Genetically Modified Food in Malaysia Halal Food Supply Chain: An Insight

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Abstract: The aim of this paper is to investigate Genetically Modfied Food(GMF) management and acceptance in the halal food supply chain and to explore how the GMF impacted Malaysia food consumerism. In this study, the researchers adopted in depth critical review of various publications and data made available on the issues and various studies on GMF consumerism and acceptance in Malaysia. The findings showed that in general GMF is still a new concept among Malaysians and despite a few studies on the matter, it is far from being able to conclude solidly or generalize compellingly the acceptance, understanding or even awareness among Malaysian consumers towards GMF. In the term of halal status of GMF, in depth and further study should be made on the unresolved issues concerning understanding on GMF products before any halal assessment could be done on it. Therefore, it is assumed that the subject of GMF in Malaysia is still far from being clear and much less distinctive among the consumers themselves. For future research, the researcher needs to take a look at the understanding level of GMF concept among consumers before wading down deeper on their behaviour, intention as well as awareness towards consuming GMF.

Keywords: GMF, Halal, Food Supply Chain

1. INTRODUCTION

In questioning the emphasized on Genetically Modified Food (GMF), one should consider the importance of biotechnology to food production in Malaysia. Under the 9th Malaysia Plan more than RM 20000 million was allocated for the biotechnology sector in order to ensure that the agriculture sector in Malaysia, relating to food production and processing will improve significantly through advance biotechnology process. However, is regards to Muslim consumerism there are general concerns on whether or not GMF is halal.

Such crucial issue of GMF has become a problem especially for religious and governing authorities whom protect the halalan toyibban aspect of Muslim consumerism. GM food even if found to be permissible from the Islamic perspective, the question remains on the toyibban criterion of Muslim dietary requirement which emphasized that food must be safe, nutritious and healthy for consumption. This is a mix method research, utilizing qualitative and quantitative methods. For the qualitative part, interviews will be conducted with experts from Islamic governance bodies i.e. JAKIM, GMF experts from MARDI and Ministry of Health officers, and it will address the issue of legal and regulatory framework used to handle GMF in Malaysia, and then was coupled with the quantitative data from survey on Muslims consumers. This study aims not only to understand Muslim consumerism but also investigate the governance aspect of GMF products. It is hope that this study would be able to produce a crucial GMF-Halalan Toyibban Framework for the Malaysia food governing bodies and a Muslim Consumerism Model for the massive Muslim market. The proposed model and framework are in line with the National Biotechnology Policy and the Third Industrial Master Plan in which the halal businesses have been selected as a key engine of Malaysia economic growth, estimated to be worth a staggering USD 2.3 trillion globally.

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2. LITERATURE REVIEW

2.1 The Importance of GMF to the halal food supply chain (HFSC)

GMF plays an imperative role in the food supply chain. The introduction of GMF helps industries related in of food supply such as manufacturers, producers, processors, caterers and other food handlers to catch up with an ever increasing food demand especially from modern consumers that looking for specific health and nutritious foods [1]; [2]. GMF was identified as the tool that enabled the alleviation of inadequate food supply system which directly create the food crisis phenomena [3]. GMF not only increase the amount of food supplied to population, but at the same time introduce better crops which are not only resistant to crop diseases but also has more enduring shelf life. One of GMF key characteristics is it resistance to longer time which directly highlighted the importance of GMF to the food supply chain [4].

2.2 The economy of GMF

In addition to that, the price offers through GMF are always lower compared to the conventionally produced food varieties [5]. GMF brings imperative innovation in the food sector which is directly driving the importance of food supply chain, resulting in the rapid growing of GM crops all over the world [6]. Such trend could be seen through the increase of planting area for GF crop all over the world. [7] reported since 1996, the area of GM crops plantation has widely increased by 87-fold from 1.7 to 148 million hectares inclusive of 29 countries which host half of the world's entire population. Such vastness of crop plantation further implied how GMF is taking a substantial portion in the food supply chain around the world. Food derived from GM crops has increased very fast. Therefore, many industries through their governments, biotechnology companies, scientists and 14 million farmers from 25 countries support the benefits rather than the risks of GMF [7]; [8]; [9].

2.1.3 GMF Progress in Malaysia

In illustrating the status of GMF in Malaysia, the advancement of GMF in Malaysia and worldwide have been introduced since 1998 [10]. Currently, although Malaysia does not develop the nutritional value enhancement of GM rice namely golden rice as developed by the Philippines, Vietnam, India, Bangladesh, China and Indonesia, but Malaysian Agricultural Research and Development Institute (MARDI) was paying attention on developing virus-resistant transgenic rice [11]; [12]. Furthermore, since 2000, Malaysia enthusiastically focused on developing delayed ripening papaya, GM chilli, virus-resistant chilli pepper, passion fruits, GM pomelo, GM palm oil and GM pineapple with enhanced quality [13]. Unfortunately, most of the GMF is still under research and & development process. For instance, until today the commercialization of GMF originating from Malaysia, is still confined to the delayed ripening papaya and rice that have been approved by Genetic Modification Advisory Committee (GMAC) [14]; [15]; [1]; [13]; [16]. In addition, Malaysia has received importation of GMF from other countries such as GM soybean and GM corn since 2004 to be appeared into Malaysian market [17]; [18]. This clearly shows that Malaysia is extensively introducing and developing GMF at this moment.

3. METHODOLOGY

This study focuses on the current status of GMF in majority Muslim Malaysia through extensive literature review of previous academic work on GMF as well as halal issues regarding GMF from Malaysia halal authorization body, JAKIM .

3.1 Halal status of GMF

To date, there is no fatwa or religious decree on GMF that can be clearly used a as guideline to answer those questions concretely. The only available fatwa dealt with the issue of swine genes and was issued by the National Fatwa Committee on July 12, 1999 which states that any product, food or drink processed using biotechnological methods incorporating swine DNA is against the precepts of shariah and is therefore not permissible and Malaysia have yet to reach a stage whereby the rule of "necessities overrule prohibitions" could be applied. This means that biotechnological usage of non halal animal DNA in the processing of foods and drinks could not be justified as there are other viable alternatives to Muslim consumers thus indicating that

the dangers of the usage of prohibited material are greater than the benefits. While this fatwa clearly put down the rule for swine DNA, there are still many other issues vis-a-vis GM food that still need to be looked at. For instance, what about the usage of DNA from other animal sources? Some of these issues were further addressed by a newer fatwa in 2011 whereby the use of other animal that is halal (to consume) is deemed acceptable as long as the animals are slaughtered according to the shariah method. However, an issue arises from this directive in which question is being asked on whether this meant that DNA extracted from live animals can't be used? All such related matter requires careful study so that all these various doubts could be tackled.

3.2 GMF and the Muslim Consumerism in Malaysia

So far there has been a huge gap in the understanding of GMF acceptance by Muslim customers. Most of studies done on GMF was conducted in the perspectives of customers from developed and non-Muslims dominated countries such as in Italy [19], Germany [1], Finland [20] and Australia [21]. Hardly any empirical evident is available from the perspective of the Muslim customers. Muslim customers with their strict dietary law have an unique and different buying behaviour as well as food selection Halal global food market contributed to more than 60% of an overall market of Halal products worldwide, estimated at a staggering USD 2.3 trillion according to data from The in its 2010 publication. This goes to show how there is a dire need to understand and comprehend the acceptance and buying behaviour of Muslim customers, especially with GMF becoming ever increasingly important to the global food supply chain.

4. ISSUES AND CHALLENGES OF GMF ON HSFC

One obvious fact that made abundance throughout this research was how previous study rarely measure the actual level of understanding among the respondents. While the assumptions were made based on education (Science background), level of education (secondary school and above) and locations of respondents (focusing on big cities in Malaysia), no adequate proof was readily available for the researchers (previous and future) to solidly confirmed that each respondent understood the concept of GMF when they were answering the researched, GMF related studies.

This discovery thoroughly changed the landscape of GMF understanding and acceptance among Malaysians. It is now crucially important to ensure that fellow Malaysian consumers really have the understanding on what GMF is all about before measuring their acceptance or overall understanding level on the matter. At this point, future researchers might want to consider the actually knowledge level or various respondents in regards to food technology in general before pursuing their interest on the subject of GMF consumption.

Another issue which permeates GMF study is the fact that labelling act of GMF is still not complied fully through the whole supply chain. This issue is crucial not only in relation to GMF but deemed important enough to the halal food supply chain regardless of the origins of the raw materials as well as the destination of the produce food [25]. How can end consumers knew what they are eating if they have no way on knowing the origin of the food or understanding what is involved in the production of the food?

5. Conclusion and Suggestion for Future Research

The need to supply food to an increasing world population has caused farmers to modify crop for millennia. Using modern technology, new traits of animal and plants which carry pre-identified specific genes are the embedded into another living cells. This has caused better yielded crops, stronger animals and most importantly endless supply of food to feed the human population.

However consumers are concerned about the possible adverse impact of eating such modified foods. Some huge corporate retailer such as Sainsbury and Safeway in the UK, have even pledged not to carry any products containing GM elements. In Malaysia, certain GMF such as soya beans and corn has been approved for human consumption. Other product such as ice cream also used ingredient from GM

source. Animal feed is another product that are majorly from GM sources. Biosafety Act 2009 was enacted to protect the environment and consumers from any adverse effect originating from GM products, which means a lot of products has been approved and deemed safe to consume [22,23,24]. However due to labelling inadequacy and the transparency of the sellers in indicating and differentiating non-GM and GM food, customers would not be able to fully exercise their right to choose what they eat.

Apart from that, another issue that is crucial to GMF consumption is the level of understanding among the consumers in regards to GMF itself. Consumers will not be able to make the right choice without understanding what exactly GMF is in general. This is an important aspect that future research should address clearly in order to really measure consumers acceptance towards such foods. Generalization of consumers behaviour towards GMF shall not be made unless we are clear on how well they actually understood the concept of genetic modification in food products and how it could possibly affect them through consumption.

Future research should also look at how to improve the labelling compliance among sellers and to also look into governing laws and regulations. A proper and tighter governance of GMF should be made available in order to ensure consumers are well informed on the source of their food products, enabling them to make a conscious choice. In regards to the halal status of GM foods, the previously mentioned concerns should be solved or at least properly understood before another religious valuation on the matter is taken into consideration. How could we determine the halal status of something when we could barely tell its origin?

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