

# Halalan Toyyiban Elements in Halalan-Toyyiban Risk Management Plan (HTRMP) of Chilled Food Products During Warehousing Activities: A Review

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## ABSTRACT

An escalating growth of Muslim population leads to a significant increase on demand for Halal products from both Muslim and non-Muslim communities around the world. Food undergoes a length of processes, starting from raw materials to final finished products, and these involve various handling operations. Therefore, concern on the Halalan-Toyyiban aspects of food from inbound to outbound stages in a warehousing activity particularly is on the rise. As stipulated in MS 2400: 2010, an organization must establish a Halalan-Toyyiban Risk Management Plan (HTRMP) according to the principles outlined in the standard. Besides Halal, the elements for Toyyib should also be considered during risk management, namely the physical, chemical and biological aspects. Altogether, there are seven principles of HTRMP during warehousing that are discovered and need to be adhered to. This paper aims to describe the elements of halal and toyyiban with related to Halalan Toyyiban Risk Management Plan (HTRMP). Specifically, the limitation of this HTRMP study is involved chilled food products only. The reason is because of halal chilled foods need to be given attention with regards to the halal and the toyyiban aspects.

**KEYWORDS:** Chilled Food, Halalan-Toyyiban Elements, Principles of HTRMP, Warehouse.

## INTRODUCTION

Recently, many countries placed emphasis on ‘Halal’ and the general public is also more responsive towards its development. Instead of only Halal, the term ‘Toyyiban’ has been tossed into the limelight as well. This is because Halal alone does not give the full understanding about the Muslim requirements; it has to be supplemented by Toyyiban to give the full picture of a Shariah compliant product. Recently, there has been a significant increase in the demand for Halal products among the Muslim and non-Muslim communities all around the world which is supported by [24] and highlighted countless in the World Halal Conference 2016. With the Muslim population amounting to 1.8 billion and growing, this will further propel the Halal Economy, which stands at a current worth of USD 2.3 trillion. The figure includes Islamic banking and all other Halal components as well. These sets apart, Halal food alone was already worth a booming USD 700 billion.

Both [4, 14] defined the terms Halal, Makruh and Haram to in the same scope and definition. Al-Halal in Arabic means “the lawful” and in the definition is “permitted with respect to which no restriction exists. By doing it of which the Law-Giver, Allah s.w.t. has allowed”. The opposite, Al-Haram, means “the prohibited” and is referred as acts which the “Law-Giver has absolutely prohibited”. Those who commit these acts are liable to not only punishment in the Hereafter but also to legal punishment too. Meanwhile, al-Makruh is detestable acts which indicate “those deeds which are disapproved by the Law-Giver albeit not very strongly”. Makruh is lower in rank than Haram and those who commit Makruh acts will not be punished as harshly as the punishment conferred for Haram acts, except when it is done in excess and in such a manner that the individual is straying into what is Haram. As for Halalan Toyyiban products, it means any goods which did not bring damage and unharmed to be eaten as mentioned by Shariah law therefore it is acceptable and can be consumed [22].

Muslims of today realize the importance of Halal concept which is not restrained to just food but also cover the process of handling, packaging, storing and delivery too. This is supported by [3, 21] which state that as of recent, customers have not only request for Halal products but they also question the Halal process. The attributes of the Halal process caused the customers to choose Halal products. So, it is important that food to be handled or stored as stipulated in the standard, lest it will be considered as not Halal. According to [20], the major factors which contributed to this increased preference are mainly because of the rapid growth of Muslims’ population [22, 38], followed by the increasing popularity of Halal food among the non-Muslims [7, 36]. Halal products become popular among the non-Muslim consumers due to their concern on human treatment to animals rather than of hygiene reason. Additionally, the belief that Halal food is cleaner, healthier and tastier has also contributed to the increase of the total Halal market demand all over the world. These elevated Halal food to

another level as it is now acknowledged to be clean and of non-harmful ingredients and so widened the coverage of Halal food market [38].

However, as the Halal food products originated and processed from all parts of the world, the question of whether these products are genuinely Halal lingers in the minds of the Halal food consumers especially among the Muslim communities. Thus, with the complexity of the current world food trade scenario, the Halal food consumers are bound to be skeptical on whether the particular food products are indeed produced in accordance with the Halal principles and Shariah law or whether it can be construed as Halal when it has to undergo various interfaces in its entire cycle of logistics [38]. As confirmed by [9], Muslim consumers still lack the information with regards to supply chain, resulting in an insufficient assurance that no cross contamination has occurred. This becomes the main reason for Muslims in Europe are compelled to obtain their Halal products from Muslim butchers in the non-Islamic countries, with the notion that the Muslim butchers are more responsible in ensuring that the meat is Halal for consumption. A study conducted by [36] discovered that non-Muslims in Russia and the Philippines made their purchase from Muslim stores solely because they believe that Halal food products are fresher, safer, infection-free, healthier and palatable. Although current Halal standards provide guidelines which are appropriate for food production, preparation, handling and storage, still it is not fully guaranteed that such food is Halal when it reaches the point of consumption. In particular, the Halal logistical capabilities are critical in ensuring the Halal integrity of the supply chain from “farm to fork” [30]. This paper aims to study the need for established halalan toyiban risk management plan by logistics provider, in particular the warehouse, to ensure the halal integrity of the chilled food products throughout the supply chain.

## LITERATURE REVIEW

### **Halal Warehouse**

The basic process of food processing can be identified immediately after yielding or slaughtering, or when arriving at the ports and when the raw materials are distributed to the food producer to modified or processed it to become finished goods. The process is diverse including for example the milling of grain into flour, grouping, docking and wrapping of goods into a multilevel of processes which end up in cooking or packing. Finished goods are then sent right to the end seller either retailers, wholesaler or distributor. However for this condition, the customer are the end consumer or user. Luckily, this situation were dealt by supply chain management, along the supply chain either from the roots to the end and specifically focusing in ensuring quality, managing supply, cost control, customer service and profit margin. Therefore, they strictly demanding on controlling the flows between departments, site or any places which required a high degree of management integration [31].

Hence, in order to cope with the world’s growing demand for Halal food, a comprehensive and well-managed supply chain management approach need to be adopted to ensure continuous availability of the Halal food products. Also, an escalating inclination into variation of products in low period of time have placed a great importance on the logistical operations capability to become smooth and efficient. This had become their core in order to identify a company competitiveness in term of operations because logistics’ costs constitute a vital part of the total production costs [25]. Additionally, research done by [11, 25] concurred that warehousing component is both important and essential in any supply chain as the degree of efficient and effective of distribution network is greatly determined by the operation network for e.g. the warehouses. Therefore, in [2, 13] have agreed that logistics management capabilities such as the Halal warehouse plays a big role in ensuring the success of the Halal industry by virtue of the integrity of the Halal products.

### **Warehouse Operations and Activities**

Warehouse major roles in any supply chain is to cater for inconsistency occurred along supply chain which involve protecting the material flow itself. This situation may due to diverse factors for example seasonal goods in processing and product movement, combining products from many suppliers prior to delivery to end users and any value-added process [11].

The innovations in warehouse technology have been significant in the last decade. With respect to warehouse management, topics like planning and control have deserved wider attention in both the popular and scientific literature and other related references. In contrast, a sound theoretical basis for a warehouse design methodology still seems to be lacking [31].

Figure 1 briefly summarized the warehousing and its related activities. On the part of the supplier, it consists of importers, trading houses, manufacturers, farms and lastly wholesalers or distributors. All these suppliers will perform such primary activities which include checking and verification process, put away or storage, sorting and picking of goods, packaging and bulk breaking and finally palletizing.

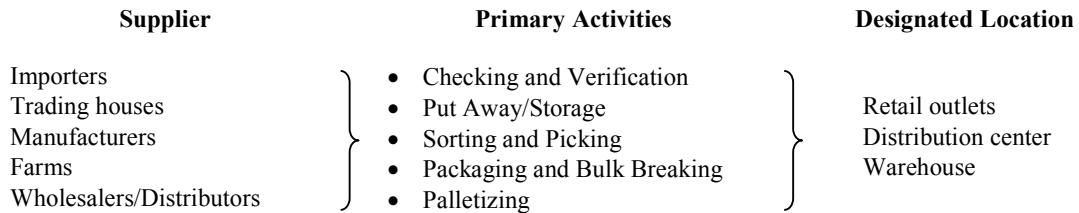


Figure 1: Warehousing and related activities

From there on, all the processed goods will then be transferred to each of the designated locations such as retail outlets, distribution center or warehouses. It can be concluded that the role of the warehouses is the most significant in the supply chain management as it performs all the goods processing activities.

According to [10], in their Halalan-Toyyiban assurance pipeline-Part 2: Management system requirements for warehousing and related activities (MS2400-2: 2010) there are nineteen examples of warehousing activities in total. Those activities briefly described in Figure 2.

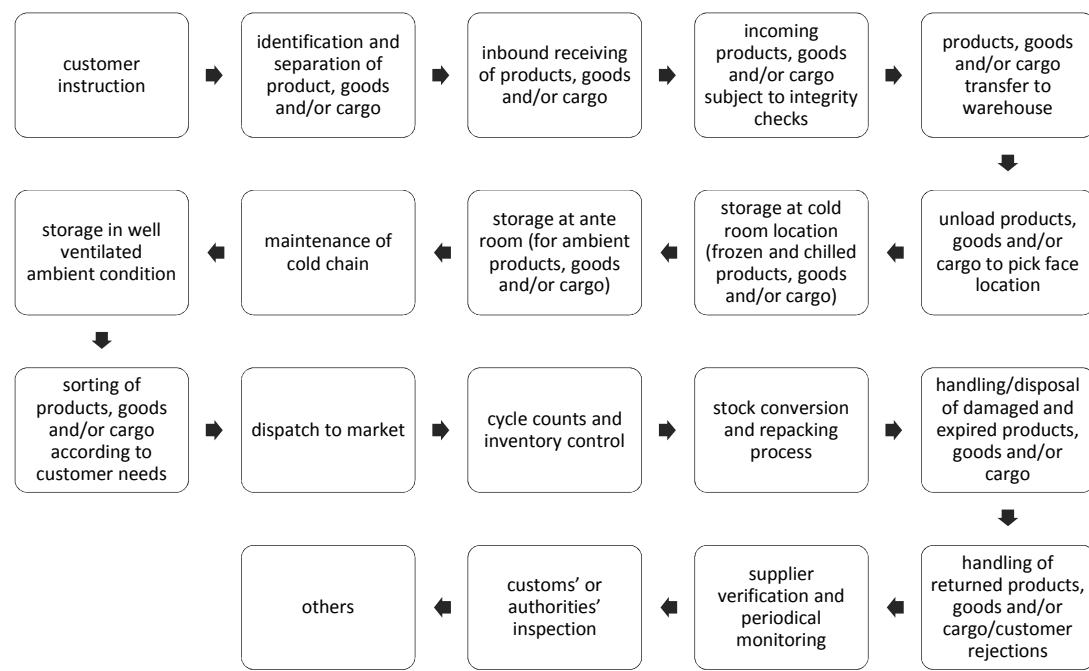


Figure 2: Examples of the typical activities of warehousing

### Warehouse Processes

In [19, 25] furthermore explained that the circulation of goods all the way through the warehouse can be alienated into some distinct phases or procedure namely unloading, storing, orderpicking and shipping. In [11] also highlighted that receiving and shipping are the boundary of a warehouse for the moving of material flow from incoming till the outgoing goods. The process will also include off the flow where products will make an entrance by lorry or interior transport (prior to a production warehouse). At this level, quantification will be carried out and random quality checks are performed on the delivered loads followed by again being checked or transformed to such as being repacked into different storage modules. Subsequently, the loads are then ready to be carried to the storage area [8].

The next warehouse process which is also a major warehouse function is storage [11]. Storage is concerned with the organization of goods held in the warehouse in order to achieve high space utilization and facilitate efficient material handling. Goods in storage can be organized into different departments. Both [19, 25] agreed that the storage area may consist of two parts. First is the reserve area where products are stored in the most economical way (bulk storage area) and secondly, the forward area where products are stored for easy retrieval by an orderpicker. Products in the forward area are often stored in smaller amounts for easy access to storage modules. For example, the reserve storage may consist of pallet racks while the forward storage may consist of shelves. The transfer of items from the reserve storage to the forward storage is called replenishment.

This is then followed by the orderpicking process. Orderpicking refers to the retrieval of items from their storage locations and can be performed manually or (partly) automated. This process is generally recognized as the most expensive warehouse operation, since it tends to be either extreme labor intensive or capital intensive.

In sequence, these items may be transported to the sorting and/or consolidation process. Consolidation here refers to the grouping of items meant for the same customer [19, 25]. Finally, at the last process which is the shipping area, orders are checked, packed and eventually loaded in trucks or any other carrier. However, for cross-docking warehouses, received goods are sent directly from the receiving dock to the shipping docks [11].

### **Halalan-Toyyiban Risk Management Plan (HTRMP)**

As stipulated by [10] in all the three parts of Halalan Toyyiban Assurance Pipeline (MS2400:2010), in order to establish a Halalan-Toyyiban risk management plan (HTRMP), the list of principles outlined shall be followed accordingly. There are seven standard principles of the HTRMP as recommended by the Malaysian Standards on Halal which are as per listed below.

1. Identification of Halalan-Toyyiban potential contaminant and/or precursor
2. Determination of control measures
3. Determination of Halalan-Toyyiban Control Point
4. Determination of monitoring system for Halalan-Toyyiban Control Point
5. Determination of corrective actions for Halalan-Toyyiban Control Point
6. Determination of verification process and documentation system
7. Management of records.

The risk management plan of this HTRMP can be divided into two parts which cover both Halal and Toyyiban elements. These elements will complement each other and become a complete risk assessment in determining any risk that may occur along the supply chain. Therefore, the aim of producing Halalan-Toyyiban products throughout the Halalan-Toyyiban supply chain will be achieved. Halal elements are basically related to all the Shariah compliance aspects and can be referred together with other related standards as listed in Table 1.

Table 1: List of Halal standards regulations established by Department of Standards Malaysia

<b>Halal Standards Regulations established by Department of Standards Malaysia</b>	
<b>MS 1500:2009</b>	Halal Food-Production, Preparation, Handling and Storage-General Guidelines (Second Revision).
<b>MS 1900</b>	Quality Management System-Requirements from Islamic Perspectives.
<b>MS 2200:2008</b>	Islamic Consumer Goods-Part 1: Cosmetic And Personal Care – General Guidelines.
<b>MS 2300:2009</b>	Value-based Management System-Requirements from an Islamic Perspective.
<b>MS 2424:2012</b>	Halal Pharmaceuticals-General Guidelines.
<b>MS2400:2010 (P)</b>	Halalan-Toyyiban Assurance Pipeline.
<b>MS2400-1:2010 (P)</b>	Management System Requirements for Transportation of Goods and/or Cargo Chain Services.
<b>MS2400-2:2010 (P)</b>	Management System Requirements for Warehousing and Related Activities.
<b>MS2400-3:2010 (P)</b>	Management System Requirements for Retailing.

On the other hand, Toyyiban elements consist of three other fundamental aspects namely the physical, chemical and biological aspects. Other guidelines that can be read together as references are guidelines on Halal assurance management system, good manufacturing practices (GMP) and Hazard Analysis Critical Control Point (HACCP).

### **Halal Elements in HTRMP**

Halal elements in the HTRMP consist of Halal logo and Halal certification. Nowadays, the term Halal covers almost all types of products that relate to Muslim lifestyles for example clothing, services such as hospitality, Islamic banking, hotel, logistics and recently the airlines. However, Halal itself should not incorporate only on the products itself. In some cases, it must go beyond it and should reach further into the disciplines of management of the company, organizational behavior and also into cultural anthropology and sociology [29]. As argued by [12, 17, 29, 32] Halal desires a supply chain approach and take into consideration the spiritual needs of the Muslim consumers and Islamic values [37]. In addition, in [37] found that national culture which underlines the employee's cultural values, attitudes and beliefs has a profound impact on organizations and thus in relation its impact on market performance. Unfortunately, there is no research to show the importance either durability, shelf-life or expiry date of the Halal certificate, authorization of the issuer Halal body and the ingredients that are used in the products in the Halal supply chain.

Recently, Muslims demand for the assurance of the products that they consume to be truly in accordance with the Islamic principles and to be also Toyyiban, which means wholesome and good [33]. According to [29], a trust mark which is the Halal logo can be placed on the Halal products for Muslims to know that the product is Halal. However, research exposed there are some bad manners performed by food producer by placing Halal logo onto their product label or packaging to catch Muslim users eyes and to buy their markets although in real life the authorized body did not certified them [5, 35]. According to [5], the Malaysian Muslim consumers are particularly concerned about the authenticity of Halal food products claimed by food producers. Literally, this is the most crucial hurdle in Malaysia, to be precise Muslims trade today where either Halal brands, logo or trademark proven to have trust issues and no more valid for customers. Not only there is issue on tracking food ingredients sold in the market, there is also the issue of how Halal is the food during preparation and packaging. Meanwhile, Halal logo is supposed to function as a code to ensure consumers' confidence on Halal. However, having Halal logo is not made a mandatory requirement.

According to [38], Halal certification for a product is the main element in Muslim buyers' decision to purchase Halal food products for their everyday consumption. The reason is because the Halal certified products encourage the sense of confidence and trust that the food products that they purchase comply with the Shariah Law. Besides, research done by [1, 23] stated that Halal certification such as the Halal logo or certificate of compliance, issued by a trustworthy and licensed agency shows that the product have sufficiently met Islamic dietary. In addition, Halal certification also applies to dining outlets, restaurants or cafes as Muslims will look for Halal certified places to dine. Thus, it shows that Halal certification does not only apply to buying groceries and meats but it also applies to food service provider as well. Muslims will not have any doubt since that the food product has been prepared in line with Shariah law when the Halal logo or certificates is attached to a product or displayed at any eating premises. In addition, in [23, 38] agreed that the Halal logo or certificates must be authorized and issued by a trustworthy Islamic organization in order to prevent any fraud, fake misleading logo or certificates being manipulated in the market.

### Toyyiban Elements in HTRMP

Meanwhile, Toyyib can be defined as wholesomeness, good, superb and pure. It also refers as a manifestation of Ihsan (competent) and Itqan (orderly manner) concepts. For this reason, the quality or estimated value of the lawfulness (halal) or the unlawfulness (haram) of a matter cannot be judged in isolation. Instead, it must take into account the process of production, manners and ways of consumption plus its effect as well [34]. Furthermore, Toyyiban also relate to the quality, hygiene, nutrition and authenticity in its claims. The most important point is that it gives assurance that the products are safe from hazards in term of chemical, biological and physical. In relation to the manufacturing and processing of food, dangerous goods are the common interference in processing plant. Dangerous goods are substances or mixtures that because of their physical, chemical or acute toxicity properties; present an immediate hazard to people, property or the environment. Therefore, it is important to take into considerations of putting hazard into hazard analysis prior to understanding their likelihood and severity level that may cause harm [26].

According to [27], hazards can be things that cause harm and they can be biological, chemical or physical in nature. During the hazard analysis level, risk should be estimated. Hazards that have little or no risk, or unlikely to occur can often be monitored and controlled by standard operation procedures (SOPs; routine employee hygiene practices, cleaning procedures, etc.), good manufacturing practices (GMP), hazard analysis critical control point (HACCP) and safe food industry responsibility (MESTI). On the other hand, findings by [16] shows that temperature conditions in the cold chain of chilled food products greatly help in determining the risk potential, the shelf life and final quality of chilled products that processed and packed under Good Manufacturing Practices and Good Hygiene Practices (GMPs and GHPs). As the temperature conditions vary significantly in practice throughout the supply chain, therefore temperature monitoring and recording is an important part to control the chain and any logistics management system that aims on product quality until the end user.

### Physical Elements

Physical risks can be occurred when consuming food and it can get into food supply chain either by tainting the food of deficient handling practice. It may composed of any entity that are hard or sharp for example glass, metal, plastic, stones, pits, wood or even bone. These item can get into the products either from the farm, during processing or packaging. Physical hazards can lead to illness and injuries that can lead to choking, cuts, broken teeth and even death. Some foreign material in food products may not be a physical hazard, but rather as an undesirable foreign material such as hair, insects or sand that are not likely to cause injuries [26].

### Chemical Element

Chemical elements may bring hazardous and it varies in any way of processing they were associated to and it known as a chemical hazards. These chemical hazards could be occurred at the very earlier processing such as an excessive used of pesticides that can lead to the unhealthy effects or antimicrobial remains. On the other hand, any remains of oils used to enhance the equipment performance, sanitizers and any chemicals that above the permitted levels as stated in food act (1983) where it can lead to sickness if swallowed to much also can be categorized as a potential chemical hazards. Usually, most of the chemical products will comes together with the Standard Operating Procedures (SOP) that provide guideline on the proper amount of chemical to be used. By this, it can help users to be more cautious and careful so that hazards can be minimized or prevented [26]. Moreover, chemical hazards can be naturally occurring either by intentionally added such as food additives or unintentionally added (incidentally added chemicals toxic elements).

### Biological Elements

At last, the very important and most hazardous hazards are biological. This consist of multitypes of microorganisms such as bacteria, fungi, yeasts, viruses and parasites. They can be in form of pathogenic microbes here they can produce toxins and some toxins can be heat resistant. Therefore, the toxins can be dispersed after the processing and production if mishandling of product occurred. This is because, during the

heat-related treatment, some of these bacteria can be dormant if the handling temperature were controlled. In a worst case condition, if there are any temperature abuse happen along the supply chain, it may cause illness that have multilevel of severity. Some common examples are *Salmonella*, *E.coli* and *Clostridium botulinum* [26].

### **Chilled Food Products**

Chilled foods are foods which are cooled to a temperature above their freezing point and they need to be maintained at the specific temperature to preserve their quality. This was also the most challenges and critical parts in the cold food supply chain. Control of storage temperature is important prior to maintaining the quality and safety of refrigerated foods from gate to plate. In reality, food companies willing to spend millions of their money in ensuring the integrity and wholesomeness of their refrigerated products yet they still facing some product recall cases such as adulterated or contaminated along the points of the cold chain [15]. In addition, such foods will lose value if they are frozen and in many cases freezings will destroy them. Highly perishable foodstuffs, such as dairy products, fresh meat and fresh fish are foodstuffs with a short durability and sellers should pay more attention to the proper storage of such foodstuffs. Furthermore, in [6] approved that the shelf life, quality and safety of perishable foods throughout the supply chain are greatly determined by environmental factors especially temperature.

Consequent to the description of chilled food, there are sometimes lists of product that need to be temperature controlled included in these definitions. These products also associated with illness in the absence of temperature control. The storage temperature of this type of products is vital because it can help to control the growth of microbial that allied to the food safety issue such as food poisoning or contamination of foods. In addition, microbial flora of food products is not static during the storage. This condition caused by many factors, but the length of time and the temperature at which it is kept have the greatest impact on food safety and quality. As the process from receiving till storage usually will take about 30-45 minutes, these are the valid reason why HTRMP are needed prior in controlling the food quality throughout the supply chain. A report by [16] also suggested that a modern quality and safety assurance system should rely on prevention through monitoring, recording and controlling of critical parameters during the entire product's life cycle that includes the post-processing phase and extends to the time of use by the final consumer. The concern of taking a supply chain perspective with regards to the role and the logistics of transport, storage and handling consideration were increased.

There are several temperature levels of food to suit different types of product groups. For example, we may identify frozen, cold chill, medium chill and exotic chill: frozen is -25°C for ice cream and -18°C for other foods and food ingredients; cold chill is 0°C to +1°C for fresh meat and poultry, most dairy and meat based provisions, most vegetables and some fruit; medium chill is +5°C for some pastry based products, butter, fats and cheese; an exotic chill is +10°C to +15°C for potatoes, eggs, exotic fruit and bananas. In [6] recommended that fruits and vegetables should be divided into three categories: 1) a 0-2°C group; 2) a 7-10°C group; and 3) a 13-18°C group according to their optimum temperature requirements. The first group is for the majority of the green, non-fruit vegetables and temperate fruits. Groups 2 and 3 refer to chill-sensitive products.

The date of durability should be checked daily and follow the rule "first in, first out". For foodstuffs with longer durability the appropriate microclimatic conditions are necessary and the products should be sold only within their durability. All foodstuffs have to be stored in their original, undamaged packaging with a clear and complete labeling in a language that is easy to understand. Labeling should include special storage conditions and instructions for use where appropriate [18].

## **CONCLUSION**

This paper discussed the elements in Halalan-Toyyiban Risk Management Plan (HTRMP) that will complete the Halalan-Toyyiban risk assessment process. As been noted, there are two elements that contribute to the Halal aspects which are the Halal logo and its certification. On the other hand, the requirements for the Toyyiban elements are namely the physical, chemical and biological. However, more research need to be done in order to analyze the implementation of the HTRMP itself and the process of risk assessment. As such, there are needs for a more comprehensive literature on the importance of the subject matter, given the fact that the market demand for Halalan Toyyiban products are expanding globally.

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