



Packaging technology and digital marketing of fish dempo to increase sales productivity

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ABSTRACT

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The BUMDes fish processing business unit group experienced obstacles regarding the function of packaging and how to market digitally in the sale of Dempo fish products. The purpose of this PKM is to create the right packaging to maintain product quality; and expand product marketing areas to increase sales productivity through digital marketing. The method is carried out through training and mentoring in the form of packaging practices with the use of vacuum sealers, the creation of e-commerce sales accounts integrated into social media, and the evaluation stage of activities. The results of this community service activity show an increase in the skills of the partner group in utilizing packaging tools for Dempo fish produced (78%) so that product packaging is more attractive and supports shelf life to maintain product quality. With the packaging technology used, the knowledge of partner group members in understanding the function of packaging that affects marketing has also increased (80%). This has an impact on the increase in sales turnover received through social media owned by members of the partner group. If previously it was known that the sales turnover of this product was IDR 16 million per year or equivalent to IDR 1.3 million per month, then after the PKM activity there was an increase in sales turnover of IDR 2.1 million at the same price within 3 weeks.

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1. INTRODUCTION

Packaging or product packaging significantly determines consumer acceptance of a product (Apriyanti, 2018; Erijanto & Fibrianto, 2018; Hayati, 2021; Puyanda et al., 2021). The function of packaging includes serving as a container that protects the product from damage, supports durability, and provides information about the product, such as nutritional content, ingredients, expiration date, and aesthetic appeal. However, many entrepreneurs tend to focus more on product quality and sales volume (Suraya, 2021).

Food products offered generally depend on consumer needs and preferences. This indicates that a product with a proper packaging design is more likely to influence consumers' purchasing decisions, making the packaging an attractive factor for consumers (Widiati, 2019; Maricar et al., 2023). Packaging essentially serves to ensure product safety until it reaches the consumer, including protection against

impact or weather conditions and enhancing shelf life (Ropikoh et al., 2024). Packaging made from eco-friendly materials, portable, safe from contamination, and accompanied by adequate product descriptions will certainly be preferred by consumers. A product's packaging should possess strong characteristics to build brand awareness. Moreover, good packaging will inevitably affect the product's price.

Dempo Fish, a processed fish product, is produced by a partner group of this community service activity, specifically the fish processing business unit of Bumdes Maddiolo, located in Polewali Village. The product has been marketed at various county-level events, such as Bone's Anniversary, Independence Day, Food Day, and several sub-district activities. During these events, the sales of Dempo Fish have allowed the group to achieve maximum profits. Orders have been received from consumers who purchased the product and saved the contact information printed on the packaging label, while others learned about it through friends or family around Polewali Village. Group members admit that the labels on the packaging are created based on specific events, making their Dempo Fish less recognizable. Frequently changing and easily damaged packaging negatively impacts the market reach (Mardhiah et al., 2023).

Dempo Fish sold at exhibitions is generally profitable compared to direct sales on market days. The partner group does not produce large quantities of Dempo Fish due to its short shelf life. Unsold products are usually distributed to neighbors or friends outside the fish processing business group. The raw fish is purchased at a price of Rp30,000-35,000/kg, and each kilogram produces two packs (1 pack equals 500 grams) of Dempo Fish, sold at Rp50,000/pack.

According to the financial report analysis conducted by the community service team and Bumdes managers for the year 2023, this product generated a revenue of only Rp16 million. If packaging innovation and digital marketing concepts were implemented, this potential could increase to an estimated minimum of Rp30 million per year. The ability to create attractive product packaging correlates with the product's image and selling price. Reports show that food and beverage businesses that pay attention to packaging design have been able to increase their revenue (Suraya et al., 2021). Packaging design is crucial in product sales, as the choice of colors or product images can significantly influence consumer interest and boost sales volume (Agustina et al., 2021; Badri et al., 2022).

Marketing strategies largely rely on packaging, as safe and attractive packaging adds value to the product and visually influences consumers' purchasing decisions (Setiyoko et al., 2023; Apriyanti, 2018; Utama et al., 2022). Product marketing strategies through digital media combined with appealing packaging are considered effective and efficient in expanding marketing areas and boosting sales productivity (Wijaya et al., 2021; Yudhanto et al., 2022). However, limited knowledge in utilizing digital promotion and marketing has become a significant obstacle for the Bumdes Maddiolo fish processing business group in Polewali Village in expanding the market for Dempo Fish. By optimizing digital media management, marketing reach could be broadened, driving business advancement (Andiani et al., 2023; Marhamah et al., 2022).

The increasing trend of social media use in society should be leveraged to promote Dempo Fish through digital marketing (Akifah, 2020). This would undoubtedly support the expansion of the product's market area. Unfortunately, this potential has not yet been utilized by the Bumdes Polewali fish processing business group. Their lack of digital technology mastery limits the marketing reach of their Dempo Fish products.

This PKM (community service program) activity aims to provide solutions for the Bumdes Polewali fish processing business group by designing appropriate packaging and expanding their product marketing area to enhance family economies and village self-sufficiency.

2. METHODS

This community service activity is carried out in collaboration with the partner group, Fish Processing Business Unit of Bumdes Maddiolo, located in Polewali Village, Sibulue Subdistrict, Bone Regency, South Sulawesi Province. This PKM consists of five implementation stages:

Socialization

This activity serves as the initial stage of the PKM to be implemented, where the objectives, stages of activity implementation, and schedule are presented by the proposing team to the partner group to reach an agreement. Through this socialization, it is expected that the partner group understands the PKM activities so that the execution of each agreed-upon work program proceeds smoothly. This will support the achievement of the program's objectives, namely creating attractive and safer packaging to maintain product quality and expanding the product's market area to boost sales productivity through digital marketing.

The materials presented during this activity are tailored based on the coordination between the Community Service Team, the partner group, and related village officials. Below is a description of the implementation of the PKM activities on Packaging Technology and Digital Marketing for Dempo Fish by the Fish Processing Business Unit of Bumdes Maddiolo in Polewali Village.

Table 1. Community service activity schedule

1 st Meeting	
Activities	Introduction of community service team and partners Explanation of implementation methods Introduction and explanation of packaging and its benefits, as well as characteristics of appropriate and attractive packaging
Objectives	Introducing the method of implementing community service activities Providing an introduction and explanation of packaging and its benefits, as well as the characteristics of appropriate and attractive packaging
2 nd Meeting	
Activities	Packaging selection (shape and size) Label making
Objectives	Providing knowledge to partner group members regarding the selection of appropriate shapes and sizes for Dempo fish products Determining the type of label, making labels and installing labels correctly
3 rd Meeting	
Activities	Explanation and training on how to use a vacuum sealer
Objectives	Providing knowledge on the benefits of the tool for Dempo packaging
4 th Meeting	
Activities	Creating an e-commerce account that has been integrated with social media Preparing interesting product information to be uploaded
Objectives	Providing knowledge about the flow of online product sales through the accounts of each member of the partner group The uploaded graphic info is sufficient for potential consumers to decide to purchase Dempo fish products.
5 th Meeting	
Activities	Explanation of product promotion in digital marketing strategy
Objectives	Providing knowledge and live sales promotion practice
6 th Meeting	
Activities	Evaluate the group members' abilities in packaging, labeling, and promotion Conduct a recap of the responses of potential consumers of Dempo fish products
Objectives	Knowing the partner's ability to participate in this activity Knowing the volume of online sales
7 th Meeting	
Activities	Calculating online sales turnover for the first 2 months Conducting a review of fish packaging activities and digital marketing exploration that has been carried out by group members
Objectives	Knowing the achievement of community service activity targets Increasing group enthusiasm to develop products by optimizing digital exploration in marketing.

Training and Mentoring

Packaging practice

This practice includes: 1) Providing an understanding of the importance of attractive and appropriate packaging, including labeling on product packaging; 2) Conducting practice by modifying the previous packaging method and packaging form (re-packaging), such as using a vacuum sealer to remove air from the packaging to ensure the durability of Dempo Fish; 3) The packaging activity, which is the first focus of this PKM, uses packaging technology to pack Dempo Fish in special plastic bags by removing air from the packaging before sealing it, using a vacuum sealer. This tool can remove air or lock in moisture to maintain the freshness of food products. It ensures quality for longer storage, is equipped with a cutter to trim plastic for neater cuts, allows flexible plastic usage as needed, and is practical and efficient. The packaging plastic used is an embossed vacuum sealer bag made of nylon polyethylene (PE) or polypropylene (PP), suitable for food industry components. The embossed plastic used comes in various sizes, and the ones used in this activity are 20x30 cm and 12x20 cm. Embossed vacuum plastic is a flexible material with excellent water resistance, strength, lightweight, oxygen barrier properties, transparency, and affordability (Nurwathy et al., 2023); 4) Assistance in creating e-commerce sales accounts integrated with social media, including guidance on creating and uploading infographics to expand marketing areas; and 5) Utilization of digital marketing exploration as a promotional and marketing tool for Dempo Fish products by the Bumdes Maddiolo fish processing business group to help boost sales productivity. Assistance is provided through monitoring to improve knowledge and skills in marketing Dempo Fish products among partner group members by facilitating discussions in each meeting, including guidance on preparing product descriptions and uploading them to their social media platforms.

Evaluation

The evaluation stage is conducted at the beginning of the activity before the training (pre-test) and after the activity (post-test), aimed at assessing the impact of this community service activity on improving the knowledge and skills of the partner group members in understanding the function and importance of good packaging, as well as digital marketing. The evaluation consists of: 1) Evaluation of packaging with labels. The community service team evaluates the fish processing business unit of Bumdes Maddiolo in implementing their understanding of how to package products and create ready-to-sell Dempo Fish packaging; 2) Evaluation of e-commerce utilization. This activity aims to assess the partner group's understanding of managing information and photos uploaded about the products offered; and (3) Evaluation of digital marketing. In the marketing evaluation, the number of orders, customer addresses, and the revenue received by the fish processing business unit of Bumdes Maddiolo from online Dempo Fish sales will be determined. During the evaluation, issues faced during digital promotion and marketing will also be noted. Through digital marketing, Dempo Fish produced by this group is expected to become a signature product of Polewali Village that is more widely recognized by the public.

3. RESULTS AND DISCUSSION

Results

Introduction to packaging and packaging technology

The first meeting was conducted in front of the partner group, which is the members of the fish processing business unit of Bumdes Desa Polewali. The material related to packaging and its benefits, as well as the characteristics of the right and attractive packaging, received positive feedback from the attending group members. The discussion was quite relaxed, but a key question raised from the topic

during this meeting was how to create attractive packaging that lasts longer while also boosting the sales turnover of Dempo Fish. This indicates how much the partner group needs training and assistance in packaging Dempo Fish in a way that can be widely recognized, thus encouraging the improvement of the village's economy.



Figure 1. Socialization activities on the benefits of packaging



Figure 2. Socialization activities on how to select packaging and labels

The selection of packaging and labels was the topic of the second meeting in this community service activity. The group members followed and listened attentively to the explanation from the Community Service Team. A sense of familiarity began to emerge with questions mixed with the local language, but the discussion remained orderly and understandable to everyone present. The partner group members who attended appeared to have understood the importance of packaging in protecting the product and supporting its shelf life, while a good label encourages consumers to purchase and helps them remember the product.



Figure 3. Introduction and use of packaging technology tools

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The introduction of tools and how to use them for packaging took place in the third meeting, where the handover of equipment, including a vacuum sealer, emboss plastic, digital scales, and a freezer, had been carried out from the Community Service Team to the Village Secretary. The packaging technology was demonstrated directly, showing how the vacuum sealer works on Dempo Fish products to the group members. Those present paid close attention to the packaging procedure using the vacuum machine in front of the partner group, and even the Chairman of Bumdes Maddiolo and the Village Secretary of Polewali tried the equipment themselves.

Assistance in creating digital marketing accounts and applications

The fourth meeting was a training and mentoring session on creating sales accounts integrated with the group members' social media. This was also accompanied by the preparation of product descriptions in the form of infographics, ready to be uploaded to social media. The partner group prepared images and created brief descriptions of the Dempo Fish they produce.



Figure 4. Sales account creation training

Next, an explanation about product promotion in digital marketing strategies was provided, highlighting the importance of digital marketing knowledge for producers or entrepreneurs who want to sell and expand their marketing area digitally. This fifth meeting was conducted directly on the smartphones of the group members, following the guidance of the community service team. To connect with the sales catalog of Dempo Fish produced by the Fish Processing Business Unit of Bumdes Desa Polewali, it can be accessed via <https://wa.me/c/6287828467871> or <https://shopee.co.id/bumdesmaddiolo2022>. This activity took a considerable amount of time due to issues with internet connectivity, requiring repeated sessions.



Figure 5. Introduction to e-commerce and digital marketing applications

Activity Evaluation

In the sixth meeting, an evaluation was conducted to assess the partner group's ability in packaging, including label placement, knowledge about packaging, and promotion as well as marketing of Dempo Fish products. A post-test was carried out to measure the improvement in knowledge and skills of the partner group members after this community service activity. The results, shown in Figure 6, indicate that 78% of the partner group members were able to operate the packaging technology skillfully, while knowledge about the importance of packaging increased by 80%, knowledge about digital marketing by 70%, and marketing knowledge by about 75%.

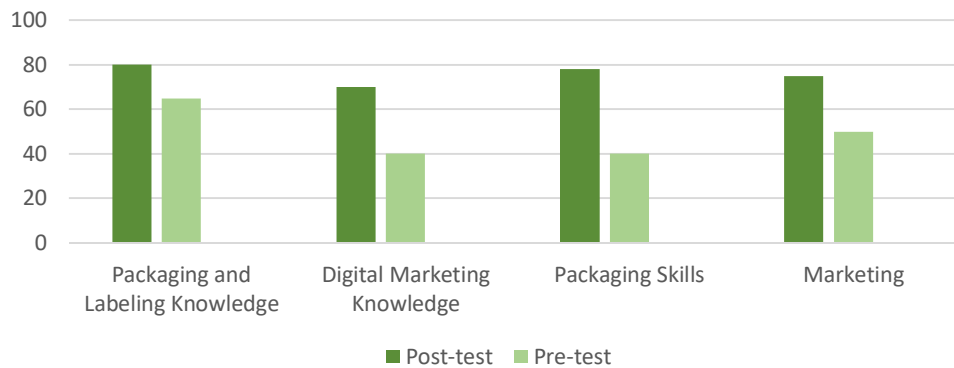


Figure 6. Evaluation report

The group members formed subgroups to divide tasks, which would later rotate between production, packaging, and marketing. Production of Dempo Fish was not part of this community service activity, but the community service team still conducted checks on the equipment used in processing, as this is also important in maintaining the quality of Dempo Fish until it reaches consumers. Additionally, the community service team and the partner group's leader conducted a recap of the responses from potential customers of Dempo Fish after the application of packaging technology and marketing efforts carried out by the partner group members through their social media accounts. The recap results showed that the response from the community through the sales accounts was not very large, considering the network issues in the area. However, some partner group members who used WhatsApp for marketing Dempo Fish showed a fairly large response, as evidenced by several orders made through chats coming from outside the subdistrict and even the district, such as from Wajo and Makassar City.



Figure 7. Results of dempo fish packaging technology

The conclusion of this community service activity (PKM) was meeting 7, which focused on calculating the online sales turnover for the first month after the implementation of packaging technology and digital marketing by the partners. Based on the order records made by the partner group, a total of 42 packs of Dempo fish were ordered. The sales record for this product in 2023 showed a turnover of Rp16 million, or approximately Rp1.3 million per month. This shows an increase in sales turnover of Dempo fish with new packaging and marketing methods of Rp2.1 million, or about 61.53%, within 3 weeks, with the same selling price. The growing number of orders will impact sales turnover, so the target of Rp30 million per year can be achieved. Additionally, during meeting 7, a review of the Dempo fish packaging and digital marketing activities carried out by the partner group members was conducted as a consideration for the continuation of the collaboration in the future.

Discussion

Product safety and quality are crucial for sellers or producers, so they must choose the right packaging. Proper packaging will extend the shelf life of consumable products, including serving as a protective layer for the product itself and being closely related to product marketing. One key factor to consider is selecting packaging materials that are suitable for the type of product (Daman et al., 2021). The use of a vacuum sealer machine is supported by an automatic vacuum system and a controlled heating/sealing mechanism, ensuring high-quality packaging that can preserve the product's shelf life (Hamdan et al., 2023).

This PKM activity uses a vacuum sealer as a technology to encourage the members of the Bumdes Village Polewali Fish Processing Business Unit to package their Dempo fish production, improving shelf life while maintaining product quality and safety for long-distance shipments. The PKM team also assisted the partner group members in selecting the right label—appealing and durable—so that the product could be memorable to consumers or the public. Labeled packaging indicates that the producer is able to communicate the value, content, and benefits of a product (Fibrianti, 2019; Siswanto et al., 2022). Innovations in packaging have brought about changes where product packaging with labels is no longer just a covering, but a critical element in marketing and selling products.

Initially, the packaging of Dempo fish products used ordinary plastic containers, which were deemed inefficient because they could produce an unpleasant smell during long-distance transportation (Daman et al., 2021). This issue was resolved by improving the packaging method in accordance with the packaging standards outlined in Government Regulation No. 69 of 1999 concerning Food Labels and Advertisements. This regulation discusses several variables that should be included in product packaging, such as the product name, ingredients, expiration date, and other necessary information. Good packaging requirements include the absence of harmful substances (toxins), protection from dirt, microbes, and factors that can cause the loss of product volume, as well as resistance to temperature changes, humidity, and friction.

Several tools that support packaging technology will be optimized for use in packaging Dempo fish products so that group members can minimize the risk of their products being damaged before reaching consumers. Packaging with technological enhancements is expected to extend shelf life and not only protect the product but also highlight the product's uniqueness in persuading consumers as a marketing strategy and product strengthening (Nurendah et al., 2021). The application of packaging technology to the Dempo fish products of the members of the Bumdes Polewali Village Fish Processing Business Unit is considered by the partners to be very important in fulfilling orders from outside the village.

Starting with estimating the weight of the product, which was previously packaged by guesswork, now digital scales are used where 1 pack is equivalent to 500 grams of Dempo fish in a sealer bag. The package is then labeled and ready to be placed in the freezer, which supports the product's quality and shelf life. Dempo fish produced by the Bumdes Polewali Fish Processing Business Unit comes in both ready-to-process and ready-to-serve forms. Therefore, community participation in product development, promotion, and sales is certainly hoped for by Polewali Village in its efforts to build the village's independence.



Figure 8. Partner groups and village apparatus active in PKM activities

The following consideration after labeling the packaging is expanding the marketing area to increase sales volume. One of the popular methods lately is utilizing social media integrated with e-commerce. The digitization of marketing combined with interaction with buyers or potential customers during transactions can be done instantly and accessed to search for product-related information (Saudah et al., 2021). Potential buyers are given options that make it easier, from choosing the product, payment methods, to a forum for direct communication with the seller.

The potential of the online market is vast, so expanding the marketing area can be explored through the internet at a relatively low cost. This is very different from traditional markets, where sellers and buyers must face each other directly (Supardin & Sukiyanto, 2024). Through the sales accounts created by the partner group members, they can promote Dempo fish as a distinctive product from Polewali Village that can be purchased online.

4. CONCLUSION AND RECOMMENDATIONS

This Community Service activity aims to create attractive and safer packaging to maintain product quality, as well as expand the product marketing area to increase sales productivity through digital marketing exploration. The target to be achieved in this activity is the improvement of the Dempo fish product quality from the Bumdes Maddiolo fish processing unit by creating the right packaging, and increasing the sales turnover of Dempo fish through digital marketing strategies. The implementation of this activity is divided into 4 stages: socialization, training, technology application, mentoring, and evaluation. Packaging technology in the form of tools that support the packaging of Dempo fish products, the location of the activity, the activity of the partner group members, and the support of village officials and the local community are determining factors for achieving the objectives of this activity. The results achieved can be seen from the labeled packaging of Dempo fish products, which have a longer shelf life compared to before. In addition, there was a 61.53% increase in sales turnover in less than a month after the partners applied packaging technology and digital marketing to their products. It is expected that

through this activity, partners will understand the importance of packaging in maintaining the quality of Dempo fish products to consumers, and enhance their skills and income through digital marketing practices that drive the economic independence of the village.

There is a need for socialization regarding packaging technology for home-based products that have the potential to become industries, so that knowledge and skills in packaging can reach all processed agricultural products in a village. Additional time for the development of digital marketing should also be implemented as an effort to assess the community's response to the marketed products and the marketing areas reached by the offered products. It would be best if this activity could be followed up through cooperation with other relevant agencies concerning product legality so that this activity can be sustainable. It is also expected that the partner group can be more open in providing information regarding the needs that can be addressed through similar community service activities in an effort to build the village's self-reliance.

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