



Journal home page: <http://ajarcde-safe-network.org> ISSN 2581-0405

## Community Service in Assisting Culinary Students of STU Tangeb, Abianbase Village, Mengwi, Badung Regency in Producing Innovative Bakery Products

A.A Made Semariyani<sup>1\*</sup>, I Gede Pasek Mangku<sup>2</sup>, I Gusti Ngurah Sugiana<sup>3</sup>

<sup>1</sup> Department of Food Technology and Agricultural Products, Universitas Warmadewa. Indonesia

### ARTICLE INFO

#### Article History:

Received: 17 October 2025

Final Revision: 1 December 2025

Accepted: 7 December 2025

Online Publication: 9 December 2025

### KEYWORDS

*bakery innovation, culinary students, digital marketing, PIRT*

### CORRESPONDING AUTHOR

\*E-mail: [asemariyani@gmail.com](mailto:asemariyani@gmail.com)

### A B S T R A C T

This community service activity was carried out to assist Culinary students at STU Tangeb in producing innovative bakery products, aiming to broaden their knowledge of bakery production, including raw materials, processing, packaging and labelling, industrial management, digital marketing, and procedures for obtaining production permits (PIRT). The methods used in this program included interviews to identify problems and the direct participation of partners in the production of various bakery products (such as Danish pastry, pizza, flavoured sweet bread, sponge cake, chiffon cake, and brownies), packaging and labelling, bookkeeping, and digital marketing. The objective of this program was to provide solutions to the problems faced by the partners in innovative bakery production, financial bookkeeping, marketing, and licensing (PIRT). The results of the program show that partners acquired skills in producing innovative bakery products (with various variations/creations). This community service activity has been published in print and electronic media, and video documentation has also been uploaded on YouTube.

#### Contribution to Sustainable Development Goals (SDGs):

**SDG 2:** Zero Hunger

**SDG 12:** Responsible Consumption And Production

## 1. INTRODUCTION

### 1.1. Research Background

The food industry is rapidly evolving in response to increasing consumer demand for products that are not only delicious but also nutritious, safe, and market-oriented [1, 2, 3]. One approach to fulfilling this demand is through innovative food processing based on agricultural products, which supports food diversification and provides higher nutritional value [5,6]. Vocational education, particularly in culinary programs, plays a strategic role in preparing skilled human resources capable of creating innovative and high-quality food products [6, 7]. STU Tangeb, a vocational school located in Abianbase Village, Mengwi, Badung Regency, Bali, offers a culinary program with significant potential to produce diverse and marketable bakery products. However, several challenges remain, including

inconsistent product quality, unattractive packaging, limited knowledge in business management and digital marketing, and insufficient production technology and equipment. These issues hinder students from developing competitive bakery products. This community service project was designed to address these challenges by providing training and mentoring in innovative bakery production, packaging and labeling, food safety, bookkeeping, and digital marketing. Through this program, students are expected to improve their technical competence, develop professional business skills, and expand their market reach, thereby enhancing the sustainability of their bakery business initiatives.

### 1.2. Objective

The objective of this community service project is to enhance the capacity of vocational culinary students at STU Tangeb by strengthening their technical and entrepreneurial competencies in innovative bakery production. Specifically, the program aims to:



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(1) improve students' skills in developing high-quality and market-oriented bakery products; (2) equip them with knowledge in proper packaging, labeling, and food safety practices; (3) build their abilities in bookkeeping and basic business management; and (4) enhance their digital marketing skills to expand product visibility and market reach. Through these integrated trainings and mentoring activities, the project seeks to support the creation of competitive, sustainable, and value-added bakery products derived from local agricultural resources.

## 2. MATERIALS AND METHODS

The implementation of this community service program employed several complementary methods to address the problems identified at the partner institution and to ensure effective knowledge and skill transfer. First, the interview and discussion method was applied at the initial stage to explore and analyze the real problems faced by the partners. Through structured interviews with teachers and students and open group discussions, the team identified challenges in raw material management, production consistency, product packaging, bookkeeping, and marketing strategies. This step ensured that the interventions provided were relevant and tailored to the partners' actual needs. Second, counselling was conducted through face-to-face sessions, during which theoretical knowledge and conceptual understanding were delivered directly to students and teachers. These sessions covered several key aspects, including proper handling of raw materials, innovative bakery processing techniques, packaging and labeling practices, and the fundamentals of digital marketing. The counselling stage also introduced students to the importance of food safety standards

and the economic value of creating in bakery production. Third, the hands-on practice method involved students directly in the production process. This practical approach ensured that participants were not only passive recipients of knowledge but also active learners who practised skills in real-world settings. Training was provided on appropriate technology for processing raw materials, producing innovative bakery products, designing attractive packaging, preparing informative labels, and promoting products through digital platforms. By engaging in this direct practice, students bridged the gap between theoretical concepts and practical application, thereby improving their technical competence and confidence in managing small-scale bakery businesses. Through the integration of interviews, counselling, and hands-on practice, this program ensured comprehensive, sustainable knowledge transfer, equipping students with the skills needed for both technical production and business management.

## 3. RESULT AND DISCUSSION

### 3.1. Implementation of Activities

In general, the outcomes of the PkM activities showed significant progress among the participants. The achievement data can be observed through six main indicators: (1) understanding of raw material handling; (2) understanding of ways to increase the economic value of innovative bakery products; (3) understanding of innovative bakery production; (4) understanding of product packaging and labeling; (5) understanding of digital product marketing; and (6) skills in carrying out proper packaging and labeling.



**Figure 1.** Community Service Activities

### 3.1.1. *Participants' Understanding of Raw Material Handling (80%)*

One of the initial important achievements was the improvement in participants' understanding of raw material handling. The results show that 80% of participants already know and understand how to handle raw materials properly. This includes selecting quality ingredients, proper storage methods to maintain freshness, and basic knowledge of hygiene and sanitation. Raw material handling is highly vital in the culinary field, especially in bakery production. The quality of the ingredients significantly affects the taste, texture, and shelf life of the final products. With this increased understanding, participants are expected to be more careful in managing raw materials before processing, ensuring that the bakery products produced meet higher quality standards. Although this achievement is already high, around 20% of participants still require further assistance. This indicates that reinforcement of materials and repeated practice remain necessary to ensure uniform understanding among all participants.

### 3.1.2. *Understanding How to Increase the Economic Value of Innovative Bakery Products (80%)*

In addition to technical aspects, the PkM program also emphasized entrepreneurial knowledge. The results showed that 80% of participants understood how to enhance the economic value of bakery products innovatively. This can be achieved through strategies such as recipe modification to reduce costs without compromising quality, creating unique flavors and shapes, and innovating in packaging to attract consumer interest. This understanding is very important because, in today's era, consumers do not only assess products based on taste but also on the added value they offer. Innovative bakery products are not only perceived as food but also as lifestyle products. With this understanding, participants are expected to develop high-value products that are competitive in the market. Nevertheless, 20% of participants have not yet fully grasped the strategies for increasing economic value. This opens opportunities for follow-up programs, such as business mentoring or entrepreneurship simulations, to apply the knowledge more effectively in practice.

### 3.1.3. *Understanding of Innovative Bakery Production (100%)*

The most remarkable achievement of this PkM program is that all participants (100%) understood how to produce bakery products innovatively. This indicates the success of knowledge and skill transfer from the program facilitators to the students. During the program, participants were trained not only to follow conventional recipes but also to be confident in experimenting and innovating. For example, they learned to modify base ingredients with healthier substitutions, create products with more appealing appearances, and even combine local flavors with modern bakery techniques. This success becomes a strong foundation for participants in their creative journey. They are no longer limited to producing standard products; they can innovate to meet market needs and consumer trends. The fact that 100% of participants achieved this understanding reflects their enthusiasm and seriousness in learning as well as in applying the knowledge gained.

### 3.1.4. *Understanding of Product Packaging and Labeling (80%)*

Another area of focus was product packaging and labeling, where 80% of participants understood its importance. Packaging is not merely about wrapping the product; it also protects the product, extends its shelf life, and serves as a visual identity that attracts consumers. In addition, proper and informative labeling builds consumer trust by providing essential information such as ingredients, expiration dates, and distribution licenses. Through this program, participants gained a basic understanding of effective packaging design and standard labelling techniques. However, as in previous aspects, 20% of participants have not yet fully mastered the concept. This may be due to limited hands-on experience or varying design skills among the students. Moving forward, more intensive mentoring, particularly on simple graphic design or the use of digital tools for label creation, could be a viable solution.

### 3.1.5. *Understanding of Digital Product Marketing (75%)*

In the era of digitalisation, online marketing has become one of the key strategies for expanding market reach. The results showed that 75% of participants gained a basic understanding of digital product marketing. They were introduced to various digital platforms, including social media (Instagram, Facebook, TikTok), e-commerce marketplaces (Shopee, Tokopedia), and instant messaging applications like WhatsApp Business. This knowledge is expected to help them promote products more effectively, reach broader audiences, and strengthen their competitiveness. However, this achievement ranked lowest among the indicators at 75%. This means that 25% of participants still faced difficulties in understanding digital marketing strategies. Common challenges included limited technological skills, inadequate access to devices, or a lack of experience in using social media for business purposes. Therefore, digital marketing remains an area that needs follow-up through more practical and hands-on training.

### 3.1.6. *Skills in Carrying Out Proper Packaging and Labelling (100%)*

Beyond theoretical knowledge, all participants (100%) were able to implement proper packaging and labelling in practice. This proves that the materials provided were not only understood conceptually but also successfully applied in practice. This achievement is significant because packaging and labelling directly determine how products are presented to consumers. Attractive packaging and apparent labelling increase both consumer trust and purchase interest. The fact that all participants demonstrated this skill indicates they possess the technical abilities to apply these practices in real business contexts.

## 3.2. *Analysis and Implications of the Results*

Overall, the implementation of the Community Service Program (PkM) with the Culinary Arts students of STU Tangeb can be considered successful. Of the six indicators, two achieved 100% results: understanding innovative bakery production and

packaging and labelling skills. The other four indicators ranged from 75–80%, indicating that most participants have understood the material, although a small portion still requires further assistance. The implications of these achievements are as follows:

1. Enhancing Technical Competence: Participants now possess the ability to process bakery products innovatively while maintaining proper hygiene standards.
2. Encouraging Creativity: A comprehensive understanding of innovation motivates participants to create new, more creative products.
3. Increasing Entrepreneurial Awareness: With knowledge of economic value, packaging, and digital marketing, students are encouraged to think beyond being cooks and envision themselves as future entrepreneurs.
4. Readiness to Enter the Business World: The packaging and labelling skills mastered by all participants serve as practical assets that enable them to market their products immediately.

#### 4. CONCLUSION

his community service project significantly enhanced the competencies of STU Tangeb culinary students in innovative bakery production, packaging and labeling, food safety practices, and digital marketing. The program generated positive economic and social impacts by enabling students to produce marketable bakery products and create additional income, while simultaneously strengthening the quality and relevance of vocational education. Moving forward, follow-up activities will focus on expanding market access, upgrading production facilities and equipment, and ensuring long-term product sustainability through continuous mentoring and capacity-building initiatives.

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