Economic Independence Improvement of Melati MSMEs in Kedungbenda Village Through the Use of Production Technology and Digital Branding

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ABSTRACT

Melati MSME is located in Kedungbenda Village, Purbalingga and faces several challenges in improving the quality and quantity of production and expanding market share. This is due to the need for digital literacy and UMKM Melati's ability to utilize production technology to support daily business. Therefore, this community service aims to encourage an increase in the economic independence of Melati MSMEs through the implementation of production technology and digital media. This program is carried out in several stages, starting from socialization, application of technology and innovation, training, mentoring, and evaluation. The production technology used is a cutting machine, spinner, and sealer to increase efficiency and product consistency. In addition, digital literacy was also improved through training on the use of social media and e-commerce for marketing, as well as the development of a visual identity in the form of a logo as a branding strategy. The results show an increase in the quality and quantity of Melati MSME production, as well as ease of market access using digital media. The program performance assessment showed significant success, with an average achievement of 95.71%. The increased ability of MSME members to use digital production and marketing technology contributed to the increase in turnover and production time efficiency. The program evaluation showed a high level of participant satisfaction, especially in terms of the benefits provided by this service activity. Through this program, Melati MSMEs can continue to develop and be economically independent by optimizing production technology and more effective digital marketing strategies.

INTRODUCTION

Micro, Small, and Medium-sized Enterprises (MSMEs) constitute a significant factor in the Indonesian economy, particularly in terms of economic growth. The annual increase in the number of MSMEs evidences this. According to the Smeru Research Institute (2022), 64.5% of MSME ownership in Indonesia is held by women. This indicates that women demonstrate a notable propensity for independent initiative in economic management, frequently initiated at the MSME level. One such example is the Melati MSME.

The Melati MSME, located in Kedungbenda Village, Kemangkon Subdistrict, Purbalingga Regency, is a shining example of diversity and inclusion. Established in 2022, the enterprise has operated for two years and currently has 10 members. The Kedungbenda Village Government initiated its formation as part of a community empowerment initiative aimed at creating business groups within the village. Among the four groups established, only the Melati MSME has remained active. The members of this group come from diverse backgrounds, including housewives, former female laborers, and farmers. The Melati MSME serves as a platform for enhancing women's roles by providing greater access to resources and opportunities, particularly within the economic sector.

The Melati MSME operates in the food sector, specializing in the production of snack chips. Its flagship products include bitter melon chips, cassava chips (locally known as *manggleng*), *rempeyek* (a type of traditional Indonesian cracker), and various other snacks. The pricing for these products ranges from Rp5,000 to Rp10,000 per package. The assortment of products produced by the Melati MSME is depicted in Figure 1.

FIGURE 1. Melati MSME Products

As of now, the Melati MSME operates independently, handling all aspects of production, sales, and promotion. The production is demand-driven, with the finished products distributed to local stalls. Operating at a household industry scale, the enterprise can produce a maximum of 10 kg per batch, with a production time frame of two to three days per batch. This results in a monthly production capacity of 50 to 100 kg. However, the reliance on manual equipment hampers efficiency, as shown in Figure 2, indicating the potential for significant improvement.

In several stages of production, the Melati MSME continues to utilize manual techniques. Specifically, during the cutting stage, manual cutting methods are employed, which account for approximately 40% of the total production time. This extended production time contributes to irregular production cycles. Currently, the production capacity is limited to two cycles per week, yielding an average of 30–80 kg per month, with a 60–90% reduction in weight from the initial raw materials. The manual cutting process also leads to significant inconsistencies in product quality, particularly in terms of variations in thickness and size. In addition, the MSME relies on traditional draining techniques, which result in higher oil content in

the final product. This elevated oil content reduces the product's shelf life (Mulyo & Istiqlaliyah, 2020). Furthermore, the packaging process remains basic, lacking sufficient protection to prevent damage. Consequently, the chips are exposed to air, leading to increased moisture content of the product, which negatively affects the product's overall quality.

FIGURE 2. Overview of Production Technology Application

The adoption of offline sales strategies cannot only support MSME participation in local promotional activities, thereby raising community awareness but also holds the potential for generating significant revenue streams (Endris & Kassegn, 2022). However, a key limitation of offline sales is the constrained market reach. In general, members of the Melati MSME have not yet developed the capacity to effectively leverage digital technologies. Their promotional efforts are primarily limited to word-of-mouth and WhatsApp, both of which target a limited audience. Moreover, Melati MSME has not yet established a presence on social media platforms for promotion and sales purposes. This narrow scope of promotional and sales activities adversely affects demand and revenue. Additionally, Melati MSME lacks the capacity and flexibility to adjust product prices in response to fluctuations in raw material costs, which is critical for maintaining customer loyalty. As a result, when raw material prices increase, the MSME is unable to adjust its prices, leading to a reduction in profit margins.

Digital transformation through online marketing and sales is essential for expanding the market reach of Melati MSMEs. However, one of the challenges faced by the majority of women-owned MSMEs is the lack of digital literacy (Smeru Research Institute, 2022), including Melati MSMEs. MSMEs also face challenges in accessing digital technologies to improve product capabilities that can compete with products that have entered e-commerce in Indonesia (Anik & Wasitowati, 2024). The Melati MSMEs have not yet fully developed the ability to utilize social media and e-commerce platforms effectively, limiting the adoption of digital technologies as marketing and sales tools. Furthermore, expanding the market requires effective branding strategies, particularly through visual elements that can create a positive brand image and strong identity (Nirmalasari & Anwar, 2023). Currently, Melati MSMEs lacks a distinct visual identity that reflects the uniqueness of their products. Establishing such an identity would not only allow the Melati MSME products to be more easily recognized across various media platforms, but also significantly enhance their brand value.

This community service initiative aims to enhance the quality and quantity of production for the Melati MSME through two primary stages: the adoption of production technology and the integration of digital technology, which is commonly known as digital marketing (Pertiwi et al., 2022), with the goal of fostering economic independence. The implementation of these technologies is expected to address key challenges faced by the Melati MSME, particularly in reducing production time and achieving more consistent product quality. Additionally, the utilization of digital technology for marketing and sales will be complemented by the development of a visual identity, such as a logo, which will be applied across social media and e-commerce platforms to increase brand recognition and market reach.

METHOD

This community service initiative is designed to mitigate two primary challenges encountered by the Melati MSME community: production and marketing. The project will introduce advanced production technologies aimed at enhancing both the quality and quantity of output. Concurrently, to overcome marketing and branding challenges, the initiative will focus on elevating the digital literacy and skills of Melati MSME members, developing robust online marketing and sales platforms, and establishing a strong visual identity to enhance marketing efforts. These proposed interventions will be implemented through a structured series of community service activities, including socialization, training, technology transfer, mentoring, evaluation, and the development of strategies for long-term program sustainability.

The implementation of community service is not a one-sided endeavor. It utilizes a participatory approach, designed to enhance understanding among participants through practical engagement. This approach, which has been shown to positively influence participants' comprehension, ensures that the stakeholders are actively involved in the process (Kuswantoro et al., 2024). This research encompasses five primary activities, as depicted in Figure 3.
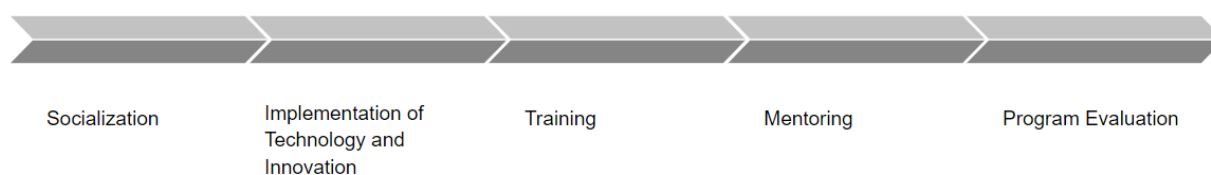
FIGURE 3. Stage of Implementation

Socialization

Socialization activities were conducted to disseminate information, knowledge, and understanding regarding the objectives and concepts of the community service initiative (Ridwan et al., 2021) to the Melati MSMEs, our collaborative partners. During these sessions, detailed explanations were provided about the various stages of the service, encompassing procedures, timelines, stakeholders, participants, and technical activity plans. The primary goal of this socialization was to orient the Melati MSMEs, particularly regarding their anticipated roles and contributions during program implementation. Throughout this stage, active communication and coordination were maintained while gathering vital information pertaining to the organization's needs, development potential, potential solutions, and internal and external environmental conditions. Moreover, the socialization activities emphasized the significance of adopting production and digital technologies to enhance product quality and quantity, as well as to expand market share more efficiently.

Implementation of Technology and Innovation

The subsequent stage of this community service initiative involves the application of technology, which includes both production technology aimed at enhancing the quality and quantity of output and digital technology to support the marketing and branding of Melati MSME products. The implementation of production technology is essential to reduce reliance on manual and traditional processes, which have contributed to the suboptimal quality of Melati MSME's products. Specifically, production technology will be employed to improve output by utilizing cutting, spinner, and sealer machines. Additionally, the application of digital technology will focus on the development of social media and e-commerce platforms to facilitate the marketing and promotion of Melati MSME products. These efforts will be complemented

by the creation of a visual identity in the form of a logo, which will be consistently applied across both print and digital media, serving as a key element in establishing the brand image of Melati MSME.

Training

The objective of the training activities is to enhance the competencies and expertise of the participants (Praseptiawan et al., 2021), in this case, members of the Melati MSME. Training activities are conducted using a presentation method with accompanying practice, thereby providing direct experience and a more comprehensive understanding to participants (Arifudin et al., 2021). The training consists of two main components: the first focuses on the operation of production machines, while the second addresses the use of digital technology for marketing and selling products.

Mentoring

Mentoring activities are intended to provide sustained support and guidance to Melati MSMEs. This support is crucial in implementing the solutions introduced following the socialization, technology application, and training stages. These activities are conducted to ensure that Melati MSMEs can effectively utilize production technology, digital marketing, and branding strategies beyond the conclusion of the formal service activities. Mentoring will be conducted across several production cycles to verify the efficient functioning of production machines, the effective use of social media and e-commerce platforms, and the consistent application of visual identity across all marketing channels. Additionally, during this stage, Melati MSMEs will be provided with standard operating procedures (SOPs) for production, detailed work instructions for the operation and maintenance of machinery, guidelines for the use of social media and e-commerce, and brand guidelines to ensure the organization can operate holistically and sustainably.

Program Evaluation

Program evaluation is a collaborative effort, with the community service team playing a pivotal role in assessing the achievement of the targets and outcomes of the initiative. At this stage, the team monitors and evaluates progress, target achievement, and the pre-established indicators. The success of this program can be evaluated based on the following criteria:

- Availability of production machinery and technology, including cutting machines, spinners, and sealers.
- The ability of partners to operate the production machinery.
- Availability of online marketing platforms, such as social media and e-commerce.
- Establishment of a visual identity.
- Improvement in both the quality and quantity of production.
- Reduction in production time.
- Increase in business turnover.
- Availability of standard operating procedures (SOPs) and detailed work/production instructions.

RESULT AND DISCUSSIONS

The implementation of community service activities is generally structured into five distinct stages, each producing specific outputs and outcomes. These stages and their results are as follows:

Socialization

The socialization activities conducted focused on the importance of incorporating technology into the production process, as well as the use of digital technology for promotion and marketing. These activities were carried out alongside a Focus Group Discussion (FGD) with Melati MSMEs, serving as partners, to further explore their specific needs. Additionally, the socialization provided information, knowledge, and

understanding to the Melati MSMEs regarding the objectives and concepts of the planned community service activities. During this session, the service team outlined the stages of the initiative, including procedures, schedules, stakeholders, participants, and the technical plans for each activity. The primary objective of this socialization was to provide guidance to Melati MSMEs, particularly concerning their expected roles and participation throughout the program's implementation. At this stage, ongoing communication and coordination were established, facilitating the collection of further information related to organizational needs, development potential, viable solutions, and the internal and external conditions affecting the MSMEs. Documentation of the socialization activities is depicted in Figure 4.

FIGURE 4. Documentation of the Program Socialization with Melati MSMEs

Implementation of Technology and Innovation

The implementation of technology and innovation aims to enhance both the quality and quantity of output for Melati MSMEs. The adoption of appropriate technology has been demonstrated to significantly increase production capacity and quality, particularly for MSMEs that have traditionally relied on rudimentary methods (Pujiyanto et al., 2024). At this stage, the community service team, in collaboration with its partners, introduced both production and digital technologies. The production technologies utilized include spinner machines, chopper or cutting machines, and sealer machines. The spinner machine, in particular, plays a critical role in improving the quality of the final product by efficiently reducing oil content quickly and practically (Witjaksono et al., 2023). Prior to the intervention, Melati MSMEs employed traditional methods, such as using tissue as an absorbent to drain excess oil, which resulted in elevated oil content. This excess oil adversely affected the durability and shelf life of the final product, reducing its overall quality and longevity.

In addition to the spinner machine, a cutting machine, or chopper, has also been introduced to assist Melati MSMEs in producing a more consistent chip product in a shorter time. The use of cutting machines, particularly in chip production, has been shown to result in more precise and efficient cutting of raw materials, thereby reducing both labor and time requirements. This, in turn, has the potential to enhance the productivity of MSMEs (Guritno et al., 2024). Moreover, Melati MSMEs have encountered issues with product degradation due to exposure to air and high humidity, largely attributed to inadequate packaging quality. To address this, the implementation of a sealer machine, a key component of the comprehensive technology adoption, serves as a viable solution for improving packaging standards. Research indicates that the use of sealer machines significantly extends the shelf life of packaged products, thus offering long-term financial benefits (Sofi'i et al., 2024). Additionally, modifications in packaging design are employed as part of this initiative to further enhance the shelf stability of Melati MSME chip products. Documentation detailing the production technology implemented at Melati MSMEs is depicted in Figure 5.

(a)   (b)

(c)   (d)

FIGURE 5. The implementation of production technology includes: (a) spinner machine, (b) round cutting machine, (c) square cutting machine, and (d) sealer machine.

In addition to the implementation of production technology, this community service initiative introduces innovations in the visual identity of Melati MSMEs, which will be utilized across various promotional and marketing platforms. This effort addresses the need for a distinctive logo that adequately represents Melati MSMEs. The newly developed logo will also be integrated into packaging design, content creation, and other applications that reinforce brand image. Fundamentally, the logo serves to enhance product visibility by encapsulating the characteristics of both the products and the overall business of Melati MSMEs. Furthermore, a well-designed logo is believed to improve marketing competitiveness, especially in the context of the highly saturated market for chip products (Sadiah & Fahmi, 2022). The logo created in this initiative is intended to represent Melati MSMEs, whose primary product consists of various chip varieties. The selected logo style is a logotype or wordmark, utilizing text as the central design element (Anjani et al., 2024). Specifically, the logo features the name "Melati Desa" in a bold, playful style, with a focus on the visual design of the letterforms. The chosen background color and typography further contribute to the desired character and impression. The finalized logo design for Melati MSMEs is depicted in Figure 6.

FIGURE 6. Melati MSME Logo

Additionally, the logo is integrated across various media platforms, including packaging design. In this initiative, the packaging design was upgraded from basic plastic materials to aluminum foil packaging. The new packaging incorporates the logo and visual identity, effectively conveying the distinct characteristics of Melati MSME products. Packaging is the first thing consumers see from a product, so it is an important factor in winning the market competition (Habyba et al., 2021). Multiple alternative packaging designs were developed to differentiate between the product variants offered by Melati MSMEs. At present, these alternative designs are concentrated on Melati MSME's flagship products, such as *manggleng* chips, cassava skin, and bitter melon chips, as illustrated in Figure 7.

FIGURE 7. Packaging Design

Training

The training activities are designed to enhance the skills and performance of Melati MSMEs, ultimately contributing to increased productivity. These training sessions are divided into two primary areas: training in the utilization of production technology and digital literacy training, which focuses on the use of social media and visual branding for marketing and promotional purposes. These training activities serve as a continuation of the technology and innovation implementation introduced in the preceding stages of the program.

Training on the Utilization of Production Technology

The training for addressing production-related challenges is designed to provide practical instruction in the use of the production equipment supplied to Melati MSMEs. These training activities are not just theoretical but hands-on, aiming to enhance participants' understanding of the newly introduced production tools, improve their operational skills, and ensure that their usage aligns with the established standards and standard operating procedures (SOPs) of the equipment. Additionally, the training seeks to impart knowledge regarding the benefits and competitive advantages gained through the adoption of sustainable production technology. A presentation on the design and implementation of this production technology will also be conducted to support improvements in both the quality and quantity of Melati MSMEs' production.

The training on the use of production technology covered the operation of several key machines: a spinner machine (for oil extraction), two types of choppers or cutting machines (round and square), and a sealer machine (for packaging). This training commenced with the formal handover of the machines to the MSME partners, followed by practical instruction on their use. The training was conducted in the form of a Training of Trainers (TOT) program, designed for women managing Melati MSMEs and delivered by the community service team. The TOT approach aimed to enhance the participants' knowledge and skills in effectively operating the production machines (Chotimah et al., 2024). The training process involved an initial introduction and demonstration of the machines, followed by hands-on practice in producing chips. Documentation of the machine handover and training activities is depicted in Figure 8.

FIGURE 8. Transfer and training on the utilization of production machinery

Digital Literacy Training for Promotional and Marketing Purposes

The digital literacy training commenced following several preliminary activities, such as the development of a visual identity and the creation of social media platforms for Melati MSMEs. The visual identity and social media established in the earlier stage became the primary focus of this training, providing participants with practical experience in implementing visual identity across digital platforms. Furthermore, training on effective social media utilization was delivered to Melati MSMEs to ensure participants could competently leverage digital media beyond the duration of the service program.

The initial digital literacy training session introduced the concept of visual identity to Melati MSMEs through discussions and Focus Group Discussions (FGDs) in small groups. This introduction aimed to familiarize participants with the visual identity (Figures 6 and 7) and social media developed by the service team, further embedding these tools into the operations of Melati MSMEs as the primary beneficiaries. The documentation of the visual identity workshop is depicted in Figure 9.

FIGURE 9. Visual Identity Workshop

Furthermore, the digital literacy training was complemented by instruction on the use of social media to highlight the advantages and functionalities of these platforms, which can enhance sales and broaden the market reach for Melati MSMEs. MSME players are required to understand the concept of digital marketing because there is a tendency to find it difficult to win market opportunities and compete in the modern market (Handayani et al., 2023). The promotion and sales training utilizing social media was necessitated by the fact that sales had predominantly been conducted through traditional channels, such as stalls and small shops within the Kedungbenda area. As an initial measure, the selected social media platforms were Instagram and Facebook, which rank among the most widely used platforms following WhatsApp (Hasya, 2023). This training focused on the operational aspects of Instagram and Facebook as primary sales channels for Melati MSMEs, encompassing procedures for logging in, uploading product content, and utilizing the advertising features for product promotion. Additionally, participants were educated on how to leverage insights provided by these social media platforms to develop effective marketing strategies tailored to Melati MSME products. It is anticipated that the effective use of social media will enable UMKM Melati and its offerings to reach a broader audience of potential customers. Documentation of the social media and digital literacy training is illustrated in Figure 10.
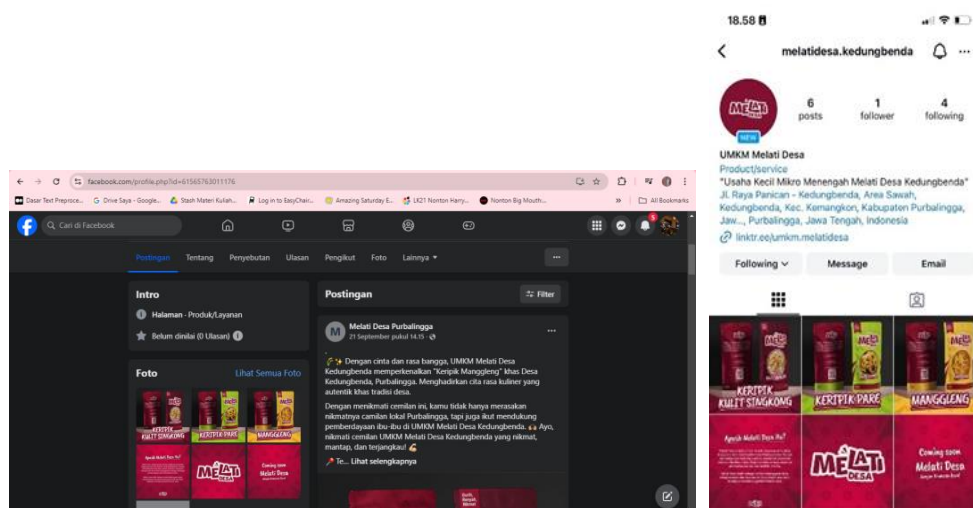
FIGURE 10. Social media of Melati MSMEs

Mentoring

The mentoring activities are designed to provide ongoing assistance and guidance to Melati MSMEs in implementing the solutions introduced following the stages of socialization, technological application, innovation, and training. These activities are intended to ensure that Melati MSMEs can effectively utilize production technologies, digital marketing strategies, and digital branding beyond the conclusion of the service program. Mentorship will be provided over several production cycles to ensure that the production machinery operates efficiently, social media platforms are effectively utilized for marketing and sales, and the visual identity is consistently applied across all marketing channels. Additionally, during this phase, Melati MSMEs will be equipped with standard operating procedures (SOPs) and work instructions for the operation of production machines, as well as guidelines for social media usage and brand guidelines. This comprehensive framework aims to ensure that Melati MSMEs are prepared to manage their business operations independently and systematically in the future.

FIGURE 11. User manual document for production machinery

Program Evaluation

The evaluation of this program is conducted to assess the achievement of the targeted outputs and outcomes of the community service initiative. The success of the program is measured across several dimensions, both tangible and intangible. These include the availability and effectiveness of production machinery and technology, the utilization of social media for promotion and marketing, the development of visual identity for branding purposes, the provision of Standard Operating Procedures (SOPs) and guidelines, and the level of participant satisfaction with the activities undertaken. The effectiveness of the technology and innovations introduced is evaluated based on increased production quantities and reduced production times. Furthermore, the utility of social media and visual identity is assessed by examining the expanded market reach of Melati MSMEs. Participant satisfaction with the community service program is gauged through a post-activity questionnaire distributed to the members of Melati MSMEs. The comprehensive results of the program evaluation are presented in Table 1.

The evaluation of the achievement for points 5 and 6 was conducted using a questionnaire administered to participants following the completion of the activities. The achievement score was derived from the average responses to the questionnaire items, rated on a Likert scale ranging from 1 to 6, where 1 represents "strongly disagree," and 6 represents "strongly agree." The questionnaire, designed to assess participants' ability to use social media for marketing and sales, comprised several items, including the following:

▪ Participants can log into social media platforms (Instagram and Facebook).
▪ Participants can upload content on social media platforms (Instagram and Facebook).
▪ Participants can modify and update their social media profiles (Instagram and Facebook).
▪ Participants can use the advertisement feature on social media platforms (Instagram and Facebook) for marketing purposes.
▪ Participants can interpret sales information from social media insights (Instagram and Facebook)
▪

TABLE 1. The assessment of the service program's outcomes

No	Indicators	Achievement	Description
1	Availability of production support machinery	100%	Spinner, cutter, and sealer machines
2	Partners' proficiency in operating production support machinery	100%	
3	Availability of Standard Operating Procedures (SOPs) and work instructions for production machinery	100%	
4	Availability of visual identity elements	100%	Logo and packaging design
5	The availability of social media platforms for marketing and sales activities	100%	Instagram and Facebook
6	The capacity to utilize social media for marketing and sales purposes	80%	Questionnaire-Based Assessment (Figure 12)
7	Level of satisfaction with the community service project	90%	Questionnaire-Based Assessment (Figure 12)

Participants' perceptions of achievement were defined by selecting a Likert scale on each question. Figure 12 shows the average score of participants' skills and the percentage increase if it is assumed that participants do not have any skills in using social media at the beginning of the activity.
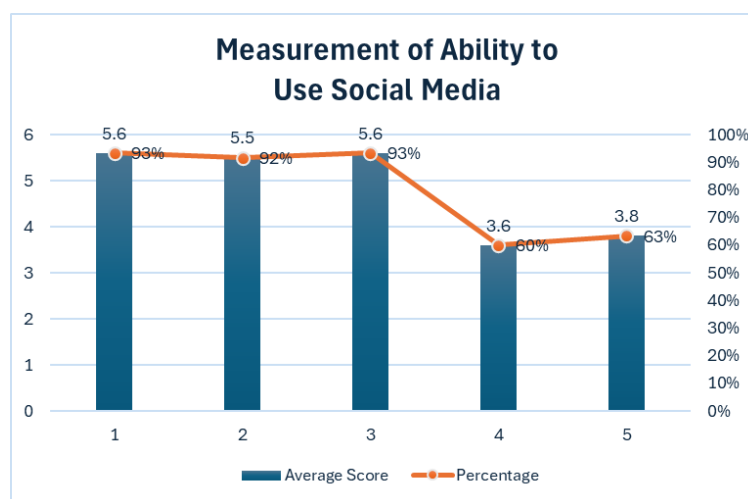
FIGURE 12. Measurement of ability to use social media

Based on the measurement results, the average participant score was 4.82, with an average skill improvement rate of 80%. Figure 12 further illustrates that the ability of Melati MSME members to utilize basic social media features, such as logging in, uploading content, and updating profiles, is strong and can be considered proficient. However, with respect to the use of advanced features, such as social media advertising and analyzing insights, there remains significant room for improvement. This area of development will be a focus for the service team in the subsequent mentoring phases.

Moreover, a satisfaction assessment was conducted through a questionnaire distributed to Melati MSMEs, the primary target partners for this service initiative. The questionnaire comprised statements aimed at evaluating general partner satisfaction with the execution of the activities, encompassing the following points:
▪ The implementation of community service activities is well organized.
▪ Information regarding the community service activities is communicated clearly prior to execution.
▪ The timeline for implementing activities aligns with the predetermined schedule.

- Community service activities are conducted according to plan.
- The material presented during the activities is easily comprehensible.
- The service team effectively guides the participants.
- The activities conducted provide significant benefits to the community.
- I am satisfied with the overall execution of this community service activity.
- I believe that the implementation of this activity is relevant to the community's needs.

Utilizing the same scale and measurement methodology, the results of this questionnaire are presented in Figure 13. The figure indicates that the lowest average satisfaction score corresponds to statement 5, which pertains to the comprehensibility of the material presented. This finding will serve as a basis for the subsequent evaluation by the service team to employ language that is more accessible to the community while preserving its intended meaning. Conversely, the highest satisfaction score is recorded for statement 8, which addresses overall satisfaction with the implementation of the service. Based on these findings, the community has expressed a high level of satisfaction with the execution of the community service activities, indicating that these initiatives provide significant benefits aligned with community needs, resulting in an average satisfaction achievement of 90%.
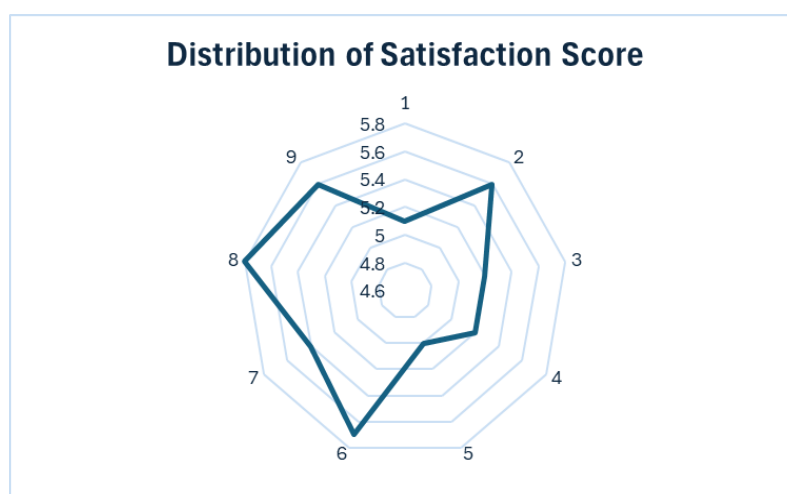

FIGURE 13. Satisfaction score for community service implementation

CONCLUSION

This community service initiative aims to enhance the economic independence of Melati MSMEs in Kedungbenda Village through the implementation of production technology and the advancement of digital literacy. The program encompasses several core activities, including socialization, the implementation of technology and innovation, training, mentoring, and program evaluation. The socialization phase is designed to provide participants with a foundational understanding of the activities and the objectives to be achieved throughout the program.

Subsequently, innovative technology is applied by deploying production machinery, including spinner, cutter, and sealer machines. Additionally, a key innovation introduced to the Melati MSMEs is the development of a visual identity in the form of a logo, which can be utilized across various digital and print media, including packaging. Following the technological application, training sessions are conducted to enhance the capability of Melati MSMEs to effectively utilize these technologies and innovations through both theoretical presentations and practical exercises.

Moreover, mentorship is provided over several cycles to ensure the program's sustainability beyond the completion of the service initiative. Melati MSMEs are also equipped with Standard Operating

Procedures (SOPs), operational instructions, and guidelines that can be referenced at any time. The outcomes of this service demonstrate that both output and outcome targets have been successfully achieved, with an overall average attainment of 95.71% across seven measurement indicators, including machine availability, proficiency in machine operation, accessibility of SOPs and guidelines, establishment of a visual identity, presence on social media, competency in utilizing social media, and overall satisfaction with the service provided.

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