications for future research are also discussed.

Key Words: Bio-Technology, Genetically Modified Food, Consumer Purchase Intention, Perceived Quality, Perceived Risk, Social Norms

1. INTRODUCTION

Biotechnology has become an important field in the global market. All the global players are competing towards mastering the field in order to boost their economy. Food biotechnology is one of the dimensions of biotechnological industry that deals in improvement of the food production technology and product differentiation in the food industry which would also fulfill the consumers' preference for a change (Font, 2009). GM technology is the use of the modern biotechnology and techniques to alter the genes of the organisms in order to benefit population by producing more food.

Where the developed nations of the world, like USA and UK have capitalized their markets by employing the benefits of reaping genetically modified crops (BIOTEK, 2009), its utility in most of the developing part is yet to be explored. The subject of Genetic Modified Organisms is relatively new to Malaysian consumers (Daud, 2002). In Malaysia, biotechnology is predicted to be a key driver of growth towards its mission 2020. However, at the moment, Malaysia is not producing sufficient amount of food to meet its nation's needs. This gives GMF Technology a space to overcome this issue as the GMF are expected to produce sufficient amount of food to meet the national needs (Daud, 2002).

It has been noticed in the previous researches that the worldwide consumer response towards food products made from GM ingredients has been largely negative (Curtis et al, 2004). They tend to avoid genetically Modified Foods (GMF) considering their perceptions and the risks attached with taking and consuming GMF. Interestingly, consumers are willing to pay more to avoid GMF if they have the choice (Kaneko & Chern, 2003). Consumer acceptance towards GMF however, varies greatly among countries. Studies in the USA mostly show that its consumers have a higher acceptance rate towards bio technology and GMF than those in other countries (Chen & Chern, 2004). China, India, Philippines, Malaysia and Indonesia are the main countries actively working on modified crops in Asia (Cohen, 2005). However, there has been little research conducted on consumer's attitude towards GMF in developing countries (Curtis et al, 2004). Identifying a gap in the literature for any descriptive studies on the consumers' purchase intentions for GMF in Malaysia the present study is carried out to investigate role of 1) perceived risks, 2) perceived quality and 3) social norms regarding GMF in determining the consumers' purchase intention for it.

2. LITERATURE REVIEW

Biotechnology is one of the main technologies which would move Malaysia towards high developed nation by 2020. The activities of R&D are categorized into seven sectors namely, food, animal, plant, bio-pharmacy, molecular biology and industry or environment biotechnology (BIOTEK, 2008). Having its roots of evolution from Sumerians and Babylonians in 6000BC and Egyptians baking leavened bread in 4000BC, the fermentative ability of microorganisms was demonstrated by Pasteur in 1857. These non-sterile conditions of developing biotechnological processes went through metamorphosis and the sterile processes were introduced by the successful production of organic compounds in 1940s. All those improvements contribute to the introduction to the applied genetics and recombinant DNA technology together with protoplast fusion which allow new programming of the biological properties of organisms (Smith, 2004).

Biotechnology can be explained in two different views. The first definition holds within new biological tools whereby, the second definition refers to new "high end" biotechnology. According to the first definition, biotechnology is the techniques used, to alter or make modification to living organisms, in order to improve and increase productivity or to develop microorganisms for specific usage. The second definition explains that biotechnology involves recombination of deoxyribonucleic acid (DNA), fusion of cell and new bio-process engineering techniques such as the transfer of gene and. manipulation of embryo (BIOTECHCORP, 2008).

2.1: Genetic Engineering (GE)

The concern for more food production is not a novel idea yet the development of more sophisticated and technology related processes to enhance and strengthen this activity have evolved with research and innovation. The selective breeding practice opted by farmers long ago (Conner & Jacobs, 1999; Fridell, 2006; Freedman, 2009; Stanley, 2000) has been changed into genetic engineering for more effective and efficient results (Insel et al, 2009).

Genetic Engineering (GE) is a sub specialty of biotechnology which is concerned with the targeted modification of the genetic materials (Spangenburg & Moser, 2004). GE is used widely in medicine but is in practice in agriculture and industry also (BASF, 2010).

2.2: Genetically Modified Foods (GMF)

Genetically modified food (GMF) consists of the food producing plants and animals which have undergone gene manipulation. The theme behind GMF is alteration of the traits of the animals or plants in some way so as to make it more productive. According to International Service for the Acquisition of Agri-biotech Application (ISAAA), the plantation of the GMF crops is increasing day by day due to its significance in counteracting the scarcity of food in different parts of the world.

GM Crops are grown in most parts of the world including countries from South America, Europe, Asia, Australia, South Africa and North America (Freedman, 2009). Currently there is an estimated 5,000 biotechnology companies worldwide which is led by the United States. The major Genetic Modified (GM) crop's revenue from the country is corn, cotton and soy. Biotechnology companies worldwide has market capitalization of USD700 billion and annual turnover of USD75 billion (BIOTEK, 2009). Nevertheless, Malaysia being a developing country is in the midst of implementing its National Biotechnology Policy which encompasses three main phases: Phase I (2005-2010), Phase II (2011-2015) and Phase III (2016-2020) (BIOTEK, 2005).

However, GMF has been assessed differently from the traditional foods due to the perception that the later are safer than GMF. Therefore, specific system has been set up for extremely thorough evaluation of GMF associated with human health and environment (WHO, 2010).

Haves and Laudan (2008) demonstrated the perceptions of the consumers towards GMF regarding its pros and cons as those who are in favor of GMF perceive it as a route towards healthier food with higher efficiency, environmentally friendly and in benefit of the farmers. However, those who are in its opposition take it as a threat to health and environment in the long run, due to alteration in genes.

According to GENOMICS (2008), benefits of GM technology to consumers includes improvement and novelty in taste, quality, productivity, resistance and feed efficiency. Whereby, the controversies are related to labeling, intellectual property rights, safety in terms of health and ethical issues.

2.3: Consumer Intention

According to Fishben and Ajzen (1975) intentions have four dimensions, behavior which is intended to perform, the target object at which the behavior is directed, the situation in which the behavior is to be performed and the time at which the behavior is to be performed. Moreover, specific intention in contrary to the general intention covers all the four elements specified for a given behavior.

Literature has identified that consumers' behavioral intentions are dependent upon certain factors like perceived value (Ness et al, 2010) positive attitudes, subjective norms and behavioral control (Chen, 2007).

Cook et al. (2002) elucidated significant role of consumers' self-identity, attitude, social norm and perceived behavioral control on their purchase intentions for GM foods. Curz (2000) identified perceived risks and bio-safety as one of the main issues related to the introduction of new bio-technology that may have effect on the purchase intentions of the consumers at large. Moreover, its effect on the producers' economic benefit has also been argued (Poveda et al, 2009).

2.4: Factors affecting consumer intention toward GMF

According to Font (2009), acceptance of new science development such as new food biotechnology applications is a matter of significant interest worldwide for a variety of reasons. Through public understanding and awareness and knowledge of modern biotechnology, the potential benefits to the mankind from the technology could be maximized (Smith, 2004).

The commercialization and marketing of GMF have resulted to public debate in many parts of the world. However consumers are not aware of its direct benefits. The issues below the debate on GMF are similar such as cost, benefit and safety issues but the result of the debate varies from country to country (WHO, 2010). Literature has identified different factors that may affect consumers' intentions of purchasing the GMF worldwide, like perceived risks, perceived quality and social norms (Thom, 2007).

2.4.1: Perceived risks

Font and Gil (2009), in their study on consumer acceptance of GMF, revealed that perceived risks are an important construct underlying attitudes and purchase intentions towards GMF. Moreover, these perceived risks may differ between distinct cultures or discrete cultural groups in the same country. Hover and Macinnis (2009) demonstrated six types of perceived risks: performance risk, financial risk, physical/safety risk, social risk, psychological risk and time risk. Although studies have been made to identify the role of perceived risk on the consumers' purchase intentions, however, producers have ignored the impact of these consumers' perceived risks for GM foods somehow. It has been argued that government should play an important role to solve this problem and rigorous testing of these GM foods should be implied before bringing them to the market (THE LANCET, 1999).

Poveda et al. (2009) shed light on the rising concerns of the consumers regarding GM food and its potential pros and cons. The role of information credibility and health concerns has been found to play a vital role on level of perceived risk among the consumers. It has been argued that consumers with more knowledge about GM food and technology are liable to perceive less risk in terms of health hazards associated with its consumption (Chen & Li, 2007; Chern & Rickertsen, 2002).

2.4.2: Social norms

Norms refers to a group's general accepting of the way of thinking, acting or feeling emerged from their societal interaction. Social norms are formed in effect of the influence of other's ideas on individuals such that through frequent interactions cause the members from a group to uphold similarity (Sharma & Malhotra, 2007).

According to the theory of reasoned action model intentions can be studied by measuring the subjective norms. Consumers' purchase intentions can be measured by assessing their feeling of acceptability from their immediate social circle (family, friends and peers) about the expected actions (Schiffman & Kanuk, 2004). Social norms have been found to have considerable role in shaping the consumers' purchase intention (Thom, 2007; Hanudin, 2007; Nysveen et al, 2005).

2.4.3: Perceived Quality

Perceived quality is referred to as the inference about any product/service by the consumer on behalf of its tangible and intangible features (Carrol & Buchholtz, 2008). Consumers often evaluate the quality of a product or services based on informational cues (intrinsic/extrinsic) that they gain about product or services. As for products, the intrinsic cues are based on physical attributes of the product such as the smell, taste, size or color. The extrinsic cues are external to the product such as the price, image of the brand, image of the manufacturer, image of the retailer or the country origin of the product (Schiffman and Kanuk. 2004). Carol & Buchholtz (2008) demonstrated eight dimensions of performance, features, reliability, conformance, durability, serviceability, aesthetics and perceived quality in determining quality of any product or service. Studies have revealed that perceived quality is negatively related to the perceived risks for a product/service such that higher the levels of perceived risk about a product/service lower will be the perceptions for quality of that product/service (Thom, 2007; Linh, 2009). Moreover, perceived quality has been found to be related to consumers' purchase intentions via involvement and overall satisfaction (Tsiotsou, 2005).

3. Methodology

A descriptive research design had been used for this study to answer the research questions related to prevailing perceptions of consumers' purchase intentions for GM food in terms of their perceived risks, perceived quality and social norms. Data was collected by using random sampling technique from two Hypermarkets of Johor Bahru, Tesco Hypermarket, Tebrau and Giant Hypermarket, Plentong. The questionnaire were distributed among 400 respondents, however, 392 were used for data analysis with the response rate of 98%. The research questionnaire was comprised of 3 sections (A, B and C) where section A included three general questions about consumers' knowledge about GMF and Section B included 18-item scale for the constructs under study comprising of 2-items each for perceived risks and consumers' purchase intentions, 3-item for social norms and 7-item for perceived quality. The items were taken from validated scales of Thom (2007), Linh (2009) and Font (2009) to ensure the reliability and validity of the research instrument. Responses for the items against perceived risks and social norms were recorded by using 5-item Likert's scale (1=Strongly Disagree…….5=Strongly Agree). Responses for perceived quality were recorded by using numerical scale ranging from low/bad evaluation to High/good evaluation. The consumer purchase intentions items were scaled by using itemized rating scale (1=Very Unlikely, 2=Unlikely, 3=Neither Unlikely Nor Likely, 4=Likely, 5=Very Likely). Cronbach's coefficient of reliability was above 0.7 against items of each construct.

Table-1: Scale Reliability

No.	Variables	No. of Items	Cronbach's alpha
1	Perceived Risks	2	0.911
2	Social Norms	3	0.928
3	Perceived Quality	7	0.961
4	Consumer Purchase Intentions	2	0.911

Section C was designed to get demographic details of the respondents regarding their gender, age, marital status, highest academic qualification occupation and monthly income. The data was analyzed by using SPSS 17.0. First of all the descriptive analysis was carried out to get results for the demographic profile of the respondents by calculating their frequency and percentage distribution. Secondly, the frequency and percentage response of the respondents against each item was calculated for questions in Section A. Lastly, descriptive statistics measures of mean and standard deviation were used to assess the distribution of responses against items of the constructs under study.

4: Results

4.1: Descriptive results for Demographics

The results regarding demographic profile of the respondents showed that out of 392 respondents, 262 (66.8%) were female while 130 (33.2%) were male. As per the age of the respondents those with age between 20-29 years presented the biggest group with 206 respondents (52.6%), followed by respondents aged 30 - 39 years old with 146 respondents (37.2 %), 40 - 49 years old with 32 respondents (8.2%), and 50 years old and above with 8 respondents (2.0%). Results showed that the majority of the respondents were Muslims with 256 respondents (65.3%) followed by Hindus with 88 respondents (14.8%), 36 Buddhist respondents (9.2%), 32 Christian respondents (8.2%) and 10 respondents from other religions (2.6%). Moreover, most of the respondents were single making 52.8% (207) of the whole sample followed by 180 (45.9%) married respondents and 5 (1.3%) respondents with divorced marital status.

The academic qualifications of respondents were grouped into 5 categories. The biggest category of academic qualification as per the results was respondents with Secondary education, 187 (47.7%) respondents followed by 104 (26.5%) respondents with degree qualification, 83(21.2%) respondents with Diploma qualification. There were 15 (3.8%) respondents with Master qualification and 3(0.8%) respondents with PHD qualification. Table-2 showed the frequency and percentage distribution of the respondents by Occupation. There are 6 groupings; executive, non-executive, professional, house wife, student and others. 142 (36.0%) respondents were non-executives, followed by 72 (18.4%) executives, 65(16.6%) professionals, 46 (11.7%) students, 43 (11.0%) respondents with other job types of job positions and 25 (6.4%) respondents were house wives.

Results for the frequency and percentage distribution of the respondents by their level of monthly income showed that 84 (21.4%) respondents were having a monthly income level between RM2001 - RM3000, followed by 80 (20.4%) respondents with a monthly income less than RM1000. Respondents with the income level of RM3001 - RM4000 and not applicable category had the same number of respondents i.e. 69 (17.6%), followed by 61(15.6%) respondents with monthly income between RM1001-RM2000 and 29(7.4%) respondents with monthly income of RM4001 and above. (See Table-2).

Table-2: Profile of the Respondents

DEMOGRAPHIC VARIABLES	FREQUENCY	PERCENTAGE
AGE		
20-29	206	52.6
30-39	106	37.2
40-49	32	8.2
50 and Above	8	2.0
RELIGION		
MUSLIM	256	65.3
CHRISTIAN	32	8.2
HINDU	88	14.8
BUDDHIST	36	9.2
OTHERS	10	2.6
GENDER		
MALE	130	33.2
FEMALE	262	66.8
HIGHEST ACADEMIC QUALIFICATION		
SECONDARY	187	47.7
DIPLOMA	83	21.2
DEGREE	104	26.5
MASTER	15	3.8
PH.D	3	0.8
MARITAL STATUS		
SINGLE	207	52.8
MARRIED	180	45.9
DIVORCED	5	1.3
OCCUPATION		
EXECUTIVE	72	18.4
NON-EXECUTIVE	142	36.0
PROFESSIONAL	65	16.6
HOUSE WIFE	25	6.4
STUDENT	46	11.7
OTHERS	43	11.0
MONTHL INCOME		
Less than RM 1000	80	20.4
RM 1001-RM 2000	61	15.6
RM 2001-RM 3000	84	21.4
RM 3001-RM 4000	69	17.6
RM 4001 and above	29	7.4
Not applicable	69	17.6

4.2: Descriptive statistics of frequency and percentage of responses against items

To check the frequency percentage of the responses against items of each construct under study, the tool of descriptive statistics was used. First of all results for Section A (general questions) is given:

4.3: Frequency and Percentage frequency of the responses against General Questions

There were four general questions asked prior answering the questions measuring the constructs. In question1 "Are you aware of the existence of GMF?" it was found that most of the respondents (202; 51.5%) were positive about their response in having awareness about GMF whereof 190 respondents (48.5%) were not having any knowledge about GMF. From Question-2, "Do you understand the concept of Genetic Modification?" it was found that 228 (58.2%) respondents do not understand it while only 164 (41.8%) respondents understand the concept of GM.

In Question-1 "Do you think that GMF is important and beneficial to the society?" the response percentage for each response category (yes, no) was equal i.e. 50%. Question-4 was being asked to the respondents who answered positive to Question-3. According to it the responses against each category of Question-4 "What type of GMF do you think would be important and beneficial for the society?" majority of the consumers (103; 52.3%) perceived rice to be the most important and beneficial GMF for the society. Nevertheless, 38 (19.45%) preferred corn, 27 (13.85%) chose wheat and 4 (2.05%) consumers selected 'others'.

TABLE-3.1: DESCRIPTIVE STATISTICS OF GENERAL QUESTIONS

QUESTIONS	CONSUMERS' RESPONSE	FREQUENCY n=392	PERCENTAGE
1-Are you aware of the existence of GMF?	Yes	202	51.5
	No	190	48.5
2-Do you understand the concept of genetic modification?	Yes	164	41.8
	No	228	58.2
3-Do you think that GMF is important and beneficial to the society?	Yes	196	50
	No	196	50
4-What type of GMF do you think would be important and beneficial for the society?			
	Rice	103	52.5
	Corn	38	19.4
	Potatoes	27	13.8
	Wheat	24	12.25
	Others	4	2.05

4.3.1: Frequency and Percentage frequency of the responses against Perceived Risks items

Table 3.2 shows the number of responses, mean and standard deviation of the questionnaire items on perceived risks.

As rated by the respondents, item- 3, "Genetically modified technologies will lead to unhealthier food." scored the highest mean score of 3.14, the second highest mean score (3.12) was against item-1"Eating Genetically Modified Food might harm health". Item-2 "Growing genetically modified crops will be harmful to the environment" shows the lowest mean score of 2.98. The ranges of responses were between 1 and. 5. In overall, all of the responses achieve more than 3. This means the distribution of the scores is slanted towards agreement. However, the responses from different consumers of the hypermarkets understudy were found to be largely distinct (SD-1.02).

TABLE- 3.2: DESCRIPTIVE STATISTICS FOR ITEMS OF PERCEIVED RISKS (n=392)

No.	Items	Mean	Std. Deviation
1	Eating genetically modified food might harm health	3.12	1.291
2	Growing genetically modified crops will be harmful to the environment.	2.98	1.255
3	Genetically modified technologies will lead to unhealthier food.	3.14	1.175
4	I would say that choosing to eat GMF is risky.	3.06	1.274
5	If I were to tell a friend about GMF, I would describe GMF as risky.	3.05	1.291
6	I would say that choosing to eat GMF is risky	3.11	1.227
	Overall	3.08	1.25

4.3.2: Frequency and Percentage frequency of the responses against Social Norms items

Table-3.3 shows the number of responses, mean and standard deviation of the questionnaire items on social norms.

As rated by the respondents, question 2, "My family would want me to eat GMF" scored the highest mean score of 2.42. The lowest mean score (2.90) was "People who are important to me would want me to eat GFM" and 'Growing genetically modified crops will be harmful to the environment". The ranges of responses were between 1 (Strongly Disagree) and 5(Strongly Agree). As overall response was approximately 3.0, the distribution of the scores was slanted towards neutral i.e. neither agree nor disagree. Nevertheless, the degree of response among the consumers of the two hypermarkets differ greatly (SD=1.04).

TABLE-3.3: DESCRIPTIVE STATISTICS OF ITEMS FOR SOCIAL NORMS (n=392)

No.	Items	Mean	Std. Deviation
1	People who are important to me would want me to eat GMF	2.90	1.032
2	My family would want me to eat GMF	2.92	1.057
3	People who are important to me would expect me to eat GMF	2.90	1.039
	Overall	2.91	1.04

4.3.3: Frequency and Percentage frequency of the responses against Perceived Quality items

Table-3.4 shows the number of responses, mean and standard deviation of the questionnaire items on Perceived Quality.

As rated by the respondents, question 1, ""Bad Taste.....Good taste" scored the highest mean score of 4.14. The second highest mean score (4.02) was against response category "Bad impression……..Good impression". However, the lowest mean score (3.85) was against "Risky for health……. ... Without health risk". The ranges of responses were between 1 and 7. The Overall mean score for all responses was nearly 4. This showed that the distribution of the scores was inclined towards positive attributes of perceived risks. According to the results, the responses of the consumers from different hypermarkets have considerable differences (SD=1.62).

TABLE-3.4: DESCRIPTIVE STATISTICS OF ITEMS FOR PERCEIVE QUALITY (n=392)

No.	Items	Mean	Std. Deviation
1	Bad ……Good Taste	4.15	1.533
2	Bad……Good Impression	4.02	1.539
3	Unhealthy……Healthy	3.93	1.600
4	Fat……..Low Fat	3.93	1.667
5	Unsafe……Safe	3.96	1.653
6	Risky for Health……Without Health Risk	3.85	1.651
7	Not nutritious……Nutritious	3.92	1.685
	Overall	3.97	1.62

4.3.4: Frequency and Percentage frequency of the responses against Consumers' Purchase Intention items

TABLE-3.5: DESCRIPTIVE STATISTICS OF ITEMS FOR CONSUMERS' PURCHASE INTENTION (n=392)

No.	Items	Mean	Std. Deviation
1	A 500 gram box of normal (not GMF) cornflakes is on sale for RM6. Would you be willing to pay more for a 500gram box of GM cornflakes with health benefits?	3.16	1.048
2	A Kilogram of ordinary (not GMF) tomatoes is on sale for RM4. Would you be willing to pay more for a kilogram of GM tomatoes with health benefits?	3.27	1.047
	Overall	3.22	1.05

Table 3.5 shows the mean and standard deviation of the responses against items for Consumer purchase intentions.

As rated by the respondents, question 2, "A kilogram of ordinary (not GMF) tomatoes is on sale for RM4.

Would you be willing to pay more for a kilogram of GM tomatoes with health benefits?'" scores the highest mean score of 3.27 followed by mean of 3.16 for question-1 "A 500 gram box of normal (not GMF) cornflakes is on sale for RM6. Would you be willing to pay more for a 500gram box of GM cornflakes with health benefits?". A high overall value of standard deviation against all responses (1.05) showed that there were greater differences among the responses gathered from different respondents of the two hypermarkets understudy.

5. Discussion and Conclusion

The main objective of this study is to identify the three factors (perceived risks, social norms and perceived quality) that affect the consumer purchase intentions towards GMF. The demographic statistics results of general questions about consumers' knowledge about GMF showed that Malaysian consumers' although know about the existence of the GMF but do not have enough understanding of the underlying concept, which might be influencing their purchasing intentions regarding GMF. Our results are supported by the studies of Abu Bakar et al (2005) who found that Malaysian consumers have lack of knowledge and understanding about GMF. These results are similar to findings of Hallman et al (2003) where they found that low level of knowledge about GMF among the Americans is the reason for their split opinion about acceptance of GMF. It was argued by them that the acceptability of GMF is malleable and can be influenced by better demonstration of the related benefits. This shows that social norms can have significant effect on transforming the intentions of the consumers towards buying GMF. Our results for effect of social norms on the GMF purchase intentions showed indifferent results from the consumers' that might move towards agreement if proper knowledge is provided. As per the results, Perceived Quality measurement achieved the highest total mean score (3.97) if compared to other factors that affects consumer purchase intentions i.e. Social norms and Perceived Risks.

Therefore, it is considered that the respondents perceive quality as the most important factor in showing their purchase intentions for GMF. The results are in accordance with that of Linh (2009) and Thom (2007) who found perceived quality to have pronounced effect on the positive consumer attitude towards GMF. Studies reveal that lesser the perceived risks, greater will be the perceived quality and intentions to adopt GMF (Klerck & Sweeney, 2007). As Malaysian consumers are found to show greater concerns for the risks attached with the GM food, it is suggested that more efforts should be laid by the policymakers from government and industry to increase knowledge about benefits of GM food. This increased knowledge is a key to help lower the consumers' perception level of risks and lever the perceived quality in turn (Klerck & Sweeney, 2007; Linh, 2009).

6. Limitations and Suggestions for Future Research

Every research studies have some strengths and limitations and so do ours. Our first limitation is regarding the choice of area for sample selection. This research intended to explore the relationship between influencing factors and consumer purchase intentions. Looking at the geographical data coverage, it is noted that this analysis is only based on the data collected from two hypermarkets in Johor Bahru; Tesco Hypermarket, Tebrau and Giant Hypermarket, Plentong. This does not take other hypermarkets, supermarkets, minimarkets, and grocery shop into consideration. This study also does not include other eight districts in Johor and 13 states in Malaysia. Future researchers are encouraged to perform this study to all consumers from different states of Malaysia particularly to represent the entire Malaysia. Secondly, we focused only on the GMF crops while the food in terms of meat, sea-food and poultry was not mentioned in the questionnaire to get response about it.

Few recommendations are suggested to future studies for further improvement and advancement of the studies in this line. In the present study, only three predictor variables (perceived risks, social norms and perceived quality) were used. A more detailed understanding of the consumers' purchase intentions is expected by incorporating other predictors like attitude, knowledge and trust in order to have wider understanding on the factors affecting consumer purchase intentions. Moreover, we took perceived risks as generally whereas more assessment of more specific risks related to performance, financial, physical, social and psychological dimensions can give a different picture in terms of their effect on consumers purchase intentions (Klerck & Sweeney, 2007).

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