SPEKTA
(Jurnal Pengabdian Kepada Masyarakat: Teknologi dan Aplikasi)
ISSN 2723-8016 (online) | 2723-8008 (print)
Vol 6, No. 2, pp. 469-483

Enhancement increasing the productivity of the traditional herbal "Jamu Mak Lin" through a community partnership program

Ira Maya Hapsari [1], Amin Nur Akhmadi [2], Rizki Prasetyo Tulodo [3], Irfan Santosa [4*]

[1] Department Management, Faculty of Economics and Business, Universitas Pancasakti Tegal, Indonesia
[2] Department of Mechanical Engineering, Faculty of Engineering, Universitas Harkat Negeri Tegal, Indonesia
[3] Department of Informatics Engineering, Faculty of Engineering, Universitas Pancasakti Tegal, Indonesia
[4] Department of Mechanical Engineering, Faculty of Engineering, Universitas Pancasakti Tegal, Indonesia
*Corresponding Author: irfansantosa@upstegal.ac.id

ARTICLE INFO

Article history
Received October 16, 2025
Revised November 25, 2025
Accepted December 13, 2025

Keywords
Jamu "Mak Lin" herbal;
Medicine financial;
Management training online;
Marketing training increased;
Productivity.

ABSTRACT

Background: The traditional home-based herbal medicine industry," Jamu Mak Lin" faces challenges, including traditional herbal medicine production methods on traditional equipment. The packaging and labels of herbal medicine are not registered. There is a scarcity of effective door-to-door marketing strategies. A lack of good management and financial accountability systems.
Contribution: The main objective is to increase the productivity of "Jamu Mak Lin" traditional herbs through improvements in production processes and equipment, financial management, and marketing strategies.
Method: The method applied is Participatory Action Research (PAR), consisting of both hard and soft programs.
Results: The results show a significant improvement in liquid herb production, reaching 150 bottles of 350 mL (approximately 52.5 liters), with an estimated increase in productivity and profit of up to 85% per day. In addition, "Jamu Mak Lin" traditional herbal products have been registered for halal certification, and the packaging design has been improved to be more elegant, hygienic, and readable.
Conclusion: Through this community partnership program, the productivity and income of "Jamu Mak Lin" traditional herbal products have significantly increased. The next program's sustainability is achieved by diversifying herbal medicine dipping and herbal medicine cafes.

1. Introduction

The advancement of traditional medicine has become a vital component of healthcare systems in many nations [1] and plays a significant role in providing healthcare services worldwide. China is one of the countries with a long history and significant advancements in traditional medicine, which is further aided by digital breakthroughs, such as the Traditional Chinese Medicine (TCM) database, offering comprehensive data for both professionals and consumers [2]. In contrast, Indonesia has a large supply of medicinal plants and natural resources that have historically been used for medical applications. The Pirdot plant (Saurauia vulcani) from North Sumatra is one example; it is recognized for its diverse pharmacological benefits and possibility for herbal preparation [3]. For centuries, Indonesia's traditional herbal medicine, known as "Jamu," has been used to treat illnesses and improve health [4].

Many of its raw ingredients, like betel leaves, tapak dara, and temu giring, are easily grown in home gardens and converted into herbal remedies [5]. Through the Center for Plantation Research and Development, the Indonesian Ministry of Agriculture has released educational resources, including a spice plant handbook [6], to raise public awareness and understanding of "Jamu" to promote the sustainable use of these medicinal plants. Despite the increasing use of modern medicine, "Jamu" is still deeply ingrained in Indonesian culture and is being developed as a sensible therapy through standardization and phytopharmaceutical strategies. Its application has considerable promise for enhancing public health as well as for boosting the national economy [7].

Many ethical issues must be addressed in the development of herbal medicine, including intellectual property rights, benefit sharing and economic equity, biodiversity preservation, and environmental conservation. Government initiatives, particularly those aimed at supporting and sustaining herbal medicine producers in rural areas, can improve their knowledge and management practices related to traditional medicine by addressing these concerns. This is consistent with the Indonesian government's transformational plan, which is laid out in the 2025–2029 National Medium-Term Development Plan (RPJMN) and emphasizes important policy priorities like [8]:

1. Social Change: Improving the caliber of human resources to create creative, productive, and competitive people.
2. Economic Transformation: Promoting the downstream development of valuable natural resources, boosting the productivity of the workforce, and enhancing research and innovation capacity.

In addition, the Eight Asta Cita states that the President's vision and mission for 2025–2029, which was announced under the banner "Together with Advanced Indonesia, Towards Golden Indonesia 2045," includes seventeen presidential priority projects. These programs include strategic projects designed to produce tangible results through Quick Wins initiatives and outline development strategies for various industries. The evolution of herbal therapy in Indonesia is particularly noteworthy, as it reflects the country's indigenous knowledge and

https://doi.org/10.12928/spekta.v6i2.14742

cultural heritage. In accordance with this, several universities have established community service programs that examine herbal medicine and its consumers. Prayitno [9] are integrating local environmental community systems and networks to deliver measurable health prevention benefits in semi-urban areas. Husnani and Puspita [10], held workshops on the campus community on how to create instant herbal beverages from white ginger rhizomes, using brief lectures and practical demonstrations. Similarly, Yuliana [11] carried out a comparable activity for members of the Family Hope Program (Program Keluarga Harapan, PKH) in Pinang Village, concentrating on the preparation of ginger-based herbal remedies. The majority of these community service projects utilized a mix of instructional and practical methods.

Community service programs focus on a variety of stakeholders involved in herbal medicine, including consumers, producers, and industries, with a particular emphasis on small and medium-sized enterprises (SMEs). To enhance the capacity of small-scale herbal medicine company owners to market their products online, Yulianto [12] emphasized the importance of digital marketing. Additionally, Faramayuda [13] conducted community service activities aimed at herbal medicine industry practitioners. The methods employed included counseling, hands-on practice, and evaluation through pre- and post-tests involving 37 participants. The results showed a 5.8% increase in participants' knowledge and understanding of herbal medicine processing. Similarly, Cahyani [14] carried out community service projects for herbal medicine entrepreneurs using the Participatory Action Research (PAR) approach. This approach enabled the implementation of economic empowerment programs within herbal medicine business communities.

Based on the literature above, this program aims to enhance the productivity of the "Jamu Mak Lin" herbal medicine enterprise through community partnership activities, drawing on several previously established community service strategies. The productivity and sustainability of small-scale traditional herbal producers like "Jamu Mak Lin" remain low due to manual processes, limited financial management, and minimal online marketing. Although many community service programs related to herbal medicine exist, only a few integrate technology transfer and participatory financial training. Community partnership using a method based on Participatory Action Research (PAR).

2. Method

The small home industry "Jamu Mak Lin" is a partner in this community partnership program. It employs only seven people and is located at Jalan Teratai, Gang Waru, No. 225, Pelutan, Pemalang, Central Java, Indonesia. The program runs from July to December 2025. The partner was chosen due to its proximity to the university and the herbal medicine's well-designed packaging, which includes labeled 250 mL bottles.

The method applied in this community partnership program is Participatory Action Research (PAR), which involves the target community or partners in playing an active role throughout the program. The PAR approach is widely adopted because it directly engages the

target community at every stage of the process, from problem identification, solution design, and implementation to program impact evaluation [15]–[17]. Accordingly, the team structured this community partnership program into two main components: a physical program (Hard Program) and a non-physical program (Soft Program), as developed by Irfan [18]–[20], and illustrated in Figure 1.

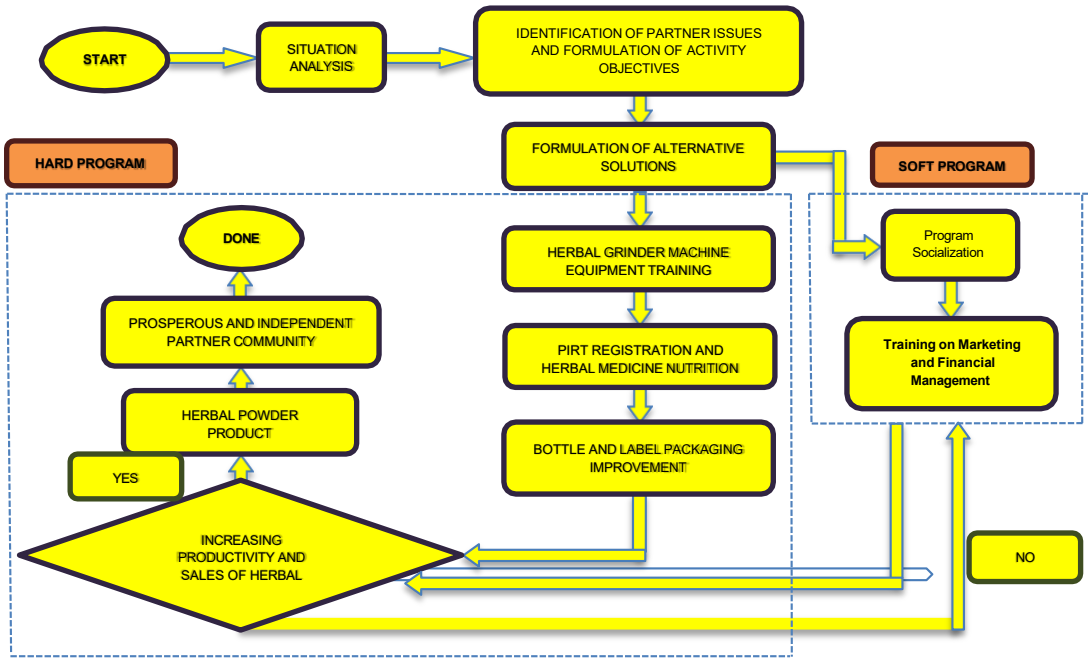

Figure 1. Community Partnership Program Flowchart

The activities of this community partnership program consist of two main parts. The first is the non-physical activity (soft program), which focuses on delivering materials related to the management and financial aspects of herbal medicine production. The sessions include guidance on online registration for PIRT (Perijinan Industri Rumah Tangga) Home Industry Licensing, the importance of understanding the nutritional content of herbal products, and strategies for managing online marketing through social media platforms. In this soft program, the active involvement of partners or target groups is prioritized. Participants are expected to understand financial management concepts, including the separation of capital and profit budgets, structured bookkeeping of cash flow, and improved knowledge of digital marketing for herbal products. Additionally, partners play an important role by providing facilities such as venues, electrical equipment, and herbal processing tools used during training and mentoring sessions.

The second activity is the physical program (hard program), which focuses on technological and innovative aspects by providing equipment support to partners. The assistance includes herbal medicine grinding machines, rice milling machines, cooking equipment (such as stoves and pans), 350 mL plastic bottles, and new packaging label designs that already contain PIRT registration numbers and halal certification. This program aims to enhance partners' knowledge of the operation and maintenance of herbal medicine grinding

https://doi.org/10.12928/spekta.v6i2.14742

machines, as well as the use of stainless-steel cooking equipment to prevent contamination and ensure product hygiene. Partner involvement in this activity includes providing appropriate locations for installing the grinding and milling machines, as well as ensuring that the production and cooking areas remain clean and hygienic [18]–[20].

3. Results and Discussion

3.1. Non-physical activities

Non-physical activities in this community partnership program focus on capacity building and community empowerment through socialization, soft skills training, entrepreneurship development, and mentoring. These activities are carried out using simulation methods, lectures, and the utilization of social media for marketing and management purposes [15]. These activities aim to enhance the ability of individuals and communities to solve problems independently and improve their welfare. In collaboration with the traditional herbal "Jamu Mak Lin" home industry, non-physical activities include mentoring partners in obtaining a Business Identification Number (NIB), assisting in the process of halal certification, providing financial management training, and guiding partners in promoting their herbal products through online marketing platforms.

Initial assistance was provided to partners to help them create accounts on the www.ptsp.halal.go.id platform in order to register their herbal products for halal certification, as shown in Figure 2. The assistance process was carried out through a hands-on mentoring approach, providing practical guidance on managing the halal certification process online. During the activity, partners were educated about the required documents for halal certification, including the halal certification application form, identity documents, business legality documents, product descriptions, raw material certificates, production procedures, and other supporting materials. This activity enabled the partners to understand each stage of the halal registration process and prepare the necessary documentation independently in the future. According to the community service projects that Taufan [21], and Fahira [22] completed, they claimed that with the help of this halal certification process, issues with applying for halal certificates, which are often thought to be difficult, can be resolved. This includes boosting consumer confidence in MSME products and enhancing marketing efficacy.

The next mentoring activity focused on the herbal medicine production process, emphasizing aspects of hygiene, cleanliness, and health, as shown in Figure 3. The mentoring model was implemented through a combination of interviews and lectures, enabling partners to gain both theoretical understanding and practical guidance throughout the production process [23], [24]. During the activity, the team monitored and provided feedback on each stage of the production process, starting with the preparation of raw materials, including washing and drying the spices, followed by grinding using a mechanical grinder. The ground spices were then mixed with water and boiled until fully extracted. Once the boiling process was completed, the mixture was filtered, squeezed, and packaged into 350 mL bottles, after which product labels and stickers were attached. This is in accordance with Elfahmi's [7] research; to

prevent contamination from biological or non-biological sources (such as bacterial and fungal toxins and heavy metals), the process of producing herbal medicines, which includes choosing raw materials, sorting, grating, scraping, crushing, mixing, and cooking before boiling the plant materials, must be done clean and hygienically.

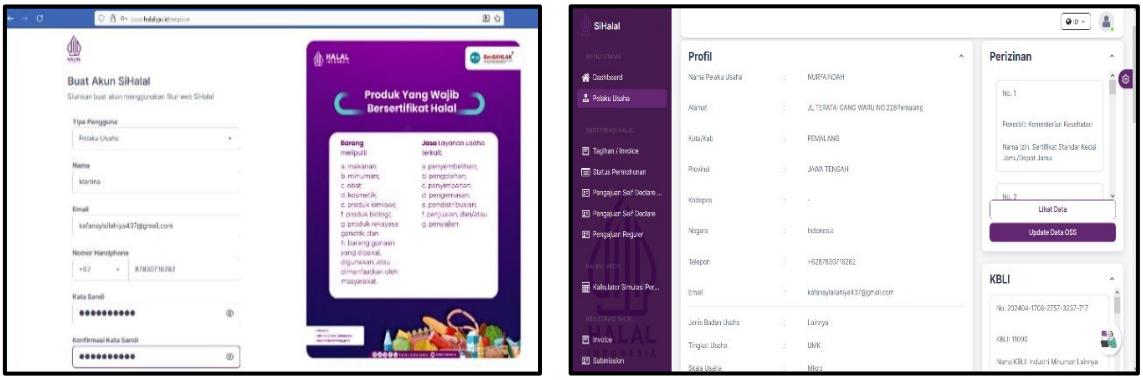

Figure 2. Partners create new accounts on the halal portal independently.

The next stage of mentoring focused on financial and marketing management training for the traditional herbal "Jamu Mak Lin" home industry, as shown in Figure 4. The training was conducted using a lecture-based approach, providing participants with insights into the fundamental principles of financial management and marketing in small-scale herbal medicine enterprises. The material covered the basic concepts of financial management, including recording transactions and preparing simple financial reports. Partners then participated in hands-on practice sessions involving financial management simulations using a simple cashbook system. For the marketing aspect, the mentoring included the creation of an online marketplace platform to enable the traditional herbal "Jamu Mak Lin" products to be sold digitally. At the end of the mentoring program, a discussion session was conducted to allow partners to share challenges related to financial management and herbal product marketing. A post-test evaluation was also administered to assess the participants' understanding, knowledge improvement, and level of active participation throughout the program.

Training assistance in management and financial management of herbal medicine is very important, so that herbal medicine producers understand the three benefit indicators conveyed by Astutik [25] regarding contribution margin, return to family, and net benefits, showing that all factors involved, such as income, land size, labor input, and costs incurred, affect the performance of the three Jamu management production systems.

The physical activities in this community partnership program were carried out through a structured approach involving systematic planning, implementation, and evaluation to achieve specific objectives [16]. In line with the activity framework previously described, the physical activities begin with the provision of an herbal spice flour milling machine and a rice flour milling machine, each powered by a 6.5 HP motor engine. The technical specifications of both machines are presented in Table 1 and Table 2, respectively.

https://doi.org/10.12928/spekta.v6i2.14742


Figure 3. Team monitors the herbal medicine-making process.

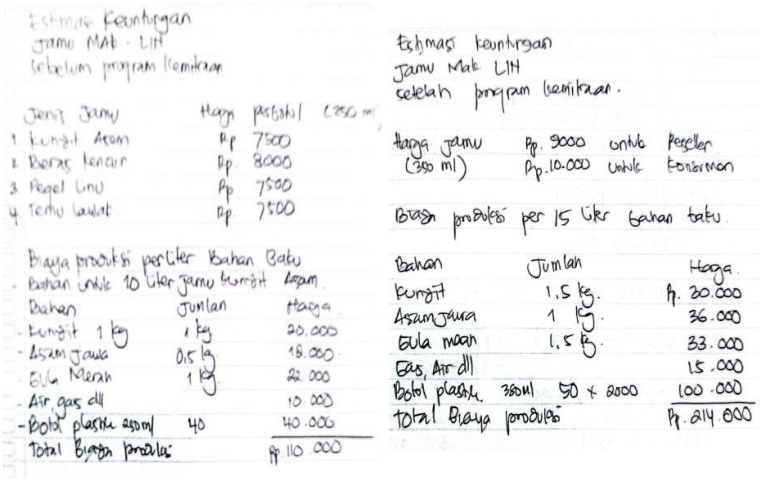

Figure 4. A simple financial book created by the herbal medicine partner "Jamu Mak Lin"

The handover of the machines was carried out directly by the team and officially presented to the owner of the traditional herbal "Jamu Mak Lin". The conditioning process and the construction of the machine stand were conducted collaboratively between the team and the partners to ensure operational stability. This step was crucial to minimize excessive vibration during operation, which could otherwise affect the quality of herbal medicine production. Furthermore, the layout planning, including the arrangement of raw material distribution, machine placement, production/cooking workflow, and packaging area, was jointly discussed and designed by the team and the partners to create an efficient and hygienic workspace. The implementation of these physical activities is illustrated in Figure 5.

Table 1. Rice flour machine specifications

Spescifications	Information
Machine	Pulverizer/ Grain flour mill
Type	EP-200
Power/Voltage	1.2 kW/ 220 Volt
Speed	27000 rpm
Production Capacity	200 grams

In addition to the machine handover, other supporting equipment, such as stainless-steel cooking pots, stoves, 350 mL bottles, and additional tools to enhance herbal medicine

productivity, were also provided to the partners. Furthermore, the product label design for the traditional herbal "Jamu Mak Lin" was also redesigned and improved. The previous label contained minimal information, which made it less informative for consumers. Therefore, a new label design was developed, including additional information such as the Business Identification Number (NIB) and storage instructions, allowing clearer communication between the producer and the consumer. A comparison between the old and new labels is presented in Figure 6.

Table 2. Specifications of the herbal spice flour machine

Spescifications	Information
Machine	Disc Mill/ Herbal spice flour
Type	MDS-20 SS
Power/Voltage	1.5 kW/ 6.5 HP
Speed	2800 rpm
Production Capacity	250 kg/ hours

Figure 5. Handover of the herbal spice flour and rice flour machines

Figure 6. Old and new herbal medicine label designs

https://doi.org/10.12928/spekta.v6i2.14742

3.2. Technology and innovative products

One of the downstream technological products is the rice flour grinder mill machine, developed as an innovation by a member of the Mechanical Engineering Study Program, Faculty of Engineering and Computer Science, UPS Tegal. The machine, with a flour production capacity of 1 kg/hour, was analyzed using the Design for Manufacturing and Assembly (DFMA) method by Kholis This study indicated that the assembly of the grinder mill machine required 17 hours and incurred a cost of IDR 3 million. The DFMA method proved to be an effective approach for designing and improving products, as it simplifies the manufacturing process and reduces assembly costs [26]. This method has also been applied by team members in the design of other tools and machines, such as the soy milk machine filter [27], the flour machine [28], and the optimization of the desalination machine design [29].

The rice flour grinder mill machine is highly suitable for application by the partners, as it requires only 900 Watts of power, which aligns well with the available electrical capacity at the partners' facilities. The machine also demonstrates a short processing time of only 5 minutes per 1 kg of rice, enhancing efficiency. Similarly, the MDS-20SS disc mill machine is well-suited for use in the herbal medicine business.

Equipped with a 6.5 HP diesel motor, it has a production capacity of up to 25 kg/hour and is easy to operate. The MDS-20SS has been widely applied for grinding ginger [30] and soybeans [31] due to its operational simplicity and ease of maintenance. Key features supporting the efficiency and effectiveness of the grinding process include: the use of cutting teeth or blades for ingredient crushing, a stainless-steel hopper to prevent corrosion and facilitate the insertion of herbal spices, and a compact, sturdy, and mobile design with safety considerations. These characteristics make the disc mill machine particularly suitable for down streaming to herbal medicine partners, as illustrated in Figure 7.

Figure 7. Machine installation drawings and labeling on partners.

3.3. Application of technology and innovation to society (relevance and community participation)

The community partnership program, conducted collaboratively by teams from Universitas Pancasakti Tegal and Universitas Harkat Negeri Tegal, was implemented using the Participatory Action Research (PAR) method. PAR is widely applied in community empowerment due to its collaborative approach, actively involving the community in identifying problems, designing solutions, implementing actions, and evaluating outcomes to achieve sustainable social change and empower participants as active subjects [32]. The program followed six stages: Preparation, which involved building relationships with partners through in-depth interviews regarding the "Jamu Mak Lin" herbal medicine production and marketing; Data Identification and Analysis, where the interviews revealed issues such as manual production processes, traditional financial management, and the lack of online marketing, which were analyzed to identify possible solutions; Problem Formulation, in which each problem was formulated and corresponding solutions proposed to partners; Action Planning, involving intensive discussions with partners to schedule and plan activities; Action Implementation, which included the handover and installation of herbal spice and rice flour grinding machines, machine operation training, and online management and marketing mentoring; and Evaluation and Reflection, consisting of post-implementation evaluation and reflective discussion. These activities are illustrated in Figures 8, 9, 10, and 11.

Figure 8. Assistance in operating the flouring machine by the team

Figure 9. The results of herbal medicine after being processed in the flouring machine

https://doi.org/10.12928/spekta.v6i2.14742

Figure 10. Herbal medicine product with a 350 mL bottle packaging and a stand pouch

Figure 11. Online Marketing Training and group photo with employees and partners of the "Jamu Mak Lin" Herbal Medicine.

Table 3. Identification, Partner Problems, Solutions, and Achievement Indicators

Identification	Problems	Solutions	Achievement Indicators
Herbal product production equipment	Manual processing with a mortar and pestle.	Herbal grinder machine fct-z200 350g, rice milling machine ffc15, grinder machine power.	The target for increasing the production of liquid herbal medicine is 150 bottles of 350 ml each (approximately 52.5 liters).
Cooking equipment	Stove and plastic pot equipment.	Stainless steel pot equipment for powdered and liquid herbal products.	Clean and hygienic.
Bottle packaging	Liquid herbal medicine in 250 ml bottles.	Liquid and powdered herbal products in 350 ml bottles and stand pouches.	The bottle has a more attractive shape and a larger capacity.
Packaging and label	Herbal product labels without a PIRT number.	Updated label design with improved appeal and assigned a PIRT number. Administration halal via online.	"Jamu Mak Lin" herbal medicine production target (halal registered) & elegant, clean, readable packaging.

3.4. Impact (usefulness and productivity)

The success of a community service program can be evaluated based on the achievement of its objectives, including the enhancement of community knowledge and skills, improvement of the local economy, elevation of quality of life, establishment of strong social relations, and active community participation in ensuring program sustainability [33]. In this particular PKM program, the resulting benefits and productivity outcomes are summarized in Table 3.

4. Conclusion

This study highlights the home herbal medicine industry partnership program "Jamu Mak Lin" using the Participatory Action Research (PAR) methods. "Jamu Mak Lin" which has been operating for quite some time, and offers reasonably acceptable packaging. However, the herbal medicine production process remains manual, and product labels are often not informative. Therefore, this program was implemented through the implementation of spice and rice grinding technology, along with supporting equipment such as stoves, stainless steel containers, and cleaning facilities. This technology implementation increased traditional herbal medicine production capacity to 52.5 liters per day and increased partners' daily income by 85%. The next program with financial management and online marketing training will be provided to partners. Partners actively participated in all stages of the activity, from problem identification and technological innovation design to financial training and digital marketing. The results showed increased partner independence in managing the "Jamu Mak Lin" home-based herbal industry. Partners were also able to diversify their herbal products into powdered forms. We recommend continuing the program by diversifying the herbal dipping and herbal cafe offerings to appeal to Generation Z and raising awareness of the importance of enhancing community health and resilience in the face of future health crises.

Acknowledgement

This community partnership program is funded by the Ministry of Education, Science and Technology, Republic of Indonesia, with contract number 007/LL6/PM-BATCH II/ AL.04/2025, dated 24 July 2025. The authors also thank all parties who contributed administrative and technical assistance during the implementation of this program. Conflicts of Interest: The authors declare no conflicts of interest. Author Contribution: All authors contributed equally to this manuscript. All authors have read and approved the final version of the paper.

References

[1] C. Liu, “Overview on development of ASEAN traditional and herbal medicines,” *Chinese Herb. Med.*, vol. 13, no. 4, pp. 441–450, Oct. 2021, https://doi.org/10.1016/j.chmed.2021.09.002

[2] M. H. Zulkifli, Z. L. Abdullah, N. I. S. Mohamed Yusof, and F. Mohd Fauzi, “In silico toxicity studies of traditional Chinese herbal medicine: A mini review,” *Curr. Opin.*

Struct. Biol., vol. 80, p. 102588, Jun. 2023, https://doi.org/10.1016/j.sbi.2023.102588

[3] M. F. Lubis, P. A. Zaitun Hasibuan, H. Syahputra, C. Surbakti, and R. Astyka, "Saurauia vulcani (Korth.) as herbal medicine potential from North Sumatera, Indonesia: A literature review," *Heliyon*, vol. 8, no. 4, p. e09249, Apr. 2022, https://doi.org/10.1016/j.heliyon.2022.e09249

[4] Z. S. Ulhaq, "The use of herbal medicine for cancer therapy in Indonesia: a prospective cohort study," *J. Herb. Med.*, vol. 51, p. 100991, Jun. 2025, https://doi.org/10.1016/j.hermed.2025.100991

[5] E. Harfiani, R. Puspita, and I. R. S. Prabarini, "Herbal Medicine Usage During the COVID-19 Pandemic in Indonesia: Trends and Determinants," *Sci. World J.*, vol. 2025, no. 1, Jan. 2025, https://doi.org/10.1155/tswj/1639500

[6] T. E. Wahjono and W. D. Jusniarti, "Buku Saku Tanaman Obat: Warisan tradisi nusantara untuk kesejahteraan rakyat," *Bogor: Pusat Penelitian dan Pengembangan Perkebunan*. 2021.

[7] Elfahmi, H. J. Woerdenbag, and O. Kayser, "Jamu: Indonesian traditional herbal medicine towards rational phytopharmacological use," *J. Herb. Med.*, vol. 4, no. 2, pp. 51–73, Jun. 2014, https://doi.org/10.1016/j.hermed.2014.01.002

[8] R. Indonesia, "Rencana Pembangunan Jangka Menengah Nasional 2015-2019," *Rencana Pembang Jangka Menengah Nas*. 2015.

[9] G. Prayitno, "Community-powered environmental pathways to reduce stunting: Food security, social capital, and open innovation in semi-urban Indonesia," *Environ. Challenges*, vol. 21, p. 101350, Dec. 2025, https://doi.org/10.1016/j.envc.2025.101350

[10] H. Husnani and W. Puspita, "Kegiatan Pengabdian Masyarakat Dengan Tema Sosialisasi Jamu Instan Dalam Rangka Milad Akfar Yarsi Pontianak Yang Ke-23," *J. Pengabdi. Indones.*, 2023, [Online]. Available: https://jkfn.akfaryarsiptk.ac.id/index.php/japin/article/view/95

[11] M. Yuliana, S. S. Tauri, N. Utami, C. Kartika, and D. Arisandi, "Pelatihan Pembuatan Jamu Herbal Jahe Pada Komunitas Ibu PKH Di Desa Sungai Pinang," *J. Pengabdi. Masy. Bangsa*, vol. 1, no. 7, pp. 1044–1050, Sep. 2023, https://doi.org/10.59837/jpmba.v1i7.302

[12] A. D. Yulianto, R. N. Hariza, R. P. Adelia, and A. U. Sofyandi, "Strategi Digital Marketing Umkm Jamu Tradisional Melalui Media Soisal Untuk Meingkatkan Jangkauan Pasar," *J. Abdimas Sosek*, 2025, [Online]. Available: https://journalpdmi.org/index.php/jas/article/view/104

[13] F. Faramayuda and A. S. Windyaswari, "Pelatihan Pembuatan Serbuk Jamu Instan sebagai Model Pemberdayaan UMKM di Kota Cimahi," *Room Civ. Soc. Dev.*, vol. 4, no. 4, pp. 725–733, Aug. 2025, https://doi.org/10.59110/rcsd.734

[14] D. Cahyani, M. Ridha, K. Huda, and A. Mubarok, "Peningkatan ekonomi keluarga melalui pelatihan bisnis jamu tradisional dengan pendekatan PAR dan capacity building di Mojogebang," *J. Pengabdi. Masyarakat*, 2025, [Online]. Available: https://jurnal.penerbitwidina.com/index.php/JPMWidina/article/view/1254

[15] A. Zunaidi, *Metodologi Pengabdian Kepada Masyarakat: Pendekatan Praktis untuk Memberdayakan Komunitas*, vol. 3, no. 1. Yogyakarta: Yayasan Putra Adi Dharma, 2024.

[16] Rif'an Luthfi, Naily Qurota A'yuni, Setiorini Rahma Safitri, Ahmad Satriya, Rahmawati

Febriyantika, and Agung Prasetyo Putra, "Program Pengabdian Kepada Masyarakat: Metode Fun-Counseling Dan Outbound Sebagai Media Pembelajaran Dan Pembentukan Karakter Anak Di Desa Rowoboni Tahun 2024," *Varia Humanika*, vol. 5, no. 2, pp. 1–7, Nov. 2024, https://doi.org/10.15294/vh.v5i2.15749

[17] B. W. Budiarto, S. Karyadi, W. Wasiran, and R. Pratiwi, "Improving Digital Literacy of Village Communities in Indonesia through Information Technology-Based Community Service Programs," *Unram Community Service*, 2024, [Online]. Available: https://jurnalpasca.unram.ac.id/index.php/UJCS/article/view/716

[18] I. I. Hidayat, S. Nurhayati, and G. Boriboon, "Vocational high school community service as innovative community empowerment program: A case study of garut vocational high school," *J. Paedagogy*, 2024, [Online]. Available: https://ojspanel.undikma.ac.id/index.php/pedagogy/article/view/8806

[19] A. A. K. Jayawarsa, K. A. K. Saputra, and N. M. Narindra, "Strengthening Ecotourism to Improve Quality of Life in Ubung Kaja Village through Creativity, Order, and Cultural Values," *Community Serv.: Sustainability Development*, 2024, [Online]. Available: https://www.swastikajournal.com/index.php/cssdev/article/view/81

[20] L. Oktaviani, Y. Fernando, R. Romadhoni, and N. Noviana, "Developing a web-based application for school councelling and guidance during COVID-19 Pandemic," *Community Serv.*, 2021, [Online]. Available: https://ejournal.umm.ac.id/index.php/jcse/article/view/17630

[21] A. D. Tuhuteru and M. Iqbal, "Readiness of micro, small, and medium enterprises (MSMEs) in the food and beverage sector for halal certification implementation: A case study in Magelang, Indonesia," *J. Islam. Econ. Lariba*, 2024, [Online]. Available: https://journal.uii.ac.id/JIELariba/article/view/38031

[22] K. T. Fahira and R. M. Yasin, "Peningkatan Nilai Produk Melalui Perijinan PIRT, Sertifikasi Halal dan Digital Marketing Pada UMKM Sirup Parijoto," *SEMAR (Jurnal Ilmu Pengetahuan, Teknologi, dan Seni bagi Masyarakat*, 2022, [Online]. Available: https://jurnal.uns.ac.id/jurnal-semar/article/view/64034

[23] M. I. N. Susiang, I. Siswanti, D. Permana, and M. W. Wibowo, "Effects of competitive intelligence and halal integrity on Halalan Tayyiban implementation strategy in Indonesian MSMEs: the mediating role of halal orientation Strategy," *J. Islam. Marketing*, 2024, https://doi.org/10.1108/JIMA-10-2023-0344

[24] S. F. Aini, N. Hendrsato, and A. Haidar, "Assessing the Impact of Marketing Mix and Halal Awareness on Consumer Purchase Behavior: A Case in Indonesia," *Halal Tour. and Pilgrimage*, 2024, [Online]. Available: http://journals.smartinsight.id/index.php/HTP/article/view/567

[25] S. Astutik, J. Pretzsch, J. N. Kimengsi, and G. Kapp, "Medicinal plants production systems in rural Indonesia: Management practices and performance insights," *For. Policy Econ.*, vol. 153, p. 102972, Aug. 2023, https://doi.org/10.1016/j.forpol.2023.102972

[26] C. Kong, H. Lee, and H. Park, "Design and manufacturing of automobile hood using natural composite structure," *Compos. Part B Eng.*, vol. 91, pp. 18–26, Apr. 2016, https://doi.org/10.1016/j.compositesb.2015.12.033

[27] I. Santosa, G. R. Wilis, and U. Mulyadi, "Soy milk filter design using DFMA method," *IOP Conf. Ser. Earth and Environmental Science*, 2021, https://doi.org/10.1088/1755-

1315/755/1/012047

[28] S. T. Kismanti and M. F. Nurdin, "Rancang Bangun Mesin Penepung Tipe Disc Mill FFC-15 pada Biji Jagung," *J. Bear. Borneo Mech. Eng. Sci.*, vol. 2, no. 2, pp. 69–76, Dec. 2023, https://doi.org/10.35334/bearings.v2i2.4721

[29] I. Santosa, A. Firdaus, R. Hidayat, R. Rusnoto, A. Wibowo, and F. Mubina Dewadi, "The Optimization of Vapor Compression Type for Desalination of Seawater Using the DFMA Method," *J. Tek. Mesin Mech. Xplore*, vol. 3, no. 1, pp. 1–8, Jul. 2022, https://doi.org/10.36805/jtmmx.v3i1.2378

[30] A. N. Swaraj, J. A. Moses, and L. Manickam, "Sustainable food upcycling: perspectives on manufacturing challenges and certification requirements for large-scale commercialization," *Sustainable Food Technology*. pubs.rsc.org, 2025, [Online]. Available: https://pubs.rsc.org/en/content/articlehtml/2025/fb/d4fb00254g

[31] H. H. Adinugraha, M. Shulthoni, and L. Syakirunni, "Halal Supply Chain Management from Theory to Application: Case Studies in Indonesia," *J. Islam*, 2025, [Online]. Available: http://publications.waim.org.my/index.php/jims/article/view/132

[32] A. Rahmat and M. Mirnawati, "Model Participation Action Research Dalam Pemberdayaan Masyarakat," *Aksara J. Ilmu Pendidik. Nonform.*, vol. 6, no. 1, p. 62, Jan. 2020, https://doi.org/10.37905/aksara.6.1.62-71.2020

[33] G. S. Putro, A. Arfiany, and Y. Yasni, "Analisis dampak sosial dari implementasi program pengabdian berbasis teknologi di pedesaan," *ABDI DAYA J. Pengabdi. dan Pemberdayaan Masyarakat*, 2024, [Online]. Available: http://ejournal.stiejb.ac.id/index.php/abdidaya/article/view/555