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Empowerment of Chicken Farmers Based on Cleaner Production and Strengthening of Product Added Value through Entrepreneurial Knowledge Enhancement

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Abstract

Given the environmental and health challenges, chicken poultry farms are now facing an increasing urgency to implement cleaner production. The application of the Cleaner Production concept is expected to be a solution to increase business efficiency and sustainability. One way is to process chicken poultry farm waste into valuable products, such as organic fertilizers, thereby reducing environmental negative impacts. This research method uses a Research and Development (R&D) approach with a three-box method. The community participates in a training program focusing on the innovation of processed chicken products, namely the manufacture of dimsum. This training covers theory and practices about Cleaner Production and dimsum-making techniques. The method used in building a complete solution in community service was obtained by Borg and Gall with the calculation of a questionnaire used to measure the achievement of induction of knowledge and skills based on the three-box method. The implementation of community service programs has shown an increase in the skills of partner Small and Medium Enterprises (SMEs) by 89%, an increase in knowledge by 97.6%, and the development of ideas for sustainability by 98.8%. This community service provides a complete solution to increase cleaner production, effectively improving skills and adding value to UD Sumber Mandiri processed chicken products.

Keywords: Cleaner Production, Enterpreneurship, Added Value, Poultry Farm, Enterpreneurial Knowlegde Enhancement

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INTRODUCTION

Net production has attracted a lot of attention from researchers from various fields, such as in the field of Geography (Paudel et al., 2021), in the field of ecology and natural change (Y. Zhang et al., 2023), in the field of agribusiness (Huang et al., 2022), and in the field of chicken poultry farm (Chai et al., 2023). Given environmental and health challenges, it is increasingly urgent for a chicken poultry farm to consider cleaner production (Wöhler et al., 2023). Environmental health in applying the concept of clean production can be a solution to improve efficiency and sustainability (Satyro et al., 2023). waste from chicken farms can be processed into valuable products such as organic fertilizers or biogas that can reduce environmental impact

(Tawfik et al., 2023). In addition, chicken farming plays an important role in meeting the community's animal protein needs. However, processed chicken still does not have innovation, so it shows a low added value of processed chicken (L. Zhang et al., 2023). The low added value of processed chicken is due to a lack of knowledge related to the downstream of processed chicken, one of which is dimsum. Chicken dimsum is popular among the people of Indonesia, which is shown by an increase in demand of 15% in the last five years; market demand for chicken dimsum, in particular, is projected to continue to grow in line with increasing income and changing consumer preferences (Nurhidayati et al., 2022). Thus, through entrepreneurial empowerment and increasing public knowledge about clean production practices and downstreaming, processed chicken in Indonesia can significantly increase added value, thereby increasing income generation for the community in the processed sector (Indrawan et al., 2021).

Processed chicken, in addition to having the potential to increase income generation, can also significantly contribute to the national economy, even more so to meet the needs of consumers in Indonesia (Rehman et al., 2022). Based on BPS (*Badan Pusat Statistik* - Statistics Indonesia) data in 2020, the need for chicken consumption in Indonesia was 2,072,672 tons (Istiqomah, 2021). Meanwhile, based on data from the Central Statistics Agency, chicken imports from abroad show a figure of 76.7 thousand kilograms (kg), data of 76.7 thousand kg shows that Indonesia still has not maximized processed chicken (Sipayung et al., 2023). Processed chicken in Indonesia has great potential that can not only meet consumption needs independently. Chicken production centers for the 2017-2020 period are concentrated in six provinces, with a total share of 83.87 percent of the national production of 1.72 million tons (Frasipa & Jojo, 2023). However, Indonesia still relies on imports to strengthen the contribution of processed chicken. Processed chicken has a macroeconomic gap that needs to be optimized by increasing knowledge and entrepreneurial training. Entrepreneurial training in processed chicken also has the potential to increase people's income and create new jobs to support more inclusive and sustainable economic development (Passarelli et al., 2020). However, the public does not know the causes of chicken death hatching failure, and the chicken coop has an unpleasant aroma, so processed chicken has two problems: the problem of cleanliness of chicken production and the added value of processed chicken products that are still low.

The problem of community empowerment is divided into two main problems. The first problem is the traditional production approach of manually hatching chicken eggs, which is ineffective and results in a relatively high hatching failure rate; a further problem is clean production, such as controlling unpleasant odors from chicken coops and processing solid and liquid waste from poorly managed chicken rearing. The second problem is that the added value of chicken products is still low due to the community's lack of knowledge and skills in processing chicken into value-added products. The added value of poultry products, which can be processed into various variants, can increase farmers' income and make an important contribution to the local economy. However, the main obstacle to developing these products is the lack of access to processing technology and marketing skills (Boimah et al., 2022). By adopting a holistic approach, which includes increasing knowledge and empowering entrepreneurs, the program aims to increase clean chicken production capacity and advance the added value of processed chicken products. The added value of processed chicken products aims to overcome production problems and increase the added value of chicken products sustainably by focusing on empowering entrepreneurs as the leading actors (Sianipar et al., 2022).

Optimizing the empowerment of chicken poultry farming through cleaner production and enhancing product-added value requires a strategic focus on improving entrepreneurial knowledge. Community empowerment aims to create pathways for adding value by integrating knowledge-enhancement programs with sustainable practices. This approach addresses production efficiency and investigates the qualitative experiences and challenges entrepreneurs face in adopting cleaner production methods and delivering high-value products.

METHOD

The process of increasing the productivity of Mbangkong Gunungpati independent source livestock is divided into 3 main discussions, namely the initiation, execution and output stages (Figure 1). The initiation stage includes several critical aspects that determine long-term success. The first step in initiation is (1) Determining a strategic location for a new cage, taking into account environmental factors. (2) Determine sanitation and electrical standards to maintain health for livestock and minimize the risk of disease. (3) Determining effective waste disposal (what) is also the main focus to maintain the cleanliness of the surrounding environment and reduce negative impacts on the ecosystem. (4) Carefully design the chicken coop, and prioritize the comfort and health aspects of chickens.

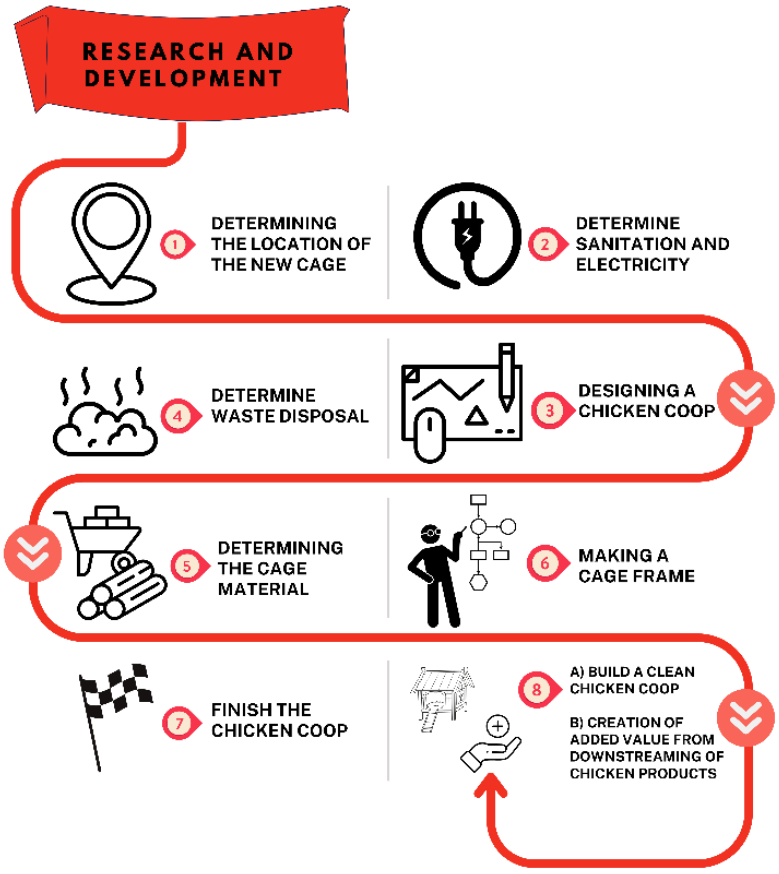

Figure 1. RnD Method (Putri et al., 2023)

At the stage of the execution process, (5) Determine the quality and durable cage material, ensuring a sturdy and safe cage structure. (6) Determining the cage frame is done with precision to ensure the stability of the building. (7) The completion of the construction of the chicken coop involves implementing all the design elements that have been planned, including the installation of sanitation, electricity, and waste disposal systems. (8) The output of this whole process is (A) the construction of a clean and hygienic chicken coop, which provides a healthy living environment for chickens to support the productivity and welfare of livestock. In addition, (B) the creation of added value from the downstream of chicken products is expected to increase the efficiency and productivity of the overall livestock. With innovation and improvement in livestock management, Mbangkong Gunungpati Farm can be a model for other livestock in implementing sustainable best practices and oriented towards increasing product-added value. Community service measures are implemented with the success rate of activities assessed through questionnaires distributed to the training participants. The indicators listed in Table 1 are used as a reference for measuring the results of this activity.

Table 1. Questionnaire Indicator

No	Indicator
1	This program helps improve skills in dimsum making.
2	The training material related to dimsum making techniques is easy to understand.
3	This program encourages innovation in the development of processed chicken in the form of dimsum
4	This program activity increases participants' knowledge about dimsum cooking techniques.
5	This program can be directly practiced in business or culinary ventures.

The indicators on the questionnaire, shown in Table 2, are assessed using a Likert scale of 1-6 (Nemoto & Beglar, 2014). The scale is designed to measure respondents' approval of a variety of statements, with each number having a specific meaning: 1 indicates "Strongly Disagreement," where respondents completely disagree with a given statement; 2 means "Disagree," indicating disagreement with the statement, but not entirely; 3 indicates "Somewhat Disagreement," where respondents are likely to disagree but not at a strong level; 4 means "Somewhat Agree," indicating a tendency to agree with a statement, albeit with certain doubts; 5 means "Agree," where respondents agree to the statement without reservation; and 6 indicated "Strongly Agree," where respondents strongly agreed with the statements given, indicating the maximum level of approval.

Table 2. Rated on a Likert Scale of 1-6 (Nemoto & Beglar, 2014)

Scale of Goods	Rated
1	Strongly disagree
2	Disagree
3	Less Disapproval
4	Quite agree
5	Agree
6	Strongly agree

Data from the questionnaire were collected and analyzed descriptively using index values. The results of this index value are used to describe the perception of participants in community service programs. Index values have a maximum scale of 100 and are grouped based on the criteria of the three-box method (Kadets et al., 2020). The percentage generated from this method is then used to determine the success rate of the activity. The range of values obtained through this method is presented in Table 3.

Table 3. Index of Criteria of the Three-Box Method (Pérez-Rodríguez & Rojo-Alboreca, 2017)

Range	Value	Grade
Range 1	16.67% – 44.44%	Low
Range 2	44.45% – 72.23%	Medium
Range 3	72.24% - 100%	High

RESULTS AND DISCUSSION

Results obtained through the implementation of community service to Mbangkong Gunungpati with the Research and Development method (R&D) (Nayeri et al., 2019) and the measurement of the questionnaire with the three-box method are as follows:

1. Improving the quality of clean production of chicken coops

   The problem of the quality of clean production of chicken cages still needs special attention. A more hygienic cage can impact chickens and farmers to produce healthy chickens (Kasianenko et al., 2022). To overcome these problems, hygienic chicken innovations are sometimes needed to improve production quality. This improvement in production quality is expected to increase the capacity of chickens in Mbangkong Gunungpati. This 6x3x3 meter chicken coop is designed with sturdy and functional materials. The walls are constructed of bricks that provide structural strength and stability and are lined with wire to ensure good ventilation and extra safety, protecting chickens from predators. Wood is an additional structural element, providing flexibility and a natural aesthetic appearance. Adequate lighting is installed inside the enclosure, ensuring the area remains well-lit.

Figure 2. Cleaner Chicken Coop with Lime Method

Figure 2 shows a picture of a hygienic chicken coop in response to the problems faced by Sumber Mandiri partners. In this image, we can see the design and functionality of the hygienic chicken coop, including the use of lime technology to support the cleanliness of chicken livestock. As shown in Figure 2, the procurement of cages aims to help minimize diseases in chicken livestock. The improvement of production sites such as Sumber Mandiri cages can reach a wider market due to the improvement of the health quality of chicken livestock.

2. Entrepreneurship training in the form of dimsum

Entrepreneurship training is crucial for partners in this increasingly competitive era, especially in the culinary industry. One of the main focuses of this training is dimsum, a food that is not only popular but also has great market potential. Through this training, it is hoped that partners can develop the skills and strategies necessary to succeed in the dimsum business.

Figure 3 shows the training on processed chicken in the form of a dimsum held for SME partners. In this picture, a training session discusses various aspects of dimsum making knowledge, aiming to provide an in-depth understanding to partners and SME participants. The training involved active interaction between presenters and participants, covering important topics such as proper dimsum manufacturing techniques, how to process chicken into value-added products, and strategies to generate sustainable income.

Figure 3. Entrepreneurship Training in the Form of Dimsum

This activity not only provides practical skills but also encourages innovation in food processing. Figure 3, taken in Mbangkong Gunungpati, shows the enthusiasm of the people who participated in this training, creating an inspiring and collaborative atmosphere. Thus, this training is expected to be the first step for partners to enter the dimsum market confidently and competitively.

Community service provides programs in the form of improving the quality of clean production to improve the quality of chicken health, entrepreneurial skills training, and strengthening the managerial side in the form of training in a simple Android-based financial system to provide complete solutions to problems that exist in UD partner SMEs. The following results of the questionnaire measurement are obtained in Table 4.

Table 4. Percentage Results

Result	Percentage
Implementation of Downstream Clean Production	94%
Community Capacity Building	89%
Increased Knowledge	97.6%
Value of Benefits	98.8%
Answering Today's Business Challenges	97,9%

a) Implementation of Downstream Clean Production

During this training, the participants showed significant success in implementing the concept of downstream and clean production. This training has proven to be effective in improving the practical skills of entrepreneurship, with 94% of participants successfully applying the principles. This figure shows that almost all participants can implement the concept of downstream in their business so that they not only produce more efficient products but also have a positive impact on the environment.

b) Community Capacity Building

The skills of participants in this activity increased. This fact is evidenced by the success rate of the activity with an indicator that reads "Community Capacity Improvement", which is relatively high through the three-box method, namely with a percentage of 89%, which means that participants understand the material that has been delivered. Entrepreneurship and finance training is not only considered a learning process but an important strategy to increase the human resources capacity in SMEs.Training can provide in-depth insights and broaden perspectives by honing professional, entrepreneurial management skills. Enhanced capabilities focus on human resource management to sustain the business in turbulence. In addition, the ability to manage finances is trained by utilizing digital technology in the form of Android-based applications.

c) Increased knowledge

Community service increases participants' knowledge. This claim can be concluded because the indicator's measurement results, namely "This service program activity increases knowledge" through the three-box method, obtained a percentage of 97.6%, meaning that the success rate of the indicator is high. The service allows participants to gain in-depth knowledge related to business management, risk analysis, marketing strategies, and sustainable business mode development. In addition, financial management training equips participants with efficient financial management with structured investment strategies.

d) Value of benefits

Community service activities have a beneficial value. A high percentage of indicators can conclude this success, namely "This training improves soft skills", which is 98.8%, which means that participants feel that they have benefited in the form of new knowledge from this activity.

e) Answering Today's Business Challenges

The value of the benefits is also indicated by the indicator "This program answers today's business challenges," which gets a 97,9% percentage of results, meaning it is included in the success criteria. Entrepreneurship and financial management training has significant implications for SMEs in the face of complex business dynamics. This training provides a conceptual and practical understanding of overcoming everyday challenges such as changing market trends, capitalization, and business competition. Applying the knowledge gained from the training encourages SMEs to respond more adaptively by optimizing financial performance based on digital systems. This fact becomes a strong foundation for building short- and long-term strategies following market dynamics.

CONCLUSION

This community service program aims to create better business sustainability in terms of production and increase partners' knowledge of entrepreneurship and finance. The implementation of this program has succeeded in improving the quality of clean production in Mbangkong, Gunungpati, through the development of hygienic, well-structured cages. These 6x3x3 meters cages are designed with durable materials, proper ventilation, and an effective waste management system, ensuring that the chickens are raised in a healthy environment. As a result, the production quality has improved significantly, encouraging the enhancement of processed chicken quality. In addition to these advancements, the program has contributed to a notable increase in skills, ease in delivering materials, and heightened knowledge among the participants. Furthermore, the production capacity of partner SMEs has seen significant growth, demonstrating impressive results in terms of both efficiency and output.

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