

THE DEVELOPMENT STRATEGY OF FISH FUMIGATION INDUSTRY AS A DRIVING FORCE OF CULINARY TOURISM DESTINATION IN BANDARHARJO, SEMARANG-INDONESIA

Hadromi HADROMI*

Semarang State University, Semarang, Faculty of Engineering, Gunungpati
Semarang Sentral Java Indonesia (50221), e-mail: hadromi@mail.unnes.ac.id

Murdani MURDANI

Semarang State University, Semarang, Faculty of Engineering, Gunungpati
Semarang Sentral Java Indonesia (50221), e-mail: murdani50@yahoo.com

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Abstract: this study was aimed at formulating the development strategy of the fish fumigation industry as one of the main attractions of culinary destination in Bandarhajo, Semarang–Indonesia. This study employed quantitative approach with ex–post facto non–experimental design. The data of this study were analyzed using Analytical Hierarchy Process (AHP) by Saaty. The results of the development strategy of the fish fumigation industry as one of the main attraction of culinary destination were: human resource, means of production for fish fumigation, product promotion, and waste management and occupational health and safety.

Key words: development strategy, fish fumigation industry, analytical hierarchy process, culinary destination, Bandarharjo, Semarang-Indonesia

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INTRODUCTION

Globalization, urbanization, modernization, and migration have changed the way people consume food (UNWTO, 2017). The consumption of food and beverage is affected by taste, cost, health care, satisfaction, comfort which affects by behavior pattern and the manifestation and human identity (Privitera et al., 2018). When the location of tourist attraction is visited by the tourists, then the behavior of the tourists change because of the food, and become the main part of the travel experience (Scott & Duncan, 2015)

The culinary tourism is not only centered around food for the tourists, but also exploration of culture of region or a country (Long, 2004). Local food can be globalized

* Corresponding author

and branding would increase the identity and accelerate its introduction to the global audience (Richards, 2012). Tourists who are familiar with culinary tourism can be attracted to a tourist destination in the area (Godfrey & Clarke, 2000; Yeoman, 2012).

From an economic standpoint, Telfer & Wall (2000) reported that tourists spend their one third of the total cost of travel expenditure in a culinary section. This reflects the importance of food consumption in tourism. This reflects the importance of food consumption in tourism. Local food is a major component of tourist destinations in the holiday and tourism industry business (Kivela & Crotts, 2005). Improvement in the tourism sector and culinary experience for tourists play a role in economic development, even education (Bertella, 2011). The Ministry of Tourism of Indonesia continues to improve the number of tourists visiting the country. One of them is by establishing three Indonesian culinary tourist destinations: Bali, Bandung and Joglosemar (Yogyakarta, Solo, Semarang). Fish in culinary tourism can use these following processing: direct selling, salting, fermentation, drying, or fumigation. Fish processing technology always evolves while maintaining a specific taste and aroma to become a consumer attraction (Egbal et al., 2010). However, fish processing is still mostly performed manually as in Nigeria (Davies & Davies, 2009), including in Indonesia (Hadromi, 2018). The criteria adopted to choose the proper technology significantly depends on the costs and benefits of the processed products.

Culinary icon in the Central Java is Semarang (Rahma, 2017). Semarang native cuisine has unique characteristics, especially in terms of taste. The ingredients used in culinary processing generally use traditional recipes. Some Semarang specialties include spring rolls, tahu gimbal (tofu and fried shrimp made with peanut sauce, tofu pong, presto milkfish, and wingko babad, as well as smoked fish. These Semarang culinary menus are rarely found in other regions in Indonesia and the prices offered are relatively affordable. This also makes culinary tourism in Semarang a memorable tourist destination, both taste and price. The smoked fish products in Semarang come from twenty-one fish fumigation industries in Bandarharjo, Northern Semarang (Hadromi et al., 2018). The location of twenty-one fish fumigation industries is around the residential area of the citizens (Figure 1). If the fish fumigation industries are not properly processed, it can lead to environmental problems such as: slum, dirtiness, smells and it becomes a source of various diseases (Hadromi et al., 2018; Dutta et al., 2018).

Globally, the smoked fish becomes a popular product in some countries, such as the coastal districts such as Cox's Bazar since the ancient time. Generally, fish fumigation in Southeast Asia is practiced to give the desired color and taste (Clucas & Ward, 1996). Local people have found a delicious dish of smoked fish products for their own consumption. The appetizing colors and delicious taste have made smoked fish become favorite food in this area (Nowsad AKMA, 2007).



Figure 1. Aerial shot on the location of the fish fumigation industry in Bandarharjo

The raw materials for the fish fumigation industry were obtained from around the Semarang. The data showed that the amount of fish sold in the city of Semarang is 460.881 kg/day. The amount of fish from the fish fumigation process is 30%, 23% from preserving, salting / drying from 19%, while others use other techniques. This condition shows that fumigation is the most common processing technique for fish products (Central Java Central of Statistics, 2016). Furthermore, the results of the fish fumigation industry are sold around the Central Java Province. The products of the fish fumigation industry are the smoked fish products and ready-to-eat food. Smoked fish products from Bandarharjo are consumed by local people and foreign tourists.

The initial survey from the previous study showed that the fish fumigation industry in producing smoked fish has not been well managed. It was indicated from the amount of pollution as the residues of the production process (Hadromi et al., 2018). Various sources of pollution in smoked fish production processes are disperse smoke, unpleasant odors from fish waste such as fish offal, coconut shell charcoal waste from combustion. Other problems are still unskilled labor resources, low product promotion, unmarketable packaging quality, limited sales area as a result of weak promotions, lack of attention from industry owners on occupational health and safety (OHS), and limited production tools. This present study aims to formulate a strategy to develop fish fumigation industry as a driving force for culinary tourism destinations in the Bandarharjo sub-district, Semarang, Indonesia. The application of the development strategy for the fish fuming industry is expected to increase the number of products, product quality, industry revenue, to shorten production time, and to simplify the production process.

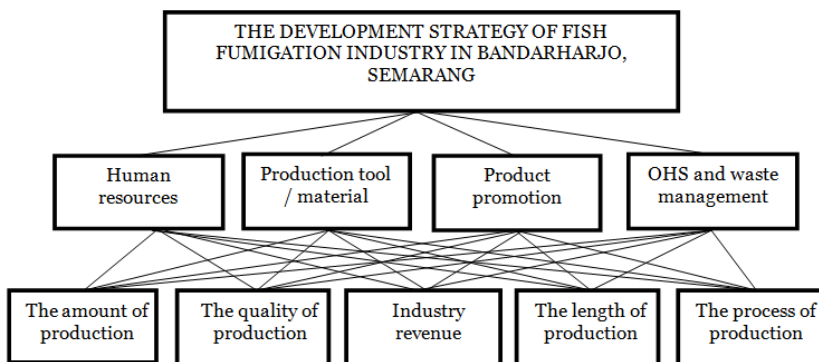


Figure 2. AHP hierarchy structure

METHOD

This descriptive study was conducted to formulate the development strategy for fish fumigation as a driving force in the culinary tourism destinations in Bandarharjo Village, Semarang, Indonesia. This study employed primary data obtained from interviews and observation sheets on the labor of fish fumigation industry, and citizens around the industry. The secondary data were obtained from Bandarharjo village, and fish fumigation cooperation. Focus group discussion (FGD) was carried out on 20 representatives from the fish fumigation industry, Bandarharjo village government, and citizens around the industry to determine the scale of the AHP hierarchy rating.

Data Analysis of Analytical Hierarchy Process (AHP) Method

Strategy analysis of the fish fumigation industry development as a driving force in the culinary tourism destinations Bandarharjo Urban Village, Semarang, used Analytical

Hierarchy Process (AHP) method developed by Thomas L. Saaty (1986), as seen in Figure 3, with these following steps:

1. Defining the problem and determining the desired solution clearly, in detail, and easily understood. There can be more than one solutions for the problems.
2. Making hierarchical structure which began with the main goal, followed by criteria and alternative choices were ranked (Figure 2). The network was made based on a comprehensive structure related to the problems developed (Baidya, 2015).
3. Determining the pairwise comparison assessment. The pairwise comparison scale was introduced by Thomas Lorie Saaty in Table 1. Comparative results are based on the judgment of the decision maker.
4. The AHP method calculation used a comparison matrix (Formula 1) if $A_{ij} = a$, then $A_{ji} = 1 / a$. If A_i has the same interests as A_j , then $A_{ij} = A_{ji} = 1$, for special matters, $A_{ij} = 1$ for all i .

$$[A] = \begin{bmatrix} 1 & a_{(1,2)} & \dots & a_{(1,n)} \\ 1/a_{(1,2)} & 1 & \dots & a_{(2,n)} \\ \dots & \dots & \dots & \dots \\ \dots & \dots & \dots & \dots \\ 1/a_{(1,n)} & 1/a_{(2,n)} & \dots & 1 \end{bmatrix} \dots\dots\dots (1)$$

Table 1. Hierarchy rating scale

Scale	Definition	Information
1	Equal Importance	KPI A is equally important compared to KPI B
3	Weak Importance is one over another	KPI A is slightly more important with KPI B
5	Essential or strong Importance	KPI A is more important than the KPI B
7	Demonstrated Importance	KPI A is very important compared to KPI B
9	Extreme Importance	KPI A is very important compared to KPI B
2, 4, 6, 8	Intermediate values between the two adjacent judgments.	The values between the two adjacent judgments.
Reciprocal	The opposite	If activity i gets one score compared to activity j, then j has the opposite value with i.

5. Calculating the Eigen values and testing their consistency. The principle of transitivity or 100% consistency is not the main requirement of AHP. $CR \leq 1$ indicates consistency, if the CR value exceeds 1, then the pairwise comparison assessment needs to be repeated. The assessment of the consistency value used this following formula:

$$CR = \frac{CI}{RI} \dots\dots\dots (2)$$

Where: CR: Consistency ratio
 CI: Consistency index
 RI: Random index, according to Saaty: 1990.

6. Repeating steps c, d, and e for all levels of the hierarchy.
7. Calculating vector priority

RESULTS AND DISCUSSION

A. The results of the Study

Based on the results AHP, the strategy of fish fumigation industry development as a driving force in the culinary tourism destinations Bandarharjo Village, Semarang, Indonesia can be seen in Table 2.

B. Discussion

The formulation of the strategy of fish fumigation industry development as a driving force in the culinary tourism destinations Bandarharjo Village, Semarang was obtained based on the level of interest according to the weight in Table 2 are as follows (1) human resources, (2) Smoked fish production equipment, (3) Promotion of products, and (4) Management of waste and OHS. Improving the components leads to the increase of these following aspects: (1) the number of smoked fish products, (2) the quality of smoked fish products, (3) industry revenues, (4) shorten production time, and (5) simplify the production process.

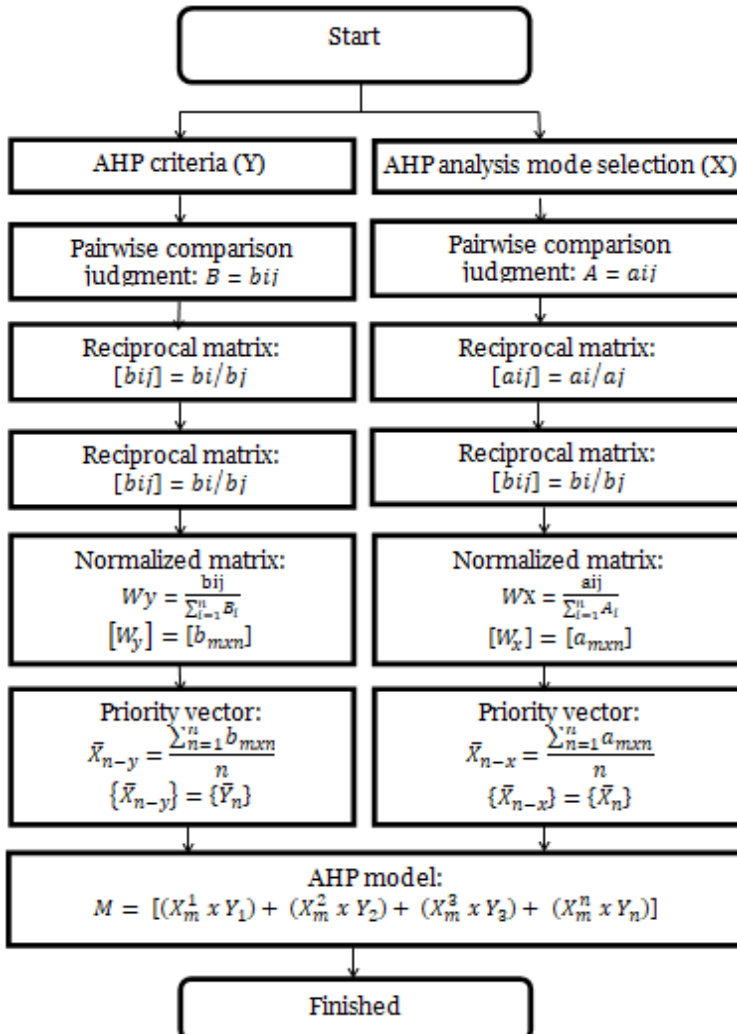


Figure 3. The flow chart of analytical hierarchy process

Based on the final score of the AHP method, then schematically the strategy of development of the fish fumigation industry as a driving force in the culinary tourism destinations Bandarharjo Village, Semarang city is illustrated in Figure 4.

Table 2. The strategy of fish fumigation industry development as a driving force in the culinary tourism destinations Bandarharjo Village, Semarang

Summary	Total production of smoked fish		Quality of smoked fish products		Industry revenue		Production time		Production process		Final score
	Weighting	Score	Weighting	Score	Weighting	Score	Weighting	Score	Weighting	Score	
HR labor	0.38	0.47	0.30	0.48	0.16	0.58	0.09	0.55	0.07	0.57	0.50
Smoked fish production equipment	0.38	0.18	0.30	0.28	0.16	0.24	0.09	0.26	0.07	0.25	0.23
Promotion of the product	0.38	0.22	0.30	0.14	0.16	0.14	0.09	0.12	0.07	0.13	0.16
Waste and OHS management	0.38	0.14	0.30	0.10	0.16	0.05	0.09	0.07	0.07	0.06	0.10

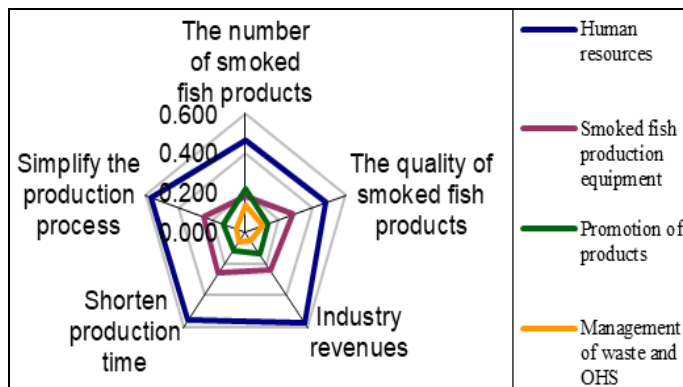


Figure 4. Final score of the strategy of development of the fish fumigation industry

Human resource in the fish fumigation industry is at the top of the score that needs to be improved. The labor of the human resource in fish fumigation industry in Bandarharjo village is dominated by elementary school graduates, and knowledge of how to smoke fish is obtained from generation to generation from their parents (Hadromi, 2018). If this issue is connected with the industrial era 4.0, then it is appropriate that the advancement of technology contributes to improving the quality, and the process of fish fumigation (Amos & Paulina, 2017). Increasing labor resources can be performed by training in the location of the fish fumigation industry, or work internships in other similar industries (Hadromi, 2018). Furthermore, the experience and knowledge obtained can be applied in the fish fumigation industry. Management of fish fumigation starts from harvesting, processing, packaging, and distribution employs a lot of labor and provide income in the form of foreign exchange to many countries (Al-Jufaili & Opara, 2006). Processing fish into smoked fish is affected the production equipment, and market quality. The process of processing fish into smoked fish must ensure the safety and hygiene of smoked fish products. In some countries, the management of the fish fumigation industry is still performed manually, as in Nigeria (Davies & Davies, 2009), in Indonesia (Hadromi, 2018). Furthermore, the implementation of advanced technology in harvesting, processing and storage of smoked fish production processes has started in the fish fumigation industry (Akinneye et al., 2007, Davies, 2005). The results of the Multi-Objective analysis showed that popular management in achieving its objectives in various sectors including fisheries management process can achieve its objectives in the field

of economics, biology, environment, and politics (Pinto et al., 2018; Pascoe et al., 2013; Rodgers & Hunter, 1991). Waste treatment and occupational safety and health at the fish fumigation industry in the Bandarharjo, Semarang, Indonesia must be improved. Globally, the bad practice of waste management and occupational health and safety occur in several countries such as China, India and Brazil. The environmental management practices regarding water supply and quality, environmental management regulatory standards and green supply chain management practices are still priorities that need to be improved (Pinto et al., 2018). In an effort to improve sales, the promotion of smoked fish products plays an important role (Del Vecchio et al., 2006). The application of sales promotion tools such as: coupons, prices, discounts, free samples, bonus packages, and displays influence consumer behavior in buying products (Nububisi et al., 2005). Kumar et al., (2005) studied the impact of the sale of the brand to increase consumer buying interest. Packaging plays an important function in determining the price criteria for a product, a promotional campaign, defining the character of the product, as a determinant of trends and creating a brand identity. Regular packaging acts as a first and last impression for consumers to buy (Silayoi & Speece, 2007). Especially in the field of food processing industry: smoked fish, culinary products must pay attention to the quality of the product. In general, fish-based food contains high nutritional value and represents about 15-20% of animal protein (Abolagba & Melle, 2008). The nutritional value of fish also depends on the freshness of the fish (Eyo, 2001). Each type of food has natural characteristics such as appearance, texture, smell, and taste, any change of the characteristics of the food leads to changes in the quality of the food (Shori, 2017).

CONCLUSION

The formulation of the strategy of fish fumigation industry development as a driving force in the culinary tourism destinations Bandarharjo Village, Semarang was obtained based on the level of interest according to the weight in Table 2 is as follows (1) human resources, (2) Smoked fish production equipment, (3) Promotion of products, and (4) Management of waste and OHS. Improving the components leads to the increase of these following aspects: (1) the number of smoked fish products, (2) the quality of smoked fish products, (3) industry revenues, (4) shorten production time, and (5) simplify the production process. Increasing labor resources can be performed by conducting training in the location of the fish fumigation industry, or work internships in other similar industries. Better changes in the quality of labor resources facilitate the development of the fish fumigation industry as a driving force of culinary tourism destinations.

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