Effectiveness of food safety for halal industry in Indonesia

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**Abstract**

The present work aimed to identify and analyse stakeholders’ role in improving food safety and halalness in Semarang City. The effectiveness of food safety control can be ensured by one actor, and requires various related actors’ role. The present work used a combination of qualitative and quantitative approaches (mixed method). The data were collected using a Focus Group Discussion (FGD) held with relevant stakeholders, including Semarang City Health Office, Semarang City Trade Office, Semarang Food and Drug Administration Center, business association, academics, entrepreneurs, Consumer Development and Protection Institute, and consumers. In regard to priority aspect, it was found that emphasis must be given to three main aspects by stakeholders, namely economic, socio-cultural, and institutional, which could be used to ensure food safety and halalness for the people. Moreover, based on the stakeholder analysis results, the actors with significant influence and high dependency were entrepreneurs, Semarang City Health Office, Semarang Food and Drug Administration Center, Agency for Drug and Food Control, and academics. Meanwhile, the actors with firm convergence were Semarang City Health Office, Semarang Food and Drug Administration Center, and business associations since they share a commitment to building food safety. Furthermore, based on the FGD results, some improvements are required regarding food control that the food safety network has carried out, along with establishing food safety and halal regulation.

**Keywords**

food safety, stakeholder analysis, halal, Semarang

**Article history**

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**Introduction**

Food safety system is needed to protect public health from any possible deviant producer’s actions, such as hazardous materials in food processing (Wiryan et al., 2018; Halim et al., 2014). This task can be fulfilled by implementing an effective and transparent food control system that takes all aspects of the food chain into account, including production, processing, storage, transport, and retail. The first step for halal food industry is to ensure that food, processing material, additive, and packaging come from good sources (tayyib).

**Halal** food for Muslim consumers is an essential part of their life. Halal is an Arabic word which means permitted, allowed, lawful, or legal. Its antonym, haram, means forbidden, unlawful, or illegal (Anggraini and Dewanti, 2020; Ur Raheema, 2018). According to shari’a (Islamic law), all issues concerning halal or haram, and all disputes, are to be referred to al-Quran and al-Hadith (Doi, 2007; Miskam et al., 2015). Halal means everything permitted by shari’a to be implemented, used, or attempted, that it has lost the obstacles preventing it or its elements, by acquiring it in a good way, and by compromising between the parties involved, and not acquired through any way prohibited (Nafis, 2019).

The food safety principle is, in fact, in line with the halal principle in Islamic teaching (Ur Raheema, 2018). Despite the fact that food safety and hygiene are an integral part of the concept of halal, the halal standards lack specifics on the topic, and instead refer to the generic hygiene principles and food safety standards (Mathew et al., 2014). This is to consume any permissible (halal) and wholesome (tayyib) products in accordance with the relevant rules set in al-Quran and al-Hadith.

As the largest Muslim country in the world, Indonesia also has the largest Muslim population in the world (Wibawa et al., 2023). Semarang City as one of the major capital cities in Indonesia has a population of 1.6 million people with 87.21% of the population embracing Islam (BPS, 2023). Halal and tayyib foods have become part of the Semarang City
community. The importance of this has been a priority for the government. In accordance with Law Number 33 of 2014 concerning Halal Product Guarantee, PMA Number 26 of 2019 stipulates that all products must be halal-certified for a period of five years starting from October 17, 2019. This first applied to foods and beverages, and other products started on October 17, 2021 (Mujahidin, 2020).

Food safety in the halal sector is an emerging area with differences in concept’s understanding/interpretation and practice; some say that it is part of the sector, while others say the otherwise (Neio Demirci et al., 2016). Additionally, even if some halal standards demand a certain level of food safety, it is unclear how these are translated into the halal certification bodies’ control measures in the certification process (Khan and Haleem, 2016; Annabi and Ibido-Obe, 2017). Such condition is worrisome, especially that Muslim and even some non-Muslim consumers perceive the halal logo to have, among others, food safety activities (Neio Demirci et al., 2016).

In regard to food consumption, Muslims are instructed to consume halal foods only, and not consume haram foods (Ab Talib, 2017). The similarity between food safety and halal principles has had halal rules adopted in developing food safety assurance standards. More precisely, a product’s halal requirements are determined from the safety, health, and hygiene aspects (Abdullah Sani and Dahlan, 2015). This way, food safety is then part of the concept of halal itself. In the halal standardisation and certification processes, food safety is one of the requirements for certification where food products must be safe from physical, chemical, and microbiological aspects for them to be healthy for consumption (Neio Demirci et al., 2016). Food-related regulations have explicitly regulated food safety, aiming to maintain food to have safe, hygienic, and nutritious qualities. This does not conflict with religion related to the halal concept itself (Muchaddam Fahham, 2014).

The Global Food Security Index (GFSI) (Figure 1) through quality and food safety index data showed that Canada has the highest-ranking quality and food safety index in the world with an average score of 94.5. Indonesia ranks 65th in the world or 19th in Asia Pacific, with an average score of 49.5. Countries with the highest and lowest average scores in Asia Pacific are Australia and Cambodia, with average quality and food safety index scores of 87.8 and 40.1, respectively. Then, the country with the lowest average score in the world is Sierra Leone, located in West Africa, with an average score of 33.1.

Furthermore, the effectiveness of food safety control cannot only be controlled by one actor (government), but this also requires various related actors’ role (Samsi et al., 2011; Nadha, 2022). Food safety control process should be carried out both on the pre- and post-market lines, comprising government and business actors, non-governmental organisations (NGOs), and consumers. Stakeholders’ play a crucial role in the effectiveness of food control to ensure that the foods consumed by the people is healthy-guaranteed, and will not harm them (Sartika, 2020). Partnerships with all stakeholders can...
contribute views, attitudes, and actions on the problems for a policy to be based on, thus they must be mutually accountable for decision making (Smith and Basurto, 2019). Therefore, the present work aimed to analyse stakeholders’ role in the effectiveness of food safety control. These findings will allow moving towards more effective policies in the halal food industry, and the stakeholder monitoring practice. The objective of the present work was to identify and analyse the role of stakeholders in improving food safety and halalness in Semarang City.

Materials and methods

The present work used primary data and purposive sampling technique. Data were collected using focus group discussions (FGD) with relevant stakeholders. The FGD involved competent people relevant to the research topic (Susilowati, 2003; Susilowati et al., 2008; Baskara et al., 2017). The FGD aimed to explore the field problems, and understand the idea of strategy to be designed. The stakeholders involved were (A) academics: one lecturer of fish processing technology, one lecturer of medicine, one lecturer of chemical engineering, and two lecturers of meat animal science, all from Universitas Diponegoro; (B) business/restaurant entrepreneurs: two restaurant entrepreneurs, one café entrepreneur, and three catering entrepreneurs; (C) community: one respondent from Consumer Development and Protection Institute (LP2K), business association (one respondent from Semarang City Restaurant Association, two respondents from Diponegoro University Halal Study Center, one respondent from Gajah Mada University Halal Study Center, one respondent from Indonesian Restaurant Hotel Association), and consumers; (D) government: one respondent from Semarang City Health Office, one respondent from Semarang City Trade Office, and two respondents from Semarang Food and Drug Administration Center (BBPOM) to a total of 21 respondents.

The present work used a qualitative method and a content analysis approach. This approach was technically used to perform quantitative analysis on the qualitative data (Downe-Wamboldt, 1992). The FGD results were then transcribed and processed using software by determining the interview transcript’s codes or variables for quantitative results out of the qualitative data (Hapsari et al., 2021). This code category was adapted to the theory and context of the study, and to the respondents’ emotional reaction. This technique presented the text frequency and the intensity of codes used in the FGD transcript. ATLAS.ti and Mactor were the software used to assist researchers in processing qualitative data (determining code and quantifying qualitative data results) (Kaefer et al., 2015).

The validity of qualitative data was based on investigator triangulation which in the process of data collection through FGD involved several investigators, namely four lecturers from Diponegoro University with each from the fields of economics, chemical engineering, meat animal science, and food technology (Thurmond, 2001). The purpose of using multiple investigators was to reduce potential bias in data collection, reporting, coding, or analysis, and to contribute to internal validity so as to increase the credibility of findings (Bans-Akutey and Tiimub, 2021).

ATLAS.ti helped in the data analysis process for qualitative research. Each of the data was coded during the data processing process for the researcher’s ease of making conclusion out of the discussion material results (Afriansyah, 2018). The ATLAS.ti analysis results produced priorities for food safety improvement with three categories as follows: (a) social: related to improving food safety information and knowledge dissemination; (b) economic: related to improving business through food safety legalisation and finance; and (c) institutional: encouraging institutional improvement between institutions.

Mactor was used to examine each actor’s relation with regard to food safety related policies or conflicts in the halal food industry in Semarang City. Mactor was also used to investigate the actors’ convergence and divergence in the face of challenges and related objectives (Furoida et al., 2021). One of the factor’s advantages is that it was applied to various strategies with many actors involved using a series of related interests and goals (Fetoui et al., 2021).

Results and discussion

Based on the FGD with the stakeholders involved, the results of processing using ATLAS.ti are presented in Figure 2. The quantitative data obtained from the code, variable, or factor determination based on interview transcripts were
used to measure the emphasis or the extent of the informants’ perception of the codes, criteria, or factors determined. The results indicated three variables that must be prioritised namely socio-cultural, economic, and institutional.

The ATLAS.ti processing found that socialisation was emphasised on social aspects. Socialisation along with training will promote food industry, especially culinary SMEs, to ensure food safety through certification. This was confirmed by the coordinator of Semarang Culinary Business Association and Muslim Business as follows:

“In my opinion, the suggestion is to organise some short course for us, especially for MSMEs, regarding the regulations needed, such as ones from BBPOM, and MSMEs must use this or from the public health office, it would be enough with PIRT or with proper hygiene since yesterday when we were dealt with it at the health office, it could not be done one by one because there must be some training, there must be some hygiene training.”

Socialisation will essentially help form community’s food safety awareness culture. There is a need for access to information for all producers to practice food safety assurance. In addition, digital transformation is needed to improve access to information and facilitate licensing process.

Furthermore, this was found in the economic aspect, and the factor emphasised was legal permission facilitation. Complex licensing process may make producers reluctant to apply for food safety certification (Aliff et al., 2015). Legalisation process facilitation means efficiency that can promote economic development. Licensing facilitation will further improve production standards to increase the selling value supported by additional production capital (Sinaga, 2017). An actor of culinary SMEs said:

“The requirements for certification are quite difficult for me, especially to adjust the shape of production premises to comply with the standards even when I use my house as the place of production.”

The factors emphasised in the institutional aspect was increasing synergy between stakeholders. Institutional strengthening can ensure continuity or survival. Social interactions on which human existence is based (including mutual trust and shared social norms) will form the stock of social capital (Yuniati et al., 2017). Social capital will then promote realisation of collective actions that promote the effectiveness of food safety control (Harsasto, 2020).

The present work found three aspects to increase safe and halal food assurance: economic, institutional, and socio-cultural. These three aspects
included the need for economic improvement, product’s added value, synergy between institutions, and culture in improving safe and halal foods at various stakeholder levels. Safety in food industry is a shared responsibility and commitment between stakeholders. The FGD results stated that stakeholders’ role in ensuring food safety is essential. The institutional context is formal institutions such as government and producers in the food sector, non-governmental organisations, academics, and consumers.

**Stakeholders’ role in building food safety and halalness**

Food safety provision focuses on final food service provider, and emphasises food chain from raw materials to end product at consumer’s hands. This food control follows Presidential Instruction No. 3 of 2017. The president instructs governments at their levels to take steps based on their respective functions and authorities to enhance the effectiveness and strengthen food safety control. The implementation of food control effectiveness following the Presidential Instruction No. 3 of 2017 will shape the regulation of food safety control, which is stakeholders’ responsibility.

The efforts of ensuring food safety actually need to be handled in an integrated manner, and involve many stakeholders, both from the government, industry, and consumers as a shared responsibility (Hermanu, 2016). Food safety is implemented comprehensively from pre- to post-market, and involves three pillars of stakeholders as the ones in charge: government and/or local government, consumers, and business actors (industry/trade) (Sartika, 2020). It is therefore essential to examine how these stakeholders perceive food risk management practices and effectiveness (Van Kleef et al., 2006). The present work determined the food safety control in Semarang, thus the stakeholders involved in food safety control based on the FGD were institutions in Semarang, as presented in Table 1.

Figure 3 shows four actors in quadrant 2 or key players, having high influence and high dependency. The actors in quadrant 2 are entrepreneurs, Semarang City Health Office, Semarang Food and Drug Administration Center, and academics. These four actors have high influence, but are highly dependent on the decisions and policies made by the other actors. The actors in quadrant 1 are context setters, having high influence but low importance, comprising consumers and food entrepreneur associations in Semarang City. Consumers, in this case, have a low interest in food with safety guarantee, and for the associations in this case, since not all food entrepreneurs are members of such organisation, so that their commitment to building food safety is not spread evenly.

Meanwhile, the actors in quadrant 4 are the crowd, having low influence and interest, comprising trade office and agency for building and protecting consumers. In this case, the trade office only acts as a facilitator in food safety control. At the same time, LP2K plays a role in coordinating food safety control, and does not have firm influence on food safety control.

Each stakeholder’s will be analysed against the objectives. The results showed that all the actors agree on increasing food business owners’ income and expanding marketing segmentation. However, there are pros and cons between the actors in enforcing food safety, maintaining public health, and synergising food safety supervision. These results are shown in Figure 2, in which food safety enforcement is to be related to public health assurance. Furthermore, the synergy of pros and cons occurred since not all actors agree with food safety warranty, even if synergy is needed to assure food safety.

The next step is to measure actors’ convergence against the objectives. Figure 4 shows the actors with powerful convergence namely Semarang City Health Office, Semarang Food and Drug Administration Center, and business associations that they share commitment to building food safety. Based on the FGD results, this was because the Semarang City Health Office and Semarang Food and Drug Administration Center serve duties, functions, and authorities of directly supervising, maintaining, and ensuring food safety. This is in line with the association, which is committed to improving food production in compliance with food safety certification standards set by the government.

Figure 5 shows the actors’ divergence due to conflicts of interest between them. The strongest divergence comes from consumers and entrepreneurs. The ATLAS.ti results confirmed the FGD results (Figure 2), showing that building food safety needs to prioritise solutions emphasised on encouraging
<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Abbreviation</th>
<th>Position</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Dinas Kesehatan Kota Semarang / Semarang City Health Office</td>
<td>Dinkes</td>
<td>Disease prevention and eradication</td>
<td>Formulate policies for health, disease prevention and control, health services, and health resources</td>
</tr>
<tr>
<td>2 Dinas Perdagangan Kota Semarang / Semarang City Trade Office</td>
<td>Dindag</td>
<td>Business development sector</td>
<td>Formulate policies for trade and market management</td>
</tr>
<tr>
<td>3 Balai Besar Pengawas Obat dan Makanan / Semarang Food and Drug Administration Center</td>
<td>BBPOM</td>
<td>Testing of foods and hazardous materials</td>
<td>Formulate plans and programs for drug and food control</td>
</tr>
<tr>
<td>4 Asosiasi pengusaha (Persatuan Restoran Kota Semarang, Pusat Kajian Halal Universitas Diponegoro, Pusat Kajian Halal Universitas Gajah Mada, Perhimpunan Hotel Restaurant Indonesia) / Business associations (Semarang City Restaurant Association, Diponegoro University Halal Study Center, Gajah Mada University Halal Study Center, Indonesian Restaurant Hotel Association)</td>
<td>Association</td>
<td>Head of the association</td>
<td>Make alliances to increase restaurant business</td>
</tr>
<tr>
<td>5 Lembaga Pembinaan dan Perlindungan Konsumen (LP2K) / Consumer Development and Protection Institute (LP2K) / Central Java</td>
<td>LP2K</td>
<td>Consumer security assurance</td>
<td>Accommodate consumer aspirations when products are found unsafe for consumption</td>
</tr>
<tr>
<td>6 Universitas (Dosen Teknologi Pengolahan Ikan, Dosen Kedokteran, Dosen Teknik Kimia, Dosen Ilmu Peternakan Daging dari Universitas Diponegoro) / University (Lecturer in Fish Processing Technology, Lecturer in Medicine, Lecturer in Chemical Engineering, Lecturer in Meat Animal Science from Diponegoro University)</td>
<td>Academics</td>
<td>Lecturers</td>
<td>Perform research and service to improve culinary business both from production and marketing</td>
</tr>
<tr>
<td>7 Pengusaha (Pengusaha restaurant, Pengusaha kafe, Pengusaha katering) / Entrepreneurs (Restaurant entrepreneurs, Cafe entrepreneurs, Catering entrepreneurs)</td>
<td>Business</td>
<td>Businessmen</td>
<td>Own culinary businesses</td>
</tr>
<tr>
<td>8 Konsumen / Consumers</td>
<td>Consumer</td>
<td>Consumer</td>
<td>Purchase foods</td>
</tr>
</tbody>
</table>
Figure 3. Map of influence and dependence between actors.
Source: Primary data, 2021 (Mactor Output).

Figure 4. Convergence between actors against objectives.
Source: Primary data, 2021 (Mactor Output).

Figure 5. Divergence between actors against objectives.
Source: Primary data, 2021 (Mactor Output).
business owners to acquire food safety certification. The priority solutions include legal convenience, training, coaching, and easy access to information. In addition, consumer involvement is also relatively low in maintaining food safety. This was confirmed by Ariyanti and Hadita (2017) that many consumers are hardly aware of food safety.

The steps of formulating a food safety control strategy model are presented in Figure 6. Figure 6 shows that the food safety control regulation mainly aims at safety and halalness. Based on the FGD results, the food safety network has made some improvements related to food control, namely periodic inspections, that so far inspections have only been carried out before Eid. Coaching and training still have not reached more business owners. Furthermore, punishments and rewards need to be added to promote interest in food safety certification. Meanwhile, the legal process facilitation and ease of access to information based on the FGD results have been carried out quite well by relevant authorities. Still, due to low awareness, its implementation was hardly effective. Therefore, consumer’s role is needed to drive food service providers to ensure their products’ safety. The next goal is synergy of food safety control, which requires coordination and involvement of all actors with support of information technology transformation for monitoring purposes. At the same time, socialisation and campaigns build food safety control that is already quite effective.

Figure 6. Strategy towards halalan toyyiban food industry in Semarang City. Source: Primary data, 2021 (ATLAS.ti Output).

The food safety achieved will be the basis for building halal and safe food products. This ultimate goal is motivated by halal food industry’s development, which is growing quite rapidly with the largest consumer market in the world (Thomson Reuters, 2014). Food safety is a requirement for halal certification in Indonesia following Islamic law as stated in Law no. 33 of 2014. In addition to compliance with Islamic law, food safety also plays an essential role in determining tayyiban, such as the whole food’s aspects (safety, hygiene, nutrition, and quality) (Abdullah Sani and Dahlan, 2015). Halal, the full term being “halalan tayyiban”, is defined as everything or action permissible according to the
Islamic law, as mentioned in al-Quran and al-Hadith (Fuseini et al., 2016). Tayyib considers food hygiene, food additives, contamination, and pesticide residues in prevention of food-related diseases (Raufu and Naqiyuddin, 2014). Tayyib in Arabic means good or wholesome. Therefore, the concept of tayyib, with regard to food, is the process that food goes through to achieve both goals: (i) maximum cleanliness; and (ii) minimum contamination (pure) without potential toxicity, najis materials (ritually unclean), and khabith (unclean) (Alzeer et al., 2018).

Food safety and halalness are consumers’ main concern in food choice for consumption. This is because many diseases are caused by bacterial contamination in food that may be disadvantageous to health (salmonellosis, escherichiosis, listeriosis, and others) (Webb and Morancie, 2015). This was also stated by Wahyuni et al. (2019), that food safety issue is one of the most important themes for thorough investigation; that lack of food safety has caused various adverse impacts. The present work demonstrated that all actors, including regulators, executors, and supporting institutions must work in synergism. Food safety network’s improvement needs to emphasise reduction of divergence between entrepreneurs and other actors (consumers, Semarang City Health Office, and Semarang Food and Drug Administration Center). This effort will establish coordination between actors in building the food security itself.

Conclusion

The present work examined stakeholders’ role and how they play that role in improving food security in Semarang City. The present work found three main aspects in priority aspect that stakeholders emphasise: economic, socio-cultural, and institutional. The aspects emphasised by producers, namely governmental agencies, non-governmental organisations, academics, and consumers will ensure food safety and halalness. In regard to food safety control regulation, the main goal is to uphold food safety and halalness. Based on the FGD results, several improvements are needed with regard to food control that the food safety network has carried out, including periodic inspection, providing training, coaching for business owners, and providing rewards and encouragement to promote interest in food safety certification.

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