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# *Enhancing Added Value of Village Agriculture Sector through Strengthening the Capacity of BUMDes Based on Digital Economy*

# Meningkatkan Nilai Tambah Sektor Pertanian Desa melalui Penguatan Kapasitas BUMDes Berbasis Ekonomi Digital

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**ABSTRACT**

*Village-owned enterprises (BUMDes) are institutions established to manage economic potential and resources in the village to improve community welfare. In Kassi Village, Jeneponto Regency, BUMDes has significant potential in developing the agricultural sector, but this potential has not been fully utilized. This research aims to increase the added value of the agricultural sector through strengthening the capacity of BUMDes by utilizing digital technology. The application of e-commerce, digital marketing, and data management is expected to expand market access for local products and improve their competitiveness. The methods used include identification of training needs, ongoing mentoring, and monitoring and evaluation of the BUMDes digitalization process. The program results show an increase in operational efficiency and expansion of marketing networks, as well as an increase in the added value of agricultural and tourism products. Analysis shows that the training on sustainable agriculture and basic technology has had a significant impact on improving participants' knowledge and skills, as evidenced by the increase in average pretest to posttest scores. The high correlation between the initial and final scores indicates that the training was effective for all participants. This digital transformation through BUMDes has the potential to become a model for other villages in Indonesia, making digital economic empowerment a strategic solution to improve the welfare of rural communities in an inclusive and sustainable manner.*
***Keywords:*** *Value Added, Agriculture Sector, BUMDes, Digital Economy*

**ABSTRAK**

Usaha milik desa (BUMDes) adalah lembaga yang didirikan untuk mengelola potensi ekonomi dan sumber daya di desa guna meningkatkan kesejahteraan masyarakat. Di Desa Kassi, Kabupaten Jeneponto, BUMDes memiliki potensi yang signifikan dalam mengembangkan sektor pertanian, tetapi potensi ini belum sepenuhnya dimanfaatkan. Penelitian ini bertujuan untuk meningkatkan nilai tambah sektor pertanian melalui penguatan kapasitas BUMDes dengan memanfaatkan teknologi digital. Penerapan e-commerce, pemasaran digital, dan manajemen data diharapkan dapat memperluas akses pasar untuk produk lokal dan meningkatkan daya saingnya. Metode yang digunakan meliputi identifikasi kebutuhan pelatihan, pendampingan yang berkelanjutan, serta pemantauan dan evaluasi proses digitalisasi BUMDes. Hasil program menunjukkan peningkatan efisiensi operasional dan perluasan jaringan pemasaran, serta peningkatan nilai tambah produk pertanian dan pariwisata. Analisis menunjukkan bahwa pelatihan tentang pertanian berkelanjutan dan teknologi dasar memiliki dampak signifikan terhadap peningkatan pengetahuan dan keterampilan peserta, seperti yang dibuktikan dengan peningkatan rata-rata skor pretest dan posttest. Korelasi tinggi antara skor awal dan akhir menunjukkan bahwa pelatihan tersebut efektif bagi seluruh peserta. Transformasi digital melalui BUMDes memiliki potensi untuk menjadi model bagi desa-desa lain di Indonesia, menjadikan pemberdayaan ekonomi digital sebagai solusi strategis untuk meningkatkan kesejahteraan masyarakat pedesaan secara inklusif dan berkelanjutan.
**Kata Kunci:** Nilai Tambah, Sektor Pertanian, BUMDes, Ekonomi Digital

# 1. INTRODUCTION

In the context of globalization and rapid technological development, the agricultural sector faces new challenges and opportunities. Farmers in rural areas often remain trapped in inefficient traditional practices, leading to low productivity and competitiveness. Therefore, it is crucial to adopt innovations and technologies that can help farmers improve their crop yields and enhance the supply chain. One way to achieve this is by strengthening the capacity of local economic institutions such as Village-Owned Enterprises (BUMDes), which serve as the driving force of the village economy.

Digitalization is key to improving efficiency and productivity in the agricultural sector. By utilizing digital tools and platforms, farmers can access real-time market information, improve production management, and market their products more effectively. For example, mobile applications can provide accurate weather data, market price information, and access to a broader network of buyers. Thus, the implementation of digital technology in the agricultural sector not only impacts production efficiency but also enhances farmers' income.

BUMDes, as a local economic institution, has great potential to drive digitalization at the village level. Village-Owned Enterprises (BUMDes) are economic institutions established by the village to manage village potential and assets to improve the welfare of the local community. According to several studies, BUMDes is considered one of the key instruments in rural economic development, particularly due to its ability to mobilize the local economy (Dewi, 2021). The success of BUMDes depends on management capacity, innovation, and the ability to adapt to technological changes and global market demands. Strengthening the capacity of BUMDes through digital-based management is expected to enhance the competitiveness and added value of local products, especially in agriculture and tourism sectors (Kriyantono, 2020).

By integrating digital technology into its operations, BUMDes can help farmers market their products more efficiently. Additionally, BUMDes can serve as an information and training center for farmers, providing the knowledge and skills needed to effectively utilize technology. This aligns with the goal of enhancing the capacity and competitiveness of the village economy through innovation.

The agricultural sector in Indonesia, particularly in rural areas, faces unique challenges. Although it is a significant contributor to the national economy, many villages remain trapped in poverty with limited access to technology. In Jeneponto Regency, for example, many farmers lack adequate access to market information and modern technology. Therefore, efforts are needed to strengthen the capacity of BUMDes in implementing digital technology and providing training to farmers so they can compete in an increasingly competitive market.

Digital technology has been widely implemented in the agricultural sector to improve productivity, efficiency, and market access. Technologies such as e-commerce, data-driven management, and smart farming applications can help farmers monitor land conditions, manage irrigation, and maximize crop yields (Harahap, 2024). The implementation of digital technology in agriculture can expand market reach and increase the competitiveness of products both nationally and internationally. In Indonesia, the implementation of digital technology in agriculture is still limited to certain areas, so further efforts are needed to expand access and adoption of this technology in regions with high potential, such as Jeneponto.

In the past few decades, digital technology has developed rapidly and has had a significant impact on various economic sectors, including agriculture and tourism (Setyariningsih, 2023; Harahap, 2024). Digitalization not only improves efficiency in production and distribution processes but also expands market access through information and communication technology. Digital economic empowerment essentially refers to the integration of digital technology into economic processes, both in production, distribution, and marketing. In the context of BUMDes, digital empowerment can include the adoption of technology to facilitate transactions, enhance market access, and simplify financial and resource management (Rahman, 2021). Many studies show that BUMDes that have adopted digital platforms are more competitive in the global market and can create more value-added product innovations, especially in the agriculture and tourism sectors. With digital economic empowerment, BUMDes are expected not only to manage local potential but also to drive economic transformation at the village level.

In Indonesia, the agricultural and tourism sectors are important pillars of the economy, especially in rural areas. However, many villages in Indonesia, including Jeneponto Regency, still face challenges in optimally utilizing technology to enhance their economic competitiveness (Handayani, 2022; Rahayau, 2023). Jeneponto Regency has significant potential for developing its agricultural and tourism sectors, supported by abundant natural resources. Kassi Village, as one of the villages in Jeneponto, has outstanding potential in agriculture and tourism that has not been fully maximized for the benefit of the community (Irwandi, 2023). Village-Owned Enterprises (BUMDes) play an essential role in managing and developing local potential to drive village economic growth. However, limitations in management and the lack of digital technology adoption are often the main obstacles to increasing the added value of agricultural products. Below is an overview of the agricultural potential in Kassi Village.

**Figure 1**. Agricultural Potential of Kassi Village

Digital transformation is becoming increasingly important in addressing these challenges. The development of the digital economy through BUMDes presents significant opportunities to improve operational efficiency, expand market reach, and increase the added value of agricultural and tourism products in Kassi Village. The implementation of technologies such as e-commerce, digital marketing applications, and data-driven management can enhance the competitiveness of local products in wider markets and strengthen sustainable tourism (Susilo, 2023).

Sustainable economics is a concept that emphasizes the optimal utilization of natural resources without harming the ecosystem and environment. In agriculture, sustainable economics focuses on environmentally friendly farming practices, such as proper land management and the use of organic fertilizers. Meanwhile, in the tourism sector, this concept centers around managing tourist destinations in a way that preserves local culture and the environment (Lagiman, 2021). The combination of digitalization and sustainable economics holds significant potential for increasing product value and competitiveness in broader markets, especially in rural areas.

In this regard, the importance of digital economic empowerment through BUMDes can contribute to enhancing the agricultural sector, particularly in rural areas like Jeneponto. This community service program aims to identify digital economy-based capacity development strategies for BUMDes and their impact on increasing the added value of sustainable agricultural and tourism products. The findings of this research are expected to provide both theoretical and practical contributions to the study of digital economic empowerment in the rural sector.

With this background, this research aims to examine how strengthening the capacity of BUMDes can increase the added value of the village's agricultural sector. The research will explore various digital strategies that BUMDes can apply to empower farmers and improve their market access. It is hoped that the results of this research will make a significant contribution to the development of the agricultural sector at the village level and provide recommendations for policies supporting digitalization in agriculture.

## 2. METHOD

This research employs an action research method aimed at enhancing the capacity and performance of the Village-Owned Enterprises (BUMDes) in Kassi Village, Jeneponto Regency, South Sulawesi. The action research was conducted through a collaborative approach involving researchers, BUMDes managers, farmers, and tourism business actors to achieve the goal of increasing the added value of the agricultural sector through the utilization of digital technology. Kassi Village was selected due to its significant potential in the agriculture and tourism sectors, yet it has not fully utilized digital technology to improve competitiveness and market access for local products.

In the preparation phase, surveys and in-depth interviews were conducted with BUMDes managers, farmers, and tourism actors to identify needs, constraints, and local potentials that could be developed through the digital economy. The results of these surveys were used to design a training program that aligns with the actual conditions in the field. The researchers also coordinated with the village government and various stakeholders, including BUMDes managers and farmer groups, to form a development committee that would function as a facilitator and liaison between the program implementers and the local community.

Following the preparation phase, the implementation phase began with intensive training provided to BUMDes managers, farmer groups, and tourism operators. The training materials covered the use of e-commerce, digital marketing through social media, financial management applications, and online payment platforms. Participants were also trained in digital marketing strategies, focusing on utilizing online platforms such as

marketplaces and social media to market agricultural products and tourism packages. In addition, the training included the creation of engaging digital content to strengthen the branding of local products.

After the training, experts conducted periodic mentoring to ensure the effective implementation of the technology. This mentoring was done both in the field and through online communication to provide solutions to any challenges encountered. The focus on technology application was directed towards managing agricultural products and developing sustainable tourism, including market access through e-commerce and financial management based on digital applications.

Regular monitoring was carried out to evaluate the progress of digital technology implementation in the management of BUMDes and its impact on increasing the added value of products. In the final stage, an evaluation was conducted to assess the impact of the program, both in terms of enhancing the capacity of BUMDes managers and its effects on the agriculture and tourism sectors. The evaluation methods included participant satisfaction surveys, in-depth interviews, and an analysis of sales and marketing data generated after the technology implementation. Data obtained from surveys, interviews, and sales analysis were analyzed using descriptive analysis techniques to understand the effectiveness of the training and the impact of digitalization on BUMDes and the agricultural sector, including a comparison between pretest and posttest scores of the training participants to measure the improvement in knowledge and skills gained.

## 3. RESULTS AND DISCUSSION

### 3.1. Research Results

a) Implementation of Sustainable Agriculture Training

The sustainable agriculture training conducted in Kassi Village, Jeneponto, aimed to enhance farmers' capacity in adopting environmentally friendly and efficient farming practices. The training included materials on organic farming techniques, natural resource management, and the use of safe fertilizers and pesticides. Farmers were taught to minimize the use of chemicals and maximize the use of natural materials in farming processes to preserve the environment. In addition, the training covered knowledge about crop rotation and effective irrigation systems to improve land productivity in a sustainable manner.

One of the main focuses of this training was how to maintain the quality of soil and water, two essential elements in farming that are often neglected. Farmers were introduced to soil management techniques that could enhance long-term fertility, such as composting, cover cropping, and erosion control. Through these methods, the soil is expected to remain fertile and support high food production without the continuous use of chemical fertilizers that could harm the local ecosystem.


**Figure 2.** Sustainable Agriculture Training

In addition to environmentally friendly farming techniques, the training also emphasized crop diversification as a key strategy in sustainable agriculture. Farmers were taught the importance of planting more than one type of crop to reduce the risk of crop failure due to disease or climate change. This crop diversification not only enriches the food supply but also increases farmers' income by offering a variety of products with different market values.

The training also addressed the aspect of sustainable agricultural product marketing. Participants were taught how to position their products in the market as environmentally friendly and high-quality goods. Additionally, there were interactive discussions on how to build partnerships with buyers who support sustainable agricultural products, as well as how to leverage organic labels or other

certifications to enhance the competitiveness of their products in both domestic and international markets.

The sustainable agriculture training held in Kassi Village received very positive responses from the participants. Farmers appreciated the new knowledge they gained, especially in terms of how to increase agricultural yields more efficiently and responsibly toward the environment. After the training, the farmers were also provided with field practice guides to apply what they had learned, with the hope of generating long-term impacts on the village's agricultural production.

b) Basic Technology Training Implementation

The basic technology training aimed to equip BUMDes managers and farmers in Kassi Village with fundamental skills in using digital technology. Participants were introduced to various tools and applications that could optimize their businesses, such as financial applications, inventory management systems, and e-commerce platforms. The training began with an introduction to computer and mobile device technology, which serve as the primary tools for accessing information and conducting business operations digitally.

In the initial sessions, participants were taught how to use hardware such as computers and smartphones more effectively. This included an introduction to basic operating systems, word processing applications, and simple financial applications that could assist them in managing the finances of BUMDes and their farming businesses. Using these applications is crucial for helping farmers and village managers track expenses, income, and monitor transactions more transparently and accurately.

**Figure 3**. Basic Technology Training

In addition to financial management, the training also focused on utilizing internet technology for marketing purposes. Participants were taught how to create accounts on social media and online marketplaces, as well as how to create and upload engaging content to promote their local products. They were also introduced to basic digital marketing strategies, such as targeted advertising and consumer data analysis, which can increase the visibility of their products in broader markets.

The training also covered the introduction to e-commerce platforms, which allow farmers and BUMDes managers to market their products online. These platforms provide wider market access and enable them to sell products directly to consumers without relying on intermediaries. Participants were taught how to upload products, manage orders, and handle online payments securely and efficiently.

The participants' response to this basic technology training was very positive, especially for those who were previously unfamiliar with digital technology. For many participants, this was their first time using digital applications for business purposes, and the training opened new opportunities for them to improve the efficiency and productivity of their ventures. Participants were also provided with guidance and support materials to ensure they could continue developing the digital skills they had learned.

c) Implementation of Pretest and Posttest

Before the sustainable agriculture and basic technology training sessions were conducted, a pretest was administered to measure the participants' initial knowledge levels. This pretest included questions on environmentally friendly agricultural techniques, crop diversification, and the use of digital technology in marketing and business management. The pretest results indicated that most participants had limited knowledge, particularly in applying digital technology and sustainable farming practices.

After the training was completed, a posttest was conducted to assess the participants' improvements in knowledge and skills. The posttest results showed a significant increase compared to the pretest. The average posttest scores were higher, demonstrating that the training successfully enhanced participants' understanding of the topics covered. This increase in scores also reflects the effectiveness of the training methods, where participants were not only provided with theoretical knowledge but also engaged in simulations and hands-on practice.

Statistical analysis revealed a strong correlation between the pretest and posttest results, indicating that knowledge improvement occurred consistently across all participant groups. Participants who initially scored low in the pretest experienced substantial improvement after the training, while those with higher pretest scores also showed improvement, though to a lesser extent. This indicates that the training was adaptable to various levels of prior knowledge among participants.

Additionally, interviews with participants after the posttest revealed that they felt more confident in applying sustainable agriculture techniques and digital technology in their daily activities. Participants expressed that the training provided them with new skills that they could immediately implement in their farming and BUMDes management. They also expressed a desire to continue learning and further developing their digital skills to support their businesses.

At the pretest stage, conducted before the training began, the average participant score was 33.75, with a standard deviation of 9.22. This indicates that most participants had limited knowledge regarding the training topics—sustainable agriculture and basic technology. The standard deviation of 9.22 suggests that although there was some variation in participants' initial understanding, this variation was relatively controlled, and most participants fell within a similar range of comprehension.

**Table 1.** Pretest and Posttest Results

**Paired Samples Statistics**

| | | Mean | N | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Pair 1 | Pretest | 33.7500 | 28 | 9.22406 | 1.74318 |
| | Postest | 58.6071 | 28 | 16.31936 | 3.08407 |

After the training, the posttest results showed an increase in the average participant score to 58.61, with a higher standard deviation of 16.32. This rise in the average score demonstrates an overall improvement in participants' understanding of the training material. The increased standard deviation to 16.32 after the training suggests that, while the training was generally effective, there was a greater variation among participants in terms of how much they improved their understanding. In other words, some participants may have experienced significant improvement, while others showed more moderate gains.

d) Correlation Between Pretest and Posttest

In the Paired Samples Correlations table, it was found that the correlation between the pretest and posttest results was 0.998, indicating a very strong relationship between the participants' pretest and posttest scores. This correlation value, which is almost 1.0, suggests that participants who scored lower on the pretest also tended to improve their scores consistently on the posttest, while those with better initial understanding also experienced improvement, although this improvement might vary among individuals.

**Table 2**. Pretest and Posttest Results

**Paired Samples Correlations**

| | | N | Correlation | Sig. |
|---|---|---|---|---|
| Pair 1 | Pretest & Postest | 28 | .998 | <.001 |

The significance level (Sig.) of this correlation is < 0.001, indicating that the correlation is statistically highly significant. In other words, the relationship between the pretest and posttest results did not occur by chance but is a real outcome of the training provided. This confirms that the training effectively improved participants' understanding across the board, even though there was variation in the degree of improvement among participants.

e) Paired Samples Test Analysis

The detailed statistical results are provided in the Paired Samples Test table, comparing the participants' pretest and posttest mean scores. From the table, it is evident that the mean difference between the pretest and posttest scores is -24.85714, meaning that the posttest scores were, on average, approximately 24.85 points higher than the pretest scores. This value indicates a significant improvement in participants' understanding after the training.

**Table 3.** Paired Samples Test Results

**Paired Samples Test**

| | | Paired Differences | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 95% Confidence Interval of the Difference | | | | |
| | | Mean | Std. Deviation | Std. Error Mean | Lower | Upper | t | df | Sig. (2-tailed) |
| Pair 1 | Pretest - Postest | -24.85714 | 7.13216 | 1.34785 | -27.62271 | -22.09158 | -18.442 | 27 | <.001 |

The standard deviation of this difference is 7.13, suggesting there is some variation in how much each participant improved. The standard error mean of 1.34785 indicates that this average difference is quite stable, providing greater confidence that the observed improvement is not due to random fluctuation but is a genuine result of the training provided.

The 95% confidence interval for the mean difference ranges from -27.62271 to -22.09158, indicating that the true mean difference between the pretest and posttest scores in the population likely falls within this range. Since this confidence interval does not include zero, it can be concluded that the difference between the pretest and posttest scores is statistically significant. Thus, the training clearly improved participants' abilities.

The t-value from this test is -18.442, with 27 degrees of freedom (df). The p-value (or Sig. (2-tailed)) is < 0.001, indicating that the difference between the pretest and posttest scores is statistically highly significant, with a very high level of confidence. This means that the significant difference in scores is not likely due to chance but is a real effect of the training provided.

### 3.2. Discussion

One of the most significant aspects felt from this initiative is the increased capacity of BUMDes (Village-Owned Enterprises) managers in adopting digital technology. The intensive training provided in this program not only enhanced participants' understanding of technology but also opened new perspectives on how to expand markets through digital platforms. This digital capacity improvement also directly impacts the operational efficiency of BUMDes. Previously, the management of BUMDes in Kassi Village was largely manual, from financial record-keeping to inventory management. However, after receiving basic technology training, BUMDes managers are now able to utilize digital financial management and inventory applications. The use of this technology has reduced errors in record-keeping, sped up management processes, and provided better transparency in financial oversight. Additionally, with a more modern management system, BUMDes can monitor cash flow in real-time, aiding in strategic decision-making regarding resource allocation.

The adoption of digital technology also contributes to the diversification of products and services offered by BUMDes (Dzikri et al., 2021). Through e-commerce platforms, BUMDes managers can sell not only agricultural products but also derivative products such as processed foods, handicrafts, and local tourism packages. These products are now accessible to a broader consumer base, which may not have previously recognized the potential of Kassi Village. According to Rahayu et al. (2024), such diversification not only increases BUMDes' income but also provides new opportunities for village communities to develop their businesses by leveraging a larger marketing network.

Moreover, training focused on digital marketing can provide new insights into the importance of branding and positioning in attracting consumer attention (Fierro et al., 2017). With expert guidance, BUMDes managers and local entrepreneurs are taught how to create engaging digital content, from high-quality product photos to promotional videos that enhance the appeal of the village as a tourist destination. The application of these strategies has helped increase consumer awareness of local products from Kassi Village, ultimately supporting higher sales and increased tourist visits.

The implementation of digital technology also fosters closer collaboration between BUMDes and the local community (Wahyu et al., 2019). With digital platforms, communication between BUMDes managers and farmers and other entrepreneurs has become easier and more efficient. Information regarding market prices, product availability, and consumer demand can be quickly communicated through instant messaging applications and social media. This creates a more connected and responsive ecosystem, where, according to Fadilah & Faesol

(2023), BUMDes not only functions as a manager of the village economy but also as a key facilitator that helps advance all aspects of community life through digitization.

By utilizing e-commerce and digital marketing strategies taught in the program, agricultural and tourism products from Kassi Village can now reach a wider market, both nationally and internationally, compared to the previous conventional marketing that was limited to local scope. The ability to sell products on digital platforms provides significant added value to village products, enabling them to compete with similar products in a more competitive market.

In addition to marketing aspects, this program also contributes to improving the operational efficiency of BUMDes through the use of digital financial management applications. Previously, financial management in BUMDes was often done manually, resulting in slow and less transparent business processes. However, with training in digital financial management, BUMDes managers can now monitor cash flow, manage expenditures and income, and generate more accurate and transparent financial reports. This is crucial in building trust among stakeholders, both internal and external. Furthermore, the online payment platforms used expedite transaction processes, enhancing efficiency and customer satisfaction, which ultimately strengthens BUMDes' position as a professional village economic entity (Heryanda et al., 2020).

Positive impacts are also evident in the agricultural sector. Through the adoption of digital technologies, such as land management applications, irrigation management, and crop condition monitoring, agricultural productivity in Kassi Village has increased. This technology enables farmers to manage their land and resources more effectively, resulting in higher-quality yields and larger volumes (Javaid et al., 2022). Consequently, the added value of agricultural products has risen, leading to higher incomes for farmers. Additionally, marketing agricultural products through e-commerce platforms allows farmers to sell their products at more competitive prices, which was previously challenging through traditional marketing.

However, this program also faces challenges, particularly regarding technology adoption among participants who are not accustomed to using digital technology. Not all BUMDes managers, farmers, and tourism operators in Kassi Village possess adequate knowledge or skills in technology use. These challenges have largely been addressed through intensive mentoring provided by a team of experts. This mentoring was conducted both directly through field visits and through online communication, allowing participants to receive solutions to the obstacles they faced. Additionally, the team conducted periodic monitoring to ensure that the technologies taught could be effectively implemented and yield optimal results.

This program has also significantly impacted the development of sustainable tourism in Kassi Village. By leveraging digital technology, the village tourism sector can be more widely recognized, especially through digital platforms that support online destination promotion. Tourism operators were trained to create engaging and relevant digital content, such as photos, videos, and reviews that can enhance tourists' interest in the existing tourism potential. With this digital marketing strategy, Kassi Village can position itself as an attractive tourist destination, not only for local travelers but also for international tourists, which can ultimately boost the village economy.

The long-term impact of this digital economic empowerment program holds great potential for creating sustainable economic development in Kassi Village and Jeneponto District as a whole. Increased capacity and operational efficiency of BUMDes, along with higher competitiveness of agricultural and tourism products, can create a more self-sufficient and sustainable economic ecosystem. Kassi Village's success in harnessing digital technology could also serve as a model for other villages in the Jeneponto area and throughout Indonesia that have similar potential. With this digital transformation, villages can develop their local potential and significantly improve community welfare. The success of this program demonstrates that with the right strategies, digital technology can be an effective tool in driving inclusive and sustainable village economic development.

Faktor pendukung dalam pelaksanaan program pengabdian kepada masyarakat ini sangat penting untuk memastikan keberhasilan kegiatan. Beberapa faktor yang mendukung tercapainya tujuan program meliputi:

a) Peserta PKM mempunyai kemauan untuk mengetahui manfaat limbah batok kelapa sebagai bahan dasar pembuatan kerajinan rumah tangga.

   Salah satu faktor utama yang mendukung keberhasilan program ini adalah adanya kemauan peserta untuk belajar. Peserta menunjukkan antusiasme tinggi dalam memahami potensi limbah batok kelapa sebagai bahan dasar kerajinan. Rasa ingin tahu ini menjadi motivasi utama bagi mereka untuk mengikuti setiap sesi pelatihan dengan serius. Dalam proses penyampaian materi, peserta aktif bertanya dan berdiskusi untuk memperdalam pengetahuan mereka, menunjukkan bahwa mereka benar-benar tertarik pada peluang yang ditawarkan oleh program ini.

   Kemauan untuk belajar ini juga membuat peserta lebih mudah menerima ide-ide baru yang disampaikan selama pelatihan. Mereka tidak hanya mendengar, tetapi juga mulai memikirkan cara

memanfaatkan limbah batok kelapa di lingkungan sekitar mereka. Sikap positif ini menciptakan suasana pelatihan yang kondusif dan kolaboratif, sehingga tujuan program dapat dicapai dengan lebih efektif.

b) Peserta PKM bersedia untuk membuat dan mengaplikasikan hasil pelatihan melalui peningkatan keterampilan memanfaatkan limbah batok kelapa.

Faktor pendukung lainnya adalah kesiapan peserta untuk mengaplikasikan keterampilan yang diajarkan dalam pelatihan. Peserta tidak hanya berhenti pada tahap belajar, tetapi juga bersedia untuk mempraktikkan teknik pembuatan kerajinan di bawah bimbingan narasumber. Mereka terlibat aktif dalam proses, mulai dari pemilihan bahan baku, pengolahan, hingga finishing produk. Kesiapan ini menunjukkan bahwa peserta memiliki komitmen untuk benar-benar memanfaatkan keterampilan yang telah mereka pelajari.

Lebih lanjut, banyak peserta yang mulai menghasilkan produk kerajinan mereka sendiri di rumah setelah pelatihan selesai. Produk-produk tersebut menunjukkan bahwa peserta mampu mengaplikasikan ilmu yang telah diajarkan, bahkan mengembangkannya sesuai dengan kebutuhan dan kreativitas masing-masing. Kesediaan untuk mengambil tindakan nyata ini menjadi salah satu indikator penting keberhasilan program pengabdian.

c) Peserta PKM bersedia untuk di monitoring dan di evaluasi pelaksanaan keterampilan yang dapat bernilai ekonomis.

Kesediaan peserta untuk dimonitoring dan dievaluasi juga menjadi faktor kunci dalam keberhasilan program ini. Monitoring dilakukan untuk memastikan bahwa peserta tetap konsisten dalam mempraktikkan keterampilan yang diajarkan. Dalam proses ini, peserta menunjukkan sikap terbuka terhadap masukan dari tim pengabdian, baik terkait dengan kualitas produk maupun strategi pemasaran. Sikap kooperatif ini memungkinkan tim untuk memberikan pendampingan yang lebih efektif dan tepat sasaran.

Selain itu, evaluasi rutin membantu peserta melihat perkembangan keterampilan mereka sekaligus mengidentifikasi area yang perlu ditingkatkan. Peserta yang bersedia menerima evaluasi menunjukkan komitmen mereka untuk terus belajar dan memperbaiki diri. Dengan dukungan ini, program tidak hanya berhasil dalam jangka pendek, tetapi juga memiliki dampak jangka panjang dalam meningkatkan kesejahteraan masyarakat melalui keterampilan berbasis sumber daya lokal.

### 3.3. Faktor Penghambat

Selain faktor pendukung, pelaksanaan PKM juga dihadapkan pada beberapa kendala yang mempengaruhi kelancaran program. Faktor-faktor penghambat ini muncul dari berbagai aspek, baik dari sisi tim pelaksana maupun peserta. Adanya kendala ini memerlukan penyesuaian agar program tetap berjalan sesuai rencana, meskipun harus menghadapi beberapa keterbatasan. Berikut adalah deskripsi mengenai faktor-faktor penghambat yang ditemui selama pelaksanaan pelatihan kerajinan rumah tangga berbahan dasar batok kelapa.

a) Adanya tugas mengajar dan pelayanan akademik yang lain di kampus

Salah satu kendala yang dihadapi adalah adanya keterbatasan waktu dari tim pelaksana PKM. Sebagai dosen, tim juga memiliki tanggung jawab mengajar dan pelayanan akademik lainnya di kampus yang tidak bisa ditinggalkan. Hal ini membuat jadwal pelaksanaan program harus disesuaikan dengan kegiatan tim di kampus dan ketersediaan mitra masyarakat untuk mengikuti pelatihan. Penyesuaian ini terkadang menimbulkan keterlambatan dalam pelaksanaan kegiatan atau mengurangi intensitas interaksi dengan masyarakat.

Kendala ini diatasi dengan membuat perencanaan yang fleksibel dan melibatkan komunikasi intensif dengan mitra masyarakat. Tim pelaksana berusaha untuk memanfaatkan waktu yang tersedia secara maksimal dengan merancang pelatihan yang efektif dan efisien. Selain itu, koordinasi yang baik antara tim pengabdi dan mitra membantu memastikan bahwa kegiatan tetap berlangsung meskipun jadwalnya harus disesuaikan.

b) Terbatasnya peralatan yang dibawa

Faktor penghambat lainnya adalah keterbatasan jumlah dan jenis peralatan yang dapat dibawa oleh tim pelaksana. Karena alasan logistik, tim hanya dapat membawa sebagian peralatan yang diperlukan untuk pelatihan, sehingga masyarakat harus menyiapkan alat tambahan. Hal ini menjadi tantangan karena tidak semua peserta memiliki akses mudah terhadap peralatan tersebut. Akibatnya, beberapa peserta harus berbagi alat, yang dapat memperlambat proses pelatihan dan mengurangi efisiensi kegiatan.

Untuk mengatasi kendala ini, tim pelaksana memberikan panduan kepada masyarakat terkait alat yang diperlukan dan bagaimana mereka bisa memanfaatkan alat sederhana yang tersedia di rumah. Selain itu, tim juga mendorong peserta untuk berbagi alat secara bergantian dengan sistem yang terorganisir. Pendekatan ini membantu meminimalkan dampak dari keterbatasan peralatan dan memastikan semua peserta tetap dapat mengikuti pelatihan dengan baik. Tim juga mencatat kendala ini untuk menjadi bahan evaluasi bagi pelaksanaan program di masa mendatang.

## 4. CONCLUSION AND RECOMMENDATIONS

The results of this analysis conclude that the training on sustainable agriculture and basic technology for BUMDes (Village-Owned Enterprises) and Pokdarwis (Tourism Awareness Groups) has had a significant impact on enhancing participants' knowledge and skills. The increase in the average scores from pretest to posttest indicates that the training successfully improved participants' understanding, despite variations in the extent of improvement experienced by each participant.

The very high correlation between pretest and posttest scores suggests that participants with different initial levels of understanding were still able to enhance their comprehension following the training. The extremely small significance value in the paired samples test indicates that these results are statistically significant, meaning the training genuinely had a positive impact on participants' abilities. This training has proven effective in enhancing participants' competencies in sustainable agriculture and basic technology, which is expected to assist BUMDes and Pokdarwis in better and more sustainably managing village resources in the future.

The digital transformation implemented through BUMDes has the potential to serve as a model for other villages in Indonesia with similar potential, making digital economic empowerment a strategic solution for improving the welfare of rural communities more broadly and inclusively.

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