

## Transforming Food Packaging Labels in Food MSMEs through Community Counseling: A Case from Purwodiningratan, Surakarta

**Bambang Suhardi \*, Rahmadiyah Dwi Astuti, Ade Aisyah Arifna Putri, Irwan Iftadi, Eko Liquidanu, Wayan Suletra**

Industrial Engineering Department, Faculty of Engineering, Universitas Sebelas Maret, Surakarta, Indonesia

\*Corresponding Author: [bambangsuhardi@staff.uns.ac.id](mailto:bambangsuhardi@staff.uns.ac.id)

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### ABSTRACT

**Background:** Many MSMEs in Indonesia struggle to comply with the packaging label standards from the Indonesian Food and Drug Authority (BPOM). The root of this problem is knowledge gaps among MSME owners about labeling standards.

**Contribution:** This community services program contributes to enhance awareness of BPOM-compliant food packaging among MSMEs through counseling programs. This program differs from previous counseling programs by incorporating digital aids, specifically in redesigning packaging that complies with BPOM standards.

**Method:** Thirty participants attended an interactive discussion and counseling session in Purwodiningratan Village, Surakarta. Using visual aids and digital packaging design examples to show compliance, the session discussed BPOM's standards. Semi-structured interviews and post-session assessments were done to assess influence; descriptive analysis was then used for interpretation.

**Results:** Showed that 80% of the participants engaged actively in conversations, and 70% desired to implement what they learned in the counseling session.

**Conclusion:** The counseling session increased participants' understanding of standard food packaging regulations and shifted their perceptions. Early signs of behavioral change supported the efficiency of participatory counseling in improving MSMEs' compliance with regulations.

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## **1. Introduction**

Surakarta Government registered 1,414 Micro, Small, and Medium Enterprises (MSMEs) in 2022 under the Agency of Regional Research and Development [1]. The most active MSMEs are in the food and beverages sector, with 629 MSMEs. The majority of MSMEs are located in Jebres District, with 378 MSMEs. One of the MSME centers is located at Purwodiningratan Village, Jebres. MSMEs are vital for regional economic development [2], [3], particularly in improving community welfare and lowering unemployment and poverty [4]. MSMEs can significantly strengthen regional economies when integrated into a well-functioning innovation ecosystem [5]. The influence of MSMEs is most evident through increased efficiency supported by innovative capabilities [6].

Among these innovative capabilities, packaging plays a strategic role, especially for food and beverage MSMEs - packaging influences not just logistics but also brand image, market access, and compliance with environmental regulations [7], [8]. The packaging design can influence customer purchase decisions [9], [10]. MSMEs have limited awareness of product packaging [11]. MSMEs often focus on the taste of their product. As product diversity increases, today's customers require more relevant information, making packaging a crucial communication medium between producers and consumers. Packaging encapsulates the entire production process and raw ingredients, assisting consumers in selecting products that align with their requirements [12]–[14].

Global packaging standards exist to guarantee product safety, consumer protection, and adherence to regulations [15], [16]. Numerous food packaging from MSMEs fail to comply with The National Agency of Drug and Food Control/ *Badan Pengawas Obat dan Makanan* (BPOM) regulations, reducing market size and lowering consumer trust. Frequent problems involve lacking essential information, such as ingredient lists, expiration dates, manufacturing codes, halal certifications, and distribution permit numbers.

A halal logo is necessary for Muslim consumers, as it guarantees that MSME products comply with halal standards [17], [18]. The distribution permit number, whether P-IRT or BPOM, is crucial as it signifies that the product is authorized for distribution, providing consumers with greater trust in its safety and quality [19], [20]. MSMEs frequently disclose only basic ingredients on their packaging, neglecting to include additional ingredients, which may mislead consumers, particularly those with allergies. Therefore, packaging not only affects brand image and sales but also significantly contributes to consumer safety [21]–[23].

Given these challenges, it is essential to explore the extent to which food MSMEs understand and comply with BPOM standards. Few studies have investigated the awareness and implementation of BPOM standards among food MSMEs in Indonesia. Since proper food packaging labels must satisfy BPOM standards as they contain important product information, raising awareness about these standards can contribute to resolving community problems [24], [25]. Counseling can effectively raise awareness and educate MSMEs stakeholders on packaging standards [26], [27]. As it enables direct knowledge transfer, interactive problem-

solving, and capacity building [28], counseling has been shown successful in improving compliance and business practices in past community empowerment studies, especially on compliance with packaging regulations among MSMEs [12], [13], [21], [22], [25], [29].

Despite the crucial role of packaging in ensuring food safety, consumer trust, and regulatory compliance, there remains a significant knowledge gap among MSME actors, particularly those in Surakarta's food sector, regarding BPOM label standards. This issue becomes even more pressing given the increasing demands from both domestic and international markets for standardized packaging and product traceability.

Without intervention, non-compliance with packaging regulations may limit the marketability of MSME products, diminish consumer trust, and expose public health to unnecessary risks. The limited awareness and understanding of packaging standards among MSMEs can also hinder government efforts to promote inclusive economic development and food safety governance. Therefore, this study addresses an urgent need to bridge the regulatory knowledge gap through direct and participatory educational interventions [30], [31].

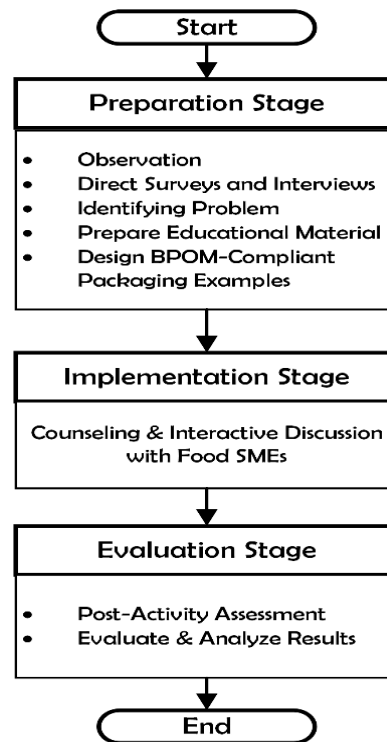
This study contributes to the body of knowledge on MSME development and regulatory compliance in several ways. First, it provides empirical insights into the current level of awareness among MSME actors regarding BPOM food labelling standards. Second, the study offers a model for community-based counsel interventions that integrate digital tools and practical redesign approaches, thus offering scalable and replicable strategies for other regions facing similar challenges. Third, by applying the Knowledge-Attitude-Practice (KAP) framework and the Diffusion of Innovation Theory, the study strengthens the theoretical linkage between knowledge dissemination and behavioral change in regulatory compliance, particularly within the food MSME ecosystem in Indonesia.

This study adheres to the Knowledge-Attitude-Practice (KAP) framework and the Diffusion of Innovation Theory. The Diffusion of Innovation Theory highlights counseling as an effective method to increase awareness and encourage the adoption of standardized packaging in MSMEs [32], [33]. In contrast, the KAP framework argues that increased awareness leads to positive attitude shifts and behavioral improvements [34]. Packaging is one of the core activities of Porter's value chain [7]. Hence, this study empowers MSMEs to improve their packaging practices through counseling.

This study aims to assess the extent of knowledge and understanding that food MSMEs in Purwodiningratan, Surakarta have regarding BPOM packaging label standards, while also implementing a participatory counseling program to enhance their awareness and capacity to comply with these standards. Furthermore, this research seeks to evaluate the impact of counseling interventions on MSMEs' knowledge, attitudes, and intended practices, ultimately offering a community-based intervention model that can be adopted more broadly to support regulatory awareness and capacity building in other MSME clusters across Indonesia.

## 2. Method

The counseling session occurred on September 28, 2024, in Purwodiningratan Village, Jebres District, Surakarta City, with 30 participants, primarily consisting of owners of food MSMEs. The counseling process is in several stages, as shown in [Figure 1](#).



**Figure 1.** Process Flowchart

### 2.1. Preparation

The preparation stage includes field observation, licensing, and preparation of materials and media that support the counseling activity. Field observations, a method commonly utilized in community-based participatory research for identifying context-specific needs, were conducted to determine the primary problems encountered by food MSMEs [35]. During the field observation phase, we performed semi-structured interviews with multiple food MSMEs in Purwodiningratan Village to ascertain primary issues associated with food packing procedures. Semi-structured interviews are typically organized around a guiding framework that establishes the areas, topics, or themes to be addressed during the interview [36]. The questions aimed to explore five main areas: (1) The packaging-related challenges encountered by participants in the home food industry, (2) The current utilization of packaging for their products, (3) The measures taken to guarantee consumer safety in packaging, (4) Their understanding of critical information required on food packaging, (5) Their familiarity with BPOM regulations about appropriate food labeling.

Before initiating counseling, applying for a permit to the Regional Research and Innovation Agency of Surakarta City is necessary. The permit was then given to the Head of

Purwodiningratan Village, and the concept of the activity was elaborated. Materials and media were created, including educational slides and sample packaging designs. The educational PowerPoint slides based on the Indonesia government regulations related to food packaging labeling such as: (1) Law No. 23 of 1992 on Health, (2) Law No. 7 of 1996 on Food, (3) Law No. 8 of 1999 on Consumer Protection, (4) Government Regulation No. 69 of 1999 on Advertising & Food Labels, (5) The decision of the Head of BPOM RI No. HK.00.05.52.4321 of 2003 on General Guidelines for Product Labeling.

## **2.2. Implementation**

The counseling program's implementation involves presenting content addressing food packaging regulations in compliance with BPOM standards. Participants were introduced to the fundamental components of compliant packaging by illustrating food packaging designs that complied with BPOM Standards. The counseling session was thereafter accompanied by an interactive discussion to engage participants and improve their understanding of BPOM regulations on food packaging.

## **2.3. Evaluation**

A descriptive quantitative approach, supported by brief qualitative observations, was used to evaluate the counseling program in Purwodiningratan Village. The success of the program was assessed using two main indicators: (1) The number of participants who asked questions or engaged in the discussion during the counseling session indicates active engagement. (2) The number of participants expressing interest in further discussion or application of the materials provided is utilized to evaluate motivation to develop knowledge. At the end of the counseling session. The proportion of participants who achieved each success measure was presented by converting response frequencies into percentages.

## **3. Results and Discussion**

The counseling received positive feedback from the participants. The total number of participants in the counseling activity was 30, achieving the minimum attendance requirement. Participants are food MSME owners in Puwodiningratan Village. Observations indicate that MSMEs in Purwodiningratan Village predominantly concentrate on food products. The range of products offered includes both dry and frozen food. Despite each product already having a packaging and brand, numerous products fail to comply with the standards established by BPOM. Interviews with MSME owners indicated that a primary issue is the limited understanding of the components required on packaging. MSMEs typically lack awareness of the BPOM standards for packaging. As a result, the placement of incorrect labels in the packaging may prevent certain products from being sold at retail stores.

This initial observation result aligns with previous findings in [37], [38], who reported that MSMEs showed low compliance with labeling regulations due to limited knowledge, particularly regarding product composition. Despite BPOM's significant advancements in

digitalization and technical assistance, a recent report highlights that numerous MSMEs continue encountering difficulties due to their low capacity to navigate complex regulations [39]. To bridge knowledge gaps, it is necessary to integrate regulatory surveillance with targeted assistance, including counseling and training for MSMEs.

### 3.1. BPOM Standardized Packaging Elements

The counseling activity involved lecturing on food packaging label regulations that comply with BPOM standards. The food packaging label must contain nine essential elements: product name, ingredient list, net weight or content, producer or importer name and address, halal status if relevant, production date and code, expiration details, distribution permit number, and origin of specific food ingredients. During the counseling, participants were presented with samples of food packaging labels that complied with BPOM standards. Figure 2 shows product packaging that fails to comply with BPOM standards. In contrast, Figure 3 shows a newly designed product packaging that complies with BPOM standards and includes all standardized packaging elements.



Figure 2. Example of Unstandardized Packaging



Figure 3. Standardized Packaging



### **3.1.1. Product Name**

The product name includes a trade name (brand) and an identifiable product category, and the product name must be able to describe the product and its attributes comprehensively. Incorporating a brand cannot violate food safety, nutrition, and health principles. The product name serves as a distinguishing factor among products. Packaging acts as a symbol that establishes itself in the consumer; hence, the product name on the packaging is an essential element [40].

### **3.1.2. Ingredients List**

The objective is to provide consumers with information regarding the types of ingredients used, particularly for individuals with allergies. Stricter allergen labeling laws are critical for protecting consumers. This minimizes the risk of accidents caused by undeclared allergens on food labels [41]. Allergen-containing ingredients must be highlighted using a distinct color or bold typography, and all raw materials, including water and food additives, must be listed.

### **3.1.3. Net Weight**

Net weight refers to the weight of the product, excluding packaging, quantified in quantities such as milligrams (mg), grams (g), kilograms (kg), liters (L), and milliliters (ml). Products presented as granules or seeds may provide the net weight per granule or seed. For products with coating materials, comprehensive weight information may also be included, defined as the net weight minus the weight of the coating or medium.

### **3.1.4. Producer/ Importer Address**

Including the producer's or importer's name and address for processed food goods and informing consumers about the producer's location [42]. The address must encompass the city name, postal code, and country. Information regarding the importing and distributing companies must also be supplied for imported products.

### **3.1.5. Halal Logo**

The halal logo on the packaging assures consumers that it has no haram substance. The presence of the halal logo positively and significantly influences purchase decisions, offering a sense of security that affects Muslim consumers [43].

### **3.1.6. Production Date & Code**

The production code for processed food must be displayed on the packaging in a visible location. The production code is an identifier that differentiates products across distinct production batches. Incorporating the manufacture date and code will enhance the traceability of potentially defective products, ensuring that only items with specific codes are recalled from distribution.

### 3.1.7. Expiry Date

Information regarding the expiry date on processed food goods is important for informing consumers about the expiration of the product's usability. The expired product undergoes a decrease in physical, chemical, and microbiological quality and nutritional value, making it unsafe for consumption. Storage techniques must be mentioned to preserve product quality during the designated shelf life [44]. The expiration date must be presented in the day, month, and year format.

### 3.1.8. Distribution Permit Number

The objective is to instill trust in consumers that the product has received authorization for distribution. This guarantees that the consumed products adhere to safety regulations. Business owners are urged to obtain a production certificate called the Home Industry Food Production Certificate (SPP-IRT). Upon completion of the SPP-IRT application process, the business owner will obtain a P-IRT number to be placed on food products ready for distribution [45].

### 3.1.9. Origin of Food Ingredients

Including the origin of food and ingredients is essential to indicate the source of animal or vegetable ingredients related to halal and allergens.

## 3.3. Increased Awareness of BPOM Standards

Figure 4 depicts the on-site counseling session and the online publication via digital media. The counseling programs in Purwodiningratan Village positively influenced participants, resulting in a shift in their perspective and an enhancement of their understanding of food packaging labels following BPOM standards. The assessment indicated that the counseling successfully increased awareness and comprehension among participants. The assessment findings are presented in Table 1. "Motivation" was assessed based on individuals who pursued follow-up consultations or expressed interest in improving their packaging. At the same time, "Engagement" was measured by the number of participants who asked questions or expressed opinions throughout the discussion session. Most participants showed interest in improving their knowledge, with several requesting private consultations regarding their business products.

**Table 1.** Summary of Counseling Evaluation Results

| Success Indicators              | Measurement                             | Achievement |
|---------------------------------|---|-------------|
| Participant Engagement          | % actively participating in discussions | 80%         |
| Motivation to Improve Knowledge | % seeking further consultation          | 70%         |

Initial observations and semi-structured interviews with MSME owners before the counseling activity revealed that most MSME packaging in Purwodiningratan Village did not



comply with BPOM standards. Following the intervention, post-activity assessment revealed encouraging results: 80% of participants actively participated in conversations, and 70% showed high motivation to improve their product packaging further.

Three prominent themes emerged from a brief thematic analysis of post-counseling feedback and open-ended responses: awareness of packaging rules, acknowledging previous non-compliance, and motivation for improving packaging. The thorough BPOM standards' requirements surprised many participants; one noted, "I never knew that listing all ingredients, even supporting ones, was mandatory, this change how I label my product." Others showed motivation to improve despite admitting mistakes, including missing expiration dates or permit numbers. One participant reported, "After this counseling session, I plan to redesign my packaging and start the process to get official permits." Employing the Knowledge-Attitude-Practice (KAP) model, the increased participant engagement and motivation indicate a transition from knowledge acquisition to positive attitudes and intended behavioral changes. This theoretical basis aligns with similar research [46]. These results imply more awareness and readiness among the participants to follow BPOM standards.



**Figure 4.** Food Packaging Counseling Activities

Despite the favorable results, some challenges were seen throughout the counseling, including the limited duration of discussions, participants' varied degrees of regulatory understanding, and the inability to find professional guidance for redesigning packaging. Future programs should incorporate follow-up mentoring, cooperation with local government and universities, and integration with ongoing MSME development initiatives for greater impact and program sustainability [47], [48]. There is a good chance that this intervention model will be replicated in other regions with similar packaging problems related to compliance with BPOM standards. A more extensive sampling across diverse geographical and economic conditions is required to improve the generalisability of these findings and strengthen policy suggestions.

#### 4. Conclusion

This study demonstrated that counseling programs to MSMEs owners on BPOM packaging standards can improve their knowledge and help MSMEs expand their market. Post-activity revealed that 80% of participants engaged in discussions, while 70% showed a strong motivation to deepen their understanding, indicating increased awareness and behavioral intent. Counseling effectively addressed a knowledge gap among MSME owners on packaging standards. Improved packaging could enhance the competitiveness of MSMEs' products and strengthen customers' trust. Future studies should assess long-term behavioral change and explore other regions facing similar challenges. This work also encourages policymakers to integrate educational outreach into MSME development programs to strengthen food safety compliance at the grassroots level.

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