Evaluation of halal assurance system (HAS) implementation on bakery products processing in small and medium enterprises (case study in X Bakery Batu, East Java)

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Abstract. Small and Medium Enterprises (SMEs) have an important role to catch opportunities in the global halal market. To achieve halal standards, bakery SMEs need to implement Halal Assurance System (HAS). The objective of this research was to evaluate HAS applied by SMEs in bakery product processing. Evaluation was conducted by audit method in accordance to Indonesian Halal Assurance System (a guideline regarding the Fulfillment of Criteria of Halal Assurance System in Processing Industry – namely HAS 23101). The result of the evaluation shows that 44% of HAS criteria have been met. Halal team is the key of HAS management, therefore the team needs to be institutionally established. Halal policy need to be documented and announced to the public. Regular training will improve understanding and awareness of the importance of HAS responsibilities among stakeholders. With regard to bread ingredients, 85% products hold halal certificate from MUI (Indonesian Ulema Council). Halal Control Point (HCP) of production process can be derived from contamination of haram (not permitted by Islamic Law) and najis (dirty according to Islamic Law) in term of material, equipment, and packaging process. It requires top management commitment and cooperation of a good halal team to implement a sustainable halal system.

1. Introduction

The consumption of bakery products is increasing in the last 10 years in Indonesia, therefore the assurance of halal is needed as Indonesia is the largest moslem country in the world. Evidences were shown that during 2011 - 2015 the level of white rice consumption in Indonesia decreased by 3.07% per serving [1]. According to the average rate of consumption of processed wheat products such as bread, it was reported to be slowly increasing from 2009 with the number of 0.121 kg per capita until 2013 with the number of 0.144 kg per capita [2]. Announcement of halal certified bakery products will facilitate the Muslim community to choose which products are halal guaranteed [3]. Bakery or patisserie products are classified into 4 groups, namely bread, cake, pastry, and cookies. The bakery product studied classified as bread group [4]. General differences between bread with other patisserie class lies on the fermentation process. Bread requires certain amount of yeast as a leavener ingredient. Halal control point (HCP) in the processing of bread does not apply for the ingredients alone, but also for the processing. Koswara [5] reported, the ingredients often used in the making of bread are wheat flour, yeast, sugar, salt, fat in the form of shortening/margarine/butter, milk, and eggs. Bread is often added by several additives to improve the quality such as emulsifier, flavor, coloring, bread improver, and preservatives. With the emergence of various and complex bread ingredients it is
important to record the control point and halal status. Baking consists of 4 general processes; dough mixing, fermentation, forming, and roasting [4]. In general, halal control points on the processing can be derived from contamination of unlawful or najis materials

The problem raised from this research was the extension of Indonesian Ulema Council (MUI)’s halal certificate which is still constrained and has not been acted upon by the company. From this point, it is necessary to study the general obstacles faced by the small and medium enterprises to apply the halal assurance system. The purpose of this research was to evaluate the consistency of halal assurance system in the companies by case study.

2. Materials and Methods
This study used an audit method according to Indonesian Halal Assurance System Guidelines regarding the Fulfillment of Criteria of Halal Assurance System in Processing Industry (6). Questionnaire used in the form of check list of HAS audit which refers to Indonesian Halal Assurance System Guidelines (6). The checklist form contains closed questions to conduct monitoring or evaluation of Halal assurance system (HAS) implementation by the company. Questionnaire filling was done by interview to selected respondents. Interview method was chosen to collect more valid data and facilitate the respondent in understanding each question in the questionnaire. Respondents were obtained from internal company employees. At least 2 persons are taken from each part or division within the company to become respondents. Respondents must have at least 2 years of experience or duration of working at the company.

3. Results and Discussion
3.1 Fulfillment of Halal Assurance System Criteria

1. Halal Policy
Halal policy in the form of a written statement contains a commitment by the top management to consistently produce halal products (6). Based on the results of filling in the audit check list form, 28.5% of respondents answered "Yes" or "No", and the rest reported that they did not know the absence or the availability of halal policy. Respondents who answered "Yes" said that the halal policy set by the company leaders was the use of materials that have been halal labeled. The respondents who gave the answer "No" explained that the company did not have a written/documented policy of HAS. There was only policy that was spoken by the business owner that all materials used must have a halal label of MUI. Furthermore, all respondents said that there had never been any of halal policies implemented and communicated to all stakeholders.

2. Halal Management Team
Malaysia Halal Certification Body stipulates that the applicant company must appoint an internal halal team of 2 Muslims, locals, and committed to halal management and work full-time in the company (7). Indonesian Halal Certification body added that the appointment of halal management team must come from the company's permanent employees and accompanied by written evidence (6). Based on the internal audit check-list results, 43% of respondents reported that there was no halal management team that was formed systematically. The remaining 57% said not knowing about the presence or absence of halal management team. Once further explored, all the needs of halal assurance systems are mostly handled by the owners of the company. In case of the need for assistance, the owner will delegate one or more persons who are entrusted to handle the implementation of halal assurance system.

3. Training and Education
Guidelines for Halal Assurance Management System of Malaysia Halal Certification requires the management of the company to provide adequate and sustained training on halal assurance system in which all workers must be trained to apply halal system with full sense of responsibility (8). The result of filling the audit check list was 43% of respondents stated that there were employees who attended the HAS external training, 14% reported "No" and 43% stated that they were not aware of any external training. Based on the interviews with company owners, internal training of employees related to halal assurance system had never been held. The owner felt that it was sufficient to convey
orally the halal rules / policies applied by the company, namely the guarantee that the materials used must have MUI halal logo or certification.

4. Materials
In determining halal status, all baking materials are grouped based on 4 (four) categories, namely vegetable ingredients, animal ingredients, microbial ingredients, and other ingredients. The halal control points of the bread ingredients are identified using a halal critical point decision tree and the results of the identification of each category of ingredients. There are 12 halal control points of vegetable ingredients: wheat flour, granulated sugar, refined sugar, palm oil, jam, brown grains, cocoa powder, sesame oil and fat derivatives (shortening, margarine, baker's fat, white fat, and butter oil substitute). Wheat flour is made from raw wheat, but it is often added / fortified with additives such as vitamin A to enrich nutritional value [10]. Vitamin A is usually coated to dissolve easily and not easily damaged during storage [11]. Coating material used may be derived from halal materials such as gum, but may also be derived from a material that is doubtfull of its halal such as gelatin. Apart from the potential for such a prohibition, wheat flour used by the company has been traced to be halal as indicated by MUI’s halal logo on the packaging material. Based on the tree chart of the sesame decision is indeed a vegetable material, but to make sesame as a food mixture requires simple processing. Sesame seeds in very simple foods, ie washed thoroughly and dried and then mixed into the food [12]. In the drying process, sesame seeds are only roasted without oil, so in general there is no addition of food additive.

Dye for bread production is a mixture of organic and inorganic materials, so it needs to be studied further for the critical point. As viewed from the compositions information on the packaging label consisting of sorbitol and inorganic dyes. Sorbitol or sugar alcohol can be found in fruits [13]. Sorbitol includes a natural sweetener of extraction or enzymatic isolation in which the most commonly used enzymes are the alpha-amylase and gluco-amylase enzymes [14]. One of the sources of this alpha-amylase enzyme comes from animals, especially pigs [3]. However, many of these alpha-amylase enzymes are derived from microorganism products and if their manufacture does not involve haram elements it may be allowed to be used. The inorganic dye composition that exists in dark green and egg yolk is Tartrazin, Brilliant Blue, and Ponceau 4R. Three materials are inorganic dyes so that there is no problem for halal status. Since the dye material used by the company has been halal certified by MUI [15].

5. Products
Indonesian Halal Certification Body declare that the brand or product name should not use a word that leads to something forbidden or worshiped that is not in accordance with Islamic Shari’a Law [6]. In addition, this also applied to a word associated with the sensory profile of the product. It should not have a tendency of smell or taste that leads to haram products. Based on the results of the inspection, all respondents agree that the brand or trade name used by bakery products in this company does not use a name that is contrary to Islamic Shari’a Law. In addition to trademarks, on the packaging of bread products the name of the variant are mentioned. The name of the variant is adjusted to the shape and physical character of the product. For example, cream ball is round with stuffing cream, for bread braids are shaped like a braid hair. All respondents also stated that the characteristics or sensory profiles of each available product do not have a tendency to smell or taste that lead to haram products based on the fatwa of the Indonesian Ulema Council (MUI). Various fresh bread and sweet breads have the flavor and aroma of bread in general and nothing else are suspicious.

6. Production Facilities
Based on the information obtained, all production facilities used in the company have never changed. There is only one additional equipment for water distillation. The water distiller used in this bread production process uses a reverse osmosis system that can process and filter water to be safer from contaminants such as chlorine. The halal production process starts from the use of sterile machines and equipment, the use of clean and holy water, and also pays attention to the sanitation of workers to produce a high quality and safe product [9]. Another important aspect in the production process is the sanitation and health of employees. A healthy employee will prevent disease contamination into the product during the production process. Therefore, it is necessary to check the health of employees on
a regular basis. It is important to provide protection to employees while protecting the company's assets [9].

3.2 Evaluation of Halal Assurance System Implementation

The evaluation was conducted to find out the conformity and consistency of the implementation of HAS in the company with the rules set by Indonesian Halal Certification Body [6]. The results showed that the implementation of HAS in the company should be improved to get halal certification. Evaluation of the implementation of HAS criteria at bakery company is shown in Table 1. The result of the evaluation on halal assurance system in this company found as many as 44% criteria in HAS 23101 assessed have been fulfilled by the company. The percentage of evaluation value is obtained from the number of scored criteria divided by the total score of the criteria.

| No | Criteria | Score | Fulfillment of HAS Criteria |
|----|----------|-------|----------------------------|
| 1  | Halal Policy | 1 | - |
| 2  | Halal Management Team | 1 | - |
| 3  | Training and Education | 1 | - |
| 4  | Materials | 1 | - |
| 5  | Products | 1 | √ |
| 6  | Production Facilities | 1 | √ |
| 7  | Written Procedures of Critical Activity | | |
| 7a | Selection of New Materials | 1 | - |
| 7b | Purchase of Materials | 1 | √ |
| 7c | New Product / Product Development Formulation | 1 | √ |
| 7d | Inspection of Coming Materials | 1 | √ |
| 7e | Production | 1 | - |
| 7f | Laundering Production Facilities and Additional Equipment | 1 | √ |
| 7g | Storage and Handling of Materials and Products | 1 | √ |
| 7h | Transportation | 1 | √ |
| 8  | Tracing ability (Traceability) | 1 | - |
| 9  | Handling of Unsuitable Product Criteria | 1 | - |
| 10 | Internal Audit | 1 | - |
| 11 | Management Review | 1 | - |
|    | Total Number of Criteria Scores | 18 | | |

Description: √ : has been fulfilled
- : unfulfilled

4. Conclusion

The halal management team is the key to the implementation of HAS management, therefore the team needs to be institutionally established and the halal policy needs to be written to guarantee that constraints such as the Indonesian Ulema Council (MUI) extension can be resolved properly. All materials included in the halal control point mostly have halal certification except for fine granulated sugar, jam, flavor, and chocolate chip. The halal control point of the production process can be derived from contamination of haram and unclean materials, workers, environmental sanitation, and packaging process. The result of HAS evaluation found around 44% criteria in HAS 23101 have been fulfilled. It takes top management commitment and multidisciplinary cooperation of a good halal team to implement a sustainable halal assurance system.

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