



Empowering Rural Communities Through Coffee Bean Processing Training for Competitive Value Creation in Motung Village, Toba Regency

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Abstract: This community service program was designed to strengthen the competitive value of coffee bean processing through a combination of practical field training and structured mentoring for rural communities. The activity took place on June 29, 2025, in Motung Village, Ajibata District, Toba Regency, and involved 20 local participants representing farming households. The implementation model emphasized a participatory and hands-on approach, where participants were directly engaged in coffee bean processing techniques under the guidance of academic experts and field mentors. This initiative was a collaborative effort between Universitas Murni Teguh PSDKU Pematangsiantar, Politeknik Bisnis Indonesia, and the Farmer and Fishermen Association (KTNA) Pematangsiantar. The program's primary objectives were to enhance local community skills in post-harvest coffee processing, to raise product quality standards, and to generate added value that would enable rural producers to compete in wider markets. Through structured mentoring, participants received continuous assistance that ensured they could apply the acquired knowledge and skills independently after the training activities concluded. The results demonstrated significant improvements in participants' understanding and technical capacity, particularly in the areas of sorting, drying, roasting, and packaging coffee beans. These competencies allowed the local community to produce higher-quality coffee products that meet market expectations and enhance competitiveness. Furthermore, the program strengthened the link between academic knowledge, practical field skills, and local wisdom, which together form the foundation for sustainable rural empowerment. By improving coffee bean processing capacity, the initiative is expected to increase household income, foster an entrepreneurial spirit, and support the long-term development of Toba's rural economy. In this way, the program not only equips the community with technical expertise but also contributes to broader goals of economic sustainability and social resilience in the region.

1. INTRODUCTION

Coffee has long been recognized as one of Indonesia's most strategic agricultural commodities, playing a central role in both the national economy and livelihoods of rural communities (Lubis & Lubis, 2024). In North Sumatra, particularly in Toba Regency, coffee

farming contributes not only to household income, but also to the region's cultural and tourism identity (Simarmata et al., 2024). Despite its high potential, many coffee farmers and local communities remain constrained by limited knowledge and skills in postharvest processing (de Melo Pereira et al., 2019; Wijaya et al., 2021). As a result, coffee beans are often sold in raw or semi-processed forms with minimal added value, leading to reduced income and weak bargaining power in a competitive global market (Ashardiono & Trihartono, 2024).

These problems are further compounded by the lack of access to structured training, technology, and mentoring that could equip local farmers with modern techniques in coffee processing (Rotta et al., 2021). Without these competencies, it is difficult for communities to achieve the consistency, quality standards, and branding required to penetrate premium or export-oriented markets (SARVINA et al., 2021). Therefore, capacity building for rural communities in coffee bean processing is not merely a technical need, but a strategic intervention to improve competitiveness, strengthen rural economies, and foster sustainable livelihoods (Rotta et al., 2021; Simarmata et al., 2023, 2024) .

This activity was held in collaboration with three key stakeholders: Universitas Murni Teguh PSDKU Pematangsiantar, which contributed to academic expertise in management and training design; Politeknik Bisnis Indonesia, which provided applied knowledge in entrepreneurship and business models; and the Farmer and Fishermen Association (Kelompok Tani Nelayan Andalan/KTNA) Pematangsiantar, which served as a direct link to local farming communities. The collaboration was further strengthened by the involvement of Henry Dunan Pardede, S.P., M.M., the Chairman of KTNA, Pematangsiantar, who acted as the primary speaker and mentor. His role was crucial in bridging the gap between the theoretical frameworks of value creation and practical realities faced by local farmers reflecting a holistic model of community empowerment that aligns with integrated value chain approaches, as described in value chain modeling in similar contexts.

The purpose of this activity is threefold. First, it aimed to enhance the skills and knowledge of local communities regarding coffee bean processing through hands-on training and mentoring. Participants were introduced to critical techniques such as sorting, drying, roasting, and packaging to meet higher quality standards core stages in coffee production that significantly influence the final cup quality.

Second, the program sought to increase the competitive value of local coffee products by fostering innovation and improving post-harvest practices. By emphasizing value-added processing, communities are expected to gain better access to regional and national markets, thus strengthening their economic resilience. This resonates with findings from modeling

studies showing that improved post-harvest decision-making and optimal market allocation can enhance farmer profitability, particularly when strategic dried or processed forms are targeted.

Third, the activity aspired to empower rural households by cultivating an entrepreneurial mindset, enabling participants to view coffee not only as a commodity but also as a potential business opportunity that can support family income and contribute to local economic sustainability. This empowerment model echoes broader efforts in sustainable capacity building and value chain sustainability.

On June 29, 2025, in Motung Village, Ajibata District, Toba Regency, the activity involved 20 local participants who were actively engaged in both theoretical and practical sessions. The training emphasized a mentoring model in which participants practiced coffee bean processing directly under expert guidance. This approach ensured that knowledge was not only delivered, but also internalized through direct application, thus enhancing long-term sustainability.

2. METHOD

This Community Service Activity (PKM) was designed using a participatory mentoring model that emphasizes the direct involvement of participants in practical learning. The method was structured to ensure that the transfer of knowledge and skills in coffee bean processing could be effectively applied by the local community in Motung Village. The stages of implementation consisted of planning, execution, and evaluation, all of which were carried out collaboratively between the academic team, KTNA, and local stakeholders (Simarmata et al., 2023, 2024).

Planning Stage

The planning process began with an initial needs assessment through informal discussions with farmers and community members in Motung Village. The assessment revealed that most farmers sold coffee beans in their raw form, with a limited understanding of value-added processing techniques. Based on this finding, the team developed a structured training module covering the critical stages of coffee processing, namely sorting, drying, roasting, grinding, and packaging.

Coordination meetings were held between Universitas Murni Teguh PSDKU Pematangsiantar, Politeknik Bisnis Indonesia, and KTNA Pematangsiantar to finalize the agenda, resource materials, and schedule. The program was tailored to the local context, ensuring that the tools and methods introduced were practical, affordable, and replicable by participants after training.

Form and Time of Implementation

The activity took place on Sunday, June 29, 2025, in Motung Village, Ajibata District, Toba Regency, starting at 09:00 AM and continuing until its completion. The session involved 20 local participants consisting of coffee farmers and community members.

The implementation consisted of two integrated components: a). Seminar and Knowledge Sharing: Henry Dunan Pardede, S.P., M.M., Chairman of KTNA, Pematangsiantar, delivered material on the importance of coffee processing for competitive value creation. His presentation emphasized strategies to move beyond raw sales and produce coffee with higher market value. b). Hands-on Training and Mentoring: Participants practiced coffee bean processing, guided by facilitators from the university and KTNA. Activities included sorting fresh beans, applying appropriate drying techniques, roasting demonstrations, and basic packaging practices. The mentoring model ensured that each participant received personalized guidance to strengthen their understanding and confidence in applying new skills.

Evaluation and Follow-Up

The evaluation was conducted using pre- and post-test questionnaires to measure changes in the participants' knowledge and skills. Direct observations during practical sessions also served as an indicator of participant engagement and competency improvement.

Feedback sessions were held at the end of the activity, where participants shared insights and identified their future needs. The results showed strong enthusiasm for continued mentoring and requests for advanced training, particularly in the branding, marketing, and digital promotion of local coffee products.

3. RESULT

Community Service activities on coffee bean processing were successfully carried out in accordance with the planned objectives and agenda. The program involved 20 participants from Motung Village, consisting of coffee farmers and local community members who were actively engaged in both theoretical and practical sessions. The activity was well received and demonstrated a high level of enthusiasm among participants throughout the training process.

The active participation of participants during the mentoring sessions was an indicator of success. Farmers not only attended passively, but also asked critical questions regarding proper drying methods, roasting techniques, and storage practices to maintain bean quality. This reflects the community's strong interest in applying knowledge to their daily coffee processing activities. The practical component proved to be highly effective in improving participants' skills. During the field practice, participants were guided step-by-step in sorting,

drying, roasting, grinding, and packaging the coffee beans. Observations showed a significant improvement in their understanding and ability to distinguish between high-quality and defective beans, apply appropriate drying methods, and prepare roasted beans suitable for consumption and marketing.

Another result of the activity was improved awareness of the importance of added value in coffee products. Before training, most participants sold coffee beans in raw form, with minimal price differentiation. After mentoring, they expressed confidence in their ability to process coffee into competitive products. Some participants even proposed establishing a community-based coffee processing group as a follow-up to this activity, demonstrating an initiative for sustainability. Feedback from the evaluation also indicated that participants valued the collaboration model. The presence of Henry Dunan Pardede, S.P., M.M., Chairman of KTNA, Pematangsiantar, as the main speaker, was particularly appreciated. His experience as a practitioner provided participants with practical insights into aligning local practices with broader market demands. Meanwhile, academic facilitators from Universitas Murni Teguh and Politeknik Bisnis Indonesia provided systematic guidance and ensured that the training materials were delivered in a clear and applicable manner.

This activity contributed to strengthening the community capacity during post-harvest coffee processing. The combination of seminar knowledge and hands-on mentoring succeeded in enhancing both the cognitive and practical aspects of the participants' learning. The results confirm that empowering rural communities through direct practice and collaborative mentoring is an effective approach for improving the competitiveness of local agricultural products.

4. DISCUSSION

The implementation of this Community Service activity demonstrates that mentoring-based practical training is an effective strategy to strengthen the capacity of rural communities to process coffee beans. The results show that participants not only improved their technical skills, but also gained a deeper awareness of the importance of value-added practices in enhancing market competitiveness. This is consistent with previous findings in community empowerment research, which highlight that practical, participatory approaches are more sustainable than purely theoretical interventions.

A key factor contributing to the success of this programme is the collaborative model. The synergy between academic institutions and the Farmer and Fishermen Association (KTNA) ensured that knowledge transfer was both systematic and contextual. The involvement

of Henry Dunan Pardede, S.P., and M.M., as Chairman of KTNA Pematangsiantar, provided credibility and practical insights that resonated with the local community. His experience bridged the gap between the theoretical strategies for competitiveness and the practical challenges faced by rural farmers. This aligns with the principle of triple-helix collaboration, linking universities, industry associations, and communities, to drive sustainable rural development.

The activity also demonstrated that empowerment in coffee bean processing contributes not only to skill development but also to mindset transformation. Participants who had previously viewed coffee primarily as a raw commodity began to recognize its potential as a high-value product that could be marketed locally and regionally. This shift reflects the importance of combining technical skills with entrepreneurial orientation in order to create long-term economic resilience. In this regard, the programme succeeded in fostering both knowledge acquisition and entrepreneurial awareness.

Another point of discussion is the role of mentoring in a continuous learning process. Unlike one-time training, mentoring allowed the participants to practice under guidance and receive direct feedback. This method was effective in ensuring that participants internalized their skills rather than merely acquiring superficial knowledge. Such an approach is crucial in community-based empowerment activities, where sustainability depends on the ability of participants to replicate practices independently after the programme ends.

The enthusiasm and feedback from the participants further underline the need for follow-up initiatives, especially in the areas of branding, marketing, and digital promotion of coffee products. While training addressed post-harvest processing, competitiveness in today's market also requires attention to product differentiation, labeling, and access to digital marketplaces. This indicates that future PKM activities should adopt a more integrated approach, combining technical processing skills with business and marketing strategies



Figure 1. The resource person directly provided training to farmers on how to process coffee beans.

During the field session, Mr. Henry Dunan Pardede, S.P., M.M., Chairman of KTNA Pematangsiantar, delivered a direct explanation to the participants on the importance of proper coffee bean processing techniques. Standing among the villagers in the training area, he emphasized how sorting and drying processes determine the quality and market value of the final product. Using simple demonstrations, he showed the difference between well-processed and defective beans, encouraging participants to pay close attention to each stage of postharvest handling. His practical approach created an interactive atmosphere in which farmers were eager to ask questions and compare the methods with their daily practices.



Figure 2. Photo with the Speaker with the PKM Team after the activity was carried out on one of the Tourist Attraction Hills in Motung Village.

5. CONCLUSION

This Community Service activity on coffee bean processing has been successfully implemented and has achieved its objectives of strengthening the skills and competitiveness of rural communities in Motung Village, Ajibata District, and Toba Regency. Through the integration of seminar presentations and hands-on mentoring, the participants gained practical competencies in sorting, drying, roasting, grinding, and packaging coffee beans. These improved skills enable them to enhance product quality and add market value, which can in turn contribute to increasing household income and community welfare.

The involvement of Universitas Murni Teguh PSDKU Pematangsiantar, Politeknik Bisnis Indonesia, and the Farmer and Fishermen Association (KTNA) Pematangsiantar, with Henry Dunan Pardede, S.P., and M.M. as the main speakers, was instrumental in ensuring the success of this program. The collaboration model demonstrates that combining academic expertise with practical farming experience creates a more effective approach to rural empowerment.

The evaluation showed that participants responded enthusiastically, not only by actively engaging in practical sessions but also by expressing their readiness to apply new knowledge independently. Furthermore, their initiative to propose forming a community-based coffee-processing group reflects the sustainability of the program's outcomes.

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