

## Women farmer group empowerment in Gunungpati Sub-District, Semarang, Indonesia

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Submitted: 27 June 2019; Revised: 16 July 2020; Accepted: 10 September 2020

**Keywords:**  
Community empowerment  
Marketing strategy  
Importance of packaging  
Product development

**Abstract** *The Women Farmer Group in Semarang was established in 2013, and it has been developing small businesses in the processing of local fresh milk into various snack products. However, the selling value has not reached the optimum results since it faces a problem in packaging quality. Therefore, as one of the goals of Tridarma of Indonesian higher education which have directed the university to care about problems in society, an accompaniment to the business was carried out for improving the quality of product packaging. There were three activities conducted, i.e., training; re-designing; and monitoring. The results of the community service showed that the program was highly effective to enhance the understanding of Women Farmer Group members on the importance of product packaging as a strategy of marketing proved by the results of the average posttest score at 80.55. Product testing to consumers shows that the new packaging could increase consumer buying interest in comparison to the old one. Also, with the new packaging, the non-preservative snacks could have a longer storability compared to the old packaging. In this community service activity, an empowerment model can be obtained and can be further developed.*

### 1. INTRODUCTION

Semarang is the capital city of Central Java Province with the high number of poverty and jobless people in their productive age. One of the local government medium-term development plans is to reduce the cases by 2020. Therefore, the government launched an accelerated poverty reduction program in the form of an integrated movement in the fields of health, economy, education, infrastructure, and the environment. By local government plans, this program has been implemented in all sub-districts in Semarang including Gunungpati Sub-district (Indonesian Central Bureau of Statistics, 2016).

Gunungpati Sub-district is a site of the Women Farmer Group, a community of housewives who works in vegetable farms and dairy cow ranchers that was established in 2013. The farmer group is expected to improve the ability of its members in the development and strengthening of a business as an independent

farmer organization (Sukesti and Wilardjo, 2015). This group consists of 18 families, each owning about two to four dairy cows. The fresh milk production reaches 10 liters per day per family, and it is sold directly to the consumers at a low price. Mustikaningtyas et al. (2017) and Yuniastuti et al. (2018) had conducted a study and community service in this area and reported that the group grew a small business under the trademark Arsa Snack which has been producing some snack products with fresh milk as the main ingredient to improve the income of its members. However, the empowerment of the small business is still needed. The snack products such as milk sticks, milk crackers, milk eggrolls, and milk pies taste delicious and have better sale value than the fresh milk; nevertheless, the packaging of these snacks is unattractive. The packaging used the clear plastic bag and sealed at the top using hot press machine without any ziplock or clipping features. The labels are simple, and the impression given is still not adequate.

ISSN 2460-9447 (print), ISSN 2541-5883 (online)

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Once the packaging is opened, it is difficult to maintain its freshness without keeping it in a closed container.

According to Tjiptono (2008), packaging defines a series of processes related to the design and manufacture of containers or wrapper on a product. Sihombing and Situmorang (2014) state that packaging is a process that involves designing a container production or packaging a product. Initially, packaging only functions to protect the product; but nowadays, it ultimately serves as an identification of a trademark. Packaging is required to foster the consumer interest to buy. Silayoi and Speece (2007) research results explain that the visual elements of packaging such as graphics, color, shape, and size are important factors that influence consumer purchasing decisions. In addition, the packaging design requires the idea of being able to express the superiority of a brand or product; therefore, the design must be attractive and pleasing to the consumer. Packaging is also crucial for product identification to distinguish from the other competing products. Without different packaging designs, all products will look the same (Cahyorini & Rusfian, 2012). Moreover, a good packaging also functions as a medium of communication and promotion that increases brand equity and product sales (Ampuero & Vila, 2006; Kotler & Keller, 2012; Ashaduzzaman & Mahbub, 2016).

One of the Tridarma (three obligations) of the Indonesian higher education is community service in the local neighborhood area surrounding the institution. Universitas Negeri Semarang as one of the public universities that are located in Gunungpati Sub-district is obligated to empower the Gunungpati Sub-district society. Therefore, as the member of the higher education institution, we conducted some activities to assist the Women Farmer Group in improving the packaging of snack products. These activities were conducted in optimism to enhance the knowledge of the group members regarding the importance of packaging quality towards marketing. Also, we assisted them in the improvement of the packaging quality and their skills that could boost the confidence to increase the sales turnover. After the activities, we performed small research on the market response to the new packaging and the results were descriptively discussed in this paper.

## 2. METHODS

### 2.1. Community target and problem identification

The Women Farmer Group in Cepoko Village, Gunungpati Sub-district, Central Java Province, Indonesia was set as the target of the community service program. All 18 members of the community were involved as the training participants. The members' age ranged between 25 and 40 years old, most of them were

senior high school graduates. The packaging of Arsa Snack products which are produced by the community was targeted for its quality improvement. The training materials were given based on the problem identification, and the data collection was performed using the method of interview and literature study. The problem identification was performed by deep interview with the women farmer group members. After the training and packaging improvement, the response from the consumers on the packaging quality improvement was obtained by random sampling.

### 2.2. Action program and output/outcome

All the Women Farmer Group members participated in the training program. They studied the importance of packaging, how to pack the snack product properly, and their idea was included in the re-designing the product packaging label. The action programs were divided into three main programs, i.e., training, monitoring, and evaluation as shown in Table 1.

### 2.3. Monitoring and evaluation

The monitoring and evaluation programs subsequently followed the action program. Those were conducted to determine the successfulness of the programs in improving the knowledge, skills, and quality of product packaging. The monitoring and evaluation on the knowledge and skills of the participants' improvement were conducted through a posttest and questionnaire after the program; whereas the assessment on the packaging, quality improvement was performed by consumer purchasing decision analysis through questionnaire and interview. The results of questionnaire distribution were tested using multiple linear regression tests. The equation model is as follows:

$$Y = 0.179x_1 + 0.158x_2 + 0.161x_3 + 0.171x_4 + 0.158x_5 + 0.211x_6 \quad (\text{Pers. 1})$$

Y is a representation of consumers; therefore, if the variables of color, shape, logo, size, material, and label are more attractive and varied, the consumer's buying interest will increase. Based on the results of the analysis of respondents, respondents who responded to the packaging of dairy products consisted of 35 people (70%) women and 15 people (30%) men. Regarding age, as many as 12 respondents (24%) aged 24–29 years, 22 respondents (44%) aged 30–35 years, and 16 respondents (32%) aged 36–41 years.

### 2.4. Development of empowerment model

The Women Farmer Group empowerment model was then developed based on the activities conducted from the step of problem identification, training

Table 1. Community service action programs in improving the quality of product packaging

Name of Program	The Activities	Duration	Speaker	Training Media/Methods
Training I: The importance of packaging	1) Pretest 2) Training 3) Posttest	3 h (1 <sup>st</sup> week)	Packaging expertise	Powerpoint show, observation, and discussion
Training II: Re-Designing the Packaging Labels	1) Workshop 2) Workshop evaluation	3 h (6 <sup>th</sup> week)	Visual Communication Design expertise	Label designing and editing, and demo
Training III: How to pack the snack	1) Workshop 2) Workshop evaluation	3 h (3 <sup>rd</sup> week)	Packaging expertise	Video presentation, demo, and practices

program, and monitoring evaluation stages of community service program. The model developed could be applied in the next activity with other Women Farmer Groups in Semarang, Indonesia. The model includes the improvement of powerless community to be empowered community through community service program conducted by the lecturers in higher education institution.

### 3. RESULTS AND DISCUSSION

#### 3.1 Problem identification

The training program was conducted based on the identification of the problems faced by the Women Farmer Group related to the small business that has been developed under the trademark Arsa Snack. The problems were identified using the method of interview and questionnaire, and also literature study. The interview results showed that currently, the snack products were well accepted to the society and consumers. Arsa Snack was routinely produced processed food products from dairy milk in the form of milk sticks, milk crackers, milk pies, and milk eggrolls which involve fresh milk in the dough mixture. Fresh milk made the product taste distinctive and savory. Another advantage is they used premium quality ingredients and cooking oil without any preservatives added. Most of the consumer said that it tastes good and delicious, but it has a drawback in the packaging design. Once it was opened, the product cannot be stored for a long period; it must be kept in a tight container since it has no protective clip or ziplock feature on the plastic bag. Also, it was difficult to keep it in a rack because of the pouch is not a standing pouch. Moreover, the design of the packaging labels was simply unattractive in its color, logo, and font type.

Based on the questionnaire given to the Women Farmer Group members, the group members had not realized that these problems must be solved to improve the selling value of the products. They were disorganized on how to start the problem-solving. They had limited knowledge on the importance of packaging, and they did not have enough skills to improve the

packaging quality by designing the labels. According to these problems, the training program was set to assist the group members.

#### 3.2 Training program

##### 3.2.1 Training I: The importance of packaging

The community service team assisted the Women Farmer Group in improving product packaging quality through activities including training, workshops, lectures, demo, and practices. The first training was held on the topic of the importance of products packaging. The pretest was given to the participant at the beginning. Activities were continued by providing the knowledge about the importance of excellent and healthy packaging for food delivered by the expert. The plastic used for packaging must be considered on its quality to support feasibility and food safety by the feature of food grade, heat resistant, oil resistant, clean, airtight, and are not easily torn. After giving the lecture, the training participants were given the posttest. The question measured the basic knowledge of partner members regarding the packaging of food products. The questions and the score of the answer in pretest and posttest are provided in Table 2.

Data in Table 2 shows that most members did not understand the aspect of food safety related to the plastic pouch criteria that can be used as food packaging, the hazards to the food product. Therefore, the participants learned the hazards of food including chemical, biological and physical aspects, followed by the principles of food microbiology and hazard analysis of critical control points (HACCP) from the expert from the Department of Integrated Science, Universitas Negeri Semarang. Moreover, they had the first knowledge on the logo design criteria for packaging and the importance of packaging to increase the selling value. Based on the posttest results, the knowledge of the participants was gained significantly.

##### 3.2.2 Training II: Re-Designing the Packaging Labels

In order to improve the quality of packaging for processed dairy milk products, the community service



team collaborated with the experts aimed at helping the Women Farmer Group to re-design the product packaging label. The expert was from the Visual Communication Design Study Program of the Department of Fine Arts, Universitas Negeri Semarang. Moreover, the team also provided in-kind assistance in the form of a plastic bag sealer machine as well as the food grade ziplock plastic pouch. The activities carried out included training on explaining the effect of product packaging and labels to boost the selling value. Also, they gave their idea to improve the design of the label. The before and after label design is presented in Figure 1.

Table 2. Questions to measure the basic knowledge of the participants on the food packaging

Questions	Pretest average score	Posttest average score
What are the criteria of good packaging for food products?	11.50	14.00
What is the symbol for the food grade plastic bag?	12.25	16.00
What are the criteria of the logo design for attractive food products packaging?	16.50	18.25
What are the aspects of hazards to food products that can make the products unsafe?	10.25	14.10
Can attractive packaging increase sales turnover and expand market share?	16.25	18.25
Totalscore	66.75	80.55



Figure 1. The label design before the community service program (a); the label design after the program was conducted (b)

### 3.2.3 Training III: How to pack the snack

The third training was the workshop on the product packing using the new packaging which had been designed in Training II. The old packaging only used the non-food grade plastic pouch and was sealed using an old manual sealer machine. Therefore, the quality of the seal sometimes can not be ascertained whether or not it has been well-sealed. In the new packaging, there were two layers of seals, the ziplock clips and hot press sealing. These two tight seal layers

could guarantee the package to be more airtight to prevent the decrease in food quality. The Women Farmer Group members were trained to utilize the new sealer machine properly, and how to pack the food in the new packaging. Also, the monitoring activities on the product using new packaging were performed. The form of old and new packaging is shown in Figure 2.



Figure 2. The improvement of product packaging quality. The difference between the old packaging (left) and new packaging using the food grade ziplock pouch (right)

### 3.3 Monitoring and Evaluation

The results of monitoring for a approximately eight weeks on the product quality in the new packaging indicated that the new packaging can improve product durability in comparison to the previous one. The intended resistance included four organoleptic aspects, namely 1) texture; 2) taste; 3) aroma; and 4) color. Based on the organoleptic test, the score obtained was 93.5%, which means that food is still very suitable for consumption and sale. Previously, using the old packaging plastic pouch, the storage period was 4-5 weeks; while after using the new packaging, the product's storage capacity was 8 weeks.

The second monitoring activity was small research on product testing towards consumers' perceptions. Products with new packaging were tested to consumers by questionnaire method. This product testing activity aimed to determine the effect of quality and new packaging design on consumer purchasing decisions. A total of 50 respondents were asked to fill out a questionnaire which contained statements regarding the packaging of dairy products. The results of questionnaire distribution were tested using multiple linear regression tests, and the results of the analysis showed that the variables of color, shape, logo, size, material, and label could increase consumer buying interest as provided in Table 3.

Table 3. The results of multiple linear regression test

Variables	Standardized coefficient beta	p-value	Description
Color (X <sub>1</sub> )	0.179	0.005	
Shape (X <sub>2</sub> )	0.158	0.011	
Logo (X <sub>3</sub> )	0.161	0.040	Positive and significant
Size (X <sub>4</sub> )	0.171	0.008	
Material (X <sub>5</sub> )	0.158	0.013	
Label (X <sub>6</sub> )	0.211	0.005	

The results of monitoring the improvement of packaging quality and its impact on sales volume indicated that there was an improvement. A brief interview about the responses of the respondents showed that consumers preferred the new packaging design because of the attractive design and color of the label, as well as the clips or ziplock feature on the plastic ends. Respondents said that the clip was very helpful in opening and closing the packaging. Also, with the clips, snacks were not easy to become soggy after opening.

Moreover, the packaging quality is related to the elements of a packaging, which are classified into various perspectives. According to Smith and Taylor (2004), there were 6 groups of elements that must be considered by producers and designers when making packaging, namely shape, size, color, graphic, material, and flavor. Similarly, Kotler and Keller (2007) distinguished 6 elements that must be evaluated when making packaging, namely size, shape, material, color, font type, and brand. While Ampuero and Vila (2007) have the same view as Underwood (2001) that distinguished packaging components into 2 elements, namely graphics elements (color, typography, images) and structural elements (shape, size, and material). Slightly different from previous opinions, Silayoi and Speece (2007) divided the packaging into two elements: visual elements (graphic, color, shape, and size) and informational elements (information contained in the packaging and technology used). Based on the classification by Ampuero and Vila (2007) and Underwood (2001), this research was aimed at the packaging structural components, i.e., shape, size, and material; and also to examine the components of the color, typography, and images.

Basically, the main function of packaging is to protect the product from damage when undergoing the process of transportation, storage, and sale of products (Gonzalez et al., 2007). Based on the opinion of Tjiptono (2018), the packaging is a series of activities related to the design and manufacture of containers/places and packaging on a product. Packaging is essential in the field of marketing by

involving the design of container production or wrapping a product to increase brand equity and increase sales (Kenesei and Todd, 2003; Kotler and Keller, 2012; Poturak, 2014). It is because the packaging is directly dealing with consumers so that it can influence consumers to provide positive responses (Jessie Chen-Yu and Kincade, 2001). Supported by the opinion of Rundh (2005), which states that packaging can attract consumers' attention, increase the impression, and influence consumer perceptions of a product. In addition, packaging also provides uniqueness to a product and as a differentiating tool that helps consumers to choose a product among many other products (Underwood et al., 2001; Wells et al., 2007).

Some research results regarding the importance of packaging on product images and sales have been carried out. The results of Formal and Wismiarsi's research (2015) found that graphic packaging design influenced the desire to buy; while other factors outside of graphic design are price, taste, advertising, and other factors. The results of research from Yu and Kincade (2001) showed that product image has a positive and significant effect on perceived quality and performance expectation at the evaluation stage, then the desire to buy at the purchase stage is influenced by price, and satisfaction after purchase is influenced by product image accompanied by product performance. Silayoi and Speece (2007) research results explain that the visual elements of packaging (graphics, color, shape, and size) are important factors that influence consumer purchasing decisions. Other research on the influence of packaging on purchasing decisions is done by Nirwana (2010). Also, packaging affects consumer buying interest. The influence of packaging, in this case, is color, shape, logo/brand, image illustration, typography (text on packaging) and layout. Other research on the packaging was also carried out by Mardiyanti (2011) regarding the colors, typography, shapes, and images of the desire to buy snacks in Jakarta. The results of his research prove that color, typography, shape, and image have a positive and significant influence on the desire to buy snack products.

Based on the results of the activities and simple research obtained, Arsa Snack producers were able to increase knowledge in the field of business practices, especially regarding product packaging strategies to increase consumer buying interest and sales figures. Also, from the community service activity, a simple model of community empowerment can be formulated as shown in Figure 3. The model of empowerment shows the step of empowerment from the problem identification, action and activities, and the output/outcome. Finally, in the future, it is expected that the quality of packaging can be further enhanced for the

empowerment of the product to be marketed to regional and national levels.



**Figure 3.** The concept of empowerment model through community service.

#### 4. CONCLUSIONS

The community service program could improve the knowledge of Women Farmer Group members regarding the importance of packaging and improving the quality of packaging on marketing. Mentoring activities could also improve the community skills, product packaging quality, and members' confidence. Monitoring activities indicated that the new packaging could improve product durability better than the old one. Based on the organoleptic test and product testing, it showed that the variables of color, shape, logo, size, material, and label could increase consumer buying interest.

#### ACKNOWLEDGEMENTS

The program was conducted under the supervision of Universitas Negeri Semarang (UNNES) Center of Community Service, and it was fully funded through the lecturer's community service program DIPA UNNES 2018.

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