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Improving the Quality of Coffee Beans and Branding of Coffee Products of Sekar Adji MSMEs Malang Through Inovokasi Program Grants

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ABSTRACT

Background: Coffee is a key plantation commodity in Indonesia, with Gunung Kawi producing Robusta, Arabica, and Excelsa varieties. However, local farmers still rely on traditional drying methods and outdated marketing, affecting bean quality and sales. This community service program seeks to address these issues by introducing a 30 kg-capacity rotary dryer to meet the SNI 01-2907-2008 standard and by providing digital marketing training to enhance competitiveness.

Contribution: This program significantly supports Sekar Adji MSMEs by introducing a rotary dryer that enables coffee drying to meet national quality standards. Combined with digital marketing training and improved packaging, it enhances product promotion and competitiveness in the digital market, ultimately boosting MSME revenue.

Method: The program involves four main activities: manufacturing and training on the use of a 30 kg-capacity rotary dryer, providing digital marketing training to enhance social media and e-commerce use, redesigning coffee packaging for better appeal, and restructuring the MSME organization to improve adaptability and management efficiency.

Results: The program introduced a 30 kg-capacity rotary dryer and digital marketing training. The dryer reduced moisture content to

11.5%, and product packaging was improved with five new designs. The program significantly increased marketing reach and MSME revenue. Digital platforms such as Instagram, Tokopedia, and TikTok Shop were utilized to expand online presence, and a new organizational structure enhanced business operation.
Conclusion: Analysis of the results shows that the program positively impacted product quality and sales at Sekar Adji MSMEs, primarily by improving drying processes and enhancing digital marketing through targeted training.

1. Introduction

Plantations represent a crucial sector in the utilization of natural resources. In 2022, the plantation sector contributed approximately 3.76% to the Gross Domestic Product (GDP). This sector demonstrated consistent growth in terms of both land area and production [1]. One of Indonesia's most significant agricultural commodities, coffee plays a pivotal role in its economy and foreign trade [2], [3]. Furthermore, the domestic coffee market exhibits considerable potential in enhancing the well-being of coffee farmers. This has been demonstrated to motivate coffee farmers to adopt more innovative practices and enhance the quality of their coffee beans [4].

The harvesting of coffee fruits occurs in multiple stages. The initial stage is selective harvesting, wherein only coffee fruits that are fully red or completely ripe are collected. The subsequent stage is semi-selective picking, in which all fruits within a group (dompolan) exhibiting a red coloration are harvested. In the final stage of the coffee-harvesting process, a technique known as simultaneous picking, or grafutan picking, is employed [5], [6]. This method involves the harvesting of all coffee fruits present in a single dompol, including both green and red beans [7], [8]. Drying is a post-harvest method that aims to reduce moisture content in newly harvested crops. This process can help extend the shelf life of plants and prevent contamination by fungi and dirt [9]. This process has been demonstrated to extend the shelf life of plants and prevent contamination by fungi and dirt [10]. Two methods of drying coffee beans are currently in use: traditional and mechanical. The traditional method involves the use of direct sunlight; however, this approach is accompanied by several drawbacks, including a prolonged drying time, a high degree of dependence on weather conditions, and the potential contamination of coffee beans with fungi and bacteria [3], [11], [12].

Accordingly, the standard stipulated in the SNI (Standard Nasional Indonesia) 01-2907-2008 dictates that coffee beans are required to comply with specific quality parameters. These parameters include a maximum moisture content limit of 12.5% [13]. Furthermore, the Specialty Coffee Association (SCA) has established guidelines to ensure the quality of coffee beans. According to these guidelines, the moisture content of green coffee beans should be maintained within the range of 10–12% [14].

Extreme weather conditions that have been observed in various regions of the world have also been documented in Indonesia. Numerous regions in Indonesia have been experiencing above-normal rainfall, leading to substantial flooding. These extreme weather conditions are both unpredictable and unavoidable, and they can occur at any time. Conversely, the inclement weather conditions have a deleterious effect on coffee drying, and elevated humidity levels have a detrimental impact on the moisture content and quality of coffee beans [14], [15]. The optimal drying process is expected to produce coffee beans of superior quality.

The demand for coffee in the Greater Malang region has been on the rise. The increasing prevalence of coffee entrepreneurs and the proliferation of coffee shops in various locations are indicative of this phenomenon [16]. The availability of various types of local coffee from several regions in Greater Malang, such as Dampit, Tirtoyudo, Ampelgading, and Mount Kawi, further supports this assertion. Coffee varieties possess distinguishing flavor profiles that vary according to their geographical provenance, thus captivating the interest of specialty coffee connoisseurs [17]. The distinct coffee flavors characteristic of each region present significant business opportunities, particularly in the domain of coffee bean processing. The community stands to benefit from this potential by establishing a coffee processing business unit, a move that would not only bolster the local economy but also enhance the added value of coffee products [18]–[20]. The expanding coffee market has led to a surge of interest in the industry, making it a lucrative and promising field for local entrepreneurs seeking to enter the global coffee economy.

Sekar Adji Micro MSMEs in Blimbing District, Malang City, East Java, are engaged in the production of packaged coffee powder under the trademark Lereng Kawi. The processed coffee beans are sourced from coffee plantations in the Mount Kawi area of Malang Regency. A taxonomic classification of coffee plants reveals three primary types: Robusta, Arabica, and Excelsa. The coffee industry continues to employ the conventional post-harvest method, which involves the direct sun-drying of coffee beans. This approach is characterized by several inherent limitations. The process is time-consuming and inefficient, necessitating the manual turning of the coffee bed every 1-2 hours to ensure even drying. Additionally, the method is vulnerable to mold contamination and is significantly influenced by weather conditions [12], [21], [22]. The substandard quality of coffee beans results in their unsuitability for sale, leading to financial losses for farmers. Concerning product marketing, the industry has leveraged e-commerce; however, these endeavors have stagnated and are no longer employed due to various considerations.

A case study of the Innovative Program grants from the Ministry of Education, Culture, Research and Technology (Kemendikbudristek), especially the Directorate General of Vocational Higher Education (Ditjen Diksi), reveals that the program effectively addresses the challenges faced by MSMEs. The project, which focuses on the process of drying coffee beans using an automatic coffee bean dryer to produce quality coffee beans, demonstrates the potential for innovation to enhance productivity and quality [23], [24], and digital product

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marketing strategies have been demonstrated to yield positive benefits for MSMEs, including increased sales and, consequently, augmented incomes [25].

2. Method

This In order to implement the Inovokasi Program, four essential activities were undertaken. Activity 1 (Manufacture of Rotary Dryer Machine Technology). The application of appropriate technology (TTG) has proven effective in addressing the key challenges faced by micro, small, and medium enterprises (MSMEs) in coffee bean drying. In this program, a controlled rotary dryer machine was fabricated to ensure that coffee beans meet the SNI 01-2907-2008 standard, which specifies a maximum moisture content of 12.5%.

The activity was conducted at the production site of Sekar Adji MSMEs, located in the Blimbing District, Malang City, East Java. The rotary dryer was made using stainless steel as the main material, with a sample capacity of up to 30 kg per batch. Drying duration varied depending on the initial moisture level of the coffee beans, generally requiring several hours to reach optimal conditions. The evaluation of the tool's effectiveness was carried out through a quantitative approach, by measuring the decrease in moisture content before and after the drying process using calibrated instruments. This setup enabled consistent, hygienic, and weather-independent drying that supports product quality improvement.

Activity 2 (Product Packaging). This activity focused on enhancing the packaging design of coffee products, targeting several coffee variants to increase visual appeal and consumer interest. The packaging was produced in Malang City, with orders placed directly at the local packaging factory. The material used was aluminum foil with zipper-lock, chosen for its durability, freshness retention, and modern appearance. This upgraded packaging not only supports brand identity but also meets practical needs in terms of storage and presentation. Details about the number and sizes of the packaging produced are presented in Chapter 4.

Activity 3 (Reorganization of Organizational Structure). The restructuring of the organizational structure of MSMEs was carried out to enhance operational efficiency and align with evolving market and consumer demands. This activity was conducted through a Zoom meeting involving the Sekar Adji MSME team and representatives from the Polinema community service team. The virtual discussion allowed for a collaborative exchange of ideas, resulting in a revised organizational structure that better supports production, marketing, and administrative functions [26], [27]. This adjustment is expected to improve role clarity and responsiveness to business challenges.

Activity 4 (Digital Marketing and e-Commerce). Digital marketing training focused on building the capacity of MSMEs in content creation and the effective use of e-commerce and social media platforms to promote products through visual materials such as photos and videos. The training was attended by approximately 30 MSME participants and took place at Atria Hotel Malang, running from 8 a.m. to 3 p.m. The session was led by Darayanza, a well-known content creator, who shared practical insights on branding strategies, content production, and platform optimization. The activity also included the strategic use of

influencers to boost the online visibility of coffee products, making this an essential component of the program's marketing approach.

3. Results and Discussion

In this initial activity, a series of stages have been executed, encompassing the conceptualization and design of a dryer machine with a designated capacity of 30 kilograms. The design of the dryer machine has been meticulously crafted to align with the specific requirements of MSMEs. The machine is engineered to operate at a precise temperature of 60°C, featuring a rotary dryer engine equipped with a regulator that enables precise modulation of the engine's rotational speed. The result of this TTG implementation is a machine, as illustrated in Figure 1.

Figure 1. Controlled coffee bean rotary dryer machine with a capacity of 30 kg.

The testing of the rotary dryer machine has been carried out in two stages. First, each of the machine's components has been tested separately. Then, the machine as a whole has been tested to ensure that its performance is in accordance with the set specifications. The coffee bean rotary dryer machine is equipped with temperature monitoring mechanisms that utilize both digital and analog thermometers. These mechanisms facilitate the precise adjustment of the machine's rotational speed, which is set at a constant rate of 28 revolutions per minute (rpm). The velocity of the machine's rotation exerts a substantial influence on the moisture content of the material that has undergone the drying process [11], [24], [28].

The subsequent activity entails the provision of training on the utilization of a controlled coffee bean rotary dryer machine to MSME partners, in conjunction with counseling on the significance of coffee bean moisture content in accordance with SNI 01-2907-2008, with the objective of enhancing coffee quality. The training and counseling activities are illustrated in Figure 2. Subsequent to the implementation of the training, the handover of the controlled coffee bean rotary dryer machine was conducted to MSME partners, as illustrated in Figure 3.

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All team members are expected to participate in training and machine handover activities in accordance with their respective roles and duties.

Figure 2. Sekar Adji, an MSME partner, participated in training on the use of a controlled coffee bean rotary dryer machine and received counseling.

Figure 3. Handover of the controlled coffee bean rotary dryer machine from the Head of the Inovokasi Team to the MSME lead of Sekar Adji.

The employment of this coffee bean rotary dryer apparatus has the potential to mitigate the reliance of coffee farmers on sunlight for the drying of coffee beans. Preliminary field tests have demonstrated the efficacy of the controlled coffee bean rotary dryer machine in accelerating the coffee bean drying process, as illustrated in Figure 4.

As illustrated in Figure 4, coffee beans subjected to the process of drying with a dryer machine, initially containing 60% moisture, can undergo a reduction in moisture content to 11.5% within a duration of 450 minutes for a volume of 3 kilograms. This indicates that the TTG machine produced can effectively accelerate the drying process of coffee beans while maintaining the required moisture content levels as stipulated by the SNI 01-2907-2008 standard.

The second activity focuses on enhancing skills (upskilling), improved packaging is a strategy that can enhance a product's competitiveness, particularly when the design is appealing to consumers. The activity was initiated with a survey of prevailing trends in the packaging market, encompassing standing pouches [29]. The activity initiated with a survey of prevailing packaging trends in the market, encompassing standing pouch packaging. The survey's results are then discussed with partners, including deliberations on the determination of the number of products, the design of the standing pouch layout, the ordering of custom-

printed standing pouch packaging, and the implementation of the offered packaging. Over time, product packaging design has undergone numerous revisions to appeal to a broader consumer base while maintaining the product's distinct identity. The visually appealing and engaging design of product packaging is known to capture the attention of consumers with ease.

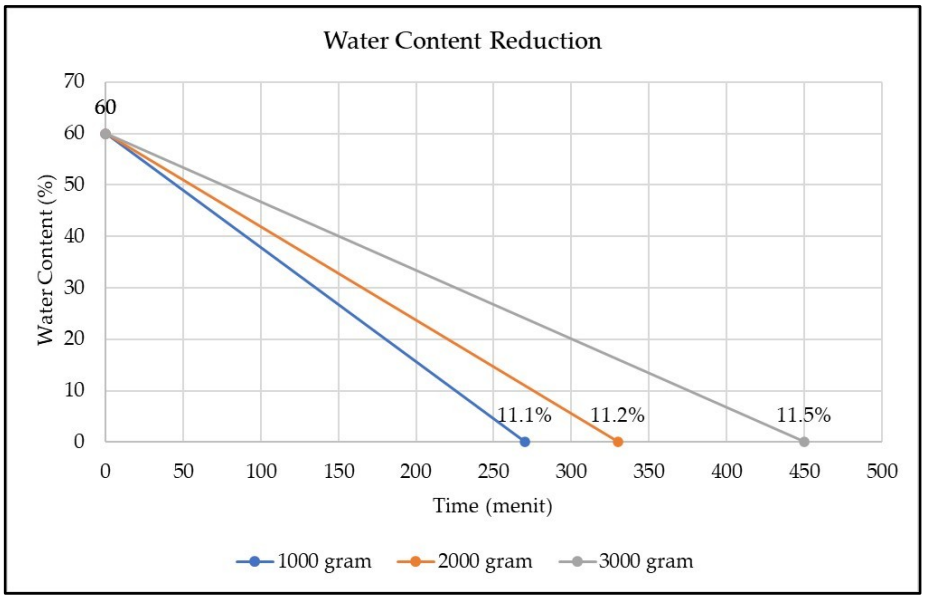

Figure 4. The decrease in moisture content produced by the coffee bean rotary dryer machine was controlled by the Inovokasi Team.

A total of three types of packaging were produced as a result of the discussions between the Inovokasi team and MSME entrepreneurs. These types of packaging included 2,000 packs of 18-gram sachets, 150 packs of 85-gram medium-sized packaging, and 100 packs of 150-gram packaging. The rotographer method was used to produce the packaging. However, subsequent review determined that the utilization of this method for packaging was unfeasible, as it necessitated the procurement of the product on a substantial scale, with a requirement of over 60,000 packs. The packaging production itself was carried out in the Sukun area of East Java.

In order to overcome this challenge, it is imperative to persist in the utilization of the existing packaging options, which are available in the following dimensions: 75 grams, 200 grams, and 250 grams. However, it is crucial to employ advanced custom printing techniques on standing pouches for all existing coffee variants. This strategic initiative will yield a total of 15 novel packaging designs. This achievement exceeded the original goal of producing three packaging types by successfully developing five new variants in three different sizes. As illustrated in Figure 5, there are five packages.

In the third activity, a reconfiguration of the organizational structure and management of MSMEs has been implemented with the objective of reorganizing the organizational structure to enhance the utilization of human resources and thereby optimized organizational performance. The objective of this activity is to formulate a new organizational structure document, in addition to recommendations for the allocation of human resources in alignment with the competencies required by the organization.

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The new organizational structure, in conjunction with the delineation of each position's responsibilities, was ascertained through deliberations with Sekar Adji's MSME partners, comprising proprietors, secretaries, and treasurers responsible for marketing and production affairs. The implementation of a novel organizational structure is anticipated to facilitate the expansion of Sekar Adji's MSME partners, thereby enhancing their capacity to address market and consumer demands in the future. The new organizational structure is illustrated in Figure 6.

Figure 5. Coffee packaging design that has been approved by Sekar Adji MSME partners.

Figure 6. Discussion on the restructuring of the MSME organizational structure between the Inovokasi Team and the Sekar Adji MSME management.

As seen in Figure 8, the fourth activity involved training in digital marketing to support coffee product sales. This session was led by Darayanza, a marketing consultant and content creator, and was attended by Sekar Adji MSMEs along with other local entrepreneurs, including students and housewives eager to gain practical skills in online promotion.

The training material encompasses a comprehensive array of topics, including product branding, optimal utilization of social media, the design of content for specific purposes, and the development of said content. Additionally, the material provides guidance on the capture of product photographs and the implementation of video platform software for product branding purposes. The training encompasses two primary components: the first is the practical application of capturing high-quality product photographs, ensuring their aesthetic appeal when uploaded to e-commerce platforms. The second component involves the theoretical and hands-on approach to photo editing and the creation of product content specifically tailored for social media dissemination. Given that the marketing techniques

employed by MSME partners are predominantly conventional, this initiative offers a valuable opportunity to enhance product marketing strategies through training initiatives focused on optimizing the utilization of social media. As illustrated in Figure 7, the atmosphere of the training is conducive to learning.

Figure 7. Digital marketing training and product photo taking practices.

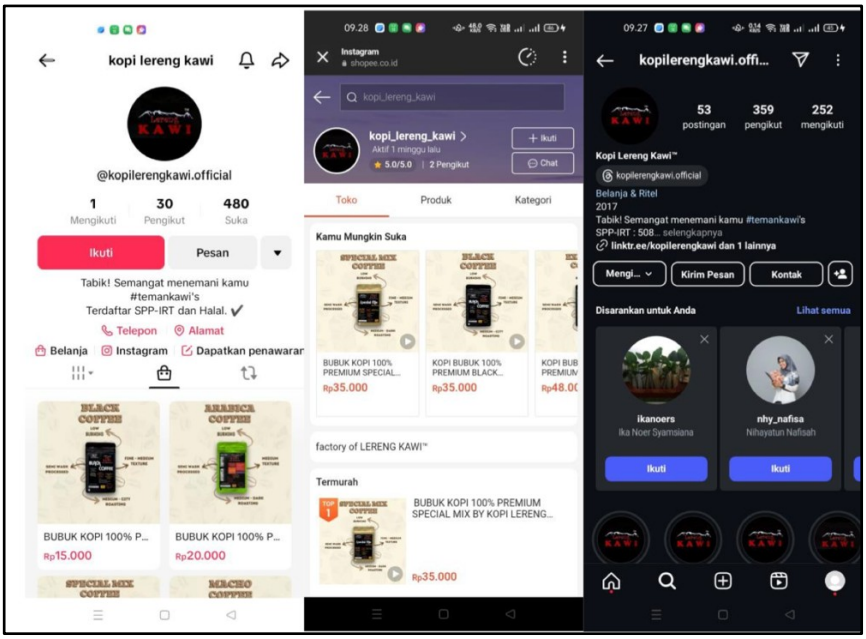

Figure 8. Examples of digital content of Sekar Adji MSME coffee products.

Following the conclusion of the digital marketing and e-commerce training, a survey was administered to all MSME participants who had participated in the training. The survey results, as depicted in Figure 9, indicate that 71% of MSMEs expressed a high degree of satisfaction, with the remaining 29% indicating a moderate level of satisfaction. The findings indicate that the participants have demonstrated a comprehensive understanding of the digital marketing and e-commerce training materials provided, particularly with regard to the creation of digital content, the comprehension of product branding techniques, and the application of appropriate photo and video capture techniques for the branding of their products.

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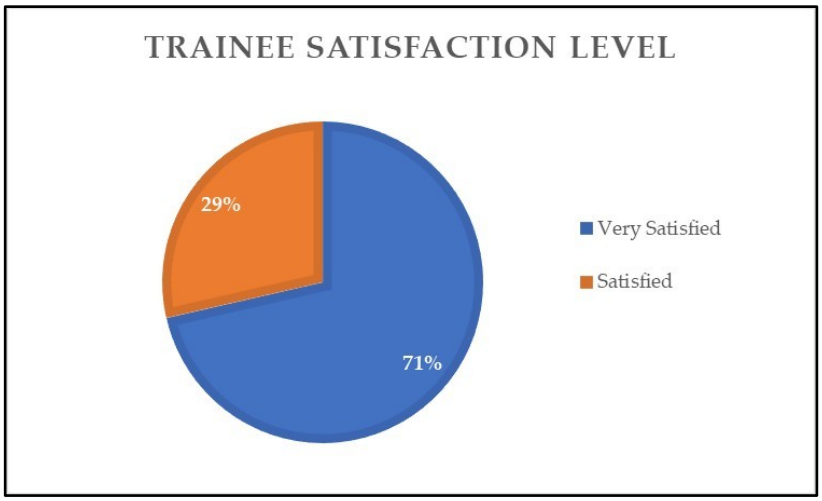

Figure 9. The results of the survey measured the satisfaction of the participants of the digital marketing and e-commerce training.

Figure 10. Socialization of the activities of the Inovokasi Team.

A social media campaign was initiated on Friday, October 11, 2024, to promote the Inovokasi activity. This campaign involved the publication of an advertisement in the POSCOMEDIA newspaper, both in its online and print versions. The advertisement can be viewed in Figure 10. The socialization process can be observed in the following links: https://malangposcomedia.id/tim-pengabdian-dosen-polinema-beri-pelatihan-branding-produk-dan-digital-marketing/. https://malangpariwara.com/2024/10/10/tingkatkan-daya-saing-umkm-kopi-polinema-beri-pelatihan-branding-produk-dan-digital-marketing/, and YouTube social media on the link: https://youtu.be/N3kRcj5cxss.

The experimental results demonstrated that the implementation of a controlled coffee bean rotary dryer apparatus led to a substantial reduction in the drying time, with the coffee beans exhibiting a final moisture content of 11.5%, which falls below the stipulated maximum threshold of 12.5% as outlined in SNI 01-2907-2008. The present findings are consistent with the results of studies conducted by other researchers [11], [24], [28]. The conclusion drawn from this analysis was that the optimal speed setting, determined to be approximately 28 rpm, can facilitate an efficient drying process, ensuring uniform moisture distribution and expeditious completion times. These findings serve to reinforce the approach utilized in this program, which posits that technical arrangements on machines exert a direct influence on product quality. The program's findings also indicate that alterations in packaging design can influence consumer appeal. This assertion is corroborated by extant research, which posits that aesthetically pleasing packaging designs can enhance consumer competitiveness and stimulate interest in MSME products [29]–[31].

The repackaging program, which incorporates custom printing, has yielded five novel types of packaging that are more professional and diverse. These new packaging options are then used to support the branding of coffee products. The utilization of digital platforms and contemporary packaging solutions, which are primarily comprised of paper-metal pouches, has the potential to augment the market share of MSMEs in the tourism sector and local products [25], [29]. The training program's innovative approach entailed the involvement of local influencers as part of a digital marketing campaign strategy, a novel element that had not been extensively explored in previous studies. This finding indicates a necessity for a more comprehensive and adaptive approach to address the evolving digital consumer behavior. Moreover, the restructuring of the MSME organizational structure in this study underscores the significance of internal management to facilitate uninterrupted production and distribution.

The implemented programs demonstrate that a comprehensive approach, incorporating elements of post-harvest technology, packaging design, organizational restructuring, and digital marketing strategies, can significantly impact the enhancement of the quality and sales of MSME products. The employment of rotary dryers has been demonstrated to assist in reducing reliance on meteorological conditions, thereby enhancing the efficiency and consistency of the coffee bean production process. Conversely, the redesign of packaging not only enhances the visual presentation of products but also fortifies brand identity and its unique selling proposition. Digital marketing training and optimization of social media and e-commerce platforms have been demonstrated to expand the reach of promotion and accelerate the process of adaptation of MSMEs to the development of the digital market. Consequently, this program employs an integrated and sustainable approach to address the challenge of enhancing the quality and competitiveness of local coffee products. Notably, the training outcomes of this program even involved local influencers as part of a digital marketing campaign strategy, a novel approach that has received limited attention in previous studies. This finding suggests a more comprehensive and adaptive approach to today's evolving digital consumer behavior. Moreover, the restructuring of the MSME organizational structure in this study underscores the significance of internal management to facilitate uninterrupted production and distribution.

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4. Conclusion

This program implemented a series of community service activities aimed at improving the quality and marketability of coffee products produced by Sekar Adji MSMEs. It successfully developed a 30 kg-capacity controlled rotary dryer equipped with temperature and rotation controls, redesigned five new packaging types with custom printing, restructured the MSME organizational system for better performance, and expanded digital marketing through platforms such as Instagram, TikTok Shop, X, and Tokopedia. These efforts significantly improved product quality, brand appeal, and sales performance. The model demonstrates strong potential for replication among other MSMEs, particularly in agriculture-based sectors seeking to enhance their competitiveness. However, the program's limitation lies in its localized implementation and short-term evaluation. Future research could explore long-term impacts and the adaptation of this integrated approach in different regions or industries to assess its broader applicability and sustainability.

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