Technology and Innovation as an Element of Community Development in the Yard Utilization Program through Family Medicinal Plant (FMP) Conservation in Neglasari Village

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Abstract. Public health and the local economic development are the crucial things in the process of sustainable development. Neglasari Village is one of the villages located in Bogor Regency that has a majority of residents who have a yard of land but it has not been utilized optimally in an agricultural sector. The program for utilizing home yard land through the conservation of family medicinal plants (FMP) is an innovative solution that is studied in this article, with a focus on the use of technology and innovation as an element of community development. This yard land utilization program aims to improve the health and income of the community through planting, utilizing and conserving family medicinal plants. This research wants to see how effective technology and innovation is as an important element in the success of a community development program. The research method used in this article is participant observation. The research results found that the technology and innovation aspect in the form of greenhouses, barcodes and website programs have been integrated into a community development program based on the use of yard land for FMP conservation in Neglasari Village. Technology and innovation is also able to increase the efficiency and positive impact of the program and help increase the capacity of the Neglasari Village community.

Keywords: Technology and innovation, Community development, Family medicinal plant, Yard land

1 Introduction

Public health and local economic improvement are crucial aspects in the context of sustainable rural development. This can be achieved by fulfilling one of the SDGS targets, namely no poverty and good health and well-being. In line with the government's agenda, according to Law No. 18 Article 60 of 2012, the government is obliged to realize the diversification of food consumption to meet the nutritional needs of the community in accordance with local potential and wisdom to realize a healthy, active and productive life. This goal can be achieved by optimally utilizing local rural resources and potential.

One of the local potentials in rural areas that can be utilized is the home yard. Home yard is a place that can be utilized by the community, including to improve family nutrition, add aesthetics, maintain ecological stability, and maintain national food security. Novitasari (2011)

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in Ashari et al. (2012) suggested the definition of a yard as a land use system that is a small-scale production of additional food for and by household family members. Government Regulation No. 17/2015 on Food Security and Nutrition Article 26 states that one of the efforts to diversify food is through the utilization of yard land. Research results from Aditiameri et al. (2021) showed that the area of yard land in Indonesia reached 14.3 million hectares or about 16% of the total area of smallholder agricultural land. However, most of the yard land has not been utilized for agricultural areas of various agricultural commodities (Setiawan, 2017). Therefore, home yards must be optimally utilized as a source of side food and increase income. One of the villages that has the potential to utilize the community's yard is Neglasari Village.

Neglasari Village, located in Dramaga Sub-district, Bogor Regency, has considerable potential in agriculture in the form of paddy fields, plantations and yards which reach 55.09% of the total village area of 164.16 ha (Village Monograph, 2020). However, only a few people in Neglasari Village utilize their yard land for agriculture. The lack of utilization of this yard land is a potential in itself that can be utilized into something of economic value to the community. Based on the Bogor Regency Central Bureau of Statistics (2020), the topography of Neglasari Village is a relatively sloping plateau area with a slope ranging from 0%-15%. This area has fertile soil and is relatively flat so that it is well used for agricultural and plantation land. One of the things that can be utilized in home yards is family medicinal plants (TOGA).

Family medicinal plants or commonly called TOGA or live pharmacy which consists of several types of selected medicinal plants that can be planted in the yard (Sari et al., 2019). According to the World Health Organization (WHO) in (Sumiaty et al., 2022), people have a tendency to return to nature in terms of maintaining and improving their health status through the use of traditional health services. According to Sari et al. (2021), one of the functions of TOGA is as a means to bring medicinal plants closer to public health efforts, which include preventive (prevention), promotive (improving / maintaining health) and curative (healing diseases) efforts. With this background, it is necessary to have a program to utilize yard land based on TOGA cultivation in Neglasari Village which involves the role of students and the participation of the Neglasari Village community.

The community empowerment program is named Ubaran or Arurang Ngobatan dina Pakarangan is a forum for community development in Neglasari Village through the use of Family Medicinal Plants (TOGA) in home yards which is implemented with a community development approach. This program invites the community to plant TOGA in their yards which is carried out to turn home yards into productive land that produces TOGA so that it can be consumed either individually or as a family business. In its implementation, the program will certainly be more optimal if it is supported by the elements of community development. According to Nasdian, 2015 there are 7 elements of community development, these include community organizing, developing partnership networks, capacity building, local economic efforts, communication, information and education, advocacy, innovation and technology.

Fig.1. The Element of Community Development

This research will focus on one of the seven elements of community development above, namely innovation and technology. Innovation itself is a value-creating activity that involves technological improvement (A.H. Nasution, 2018). Meanwhile, technology according to Purwanto (2009) is a human tool to achieve goals created to facilitate or expedite a job. In its development, innovation and technology are growing rapidly and spreading to all areas of life. This research will discuss the technologies and innovations used in the yard utilization program, how these technologies and innovations are operated, which parties are involved in their implementation, and the sustainability potential of these technologies. By doing so, this article can add insight into how the role of technology and innovation can be a driving force in encouraging sustainable and efficient yard utilization programs.

2 Methods

In this study, a descriptive method with a qualitative approach was used. This research is called descriptive research because it produces case study data in the form of a description of the technology and innovations used in the community empowerment program through the utilization of yard land based on TOGA conservation. Data collection techniques include participant observation and literature study. Participant observation according to (Sugiyono, 2018) is a research method in which the researcher is involved with the daily activities of the subject being observed as a source of research data. This approach is used to understand more deeply how technology and innovation affect the implementation of the yard land utilization program and its role in the process. Researchers conducted participant observation of activities that occurred in the field, such as planting methods, learning, crop management, and interactions between KWT members and the community concerned. During the observation, the researcher also conducted informal interviews with the yard owners and local community members to gain a deeper understanding of how technologies and innovations have been adopted and influenced farming practices in the yard. The qualitative data collected through these observations included detailed descriptions of the technologies and innovations used in the TOGA -based yard land utilization program, the operation of the technologies and innovations found, the parties involved in the operation of the technologies, and the potential sustainability of the technologies and innovations in the program.

3 Results and Discussions

3.1 Ubaran Program Innovation

The Ubaran program has reached 80% in its implementation and produced an innovation framework called UTES or Ubaran Toga Economic Synergy. In the innovation framework, there are 2 categories of innovation, namely technological innovation and social innovation. Existing technological innovations are in the form of greenhouses supported by innovative agricultural facilities, ubaran websites and TOGA barcodes that help disseminate information about TOGA to the public. While the resulting social innovation is the formation of KWT Kemuning Asri, which consists of active women in Neglasari Village, which aims to manage the results of TOGA products later. In addition to the formation of KWT, there is the formation of the Ubaran Community which aims to manage the Ubaran program, greenhouses and as environmental cadres and family medicinal plants in Neglasari Village.

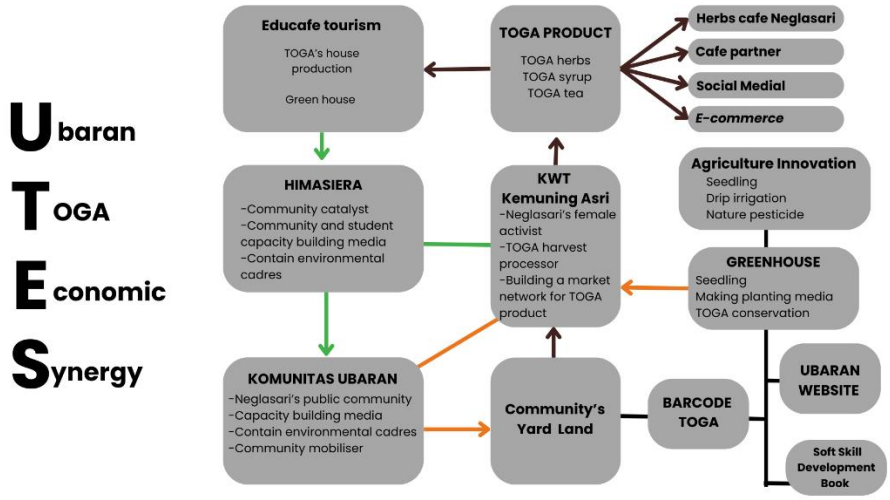

Fig.2. UTES Concept

3.2 Technology Innovation

The implementation of the Ubaran program also involves some use of technology in it. The technology is classified as agricultural technology which can be defined as a tool, method or method used in processing / processing agricultural inputs so that later it can produce agricultural outputs / results and provide good results in the form of processing raw, semi-finished and ready-to-use materials (Putra, 2018). Before applying the technology, the student team also provided socialization and training so that later the community could enjoy the benefits and results optimally. The technology promoted by the student team also departs from the needs of the local community so as to ensure the sustainability of its use. These technologies are in the form of:

3.2.1 Green House

(Nelson, 1991) defines a greenhouse as a building that has a translucent roof and walls as a place for plant cultivation. The green house established by IPB University students together with the Neglasari Village community is located on vacant land owned by the village government adjacent to the livestock pens of the village food security program. The green house, which covers an area of 9.6 x 5.5 x2.5 m, was built to serve as a conservation center and a place to store TOGA seeds so that they can grow well. Neglasari villagers who want to start planting TOGA in their yards can take seeds from the greenhouse. In addition, the greenhouse can be used to store several agricultural tools and other planting media, such as organic fertilizers, fire husks and planting media. Its strategic and comfortable place also makes the greenhouse a gathering and learning place for KWT and Community members.
The Ubaran Greenhouse also supports innovative agriculture. One of the innovative farming systems implemented in the green house includes nurseries, drip irrigation and the use of natural pesticides. Seeding is done by sowing seedlings in trays on special shelves. Then drip irrigation is done by placing a container of water on each plant and flowing it to the plant by dripping slowly to the roots of the plant as needed. In addition, natural pesticides are used in the form of liquid organic fertilizer made from a mixture of rice washing water, garlic and shallot skins, grass, and banana leaves in a ratio of 2:1:1:1 respectively.

Fig. 3. Ubaran Green House

Fig. 4. KWT activity around the Green House

3.2.3 Barcode

The Neglasari Village Government fully supports the implementation of the programme by providing permits for the use of village facilities and infrastructure including the village hall, community land for FMP conservation, socialization assistance and communication with the community, and helping to fulfil the data needed in the preparation of proposals to the program implementation stage. Various approaches have been made by the implementation team to the Village Head, Head of RT and RW, stakeholders and other villagers. This aims to make the Ubaran programme run smoothly and can be supported and followed by all levels of the Neglasari Village community.

The increasingly massive use of barcodes to make it easier for someone to access a lot of information is the background for using barcodes in this program. Muhammad et al (2021) explain that a barcode is a collection of optical data that is read by a machine. Barcodes function to store data and information that can be accessed quickly (Rahmadani & Arum, 2022). This TOGA barcode is placed on each plant as well as a marker for the plant. This barcode is available on plants located in the greenhouse and also the display of each RW.

The contents of the barcode are detailed information about the types of TOGA, how to cultivate, content, benefits, and how to process them so that it can make it easier for people to recognize and cultivate TOGA. The scan results from each barcode will be connected directly to the Neglasari Village website that created the information. So that the operation of this barcode is closely related to the Ubaran website. In addition, the existence of this barcode is also a hallmark of the program carried out by the student team.

Fig. 5. Barcodes on RW and Greenhouse displays

Fig. 6. TOGA barcode details

3. 2. 4 Website

The programme also collaborated with the Bogor District Government in the form of an audience aimed at strengthening the implementation of the community development programme. The website formed by the student team aims to brand the community and implement educafe tourism. A website is a collection of web pages located on the World Wide Web (WWW) on the internet, usually incorporated in a domain or subdomain (Trimarsiah & Arafat, 2017). The Ubaran website was formed with the aim of becoming a center of information about activities carried out by Ubaran Community, such as learning activities and TOGA display competitions. Along with the development of online marketing, this website can later be passed on to the people of Neglasari Village, especially those who are members of the Ubaran community for the benefit of branding and marketing activities, so as to increase profits and benefits. The profits and benefits obtained by the existence of this website are increased marketing, increased community economy, to increase community capability in the use of technology in the 4.0 era.

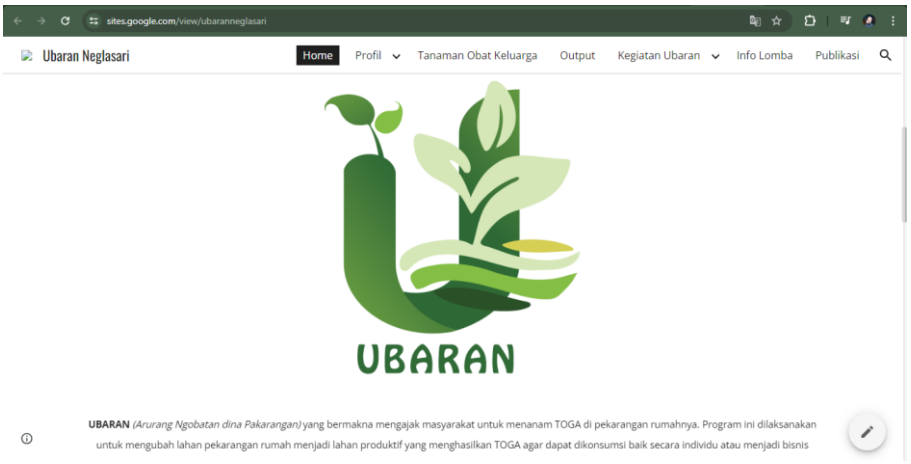

Fig. 7. Ubaran website

4 Conclusion

Based on the results and discussion above, it can be concluded that there is a role of technology and innovation in implementing the Ubaran program. The resulting innovation is in the form of social innovation and technological innovation. The resulting social innovation is the formation of Women Farmers Group and Ubaran Community. While the existing technological innovations are in the form of greenhouses, barcodes, and websites. Both social innovation and technological innovation support the success of the TOGA conservation-based yard land utilization program.

The parties involved in the creation, operation, and implementation of these technologies and innovations are the Neglasari Village Government, the Neglasari Village community and the HIMASIERA IPB University student team. The government plays a role in providing support for the technology and innovations carried out by providing land for greenhouses and helping to form the Ubaran and KWT communities in Neglasari Village. The community also plays an active role in the form of participation in the greenhouse making stage as well as the use of barcodes and websites. Then the student team acts as a catalyst between community needs and the creation of appropriate technology and innovation.

The resulting innovations and technologies have high sustainability potential due to the Ubaran community that will continue the operation of these technologies. In addition, the technology and innovations offered by the student team are also based on the needs of the Neglasari Village community. Thus, the community has a sense of ownership of these technologies and innovations.

References

[1] Aditiameri, Susilastuti, D., & Darmansyah, E. (2021). Analysis of yard utilization based on area strata in Kalisari urban village, East Jakarta. Journal of Agrisia, 14(1), 6.

[2] Ashari, N., Saptana, N., & Purwantini, T. B. (2012). Potential of Use Backyard Land for Food Security. Agroeconomic Research Forum, 30(1), 13.

[3] Bogor Regency Statistics Center Agency. (2020). Dramaga Sub-district in Figures. Bukitinggi City in Figures, 1-68.

[4] Neglasari Village. (2020.). Neglasari Village. neglasari-dramaga.desa.id. Retrieved October 25, 2023, from http://neglasari-dramaga.desa.id

[5] Muhammad A., Elsera M., & Andriana S. D. (2021). Implementation of barcode technology in data collection of goods using the RAD method. Engineering Main Bulletin, 16(2),64-69.

[6] Nasdian, F. T. (2014). Community Development. Yayasan Pustaka Obor Indonesia. https://books.google.co.id/books?id=7cdIDAAAQBA J

[7] Nasution, A. H., Kartajaya H. (2018). Innovation. (1ststst ed.). Yogyakarta: ANDI Government Regulation Number 17 Year 2015. (n.d.). Retrieved October 4, 2023, from https://peraturan.bpk.go.id/Details/5581

[8] Nelson, P. V. (1991). Greenhouse operation and management. Greenhouse Operation and Management, 4th ed. 4

[9] Purwanto, H. (2009). Agricultural product processing technology. Purwanto |MEDIAGRO. https://doi.org/10.31942/mediagro.v5i1.891

[10] Putra R. F. (2018). The Development of Agricultural Technology and Its Impact on the Socio- Economic Life of Farmers in Bandongan District, Magelang Regency in 1995-2008. https://eprints2.undip.ac.id/id/eprint/4143/1/Rizal Frisca Putra.pdf

[11] Rahmadhani, V., & Widya Arum. (2022, July 8). Literature review of internet of think (IoT); sensor, connectivity and QR code. Journal of Education Management and Social Science. 3(2), 573-582. https://doi.org/10.38035/jmpis.v3i2.1120

[12] Sari, S. M., Ennimay, & Rasyid, T. A. (2019). Utilization of Family Medicinal Plants (TOGA) in the Community. Dinamisia: Journal of Community Service, 3, 1-7. https://doi.org/10.31849/dinamisia.v3i2.2833

[13] Sari, Sekar, & Martin. (2021). The benefits of family medicinal plant (TOGA) gardening for mental and mental health during the covid-19 pandemic. Proceedings of the National Seminar on the Results of Community Service, 273-278. https://jurnal.ustjogja.ac.id/index.php/ppm- ust/article/download/11275/4472/23611

[14] Sugiyono. 2018. Quantitative, Qualitative, and R&D Research Methods, publisher Alfabeta, Bandung.

[15] Sumiaty, S., Usman, H., & Kuswanti, F. (2022). Development of Medicinal Plant-Based Health Tourism. JMM (Journal of Independent Society),6(1), 12 https://doi.org/10.31764/jmm.v6i1.5594

[16] Setiawan, A. (2017). Contribution of the yard to family income in Triyoso Village, Belitang District in 2017. Angewandte Chemie International Edition, 6(11), 951-952.

[17] Trimarsiah, Y., & Arafat, M. (2017). Analysis and Design of Website as a Means of Information at AKMI BATURAJA Entrepreneurship and Computer Language Institute Using PHP and MySQL. Matrik Scientific Journal, 19 (11-10. https://doi.org/10.33557/jurnalmatrik.v19i1.366

[18] Law Number 18 Article 60 Year 2012. (n.d.). Retrieved October 4, 2023, from https://peraturan.bpk.go.id/Details/39100