

# Halal Risk Analysis of Snake Fruit (*Salacca zalacca*) Processing Industry using Fishbone Diagram

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**Abstract:** Innovation that continues to develop in the culinary industry also requires business actors to pay attention to the quality of the products they produce. One of the things that needs to be considered as part of product quality assurance is the halalness of the product itself. The importance of the halal aspect of products requires the Salak Turi Small Medium Enterprise (SME) Small and Medium Enterprise (SME) to pay attention to the palak products they produce. Through this research, results were obtained that the halal product guarantee has not been fully implemented. The results of mapping using a fishbone diagram show that there are 10 risks that have the potential to disrupt the halal guarantee of products produced by Salak Turi SME. These risks are divided into 5 categories, namely man, material, method, equipment and environment. To ensure the halalness of the palak products produced by Salak Turi SME, it is necessary to improve by mitigating the risks that occurred on their industry.

**Keywords:** fishbone diagram, halal, risk, snake fruit.

## INTRODUCTION

The development of the industrial world has led to various innovative culinary products. This can be seen in the presence of regional traditional cuisine that can compete as popular foods among people, despite the onslaught of foreign food adoption in the food industry. This phenomenon is also a result of the movement in the tourism industry, where the attraction of traveling to a place is influenced by the desire to try specific local foods (Harsana & Triwidayati, 2020). The marketing strategies employed by culinary industry operators are becoming more creative, with the support of social media as a promotional tool and the active participation of social media users who provide reviews, attracting others to try specific types of cuisine (Dewa & Safitri, 2021).

The increasing competition in the culinary industry demands that every participant pays attention to the quality of the products they

produce. Currently, culinary products face challenges not only in terms of taste, price, service, and appearance but also in ensuring the halal status of the products. Halal products, verified by a halal label from relevant organizations, indicate that the product quality is considered good because it follows Islamic values in industrial management (Husny et al., 2018). The implementation of halal standards provides assurance to consumers, especially those who follow Islamic principles, that what they consume is halal and complies with their religious regulations. The application of halal product management also has positive implications for all consumers, regardless of their religious background, as it ensures that the food product meets cleanliness and hygiene standards from production materials to the final processed product (Islamadina & Vanany, 2021).

The halal status of products needs to be

considered by all culinary industries, not just those dealing with meat but also with fruit-based products. This is because over time, consumer preferences tend to favor products labeled as halal compared to similar products without a halal label (Paramita et al., 2022). Even, non muslim consumers is prefer to halal-labeled product than other similar product without halal logo on their packaging (Fadhillaah, 2022). Indirectly, the influence of the halal label on a product can affect its sales turnover, thus enhancing the economic aspect for the industry players (Efendy et al., 2022). Salak Turi Small and Medium Enterprises (SMEs) as one of the businesses in the culinary field, producing processed snake fruit beverages and snacks, also need to ensure their products have halal certification. To achieve this, Salak Turi SMEs need to improve their operations by minimizing risks in their industry to avoid any disturbances that could compromise the halal status of their products.

This research assesses the risk of halal product quality assurance in Salak Turi SMEs. Through this study, an analysis will be produced that outlines the possible reasons why the halal status of products from Salak Turi SMEs may be questioned. The research is not only conducted to trace raw materials but also the management of the industry. By using the fishbone diagram, the extent of the risks faced by this industry will be determined, allowing for mitigation measures to be implemented.

## **CONCEPTUAL FRAMEWORK**

Halal risk analysis of food processing industry has been done by several researchers. Research in snake fruit processing SME analyzed halal risk product by evaluating their raw materials (Habibah & Juwitaningtyas, 2022). Other research that took place in bakery industry in Palembang applied the Failure Mode and Effect Analysis (FMEA) method to determine the risks associated with halal bread production process (Patradhiani et al., 2023). In general, the findings from these studies indicate risks to halal product assurance caused by

operating procedures and raw materials (Habibah & Juwitaningtyas, 2022; Patradhiani et al., 2023). Halal risk analysis must be done deeper than that. Other aspects that need to be considered as halal risk are human factor, equipment and working environment.

Halal risk analysis of SME that contains of several factors such as operating procedures, raw materials, human factor, equipment and working environment can be done using fishbone diagram. Fishbone diagram is an analytical method to identify quality problems including several types that related to industrial aspects (Yahyono & Hidayah, 2023). To the best of our knowledge, there are only one research that has implemented fishbone diagram as a method to analyze halal risk. It has been applied by researchers to identify the cause of halal misunderstanding of tourism in Bandung City. They shared their result by dividing cause of halal misunderstanding of tourism into four factors namely amenities, accessibility, concept and attractions (Wahyudin et al., 2022).

## **METHODOLOGY**

This study was conducted in the Small and Medium Enterprises (SMEs) of Salak Turi, which is a culinary industry producing processed products primarily using snake fruit as the main ingredient. The research process involved a direct visit to the industry to ensure the validity of the research data. The flowchart of the research process in Figure 1 outlines the steps taken by the researcher.

Based on the research flowchart in Figure 1, it is evident that there are three crucial stages in this study. The first stage, as indicated in the red box, involves Halal Risk Identification on Raw Material. This stage is conducted using a checklist. The second stage, which is Halal Risk Analysis on Manufacturing Process in the blue box, is carried out by directly observing the production process. The third stage, found in the green box, is Halal Risk Analysis of Industrial Management Process conducted using a fishbone diagram.

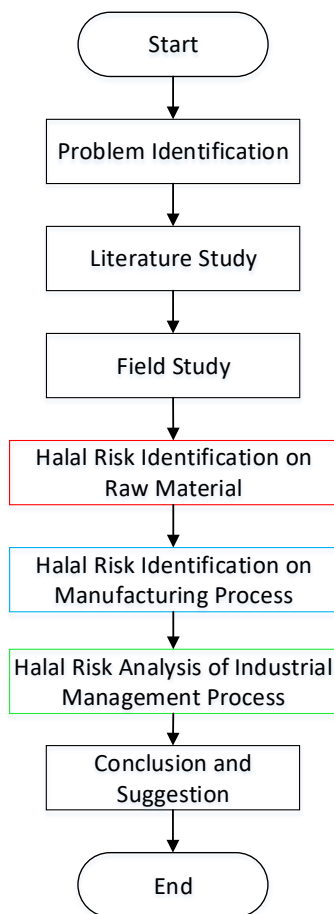


Figure 1. Research Flowchart

## RESULTS AND DISCUSSION

The direct visit to Salak Turi SME provided information regarding the industry profile and the industrial management process. Salak Turi SME is located in Sidosari Hamlet, Dukusari Village, Wonokerto Subdistrict, Turi District, Sleman Regency. The business is managed by Mrs. Kuswatun Kasanah, the owner, with assistance from her neighbors. The business produces main product named Palak. Palak is acronym of “Kelapa” and “Salak”, a food produced by combining coconut and snake fruit as main raw materials. This product has been marketed in the Special Region of Yogyakarta as well as various regions in Indonesia. Based on the field study, an analysis of the halal product risks of palak has also been conducted, as discussed below.

To determine the halal status of a product, it is necessary to first identify the raw materials or production materials used by an industry. This information can be obtained by conducting direct interviews and observing the conditions in which an industry operates. Based on the case study conducted, it is known that palak produced by Salak Turi SME is composed of several raw materials, as shown in the following Table 1.

Table 1. Halal Checksheet on Raw Materials

Raw Material	Source	Brand	Halal Status		
			Halal	Doubted	Nonhalal
Snake Fruit	Private Garden	No Brand	✓	-	-
Coconut	Private Garden	No Brand	✓	-	-
Sugar	Traditional Market	No Brand	-	✓	-
Vanilla Powder	Traditional Market	Cap Gunungan	✓	-	-
Water	Private Well	No Brand	✓	-	-
Salt	Traditional Market	Refina	✓	-	-
Food Coloring	Traditional Market	Raja Burung	✓	-	-

Based on the production material data, as seen in Table 1, it is known that not all of the raw materials used have been ensured for their halal status. The raw materials used in palak products can be categorized as straightforward, making the tracing process for their halal, doubted, or non-halal status quick and easy.

In general, when looking at the sources, the

raw materials for palak products used by Salak Turi SME can be categorized into two types: natural and artificial. Natural raw materials include snake fruit, coconut and water. The snake fruit and coconut are sourced from garden of Salak Turi itself. The industrial location in Wonokerto Village, Turi Subdistrict, Sleman Regency, is known for its

snake fruit production. The water used in palak products is also obtained from nature, either from springs or wells. These natural ingredients can be directly categorized as halal because they do not undergo specific chemical processes or materials that would require halal certification.

In addition to natural ingredients, Salak Turi SME also uses artificial ingredients. The artificial raw materials include sugar, coloring, vanilla powder and salt. These three ingredients are obtained through chemical processes, requiring proof of their halal status. In the case study conducted, it is known that not all of the artificial ingredients used by Salak Turi SME in the production of palak have obtained halal certification. The certified halal salt used is the Refina brand. The food coloring used, under the Raja Burung brand, has also obtained halal certification. The vanilla powder used halal brand namely Cap Gunungan. There is one doubted material. Salak Turi SME used sugar without any brand on their packaging. It is a critical point that should be analyzed to the supply chain process in order to make sure halal status of the product. In other words, Salak Turi SME is better to use halal sugar than their current material.

In order to produce palak, specific processing steps are required. These stages involve the use of raw materials as outlined in Table 1. The production stages of palak are

divided into several stages as follows. Granulated sugar is cooked in a pan with enough water until it caramelizes. The grated coconut and salak are put into the finished caramel, then cooked until mixed perfectly. Then add the vanilla and coloring little by little and cook until cooked and stirring continuously for approximately 1 hour. After that, it is printed and then packaged.

Based on the production processes on previous paragraph, it is known that, in general, there is no risk that would compromise the halal assurance of the resulting products. This is because the processes only use halal raw materials, as outlined in Table 1. The palak production process does not involve the use of any additional ingredients whose halal status might be questionable. Salak Turi SME just need to pay attention on their sugar as one of palak raw materials because it is not packaged with halal label on their wrapping.

In addition to identifying the halal status of raw materials, this research also conducted an analysis of the industrial management at Salak Turi SME. The management processes examined include the handling of raw materials, production processes, and packaging. Based on the observations, several risks that could compromise the halal assurance of the palak product were identified, as shown in the following Table 2.

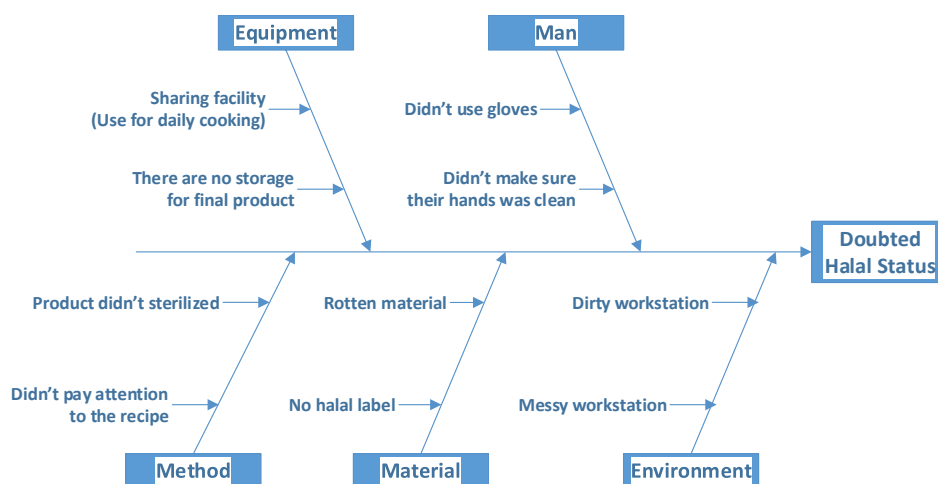


Figure 2. Fishbone Diagram

Based on the figure 2 above, it is found that there are 10 risks that have the potential to disrupt the halal assurance of palak products. It is categorized into 5 aspects namely equipment, man, method, material and environment. Judging from the equipment side, it is known that production facilities are also used for other activities so that it is possible to use materials that are not yet clearly halal. When production is carried out, workers do not ensure that their hands are clean by washing their hands and do not use gloves, so there is a possibility of contamination. In terms of materials, it is known that there are materials that are not labeled halal and goods from nature have the potential to rot if they are not checked regularly. The palak production site is also not well organized and is not kept clean. From the method aspect, it is known that after the product has been produced, it is not sterilized or stored in a special place, which is a factor that interferes with the halal guarantee of the product.

Based on the analysis that has been carried out, it can be seen that Salak SME carried out an evaluation. Owners need to ensure that raw materials use products labeled halal. Raw materials that rot easily must be checked periodically so that they do not affect the final product. When carrying out the production process, it is necessary to use gloves and keep your hands clean. Production facilities, both in the form of location and equipment, also need to be kept clean. Production equipment should not be used for daily cooking to avoid cross contamination. Salak Turi SME needs to provide a special storage area for finished products so that they remain sterile.

## CONCLUSION

The research results indicate that Salak Turi SME has not yet guaranteed halal products as a whole. Judging from the use of raw materials, there are still materials whose halalness is doubtful. This is because this material is an artificial material without a halal logo. The

production process carried out using these materials causes the halal status of the resulting product to be questioned. Analysis using a fishbone diagram also found that there were 10 risks that needed to be handled by Salak Turi SME. These risks are divided into several categories including material, method, equipment, man and environment. In order to guarantee the halalness of palak products produced by Salak Turi SME, it is necessary to avoid existing risks. Through this research, we have been able to find the risk of halal products from many aspects in small and medium enterprises, especially those operating in processed fruit foods. Future research needs to carry out an analysis that causes a risk in making a product halal in more detail. This research can be explained in more depth using the Fault Tree Analysis (FTA) method.

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