

EMPOWERING SORGUM MAK JAGO SMES THROUGH PRODUCTION OPTIMIZATION AND DIGITAL MARKETING INNOVATION

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Abstract.

Sorgum Mak Jago, a small enterprise in Buleleng Regency, produces sorghum-based products such as bread, bagelen, cookies, and popcorn. The business faces two main challenges: limited production capacity due to basic equipment and the lack of digital marketing adoption. This community service program was designed to address these issues by providing production tools and training in e-commerce. The program consisted of observation, equipment needs assessment, tool distribution, Tokopedia training, and evaluation. The partner actively participated throughout the process. As a result, production capacity increased by about 30% with the use of new tools such as a stand mixer and hand sealer. In marketing, the SME successfully created a Tokopedia account, uploaded 3 products, and received two initial online orders. An instructional guide on e-commerce was also submitted for intellectual property rights (IPR). This program not only improved production efficiency but also expanded market reach and enhanced digital literacy. Sustainability is supported through ongoing mentoring and monitoring of the online store.

Keyword : *SMEs; Sorghum; Production; E-commerce; Digital Marketing*

I. INTRODUCTION

Indonesia possesses vast agricultural potential, both in terms of commodity diversity and harvest quality. One crop with significant promise yet still underutilized is sorghum. Sorghum is a nutrient-rich cereal, naturally gluten-free, and high in dietary fiber, making it a healthy alternative food source that supports dietary diversification and national food security (Sumaiyah, 2016). Despite these advantages, sorghum utilization in the Indonesian food industry remains low.

While agro-climatic conditions in Buleleng support sorghum farming, its processing and commercialization remain underdeveloped. Recent data estimate that the

potential sorghum planting area in Indonesia spans over 109,000 hectares, yet only about 4,355 hectares (less than 4%) are currently cultivated. This discrepancy highlights an urgent need to develop value-added sorghum products to meet growing demand for healthy and environmentally friendly food alternatives (Direktorat Perencanaan Sumber Daya Alam, 2023).

Sorgum Mak Jago, a micro and small enterprise established in 2014, has focused on processing sorghum into bread, bagelen, cookies, and sorghum popcorn. Although its products are distinctive and nutritionally valuable, production is constrained by the use of household-scale equipment. This limitation restricts the enterprise's ability to meet higher demand. Moreover, its marketing strategy has relied mainly on direct sales and personal networks, limiting the market reach to a narrow local area.

Meanwhile, consumer behavior in Indonesia is increasingly shifting toward digital platforms such as e-commerce and social media for product discovery and purchasing. Research shows that improving production capacity, coupled with digital marketing adoption, can significantly boost SME performance. For example, (Purnama et al., 2021) observed that SMEs using e-commerce platforms experienced sales growth of up to 30% during the pandemic. Similarly, (Permana et al., 2024) documented that traditional snack enterprises in Bali increased sales after integrating social media marketing, and (Ardiyasa et al., 2024) found that MSMEs in Buleleng expanded their customer base by adopting Tokopedia and Shopee.

These findings are consistent with broader global digital market trends, where SMEs leverage online platforms to expand market access and enhance competitiveness (Diaz et al., 2021). Therefore, strategic interventions are essential, both to strengthen production capacity with appropriate technology and to build digital marketing capabilities. By adopting these innovations, Sorgum Mak Jago is expected to increase competitiveness, expand market reach, and contribute to local economic growth, while also aligning with national efforts to empower SMEs.

II. METHOD

The community service program was implemented sequentially over eight months, involving the owner of Sorgum Mak Jago and two family members assisting in the business. The methodology followed several structured stages:



Figure 1. Stages of Activity Implementation

1. Observation and Survey

The service team conducted initial visits to the SME's location to directly observe production processes, interview the business owner, and record existing challenges. This stage lasted for approximately two weeks.

2. Partner Profiling

In-depth profiling was carried out to document production capacity, marketing strategies, available tools, and resource management. This stage was conducted over two weeks and served as the basis for planning solutions.

3. Production Equipment Survey

Based on collected data, the team identified and selected the production tools needed to improve efficiency and capacity. This activity took around three weeks, including consultation with suppliers.

4. Distribution of Production Equipment

The selected equipment (such as a stand mixer and sealing machine) was handed over to the partner, accompanied by demonstrations and usage guidance. This stage was completed within two weeks.

5. E-Commerce Training

Training sessions focused on the use of Tokopedia, including account creation, product uploads, price settings, and basic digital promotion strategies. Conducted over three separate sessions in one month, these trainings involved both the SME owner and family members.

6. Evaluation and Final Report

An evaluation phase was conducted after six months of implementation. The evaluation applied a Likert scale questionnaire to measure changes in digital literacy and confidence, as well as observational tracking of sales and production performance. At the end of the eight-month program, findings and results were compiled into a final report and an academic article prepared for publication.

III. RESULTS AND DISCUSSION

1. Partner Profile and Observations

Field observations confirmed that Sorgum Mak Jago SME produces unique sorghum-based food products but is constrained by limited production capacity and traditional marketing practices. Production relied on basic household tools such as a hand mixer, a small oven, and standard kitchen equipment. These limitations slowed down the process

whenever demand increased. For example, prior to the intervention, the SME was able to produce around 50 product units per day, but struggled to maintain consistency when demand rose above that threshold.



Figure 2. Visit to the Partner's Location

In terms of marketing, the SME still depended on direct sales and word-of-mouth promotion within the local community. This approach restricted its ability to expand beyond Buleleng Regency. The partner had never used e-commerce platforms and lacked the knowledge to market products digitally. Such conditions are typical of many Indonesian SMEs, where limited digital literacy is a significant barrier to growth (Permana et al., 2024).



Figure 3. Partner's Condition

2. Distribution of Production Equipment

To address these constraints, the program provided new production equipment, including a stand mixer, a hand sealer, baking trays, and molds. These tools were selected to improve efficiency and product consistency. After adoption, the SME's daily production increased from 50 units to approximately 65–70 units per day, representing a 30% improvement in capacity. Moreover, the sealing machine ensured more hygienic and durable packaging, which enhanced product presentation and consumer confidence. Similar findings were also reported by (Ferdiani et al., 2018), where the addition of production tools increased productivity among craft producers.



Figure 4. Distribution of Production Equipment to the Partner

3. E-Commerce Training and Implementation

Digital marketing training was delivered with a focus on the Tokopedia platform. The training included account creation, store management, product uploads, and the use of promotional tools such as Tokopedia Ads and Flash Sale. By the end of the training, the partner had successfully created a Tokopedia store and uploaded 3 products within the first month. The SME also reported receiving two initial online orders during this period, indicating early adoption of digital sales channels.



Figure 5. Digital Marketing Training Using the Tokopedia Application

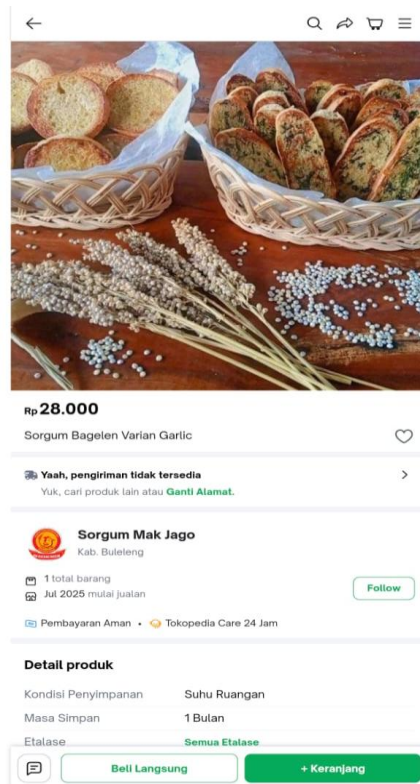


Figure 6. Tokopedia Account Display of Sorgum Mak Jago

This outcome reflects the trend reported by (Purnama et al., 2021), who found that SMEs adopting e-commerce platforms increased sales by up to 30% during the pandemic. Furthermore, (Diaz et al., 2021) emphasized that digital branding and online presence are critical factors in improving SME visibility in competitive markets.

4. Evaluation of Activities

The program evaluation was conducted through interviews and Likert scale questionnaires to assess changes in partner knowledge and confidence. Results showed that the SME rated its confidence in using e-commerce tools at 4.3 out of 5, compared to 2.1 before the training. The owner and family members expressed that they felt more capable of promoting their products online and more aware of the importance of product consistency.



Figure 7. Evaluation Visit

Beyond technical and marketing improvements, the program also fostered a stronger entrepreneurial mindset. The partner's willingness to experiment with new packaging designs and explore additional digital platforms (e.g., Instagram) reflected a broader readiness to adapt. These findings align with (Ardiyasa et al., 2024), who highlighted the role of digital marketing training in improving the quality and efficiency of SME marketing in Buleleng.

Overall, the integration of production support and digital marketing training effectively addressed the dual challenges faced by the partner. The quantitative improvements in production capacity and early online sales evidence tangible progress. Equally important, the SME developed digital literacy and confidence that will serve as the foundation for sustained growth. This program thus reinforces previous studies that emphasize the

necessity of combining technological tools and digital marketing literacy in community service interventions (Diaz et al., 2021; Permana et al., 2024).

IV. CONCLUSION

The community service program at Sorgum Mak Jago successfully addressed two major challenges faced by the partner: limited production capacity and inadequate digital marketing adoption. Production capacity improved significantly with the use of new equipment, enabling faster processes, greater stability, and more consistent product quality. On the marketing side, the SME is now able to independently manage its Tokopedia account, upload products, set prices, and use promotional features to expand its market reach.

The measurable outcomes achieved include a 30% increase in production capacity (from 50 to 65–70 units per day), the successful upload of 3 products on Tokopedia, two initial online orders within the first month, and an increase in e-commerce confidence levels from 2.1 to 4.3 on a Likert scale. In addition, the instructional guide on e-commerce usage has been submitted for intellectual property rights (IPR), providing long-term learning resources for Sorgum Mak Jago and potentially for other SMEs.

Despite these positive results, the program faced limitations such as the lack of sustainable funding for broader adoption, limited use of paid promotions, and the restricted scope of marketing confined to a single platform. For future projects, it is recommended to expand training to cover social media platforms, provide continuous mentoring, and establish long-term monitoring systems to evaluate sustainability and wider impact.

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