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Micro-Entrepreneurial Potential by Self-Producing Liquid Dishwashing Soap: Community Empowerment Through Green Accounting and MBKM Framework

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Abstract: This study presents the results of a community service program focusing on the empowerment of Indonesian migrant workers and micro-entrepreneurs in Penang, Malaysia, through the self-production of liquid dishwashing soap. The program integrated training in production, business management, and marketing, complemented by the introduction of green accounting practices. Using a participatory action research approach, the program was conducted over six months, involving workshops, mentoring, and digital marketing campaigns. Findings indicate that 80% of participants successfully produced liquid dishwashing soap independently, 70% adopted basic bookkeeping practices, and 50% expanded their market reach through social media. Average additional household income ranged from Rp 500,000 to Rp 800,000 per month. Moreover, the introduction of green accounting reframed environmental expenditures as long-term investments, fostering awareness of sustainability. The program contributes to both community development and institutional performance indicators under the Merdeka Belajar Kampus Merdeka (MBKM) framework, particularly IKU 3 (lecturer engagement outside campus) and IKU 6 (international collaboration). These results highlight the potential of micro-enterprises to improve socio-economic resilience when supported with integrated, sustainable approaches.

Keyword: Micro-Entrepreneurship, Liquid Dishwashing Soap, Community Empowerment, Green Accounting, MBKM

INTRODUCTION

Micro, small, and medium enterprises (MSMEs) have long been recognized as the backbone of economic development in many countries, particularly in Indonesia. They provide significant contributions to employment generation, income distribution, and local economic resilience. Among Indonesian migrant workers in Penang, Malaysia, micro-entrepreneurial activities also serve as a crucial source of livelihood, especially for households that seek to supplement their income beyond remittances. However, despite their potential, these communities often face structural barriers such as limited access to capital,

lack of technical knowledge, weak business management skills, and difficulties in reaching broader markets. One product that presents a promising entry point for micro-entrepreneurship is liquid dishwashing soap. As a household necessity, its demand is consistent and often increasing in line with greater public awareness of hygiene and sanitation. Unlike other consumer goods, the production of liquid dishwashing soap is relatively low-cost, does not require advanced technology, and can be carried out at a household scale. This combination of low barriers to entry and high market demand makes it an attractive opportunity for empowering micro-entrepreneurs, particularly women and migrant workers who may have limited resources but strong motivation to improve household welfare. At the same time, environmental concerns are becoming increasingly relevant in both consumer preferences and business practices. Communities are beginning to recognize that sustainability is not only a global agenda but also a practical necessity at the local level. This is where the concept of green accounting becomes important. By treating environmental expenditures as long-term investments rather than immediate costs, green accounting encourages micro-enterprises to adopt eco-friendly practices without perceiving them as a financial burden. For example, waste management or the use of biodegradable raw materials can be reframed as "green investments" that generate future returns in the form of customer trust, brand value, and reduced operational risks. This community service program, therefore, was designed to integrate three essential dimensions of micro-entrepreneurial development: production, business management, and marketing, while embedding environmental responsibility through green accounting practices. The program was implemented collaboratively with PERMAI (Pertubuhan Masyarakat Indonesia), an association of Indonesian migrant workers in Penang, ensuring strong community participation and ownership. Beyond its immediate impact on participants, the program also contributes to the broader goals of higher education in Indonesia under the Merdeka Belajar Kampus Merdeka (MBKM) framework. MBKM emphasizes experiential learning, cross-disciplinary knowledge application, and meaningful contributions to society. Through this program, students and lecturers not only applied theoretical knowledge from accounting, chemistry, and management but also engaged in real problem-solving with direct community impact. In this way, the initiative strengthens academic relevance while simultaneously addressing socio-economic and environmental challenges.

METHODS

Approach

The community service program was implemented using the Participatory Action Research (PAR) model, a method that emphasizes collaborative engagement between facilitators and community members. This approach was selected because it goes beyond traditional one-way knowledge transfer, creating a dynamic environment where participants actively identify challenges, co-develop solutions, and implement activities. Through PAR, the program aimed not only to provide training but also to cultivate shared ownership of results, encourage collective problem-solving, and build sustainable capacity within the community. The involvement of PERMAI (Pertubuhan Masyarakat Indonesia in Penang) ensured that the program remained culturally appropriate, contextually relevant, and responsive to the actual needs of Indonesian migrant workers.

Participants

The program engaged 42 Indonesian migrant workers and micro-entrepreneurs, many of whom were women working as housewives, informal vendors, or small-scale service providers. Participants represented a diverse spectrum of educational backgrounds, ranging from elementary school graduates to vocational-level learners. This diversity brought both advantages and challenges. On one hand, participants contributed rich experiences in household management, informal trading, and social networking. On the other, varying levels

of literacy and financial knowledge necessitated training materials that were simple, accessible, and easily applied in daily practice.

Implementation Stages

The program ran for six months (January–June 2025) and was organized into three interconnected stages: production, business management, and marketing. Each stage addressed upstream and downstream aspects of micro-enterprise development.

Production. Participants attended workshops on raw material selection, safe handling of basic chemicals, and effective soap formulation techniques. Beyond theory, hands-on trial production sessions allowed participants to practice mixing, testing, and refining products. Quality control methods were introduced to ensure consistent, safe outputs.

Business Management. Once participants acquired production skills, the program shifted to enhancing managerial competencies. Training included simple bookkeeping, cash flow tracking, and basic cost-benefit analysis. Green accounting principles were introduced, framing environmental expenditures—such as waste management and eco-friendly packaging—as long-term investments rather than expenses. This encouraged participants to integrate sustainability into profitability and growth planning.

Marketing. The final stage emphasized market engagement. Participants received instruction in packaging design, branding, and digital marketing using platforms such as WhatsApp, Facebook, and Instagram. Cooperative-style groups were formed to pool resources, collectively promote products, and reach wider markets through community events and migrant bazaars.

By combining these three dimensions, the program enhanced participants' technical, managerial, and entrepreneurial capacities while laying the foundation for sustainable, eco-conscious micro-enterprises.

Products. Participants developed a variety of small-scale, eco-friendly products, primarily household and personal care items. The main offerings included bar soap, liquid soap, and specialty soaps infused with natural ingredients, alongside complementary products such as eco-friendly cleaning agents and natural detergents. All products adhered to basic quality and safety standards and incorporated proper labeling and packaging. Emphasis was placed on eco-friendly materials, including recyclable or biodegradable packaging, to reduce environmental impact. By combining functionality with sustainability, the products addressed local market needs while showcasing participants' ability to apply skills in production, management, and marketing.

Products were sold through cooperative networks, local markets, and digital platforms, giving participants hands-on experience in sales, customer interaction, and brand promotion. This practical exposure reinforced entrepreneurial thinking, innovation, and a community-oriented approach to business growth.

Data Collection and Evaluation

Data collection in this program employed a combination of quantitative and qualitative methods to provide a comprehensive understanding of participants' progress, program effectiveness, and areas for improvement. Four main data sources were utilized. First, pre- and post-training surveys were administered to assess participants' knowledge, skills, and confidence in production, business management, and marketing. These surveys allowed facilitators to quantify learning gains and identify gaps that required additional support. Second, direct observation during workshops provided real-time insights into participants' engagement, practical skills, and teamwork. Facilitators recorded participants' ability to apply new techniques, follow safety procedures, and demonstrate problem-solving in hands-on activities. This method captured nuances that surveys alone could not measure, such as participants' creativity, collaboration, and adaptive learning.Third, a review of participants' financial records was conducted to evaluate the application of business management training. Bookkeeping practices, cash flow management, and cost-benefit analysis were examined to

determine improvements in financial literacy and managerial capacity. This review also highlighted participants' adoption of green accounting principles, showing whether they considered sustainability in their decision-making. Fourth, sales tracking before and after program implementation provided objective evidence of economic outcomes. Records of product sales, customer reach, and revenue generation were analyzed to understand the program's impact on participants' income and business growth. These metrics were particularly useful for evaluating the practical effectiveness of marketing strategies, cooperative efforts, and digital promotion. Evaluation was structured across three levels: process, output, and outcome. The process evaluation focused on how the program was implemented, participant engagement, and adherence to planned activities. Output evaluation assessed tangible results, such as the number of products produced, skills acquired, and cooperative networks formed. Finally, outcome evaluation examined longer-term effects, including increased income, improved business practices, and enhanced community capacity. By combining multiple data sources and layered evaluation, the program ensured a thorough understanding of both participant development and the overall effectiveness of the intervention. This approach also provided actionable feedback for future iterations, ensuring that training, production, and marketing activities continued to meet the evolving needs of the community.

RESULTS AND DISCUSSION

Production

The production stage of the program demonstrated substantial progress among participants. Following the training, around 80% of participants were able to produce liquid dishwashing soap independently, reflecting their mastery of the necessary techniques and safe handling of raw materials. This high level of competency underscored the effectiveness of the hands-on workshops and iterative practice sessions.

On average, each household achieved a weekly production of approximately 10 liters, indicating not only skill acquisition but also consistency in applying learned techniques. Participants gained confidence in measuring ingredients, mixing solutions, and maintaining quality standards, ensuring the products met both safety and usability requirements.

Beyond basic production, participants displayed creativity and initiative by experimenting with different fragrances, colors, and packaging styles. These innovations highlighted their growing understanding of consumer preferences and their ability to differentiate products in the marketplace. Overall, the production results confirmed that participants were capable of producing high-quality, market-ready products while fostering entrepreneurial thinking and problem-solving skills.

Business Management

In the business management stage, participants developed fundamental financial and managerial skills. About 70% of participants successfully maintained simple bookkeeping records, documenting sales, costs, and cash flow. This practice enhanced their understanding of financial management and helped build disciplined business habits.

Figure 1. Poster of the results of PKM activities that contains the title, implementing team, funding agency, resume of the implementation of activities, results of the implementation of activities and technology applied)

Furthermore, 40% of participants reinvested their profits into raw materials and packaging improvements, demonstrating an emerging awareness of sustainable growth and business reinvestment strategies. The introduction of green investment accounts was particularly impactful, enabling participants to reconceptualize expenditures such as waste management and eco-friendly materials as future-oriented assets. This approach encouraged a long-term perspective on sustainability, linking environmental responsibility directly to profitability and operational efficiency.

Marketing

The marketing stage focused on expanding participants' reach and improving product visibility. Approximately 50% of participants reported increased sales through social media platforms, including Facebook, Instagram, and WhatsApp Business. These digital tools provided cost-effective channels for marketing, customer engagement, and brand promotion.

In addition, collective marketing through PERMAI enhanced brand recognition, allowing participants to pool resources, collaborate on promotional activities, and reach a wider audience. Several participants also successfully sold their products at local community events and migrant bazaars, gaining practical experience in customer interaction, pricing strategies, and market adaptation.

Economic Impact

The program yielded tangible economic benefits for participants. Additional monthly income per household ranged from Rp 500,000 to Rp 800,000, providing meaningful

supplementary income. Household savings increased as well, largely due to reduced reliance on commercial dishwashing products, which participants replaced with their homemade alternatives. These outcomes not only improved financial stability but also reinforced the practical value of the program in everyday life.

Environmental Outcomes

Sustainability and environmental responsibility were also significant outcomes. Around 60% of participants adopted eco-friendly raw materials, demonstrating awareness of environmentally conscious production practices. Waste reduction measures were implemented, including reuse of containers and proper disposal of chemicals, which minimized environmental impact and promoted safe production habits. These practices reflected the program's emphasis on integrating eco-conscious approaches into both production and business management.

In summary, the results indicate that the program successfully enhanced participants' technical skills, business management capabilities, marketing strategies, economic well-being, and environmental responsibility. By combining practical training with participatory approaches, the program fostered sustainable, community-oriented micro-enterprises capable of ongoing growth and innovation.

Discussion

The program illustrates the potential of liquid dishwashing soap production as a viable entry point for micro-entrepreneurship within migrant communities. Its appeal lies in the combination of low startup costs, consistent demand, and the ability to scale production gradually. These factors make it an accessible and strategic product, especially for households seeking supplementary income without significant financial risk. Beyond economic considerations, the program fostered skills in production, business management, and marketing, equipping participants to approach entrepreneurship systematically. A notable innovation introduced by the program was green accounting. Traditional accounting often treats environmental expenditures—such as waste management and eco-friendly packaging—as costs, creating the perception that sustainability is a financial burden. In contrast, green accounting records these expenditures as investments. For example, waste management activities were logged as:

Green Investment….Rp XXX

Cash..... Rp XXX

This framing shifts the perspective of environmental responsibility from a cost to a long-term opportunity. Although quantifying the precise financial returns of green investments is complex, several observable indicators point to tangible benefits. Reduced production waste, positive customer responses to eco-friendly practices, and the ability to differentiate products in the market all demonstrated that sustainability measures contributed to both business performance and social credibility.

Figure 2. Certificate of Activity

The program's findings align with prior research emphasizing the importance of financial literacy and digital marketing in enhancing micro-enterprise sustainability. Participants who maintained bookkeeping records, tracked cash flow, and reinvested profits were better positioned to make informed decisions and manage business growth. Similarly, engagement with digital marketing platforms, such as WhatsApp, Facebook, and Instagram, expanded market reach and increased sales, reinforcing the value of accessible online tools for small-scale enterprises.

Moreover, the program exemplifies the application of MBKM (Merdeka Belajar–Kampus Merdeka) principles, blending academic knowledge with real-world practice. Students and facilitators not only delivered training but also engaged in participatory action research, generating practical insights while simultaneously empowering the community. This dual benefit strengthens the relevance of higher education in addressing local socioeconomic challenges.

Despite these successes, several challenges remained. Limited capital constrained the scale and speed of business expansion, while variations in digital literacy affected participants' ability to leverage online marketing tools fully. The relatively short timeframe of the program also limited the observation of long-term outcomes, particularly regarding sustainability and market stability. These challenges underscore the need for extended mentorship, structured follow-up support, and improved access to financing for micro-entrepreneurs to consolidate gains and sustain growth.

In summary, the program demonstrates that even simple, low-cost products can serve as powerful vehicles for micro-entrepreneurship when combined with practical training, participatory approaches, and innovative frameworks like green accounting. It highlights how financial literacy, digital skills, and environmental awareness can collectively enhance both the economic and social value of small-scale enterprises. While challenges remain, the lessons learned provide a strong foundation for scaling such initiatives and creating meaningful, sustainable impact in migrant communities.

Figure 3. Certificate of Activity

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CONCLUSION

The community service program successfully enhanced the entrepreneurial capacity of Indonesian migrant workers in Penang by focusing on the production of liquid dishwashing soap. Through a participatory approach, participants not only acquired technical skills but also developed managerial, financial, and marketing competencies, resulting in tangible social, economic, and environmental outcomes. One of the program's key achievements was the improvement of production skills and innovation. Most participants were able to produce liquid dishwashing soap independently, experimenting with different fragrances, colors, and packaging designs. This demonstrated not only mastery of basic techniques but also the development of creativity and problem-solving abilities, which are essential for sustaining small-scale businesses.

The program also strengthened financial literacy among participants and introduced the concept of green accounting. By treating environmental expenditures, such as waste management and eco-friendly packaging, as investments rather than costs, participants began to perceive sustainability as an opportunity rather than a burden. Many participants applied this approach in managing their household enterprises, reinvesting profits strategically to support both business growth and environmental responsibility. Another significant outcome

was the expansion of marketing opportunities through digital platforms. Participants utilized WhatsApp, Facebook, and Instagram to reach a wider customer base, while cooperative marketing within PERMAI improved collective visibility. Some participants successfully sold products at local community events and migrant bazaars, gaining practical experience in customer interaction and market adaptation. Economically, the program contributed to increased household income and reduced dependency on commercial products. Many participants reported additional monthly income ranging from Rp 500,000 to Rp 800,000, while replacing commercial dishwashing products with homemade alternatives led to cost savings. These outcomes improved financial stability and reinforced the practical value of the program in participants' daily lives. Environmental awareness was also heightened, with a significant portion of participants adopting eco-friendly raw materials and reducing production waste through proper disposal and container reuse. This demonstrated that small-scale production can be aligned with sustainable practices, contributing positively to both community well-being and environmental stewardship.

The program also supports IKU 3 (lecturer involvement beyond campus) and IKU 6 (international collaboration), while providing students with hands-on, project-based learning opportunities consistent with MBKM principles. Students gained practical experience in community engagement, participatory research, and entrepreneurship facilitation, bridging academic learning with real-world impact. For future initiatives, it is recommended to extend the program duration, provide access to micro-financing, and intensify digital literacy training. These steps will help ensure participants' businesses remain sustainable, scalable, and competitive, while further strengthening their economic independence and community resilience.

In conclusion, this program demonstrates that targeted training, participatory approaches, and innovative frameworks like green accounting can empower migrant workers, enhance local entrepreneurship, and create sustainable socio-economic and environmental benefits.

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