Halal and safety traceability of material, production, and serving of local food in Surabaya: A review

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Abstract. Indonesia has a very diverse culinary consisting of a variety of local food. Although the production process using ingredients and seasonings is quite complex, the serving is simple and traditional. This simplicity often leads to low consumer’s and manufacturer’s awareness of its safety and halal guarantees thus making this phenomenon very feasible to discuss. This research aims to review halal and safety traceability of local food in Surabaya, namely rujak cingur, rawon (traditional black soup), and kupang lontong (lontong mussels). These foods are most sought after by tourists when visiting Surabaya. Halal traceability and safety are carried out on materials, production, and serving of the food. Traceability results show that most street vendors selling rujak cingur, rawon, and lontong mussels in Surabaya have not implemented halal and save food traceability. The risk of safety and halal of these local foods are quite large due to the lack of concern of consumers and producers to the importance of safety and halal in their product. In fact, the food that is a specialty of an area should get greater attention to ensure the safety and halal of the product. Increased awareness and practicality to trace ingredients, production, and serving are very important to ensure the safety and halal of ready-to-eat local food, thus supporting culinary tourism development.

1. Introduction

The diverse ethnic groups in Indonesia show the large variations of local foods across the country. There are thousands of local foods which potentially offer a strong focal point to portray Indonesia as a tourism destination [1]. Indonesian local food can be classified based on six major islands across the country, one of which is from Java. Java is divided into 3 regions, namely West Java, Central Java, and East Java. Each region has different local food flavor characteristics [2].

East Java has a distinctive taste of food that is salty and spicy. Many local foods become culinary icons of Surabaya that are often served to attract local and foreign tourists. However, foods that have a distinctive taste of spices and halal control point (HCP) from raw materials are rawon (traditional black
soup), *rujak cingur*, and *kupang lontong* (*lontong* mussels). These local foods are often served simply by street food vendors. It becomes a tourist attraction because the traditional nature and authenticity show the characteristics of Surabaya. Ready-to-eat food needs to be prepared according to halal rules [3] to support tourism [4]. Unfortunately, awareness of manufacturers and consumers of *halal* and safety traceability is still lacking, especially iconic culinary.

The certainty of *halal* food is not only in the final product but also in raw material, process, and serving [5]. Halal product influences sustainable production [6]. *Rawon* and *rujak cingur* made from beef. *Rawon* uses beef, while *rujak cingur* uses *cingur* or cartilage and meat of the nostrils and ears of cattle. *Lontong* mussels use mussels as raw material. Mussel is a type of shellfish attached to the bottom of sandy or muddy waters in the estuary of the river. This study reviewed the *halal* and safety traceability of those three foods to become an iconic part of the culinary in Surabaya. This study aims to describe the application of *halal* traceability in street food vendors, mainly *rawon*, *rujak cingur*, and *lontong* mussels in Surabaya.

2. Material and methods

This study used enriched literature studies and interview with traders directly in roadside restaurants and street vendors in Surabaya. Researchers interviewed 2-3 traders for each of the local types of food and observed the serving process in each vendor. The research was sourced from books, journal articles, and proceedings. Sources of reference about *halal* food, traceability, local food are included in the scope of this research discussion.

3. Result and discussion

3.1. Overview of halal standard

*Halal* food represents food that is pure and wholesome and free from *haram* (forbidden) products [7]. It is an important concern for Muslims because Muslims should only consume *halal* food. A *halal* food market is increasing and becoming a trend among Muslims and non-Muslins [8]. Consumers have realized *halal* food is healthy and very good for anyone to consume [9].

The *halal* product process is a series of activities to ensure the *halal* of products, including materials, processing, storage, packaging, distribution, sales, and presentation of products [10]. The requirements of *halal* product guarantee can be submitted to *halal* certification. *Halal* certification is obtaining a *halal* certificate through inspection to prove that the material, production, and *halal* assurance system meet the standards [11]. *Halal* food certification provides certainty of *halal* products as a consumer right [12 - 13].

Meat-based food products have a *halal* control point (HCP) on the aspect of slaughter. If the slaughter is not according to Islamic law, making the meat *haram* to be consumed [14]. Slaughterhouses (RPH) need to pay attention to the slaughter process and apply for *halal* certification [15]. The Indonesian government stipulates that materials from animals are forbidden, including blood, carcasses, pork, and animals slaughtered are not following *sharia* [14]. These materials have been determined *haram* based on MUI (Majelis Ulama Indonesia) fatwa. *Majelis Ulama Indonesia* (the ulama council of Indonesia) is an advisory body with a nationwide network of branches that produces fatwa to guide Muslims and the government.

3.2. Mechanism and maintaining food safety and halal traceability

Food traceability can be used to track the *halal* status of food products by recording all activity information to produce a product from upstream to downstream [16]. A traceability system can ensure food safety, product quality and increase consumer confidence in *halal* food products [17]. Increased transparency of the production chain is a *halal* traceability drive machine [18].
Food traceability is an important mechanism in food safety [19]. *Halal* traceability and food safety go in tandem with each other [20]. Food safety arguably emphasizes a similar goal, especially from the health aspect [21]. An effective traceability system is good communication and management of all workers involved in the process [22]. HCP can be monitored in *halal* traceability systems if the product is suspected to be contaminated with non-*halal* elements and detailed information can be recorded until the contamination can be identified and corrected [23]. *Halal* traceability mechanism, namely:

1. **Producer traceability** is the traceability of each production stage. Manufacturers must track the suitability of raw materials with *sharia* and *halal* requirements [24]. Complete information about *halal* raw materials needs to be shown through labels and markings. The raw material of slaughter animals must pass through slaughter according to Islamic law.

2. **The traceability process** determines the type and sequence of events during the production and handling of the product. During its preparation, processing, packaging, storage, or transportation, the food is physically separated from any other food that does not meet the requirements by *sharia* law [25].

### 3.3. *Halal* material traceability

Based on observations, the interview results show visitors and tourists are very excited about the taste and sensation of food authenticity when in street vendors. When served in the restaurant it seems luxurious and not traditionally original. The large interest of visitors should encourage the awareness of restaurant business owners to implement traceability system *halal* and safety products typical of Surabaya. *Halal* traceability system can increase consumer confidence because the food consumed has been guaranteed safe and *halal*.

#### 3.3.1. *Rawon*

*Rawon* is the main ingredient of *rawon* combined with spices in gravy. *Rawon* soup should come from the beef broth. It is blackish because it contains spices native to Indonesia, namely *kepayang fruit* [26]. The basic ingredients of beef should be considered *halal* and have safety traceability. One of the critical points of meat to be not *halal* is the slaughter of animals not in accordance with Islamic *sharia*. The role of *halal* slaughterers is very important. As in the Regulation of the Minister of Agriculture No. 13 of 2010 concerning The Requirements of Ruminant Slaughterhouses (RPH-R) and Meat Cutting Plant, every RPH-R must have a *halal* slaughterer who has competence from aspects of Islamic *sharia*, veterinary public health technical and animal welfare.

Surabaya has several slaughterhouses that have been *halal* certified. However, there are still many who do not have *halal* certificates. Based on observations and interviews of researchers, the street vendors always obtain beef from reliable suppliers of *halal*. They believed in the *halal* meat of the supplier because they knew the suppliers are Muslims. *Halal* meat must be proven by *halal* certification. In fact, both fresh meat suppliers and street vendors have not shown proof of *halal* certification of raw meat.

*Rawon* seasonings are shallots, garlic, red chilies, leeks, ginger, turmeric, galangal, pecans, coriander, cumin, pepper, lemongrass, orange leaves, bay leaves, granulated sugar, salt, fried oil, and water [27]. The use of cooking oil needs to be observed, whether cooking oil is still good / not, already used frying other products or not [28, 29]. If it has been used for illicit products, then the oil should not be used.

#### 3.3.2 *Rujak cingur*

*Rujak cingur* is made from *cingur* (cartilage and meat of the nostrils and ears of cattle) and a mixture of fruits, vegetables, tofu and *tempe*. The ingredients are mixed *rujak* seasoning that is *petis* (black shrimp paste). The taste of *petis* on *rujak cingur* makes tourists or consumers very fond of this culinary. Seasoning in *petis* are shrimp paste, chilli, *terasi* (shrimp paste), *Musa balbisiana colla*, fried peanuts, tamarind, sugar, flavoring, salt, and water. *Petis* is included as HCP due to the raw material that is from shrimp’s waste. The food safety of shrimp waste depends on the washing and cooking process.
The seasoning ingredients of *rujak cingur* are *cingur*, fried *tempe*, fried tofu, kale, sprout, boiled long beans, unripe mango, cucumber, *ambarella fruit*, jicama, and fried onions. *Cingur* includes HCP due to animal slaughtering. It is the responsibility of the supplier to carry out the slaughter process following Islamic rules [30]. Based on the interview, the street vendors purchase *cingur* at the supplier who they trusted. In fact, the supplier is not able to represent the *halal* certificate.

### 3.3.3 Kupang lontong (Lontong mussels)

*Lontong* mussels are made from mussels, small white shells mixed with gravy and a little *petis*. Mussels are not a potentially illegal food [31]. However, the content of mussels and how to catch them raises doubts about the feasibility of mussels consumed. Mussels are susceptible to pathogenic virus contamination when growing in waters affected by unprocessed wastewater [32-34]. Human feces contamination may occur from wastewater susceptible to the entry of human enteric viruses, including norovirus contamination in mussels [35]. In addition, the presence of microplastics in many species of shellfish, one of which is mussels, affects food safety and human health [36].

### 3.4. Halal production traceability

Halal production process traceability is the phase when all the main materials, supporting materials, and production equipment must be *halal*, safe and used in accordance with the provisions of *halal* legal requirements. Production stages must be identified to determine the *Halal* Control Point (HCP). The purpose of determining HCP is to find out the source of the *halal* of product and production process.

The cooking process of *rawon* and *lontong* mussels is almost the same, which is the basic ingredients of beef for *rawon* and mussels boiled first. Boiling aims to get meat broth and mussels. Boiling softens the texture of the meat, making it easy to consume. Next, seasonings are included to get a distinctive taste of *rawon* and mussels. *Rawon* and *lontong* mussels production process in Surabaya, as shown in Figure 1 and Figure 2.

*Rujak cingur* has a different process. *Cingur* is cleaned, then boiled to soft. The *cingur* stew water is not made of broth. *Rujak cingur* is served with fruits, tofu, and *tempe* and mixed with *petis* seasoning. Sometimes some consumers like without a mixture of fruits. Production process *rujak cingur*, as shown in Figure 3. Each process of cooking *rawon*, *rujak cingur*, and *lontong* mussels is a simple process. Even so, *halal* and safety traceability needs to be done in order to gain consumer trust. Manufacturers still need education and assistance with *halal* and safe production processes in small and medium-sized restaurants [37].

### 3.5. Halal serving traceability

Halal serving traceability is not prepared using equipment that is contaminated with najs (filth or unclean) according to *sharia* law. The *sharia* law is requiring the physical integrity of *halal* products demanding *halal toyyiban* concept that *halal-*ness, cleanliness, safe, healthy and nutritious. *Halal* serving is necessitated because the concept of *halal* is not mixed by ingredients or things that contain *haram* elements.

*Rawon* is often served with white rice, a sprinkling of sprouts, crackers, and chili sauce [38]. The serving is simple, which is served on a plate and without platting like in a restaurant. Sometimes consumers like the separate presentation between *rawon* and white rice. Serving *rujak cingur* and *lontong* mussels is also simple and traditional. There is no fancy platting like the serving in the restaurant. Consumers are free to add supporting products such as *lento*, or crisp that are served at the table.

Unfortunately, the process of sanitation and hygiene of cutlery in vendors is still very lacking. Most vendors wash cutlery using only water in buckets. The water will be replaced if it has been used for washing several times. This condition is not in accordance with the hygiene requirements of cutlery in
sharia law. The running water is used, so not been in contact or use. The presentation of rawon, rujak cingur, and lontong mussels is shown in Figure 4.

**Figure 1.** Rawon production.

**Figure 2.** Lontong mussel production.
Figure 3. Rujak cingur production.

Figure 4. Typical culinary presentation of Surabaya (a: rawon, b: rujak cingur, c: lontong mussels) (Source: author documentation).

4. Conclusions
Surabaya's iconic culinary should get attention for its safety and halal, ranging from raw materials to presentation. Rawon, rujak cingur, and lontong mussels, have halal and safety control points. Public awareness of manufacturers, suppliers, and consumers to the accuracy of materials, processes, and presentations is still lacking. The result of halal material traceability of local food in Surabaya showed that many street vendors of rawon buy meat as raw material from suppliers who do not clearly have halal certification. The street vendors of rujak cingur and lontong mussels also get raw materials from suppliers who are not clear halal and food safety. Halal process traceability of rawon, rujak cingur, and lontong mussels are located in raw material and seasoning. Hygiene and sanitation are also not in accordance with halal serving provisions that demand clean cutlery. Furthermore, it is necessary to research local government policies and assistance to local street food vendors to become safe and halal local food.
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