

REVIEW ARTICLE: THE IMPORTANCE OF HALAL VALIDATION OF INGREDIENTS AS CRITICAL PARAMETER DURING HALAL AUDITS

Endang S. Sunaryo¹, Mardiah², Siti Irma Rahmawati¹

¹PIPIMM (Pusat Informasi Produk Industri Makanan dan Minuman), Center of Information for Food and Beverages Industries, Indonesia

²Magister Teknologi Pangan, Sekolah Pascasarjana, Universitas Djuanda
email: endang.sunaryo304@gmail.com

ABSTRACT

As one of the biggest numbers of Muslim population in the world, Indonesia considering as one of potential market for food and beverages. Latest 3 years data showed products especially Food & Beverages produced by small & micro industries increased tremendously compared to medium & large enterprises. Among of Asean countries, the growth of consumer goods market in 5 years (2012 – 2017) increased significant (10 %) particularly packaged food and soft drinks. Therefore more challenges related with validity of raw material/ingredients Halal certification (its authenticity), validity of GMP and HACCP certification to guarantee “thoyyiban” during food processing and validity of halal supply chain from farm to table (documents authenticity). Interesting facts that due to scarcity of getting halal ingredients, producers tends to sifting to chemical process in orders to make halal audit easy. Unfortunately they ignore the sifting may create another health concern. Others concern are incompletely requirement such as Halal Certificate of ingredients, Certificate of Analysis, Material Safety Data Sheet and Food Processing Chart. Those documents often issued by traders instead of its manufactures (supposed to be). To improve and fasten the innovation, we propose some cooperation and network among ASEAN Halal institutions.

Keywords: halal validation, ingredients, critical parameter, halal audit

1. INTRODUCTION

As the 4th most populous country in the world after China, India and USA, Indonesia among them recognised as the largest muslim population with more than 204 million inhabitance, Indonesia considered as the important market for processed foods and beverages. The latest Food and Beverages data showed from 2014 until 2016 that more than 99% development of Food and Beverage industry was contributed by Small and Micro industries (SMI) and only less than 1% contributed by Medium Large enterprises (MLE). From economical point of view, the role of small & micro industries mainly coming from home scale played importance in influencing Gross Domestic Product. They absorbed local informal workers and influences significantly to the growth of regional economic as well as reduce unemployment of unskilled workers. Compared to MLE, the growth of workers engaged 55.88% in SMI while minus 17.73% in MLE.

Table 1. Food & Beverages Industries between SMI and MLE

Number of Establishment (Source: BPS)							F&B Industry	
Category	2014		2015		Growth		Medium - Large	Small & Micro
	Medium - Large	Small & Micro	Medium - Large	Small & Micro	Medium - Large	Small & Micro		
Food	5,794	1,198,491	5,438	1,567,019	(6.14)	30.75		
Beverages	374	44,694	310	47,130	(17.11)	5.45		
Total	6,168	1,243,185	5,748	1,614,149	(6.81)	29.84		
%	0.49	99.51	0.35	99.65				

Workers Engaged							F&B Industry	
Category	2014		2015		Growth		Medium - Large	Small & Micro
	Medium - Large	Small & Micro	Medium - Large	Small & Micro	Medium - Large	Small & Micro		
Food	877,771	2,324,212	719,116	3,664,208	(18.07)	57.65		
Beverages	52681	81,027	46,379	85,167	(11.96)	5.11		
Total	930,452	2,405,239	765,495	3,749,375	(17.73)	55.88		

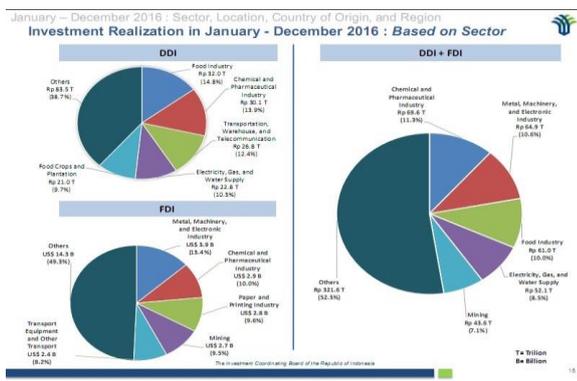
(SOURCE: BPS, 2016)

These figure aligned with the contribution of GDP of non oil industries, mainly Food & Beverages which growth within 5 years (2012 to 2016). In table 2, based on the growth of Food & Beverages in 2010 of 8.55%, it contributed 33.60% to GDP of non oil industries. Regional growth of retail groceries among Indonesia provinces showed between 12.5 % in Kalimantan until 13.5 % in Sulawesi while faster in Jawa 9.2 % until 10.4 % with contribution of 4.6 ; 5.2; 14.9 until 21.5 % to GDP non oil industries (Lukman, 2017).

Table 2. The Food and Beverages Growth and Its Contribution to GDP Non Oil Sector

INDICATOR	2012	2013	2014	2015**	Q3 2016**
GDP Growth	6.03	5.56	5.02	4.79	5.02
GDP Growth Non Oil Industry	6,98	5,45	5,61	5.04	4.56
F&B Growth base in 2010	10,33	4,07	9,49	7.54	8.55
Contribution to GDP Non-Oil Industry Sector	29,52	29,01	29,74	30.86	33.61

Figure 1. Investment Realisation of Domestic Direct Investment and Foreign Direct Investment in 2016 (Indonesia Investment Coordinating Board, 2016)

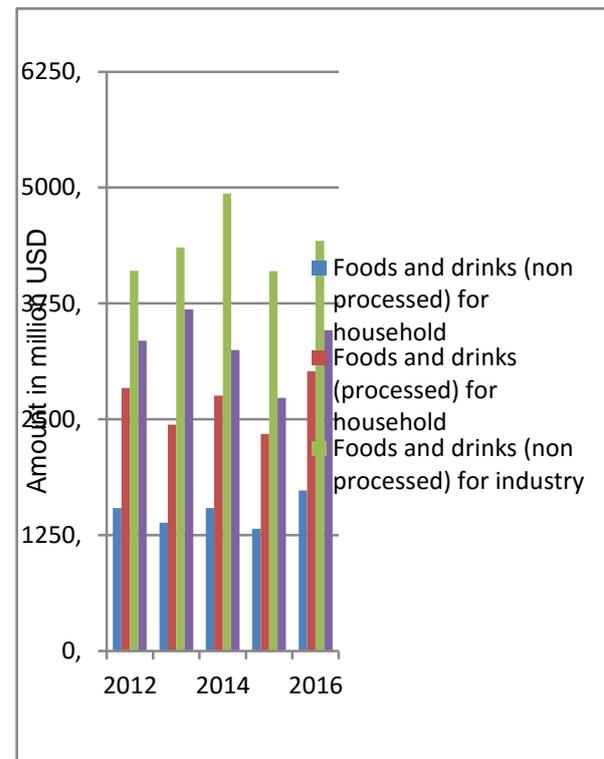


If we looked at Investment realisation profile, the Food & Beverages industries derived mostly from Domestic Direct Investment with total amount 32 Trillion rupiah or contributed 14.8%, while Food Crops and Plantation provided 21 Trillion rupiah or 9.7%. On the other hand Foreign Direct Investment seem have no interest to Food & Beverages Industries, they put investment mainly to machineries, mining, chemical industries like showed in Figure 1 (Lukman, 2017).

Both compilation of total Domestic Direct Investment and Foreign Direct Investment showed diverse interest among investors. From total investment, percentage and its contribution respectively occupied by Chemical and Pharmaceutical Industries 69.6 T /11.3% ; Metal, Machineries and Electronic industries 64.9 T/ 10.6% ; Food and Beverages industries 61 T/ 10% ; Electricity, Gas and Water supply 52.1 T/ 8.5% ; Mining 43.6 T/ 7.1% and remaining occupied by various industries 321.6 T/ 51.5%.

Moreover, improvement Gross Domestic Product cause steady increment on production Food and Beverages both processed and non-processed product. Unfortunately, those raw material could not sufficient provided by the local agriculture,

hence increase total imported raw ingredients in



the form of fresh and semi finished product.

Figure 2. Total Import Food and Beverages Consumption in 2012 – 2016 (BPS;Ministry of Trade, 2016).

ASEAN as well as ASIAN Free Market open opportunities for industries to penetrate new entries. Rapid changes due to digital revolution, more exposure to e-commerce cause consumer loyalties to specific branded product declining. More fiercely competition among consumer good product’s brands and services open consumer preference towards challenge and choice. Within 3 years we observed various local ASEAN brands expansion, 78% growth in consumer goods, retail industries and the growth of mall and apartments. Usage, Attitude and Image survey among consumer goods within 5 years (2012-2016) strengthen the facts of rapid changing consumer behaviour. Only 34% of online reviews consumers are loyal to specific brands, 65% use mobile devices to learn about products and services, last but not least 64% they exposed to others comment. During 5 years packaged foods and soft drinks (including fruits juices and sugar sweetened beverages) consistently growth and occupied major products preferred by consumer besides tobacco and other consumer goods. Thus packaged foods and sugar

sweetened beverages will be the next future product providing global value chain.

2. WHAT ARE THE CHALLENGES FOR AUDITOR ?

The Global halal food market grow at 15.52% during the period 2017 – 2021. One trend in the market is increased demand for convenience foods. The purchase and demand for convenience and packaged foods are on the rise with improvement in the living standards, lifestyles, and disposable incomes of consumers in Muslim countries. These packaged foods are prepared according to Islamic dietary laws. One driver in the market is improved economic conditions of Muslim countries (Demircy et al., 2016).

One of the most important economic health indicators of a country is gross domestic product (GDP) by purchasing power parity (PPP). PPP considers the local price differences between nations and then equalises them to the US economy. The economic conditions of Muslim countries are improving with time. Economic development has led to an increase in purchasing power and income levels of people in the Muslim countries.

Rapid changing consumer behaviour and growth of Mall or groceries spread particularly in big cities provide new entries both packaged foods and sugar sweetened beverages. Products considered as processed Foods and Beverages. Although these a good sign of economic development for the country, but it also bring consequences for Muslim consumer in Indonesia or other ASEAN countries. The facts processed foods may contain different ingredients both fresh raw materials and or processed agriculture material; also different food additives due to diversity of consumer acceptance and development of food processing aids exposure to get right texture and self stable foods.

Obtaining a halal certification is difficult as there are no uniform halal standards and halal certifying bodies for every country. This makes it difficult for the companies to operate in the international market. In addition, the lack of transparency from certifiers and fragmented marketplace create uncertainty and difficulty in obtaining halal certification. This has led to the loss of faith and protests against halal and halal certifiers.

Those concern definitely influence “Halal“ complexity. The more complexity of Food System Matrix in formulation to pursue consumer preference and acceptance, the more difficult during getting Halal Certificate. Development of food technology such as bio-conversion of raw materials and advance processing technology in order to win the consumer heart and to achieving the organoleptic signature cause more complexity during halal audit.

1. Validity of raw material/ingredient document authenticity

Halāl (Arabic: *حلال* ḥalāl, "permissible"), also spelled hallal or halaal, refers to what is permissible or lawful in traditional **Islamic** law. It is frequently applied to permissible **food and drinks/beverages**. In the Quran , the word **halal** is contrasted with haram/forbidden. Therefore with regards to Food and Beverages, these should comply with 3 guidelines :

- a. Consumption must be only Halal Foods and Food Products.
- b. Halal Food and food products must be obtained through Halal lawful including its raw ingredients, food additives and its processing aids.
- c. The material in contact with the food and food products must not be harmful to health

Due to restricted requirements, availability of Halal source is challenging. Awareness and understanding Halal Principles behind formulation quite often being ignored by the suppliers and traders. Accuracy and similar understanding on the principle of halal through out process behind availability of raw ingredients during audit become important aspect. Thus availability of documents consisting Certificate of Analysis, Material Safety data Sheet, Flow chart processing and Halal Certificate authenticity from the producers/supplier become mandatory.

2. Validity of GMP and HACCP certification to guarantee “thoyyiban” during food processing

The basic Halal requirements showing how food safety would be a part of the Halal concept. HACCP programs depend upon prerequisite programs, such as good manufacturing practices (GMPs) to ensure the production of safe food products. GMPs provide the operating and environmental conditions that are needed to protect food products during processing and storage. They typically apply to all related processes in a facility. Successful GMPs include procedures related to the following topics: Receiving raw ingredients; Storage of raw materials and finished products; Sanitary design principles for facilities (construction, maintenance, linear product flow, traffic control, etc.); Supplier control (guarantees and system verification); Chemical handling (segregation and proper use of cleaners, sanitizers, pesticides, etc.); Specifications for ingredients, products and packaging materials; Sanitary design principles for equipment (construction, installation, preventive maintenance and calibration; Personal hygiene; Training (personal hygiene, GMP, sanitation, HACCP, etc.); Shipping; Recall programs, etc.

Halal Assurance System (HAS) has integrated "Toyyiban" analysis into one Halal standard whether they are sufficient to assure food safety. The integrated management system in Halalan Toyyiban keeping the sustainability of Halal status of certified product during Halal Certificate validity period (2 years). It consisted Halal policy, Halal Management Team, Training and Education, Material (Raw Material, Food Additives and Processing Aid) , Product, Production facilities, Written Procedures for Critical Activities, The Product handling for product which incompliance with standard, Traceability, Internal audit and Management Review.

3. Validity of halal suply chain from farm to table

Besides production, Halal certification required assurance during product delivery until product received by consumer. In accordance with CAC/GL

24-1997 (GENERAL GUIDELINES FOR USE OF THE TERM "HALAL") :

1. Halal food can be prepared, processed or stored in different sections or lines within the same premises where non-halal foods are produced, provided that necessary measures are taken to prevent any contact between halal and non-halal foods.
2. Halal food can be prepared, processed, transported or stored using facilities which have been previously used for non-halal foods provided that proper cleaning procedures, according to Islamic requirements, have been observed (Although the second pre-requisite may not be easy accepted by several Muslim countries).

The facts that very often facing difficulty during audit after released Finish Good from the factory due to some pressure in delivery system since transporter and warehousing managed by third party. Validity of documents authenticity really becoming critical and cause time pressure.

3. FACT FINDING OR CRITICAL PROBLEM

Different countries applied different procedure in getting Halal Certification. These may cause disturbance due different understanding and lack of uniformity in Halal Standard particularly Halal Assurance System. Variation of critical parameter perception caused difficulty to collect all documents needed particularly its assurance of authenticity or source of documents it self.

Different Halal Certificate Agencies among countries also bound respectively to their own country legislation. These made confusion at the end between them for example conflict TBT (Trade Barrier to Trade) and SPS (Sanitary and Phytosanitary Measures) agreements about Halal Requirement between Muslim versus Non Muslim Countries as well as between Muslim countries.

Technically understanding and similarity to agree with Halal requirement clearance point of view to describe its source and process behind, for example **Replacement of Halal critical**

ingredients may create a new problem on health concern in case of :

- 1) Replacement of activated carbon with sulphitation in sugar refinery process

From audit report very often producer replaced refined sugar using activated carbon as whitening agent with refined sugar using sulphitation process. Most of refined sugar producer did not aware of sulphite residue which cause allergenic to infant and toddler. In one side, producer need white sugar but this cause critical in getting its Halal Certification, but on the other hand they did not aware sulphite might cause health concern due to its allergen.

- 2) Replacement of enzymatic reaction with HCL in saccharification

This case quite often in fruit manufacturing producer like Thailand, Taiwan etc, they use maltodextrin as carrier or filler. To avoid long procedure during Halal audit they replaced enzymatic processed Maltodextrin with Acidified Dextrin. The fact enzymatic very tricky process in getting its Halal, producer jump in replacing Maltodextrin with Dextrin. Unfortunately many Dextrin producer did not aware of residual HCl which cause gastro disturbance.

Beside health concern, other technical aspect concerning **Lack of supporting documents of additional ingredients such as :**

- 1) The use of maltodextrin in dried fruits and vegetables .

Maltodextrin is considered as additional ingredient which sometimes manufactured ignored to mention in the label (not compulsory). Therefore they did not aware if this might cause prolong or critical point.

- 2) The use of microbial substrate material.

In fermentation process, the use of microbes or its metabolites quite often become critical point of audit. Auditor will digging the traceability history of the ingredient. If microbes or its metabolites using "Haram

material" in the growth media, this certainly become critical. Unfortunately manufacture did not put their concern in this regard since they ignore or considered they purchased RTU microbial growth media.

Problem occurred during audit which commonly caused delaying in Halal Certification :

- 1) Insufficient document prerequisite such as Halal Certificate of respective raw ingredient, Certificate of Analysis, Material Safety Data Sheet and Flow Processing Chart of syubhat raw ingredients example Maltodextrin, Enzymes etc.
- 2) Generally the documents issued by traders not manufactures (supposed to be). Since additional ingredient, manufacture difficult to contact directly to the respective manufacture company. To short cut process, they only able to get letter of acknowledgment from the trader.

4. RECOMMENDATION

Aligned with university mission as well as reducing unnecessary pressure during variation in countries "Halal Regulation caused further Halal Assurance confusion" and harmonization into a Global World Halal Standard, we aim to propose several points to be considered. There are :

a. National Level

1. Strengthen internal networking between BPJPH with halal centre members (35 academic institution)
 - a. priority on core subjects (research and publication)

Ex : palm oil and its derivatives, fish or bones and its derivatives (gelatin, protein concentrate, minerals)
 - b. Priority (quantitative or qualitative measurement)

Ex : To ensure the active component of bleaching agent in accordance with Certificate of Analysis
2. Strengthen facility (laboratory analysis and pilot plant)
3. Strengthen human resources capacity building (auditor) by Short course, Advance Studies for scientist and practitioner (MSc or PhD education) and Bi annual meeting focus on progress development on critical issue

b. Regional Level

1. Strengthen internal networking between halal authorities member countries to solve common issues example Updating audit mechanism issues and Transparency related with code of conduct during audit mechanism to get alignment.
2. Harmonization in halal procedure before issuing halal certificate including ;
 - a. Decision on halal should be declared by fatwa commission representing a group of ulama (ahlul fiqih) instead of individual ulama
 - b. Audit mechanism focused on critical item to be audited.
3. Capacity building focus in several research ;
 - a. Raw material, food additives and processing aids alternative
 - b. Research on possibility impact on health concern as a result development of ingredients replacement especially to achieve halal requirement

DAFTAR PUSTAKA

Accenture strategy. 2015. https://www.accenture.com/t20150523T033705_w_us-en/acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/

[Dualpub_9/Accenture-ASEAN-Consumer-Research-CPG.pdf](#)

BPS, Ministry of Trade. 2016. <http://www.kemendag.go.id/en/economic-profile/indonesia-export-import/development-of-goods-imports-by-group>

CAC/GL 24-1997. GENERAL GUIDELINES FOR USE OF THE TERM “HALAL”

Demirci M, N.Soon, Jan M, Wallace and Carol A. 2016. Positioning Food Safety in Halal Assurance. *Food Control*. 70. PP 257 – 270. ISSN 0956 – 7135.

GENERAL GUIDELINES OF HALAL ASSURANCE SYSTEM LPPOM MUI. 2008. Lembaga Pengkajian Pangan, Obat-obatan dan Kosmetika Majelis Ulama indonesia (LPPOM MUI). The Assessment Institute for Foods, Drugs and Cosmetics, Indonesian Council of Ulama (LPPOM MUI) .

Indonesia Investment Coordinating Board. 2016. http://www2.bkpm.go.id/images/uploads/investasi_indonesia/file/Bahan_Paparan_-_ENG_-_TW_III_2016.pdf.

Lukman, A. 2017. Meminimalkan Hambatan Pertumbuhan Industri Makanan Minuman..