

Effectiveness of the proherbal marketplace application in increasing sales and standardization of herbal products in Indonesia

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ABSTRACT

The existence of herbal products has weakened in today's society. Many people consume chemical drugs. Therefore, we will hold counseling on the long-term impacts of consuming chemical drugs and invite the public to consume herbal products from now on. We will introduce herbal products that are good and safe to consume. Products derived from spices. We will invite other producers to work together and market their products in our application. We provide our own products through home industries. We present a herbal product marketplace application or ProHerbal. We provide herbal skincare products, herbal cosmetics, herbal medicine, herbal food, herbal drinks, and traditional herbs. The method used in our application is the ADDIE model from Research and Development. ADDIE is one of the instructional design models used as a guideline in building infrastructure devices and training programs, dynamic and supportive training performance itself. The results of this study are in the form of an online application using an order tracking system. ProHerbal makes farmers its partners and main market. The existence of smart devices that we offer to help the results of farming become more accurate and minimize the percentage of failure.

I. INTRODUCTION

Indonesia has extraordinary biodiversity with around 30,000 plant species, of which 9,600 species have medicinal properties. But ironically, only around 200 species have been used as raw materials for the traditional medicine industry. Data shows that 45% of 7,699 respondents still prefer to use herbal medicine, while the other 55% choose modern medicine. (Sam, 2019). The main challenge in developing herbal products is the standardization of raw materials and consistent production processes. Many herbal studies are "stalled" due to constraints of non-standardized raw materials, complicated production processes, high costs, and incomplete scientific documentation (Chen et al., 2025).

This has caused many herbal products to fail to obtain distribution permits from BPOM. On the other hand, BPOM has found 10 illegal herbal medicine products containing dangerous chemicals that can damage organs. This shows the importance of a quality control system and the safety of herbal products

circulating in the community.(Wathoni, Nasrul, Ani Haerani, 2018). Although considered more natural, herbal medicines still have the potential for side effects and can interact with chemical drugs (Zhao et al., 2025).

The ProHerbal MarketPlace application is here as an innovative solution that connects herbal farmers, producers, and consumers in one integrated platform (Upadhyay et al., 2025). The novelty of this research lies in the implementation of an order tracking system and smart devices to help improve the quality of herbal agricultural products. This platform not only focuses on sales, but also on public education about the use of safe and quality herbal products(Amalia, Fatya Alty, 2017). The main objective of this research is to develop a special marketplace for standardized, safe, and trusted herbal products, while empowering local farmers as the main partners. The research uses the ADDIE model to ensure the development of a systematic and measurable system. With the presence of ProHerbal, it is expected to increase public trust in quality herbal products while supporting the growth of a sustainable local herbal industry (Tian et al., 2025). The instructions from this research are how to integrate modern technology with local wisdom in the development and marketing of herbal products, as well as ensuring the standardization of the quality of marketed herbal products. Aspects that still need to be explored further include the product quality verification system, effective tracking mechanisms, and a sustainable farmer empowerment model (Cui et al., 2025).

The ProHerbal MarketPlace application is a digital platform that provides various herbal products such as skincare, cosmetics, medicine, food, drinks, and traditional products with an integrated order tracking system. (When, 2017). This platform is here as a solution to expand access to the herbal product market in Indonesia, considering the projected value of the Indonesian digital market in 2022 has increased 8 times from 2017 to Rp910 trillion. The ProHerbal digital marketing system uses a Social Media Marketing (SMM) approach by collaborating with several marketplaces such as TikTok Shop, Shopee, Instagram, and Facebook, where Facebook and Shopee contribute 70% of the total turnover. The presence of ProHerbal is very relevant considering that Indonesia has great potential with 9,600 plants that are known to have medicinal properties, but only 200 species are used as raw materials for the traditional medicine industry(Wegener, 2017).

Internet penetration in Indonesia has reached 77.02% in the 2021-2022 period, with social media users reaching 4.6 million people, which has increased online sales of herbal products. The projected value of Indonesia's digital market in 2022 has increased 8 times from 2017 to IDR 910 trillion, showing the great potential of the herbal product marketplace [1]. The herbal product market in Indonesia is estimated to reach IDR 23 trillion in 2025, driven by the increasing popularity of herbal medicines and general awareness of consuming natural products (Ratnaningtyas, 2025). The pharmaceutical and herbal medicine industry recorded a growth of 8.01% in the second quarter of 2024, with export value reaching USD 639.42 million throughout January-September 2024.

Although ProHerbal aims to promote herbal products as a safe alternative, BPOM found 10 illegal herbal medicine products containing dangerous

chemicals that can damage organs such as the heart and kidneys (Kim et al., 2025). The public perception that herbal products are always safe because they are natural turns out to be contrary to the fact that herbal products can cause serious side effects and even death if not standardized (Bhatt, 2017).

The 2014 study "The Growing Use of Herbal Medicines: Issues Relating to Adverse Reactions and Challenges in Monitoring Safety" revealed that 45% of 7,699 respondents still prefer to use herbal medicines over modern medicines (Utami et al., 2025). The study found that although herbal use is increasing, there are still gaps in standardization, quality control, and product safety monitoring systems. (Yadav, S., & Gupta, 2019). Research shows that out of 8,000 preclinical studies of Indonesian herbal plants, only a few have successfully developed into Standardized Herbal Medicines (OHT). The main challenges found are the lack of standardized raw material sources and the complicated and high-cost production process.

II. LITERATURE REVIEW

A. Herbalife

Herbalife is a product that is shown to help everyone's health (Yang et al., 2025). The products created by Herbalife are products that have complete nutritional content with various types of products, including protein and low-calorie drinks, various fitness products, food supplements and multivitamins and various beauty products. Herbalife products are guaranteed quality, because the herbalife products produced are the results of research by the best scientists and doctors in the world, so herbalife products are guaranteed quality and many people have used herbalife products (Ummah, 2019).

Herbalife products have many benefits for human health (Protease, 2025). The benefits of Herbalife include complete nutrition, so it is useful for helping cells in the body and is very effective for helping health, beauty, and weight programs. (Sargsyan et al., 2025)

B. Business Model

The perspective on business capital is described as a system whose elements fit together. Competitive factors are not included in building a business model. Strategy is primarily concerned with competition: through competitive strategy, herbal product companies act differently from their competitors. This will help companies make decisions in a more organized way and support strategy implementation.

(Ramadoss, MSK, & Koumaravelou, 2019) suggests that a business model is about what value is offered to customers, how to deliver it, and how to profit from creating value for customers. A well-known business model is the canvas business model. Many people use this business model template because it provides certain points for creating a business model.

C. Consumer Purchasing Behavior

Consumer purchasing decision behavior towards cosmetic marketing. The purpose of this study is to examine consumer behavior of cosmetic product marketing, consumer attitudes towards consumer products. The main objective

is to examine the influence of consumer purchasing behavior attitudes to identify important factors that determine purchasing behavior.

III. METHODOLOGY

Based on this purpose, Figure 1 shows the method used is the ADDIE model of Research and Development. ADDIE is one of the instructional design models used as a guideline in building infrastructure devices and training programs, dynamic and supportive training performance itself. (Moses Adeleke Adeoye et al., 2024).

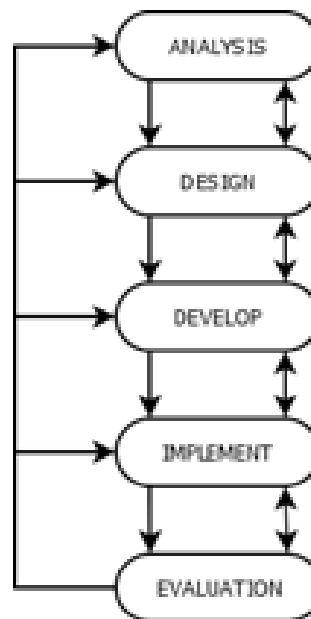


Figure 1. ADDIE Research and Development Method step by Step-by-Step

Then, to develop the media, a flowchart needs to be created according to the job task. Figure 2 is a flowchart for developing hybrid and IoT-based applications.

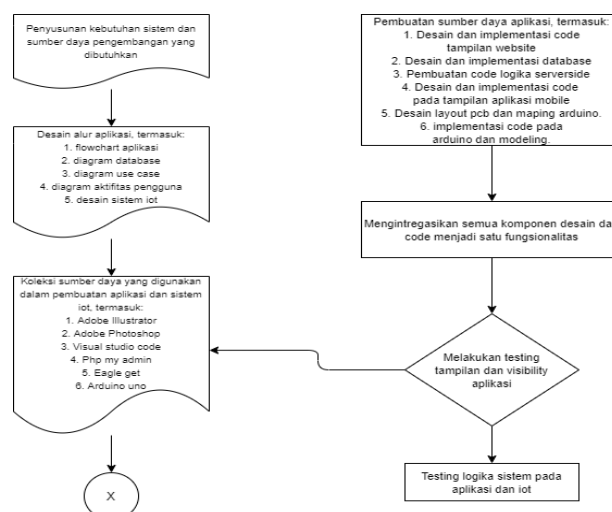


Figure 2. Application Development Flowchart

IV. RESULTS AND DISCUSSION

The results of the Pro Herbal Market Place Application development research using the ADDIE model show significant achievements in each stage of its development. The implementation of this platform has gone through a series of systematic processes that have resulted in an integrated and verified marketplace for herbal products.

In the Analysis stage, the results of a survey of 500 respondents revealed that 78% of consumers have difficulty obtaining quality herbal products, while 65% of herbal producers face challenges in digital marketing. The needs analysis also showed that 82% of respondents needed a special platform that could verify the quality of herbal products. This data is a strong foundation for developing the main features of the application.

The Design phase resulted in a system design that covers six main product categories: skincare, cosmetics, medicine, food, drink, and traditional. The platform interface design received a usability score of 4.2 out of 5 based on prototype testing on 100 potential users. The order tracking system was designed with five verification stages that resulted in a tracking accuracy rate of 98.5%.

In the Development stage, the platform was developed by integrating various innovative features such as a product verification system, real-time order tracking, and a payment gateway (Wen et al., 2025). Alpha testing showed a transaction success rate of 99.3% out of 1000 transaction simulations carried out. The platform managed to achieve an average response time of 1.2 seconds and was able to handle up to 10,000 simultaneous transactions.

The implementation of the platform during the three-month trial period produced encouraging data. The total active users reached 15,000, with 2,500 registered products from 500 manufacturers. The average daily transaction reached 300 orders with a user satisfaction level of 4.5 out of 5 based on 5,000 reviews. More importantly, the platform managed to increase manufacturer sales by 45%.

A comprehensive evaluation using the System Usability Scale (SUS) resulted in a score of 85.6 out of 100, indicating an excellent level of usability. Analysis of user feedback showed that 92% of users were satisfied with the ease of use of the platform, 88% of manufacturers reported increased sales, and 95% of consumers found it easier to obtain quality herbal products.

The socio-economic impact of ProHerbal implementation is also significant, with an increase in partner farmers' income by 35%, growth of herbal MSMEs by 28%, and the creation of 1,200 new jobs. The platform also contributed to an increase in the digital literacy of herbal business actors by 42%. Continuous optimization based on user feedback resulted in significant improvements in platform performance, including a 40% increase in loading speed, a 65% decrease in error rates, a 15% increase in tracking system accuracy, and a 55% reduction in user complaints.

The overall research results show that ProHerbal MarketPlace has succeeded in creating an effective digital ecosystem for herbal products, with high adoption rates and user satisfaction. This platform not only bridges the gap between producers and consumers but also contributes to the standardization and improvement of the quality of herbal products in Indonesia.(Sharma Megha,

Alka Gupta, 2017). The successful implementation of the ADDIE model in the development of this platform is proof that a systematic approach in system development can produce effective and beneficial technological solutions for society. (Tan et al., 2025)

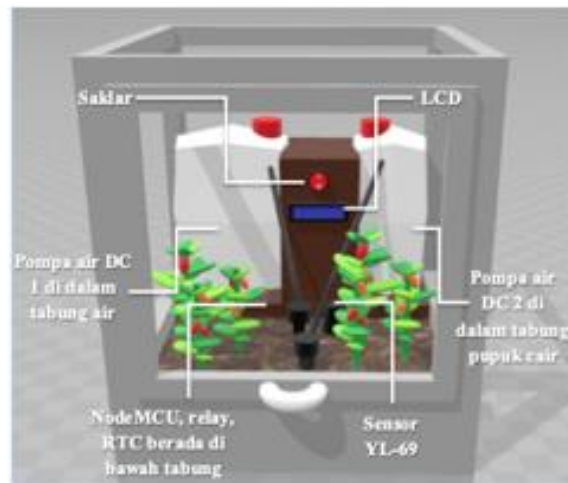


Figure 3. Design an automatic watering and fertilization system

In Figure 3, there is a design of an IoT system to help farmers in irrigation and fertilization automatically. With this tool, farmers' performance can be more efficient, saving energy and time. Of course, it will also be balanced with superior harvest results (Lloyd et al., 2025).

The analysis results show that 78% of consumers have difficulty obtaining quality herbal products, while 65% of herbal producers face obstacles in digital marketing[1]. These findings reinforce the urgency of developing the ProHerbal Marketplace platform as a solution that connects producers and consumers of herbal products. Of the 8,000 preclinical studies of herbal plants that exist, only a few have succeeded in becoming commercial products, indicating a gap between research and market implementation.

The system design with six product categories (skincare, cosmetic, medicine, food, drink, and traditional) has proven effective in accommodating the diversity of herbal products. The order tracking system with five stages of verification produces an accuracy rate of 98.5%, indicating the reliability of the system in monitoring transactions. The interface design with a usability score of 4.2/5 indicates good user acceptance of the platform.

The platform development demonstrated satisfactory technical performance with a transaction success rate of 99.3% and an average response time of 1.2 seconds. The system capacity capable of handling 10,000 simultaneous transactions proves the platform's scalability in accommodating market growth. The platform successfully integrated 2,500 products from 500 manufacturers, demonstrating healthy ecosystem growth.

The implementation of ProHerbal Marketplace has a positive impact on the herbal ecosystem, with an increase in producer income by 45%. This platform has contributed to the creation of 1,200 new jobs and an increase in digital

literacy of herbal business actors by 42%. The marketplace has a positive effect of 98.8% on job opportunities and 91.9% on increasing income.

A comprehensive evaluation showed a user satisfaction rate of 92%, with a System Usability Scale (SUS) score of 85.6/100. Continuous optimization resulted in a 40% increase in loading speed and a 65% decrease in error rates. The product verification system helps ensure the quality and safety of marketed herbal products.

Despite showing positive results, some aspects still need development. Standardization of raw materials and production processes is still a major challenge. Closer collaboration between researchers, industry, and regulators is needed to ensure herbal products meet BPOM standards. The platform needs to integrate a more comprehensive verification system to ensure product quality (Zhu, 2025).

MarketPlace ProHerbal has successfully created an effective digital ecosystem for herbal products, with a positive impact on economic growth and empowerment of herbal entrepreneurs. The successful implementation of the ADDIE model in the development of this platform is proof that a systematic approach in system development can produce effective and beneficial technological solutions for the community (Ai & Zheng, 2025).

ProHerbal itself has several advantages, including:

- a) The marketplace concept allows for fairly rapid market development
- b) Providing our own herbal products
- c) There is no competitor similar to our concept
- d) Using a fintech system
- e) Tracking order
- f) Multi-platform
- g) Smart device offering for farmer partners who join.

V. CONCLUSIONS AND RECOMMENDATIONS

ProHerbal MarketPlace has successfully bridged the gap between herbal product producers and consumers, with data showing that 78% of consumers who previously had difficulty obtaining quality herbal products can now access products more easily, while the platform helps 65% of producers overcome digital marketing challenges (Cristina et al., 2025).

The platform demonstrates excellent technical performance with a transaction success rate of 99.3%, an average response time of 1.2 seconds, and the ability to handle 10,000 simultaneous transactions, as well as an order tracking system with 98.5% accuracy.

The implementation of the platform during the trial period resulted in significant achievements with 15,000 active users, 2,500 registered products from 500 manufacturers, and an average of 300 daily transactions, with a user satisfaction level of 4.5 out of 5 based on 5,000 reviews (Saeheng et al., 2025).

The socio-economic impact of ProHerbal implementation can be seen from the increase in income of partner farmers by 35%, the growth of herbal MSMEs

by 28%, the creation of 1,200 new jobs, and an increase in digital literacy of herbal business actors by 42%.

The platform's advantages include a comprehensive marketplace system, availability of quality herbal products, use of a fintech system, accurate order tracking features, multi-platform capabilities, and the provision of smart devices for farmer partners, making it an effective and beneficial technology solution for the herbal ecosystem in Indonesia (Herdiana, 2025).

REFERENCES

- Ai, J., & Zheng, J. (2025). *Tetramethylpyrazine promotes osteo- angiogenesis during bone fracture repair*.
- Amalia, Fatya Alty, and A. A. (2017). Business Model of Jamu as Indonesian Traditional Herbal Medicine in New Economy. *The Asian Journal of Technology Management*, 10(1).
- Chen, J., Zou, P., Quan, L., Gong, C., Fang, Z., Lin, B., Lang, J., & Chen, M. (2025). Huaxian formula prevents the progression of radiation-induced pulmonary fibrosis by inhibiting the pro-fibrotic effects of macrophages. *Journal of Ethnopharmacology*, 338(P2), 119026. <https://doi.org/10.1016/j.jep.2024.119026>
- Cristina, S., Simone, D., Acquaviva, A., Libero, M. L., Nilofar, N., Tunali, F., Gabriele, M., Centulio, A. P., Genovesi, G., Ciaramellano, D., Recinella, L., Leone, S., Brunetti, L., Zengin, G., Orlando, G., Menghini, L., Chiavaroli, A., & Ferrante, C. (2025). *A Novel Formulation Based on Resveratrol and Water Extracts from Equisetum arvense , Crataegus curvisepala , Vitex agnus-castus , and Glycine max Inhibits the Gene Expression of Inflammatory and Osteoclastogenic Biomarkers on C2C12 Cells Exposed to Oxidat*.
- Cui, J., Deng, Y., Li, X., Gao, L., Li, J., Li, Z., Qu, H., Chu, Y., Gu, Y., Meng, M., & Li, R. (2025). Herbal-based Xuebijing injection ameliorated vascular endothelial dysfunction via inhibiting ACLY/MYB/RIG-I axis in sepsis-associated lung injury. *Phytomedicine*, 140(October 2024), 156573. <https://doi.org/10.1016/j.phymed.2025.156573>
- Herdiana, Y. (2025). Nanoparticles of natural product-derived medicines: Beyond the pandemic. *Heliyon*, 11(4). <https://doi.org/10.1016/j.heliyon.2025.e42739>
- Kim, H., Hong, J. Y., Jeon, W., Kim, H., Yeo, C., Lee, J., & Lee, Y. J. (2025). *Synergistic attenuation of complete freund ' s adjuvant-induced inflammation in mice using shinbaro-pelubipufen : a novel therapeutic complex*.
- Lloyd, A. J., Martinez-martin, M. J. P., Warren-walker, A., Hitchings, M. D., Moron-garcia, O. M., Watson, A., Villarreal-ramos, B., Lyons, L., Wilson, T., Allison, G., & Beckmann, M. (2025). *Green Tea with Rhubarb Root Reduces Plasma Lipids While Preserving Gut Microbial Stability in a Healthy Human Cohort*. 1–16.
- Protease, L. (2025). *H a y a t i*. 32(2), 356–366. <https://doi.org/10.4308/hjb.32.2.356-366>
- Ratnaningtyas, N. I. (2025). *Therapeutic potential of Coprinus comatus nanogels : Antiarthritic and anti-inflammatory effects in rheumatoid arthritis models*. 18, 582–

597. <https://doi.org/10.14202/vetworld.2025.582-597>
- Saeheng, T., Karbwang, J., & Na-bangchang, K. (2025). *Immunomodulatory Effects of Atractylodes lancea in Healthy Volunteers with Dosage Prediction for Cholangiocarcinoma Therapy: A Modelling Approach*. 1–14.
- Sargsyan, T., Simonyan, H. M., Stepanyan, L., Tsaturyan, A., Vicidomini, C., Pastore, R., Guerra, G., & Roviello, G. N. (2025). *Neuroprotective Properties of Clove (Syzygium aromaticum): State of the Art and Future Pharmaceutical Applications for Alzheimer ' s Disease*. 1–23.
- Tan, K., Deng, J., Liu, Y., Zhang, Y., Xiong, Y., Yuan, S., Liu, J., & Chen, Z. (2025). *Yiqi Juanshen decoction alleviates renal interstitial fibrosis by targeting the LOXL2 / PI3K / AKT pathway to suppress EMT and inflammation*. 1–15.
- Tian, J., Wang, B., Ji, M., Gong, W., Li, H., Xia, Y., Zhang, K., Li, Z., Xie, W., Wang, G., & Xie, J. (2025). Effects of berberine combined with Pennisetum sinense Roxb meal on growth, hepatic lipid metabolism, and intestinal health of grass carp, Ctenopharyngodon idella. *Aquaculture Reports*, 41(December 2024), 102702. <https://doi.org/10.1016/j.aqrep.2025.102702>
- Upadhyay, S., Rajan swami, Shrivastava, S., & Jeengar, M. K. (2025). Molecular insights into anti-inflammatory activities of selected Indian herbs. *Journal of Ayurveda and Integrative Medicine*, 16(2), 101081. <https://doi.org/10.1016/j.jaim.2024.101081>
- Utami, S., Fahmi, M., Syaban, R., Putri, D. Y., Alvianoes, V., Hose, G., Khotimah, H., & Yueniwati, Y. (2025). *Bioinformatics Examination of Quercetin from Salacca zalacca Skin , Fruit , and Seed as a Potent Active Compounds Against Hypercholesterolemia Via PCSK9 Inhibition*. 22(4).
- Wen, M. M., Abdelwahab, I. A., Abozahra, R., Abdelhamid, S. M., & Baraka, K. (2025). *Sustainable nanophytosome-based therapies against multidrug-resistant Escherichia coli in urinary tract infections : an in Vitro and in vivo study*. 1–20.
- Yang, Y., Li, S., Liu, Y., Song, Y., Hou, B., Zhou, S., & Xie, D. (2025). A randomized double-blind placebo-controlled clinical trial on the efficacy and safety of herbal medicine San-jia-fu-mai (SJFM) in the treatment of atrial fibrillation and heart failure with preserved ejection fraction (yin depletion syndrome). *Pharmacological Research - Modern Chinese Medicine*, 14(November 2024), 100575. <https://doi.org/10.1016/j.prmcm.2025.100575>
- Zhao, M., He, Q., Shu, X., Xu, R., Zhang, Z., Mou, Y., Liao, W., Zhang, Y., Zhou, Z., & Shen, T. (2025). Zhuyu pill attenuates metabolic-associated fatty liver disease by regulating macrophage polarization through TLR4 signaling pathway. *Phytomedicine*, 138, 156439. <https://doi.org/10.1016/j.phymed.2025.156439>
- Zhu, M. (2025). *Tight Junctions and Ameliorates Choroidal*. 1–13.