

CHALLENGES AND SOLUTIONS OF HYDROPONIC FARMING DEVELOPMENT IN WARU VILLAGE, KARANGANYAR REGENCY

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ABSTRACT

The role of agriculture is evaluated through its contribution as a provider of food, employment opportunities, income sources, and environmental preservation. To comprehend the role of agriculture, we can examine the agricultural development in the region. The analysis method used in this study needs assessment and descriptive analysis. Waru Village, Karanganyar Regency, is a village that has pioneered agricultural development with the aim of improving farmers' living standards. Agricultural development in Waru Village was carried out by transitioning to a hydroponic planting system. Challenges in cultivation techniques, capital, marketing, and a lack of extension services accompanied this transition. This study aims to elucidate the problems and propose potential solutions to address these issues. The results indicated that strategic solutions were formulated to resolve these problems: enhancing production, expanding trading partners, utilizing digital marketing strategy, and implementing production management practices.

Keywords: Hydroponic farming, farming development, need assessment analysis

INTRODUCTION

Agricultural development holds a strategic role within the national economic system. Sustainable agriculture has emerged as a critical issue in agricultural development, with many agricultural practitioners encouraging this development to create a healthier agricultural climate (Dadi, 2021). In the development of the nation, villages play a vital role. National development constitutes a series of sustainable development efforts to

comprehensively advance all aspects of community life (Cristian, 2015). However, economic development policies in numerous developing countries, including Indonesia, often contain inconsistencies between the formal objectives stated in planning documents and the implementation of economic development strategies.

Waru Village is one of the villages located in Karanganyar Regency. The village encompasses an area of 343.20 square kilometers with a total population of 6,494 residents. A

portion of the population is engaged in agricultural activities as farmers. Product marketing is the main challenge faced by the Kelompok Wanita Tani (KWT) Hijau Daun as a Farming Women's Group in Waru Village. KWT Hijau Daun Waru Village produces horticultural commodities, specifically vegetables cultivated using the hydroponic method. Hydroponic technology represents an innovative approach to plant cultivation plants without soil, instead utilizing nutrients solutions, water, and porous materials as growing media (Siregar et al., 2015).

Certain technical cultivation issues have yet to be resolved due to the absence of counseling or extension service. Additionally, KWT Hijau Daun Waru Village faces the challenge of insufficient capital to procure new technology. Development initiatives in villages should be based on community empowerment, as rural areas continue to have problems, such as limited human resources capacity and constrained village-owned enterprise (BUMD) budgets (Wahed et al., 2020). Capital is a crucial business factor that must be available before commencing operations. The size of the capital will influence business development in

terms of growth and income (Purwanti, 2012).

These agricultural problems can be overcome by formulating appropriate and implementable strategies. Proper planning can mitigate new challenges caused by the development that is about to be carried out. Village and agricultural development planning should ensure that current development activities do not adversely impact future generations (Arham et al., 2019). Therefore, the formulated development plans require innovation and sources of knowledge related to the conditions of local communities. This encouraged analysis of the various agricultural problems in Waru Village, including marketing, cultivation, and capital problems, to formulate suitable strategies and solutions for addressing the marketing, cultivation, and capital problems in agriculture.

RESEARCH METHODS

The basic research method used in this study is a qualitative descriptive method, with the research site location in Waru Village, Karanganyar Regency. Descriptive research aims to describe objects following the conditions in Waru Village, Karanganyar Regency.

Determining the research location was conducted deliberately based on specific considerations aligned with the objectives of the research to be carried out. Waru Village, Karanganyar Regency, was selected as the research site due to the village's implementation of agricultural development in the form of transitions to the hydroponic cultivation system and the Women's Farmers Group managed agriculture in Waru Village. The sampling method used in this research was purposive sampling. Primary data were obtained through direct observations of the Waru Village area and in-depth interviews with informants.

Assessment Analysis

The data analysis used in this study is needs assessment analysis. Need assessment analysis is a comprehensive analysis process between the current and desired conditions in the future. In this study, this analysis can describe the gaps between the agricultural problems and the solutions (Lamm et al., 2023). This will allow farmers to identify needs within a specific priority for their agriculture development. Needs assessment is an important part of development because it can allow farmers and stakeholders to understand

more about the disparity or gap and allow the best solutions.

RESULTS AND DISCUSSION

Agricultural civilization, initially focused on subsistence farming and animal husbandry to meet daily needs, gradually evolved into the precursor of commercial farming as society transitioned towards a trade-oriented lifestyle (Indahyani & Maga, 2023). Waru Village, located in Kebakkramat District, Karanganyar Regency, Central Java Province, is currently developing its agriculture, transitioning from traditional to hydroponic farming. During a period of structural transformation, economic resources shifted from low-productive sectors to more productive sectors. The effects of structural transformation demonstrate that increasing labor productivity and specialization have a positive effect on the long-term unemployment ratio in the economy (Mecik & Afsar, 2014).

These changes were initiated and implemented by the KWT Hijau Daun as Women's Farmers Group in Waru Village. KWT Hijau Daun is an organization whose consist of women engaged in farming activities. Previously, most of the women in Waru

Village worked as foreign workers; after returning to Indonesia, they formed this group of women farmers. Initially, this KWT cultivated agricultural commodities using funds from community self-help initiatives. Over time, they also received financial support from the Waru Village government. The active involvement of the government through village governments shows the existence of technology transfer. Technology transfer is defined as a process whereby technology developed by government research institutions is subsequently transformed into marketable products (Dardak & Adham, 2014). The application of technology for farmers must be improved to increase of production continuity and income (Rusydi & Rusli, 2022).

KWT Hijau Daun empowers its members to improve their welfare from an economic perspective, as the proceeds from successful harvests are sold and later will be distributed evenly. This approach increases productivity, which previously relied solely on conventional agriculture, and is now increased with the presence of collectively managed hydroponic cultivation. The effectiveness of agricultural institutions is expected to

support agricultural development (Herdini & Masduki, 2021). However, as time progressed, KWT Hijau Daun faced several challenges, including marketing difficulties, insufficient knowledge and efficiency of agricultural management, and capital constraints.

Issues with product marketing arise because KWT Hijau Daun in Waru Village lacks information and is relatively new to hydroponics farming. The dissemination of technological information to farmers can be accelerated by facilitating the flow of information from sources to users, thereby requiring the identification and formulation of information flow strategies through existing social networks

(Purnomowati et al., 2015). This results in the harvest's selling price being unprofitable. For example, the selling price of hydroponic vegetables produced by KWT Hijau Daun in Waru Village is only around IDR 6,000.00, significantly lower than the market price, three times the amount obtained by KWT Hijau Daun. The marketing of KWT Hijau Daun agricultural products from Waru Village is conducted by entrusting the merchandise to one of the experienced producers. This arrangement is because KWT Hijau

Daun Waru Village cannot yet operate independently in marketing its products. KWT Hijau Daun is unfamiliar with branding, which can increase product value. The packaging used is still ordinary, with clear plastic and tape; no brand name or logo indicates that the product is derived from a hydroponic system.

The next problem is the lack of knowledge regarding hydroponic cultivation systems. This is due to the absence of agricultural counseling in Waru Village. Extension agents serve as an extension of researchers or research institutions, conveying information to farmers. An extension agent is the only source of information for farmers because they relate directly (Sirnawati & Syahyuti, 2019). The adaptation of hydroponic technology can be considered satisfactory, as it has been able to produce, but for the efficiency in increasing production has not yet been achieved. There is no modern technology that can help when cultivation is carried out. Effective technology for planting and harvesting still relies on human labor with the help of simple tools.

Based on the needs assessment analysis, the solution to the problem that can be implemented to enhance

agricultural development in Waru Village is to improve products. Products harvested from hydroponic cultivation already possess some advantages. To increase the superiority of these products, cultivation improvements can be made by increasing the use of inputs to achieve better production results. Furthermore, proper post-harvest treatment involves product sorting by paying attention to product uniformity and packaging, prioritizing product protection, and adding a product logo. It is hoped that needs assessment analysis can help align needs with the development and growth of agricultural development (Harahap, 2020).

Marketing problems can be overcome by adding trading and production partnerships through technological adaptation, specifically digital marketing, and by improving marketing management performance. Digital marketing represents the latest breakthrough in online product marketing (Purwana et al., 2017). Digital marketing or online marketing strategies are important and can be considered more effective and efficient in reaching the desired target market. Online marketing can also increase marketing reach to areas that offline marketing cannot or finds difficult to

reach (Febriyantoro & Arisandi, 2018). Online marketing can potentially increase product sales results because people nowadays prefer seeking online and even purchasing products online (Pradiani, 2017).

CONCLUSION

Agricultural development in Waru Village, Kebakkramat District, Karanganyar Regency, is supported by the village institution, namely the KWT Hijau Daun (Women's Farmer Group). KWT Hijau Daun is advancing agricultural development by transitioning to a hydroponic planting system to increase the selling power of products. Agricultural development undertaken by a group should receive support from the Village Government and residents. The Village Government can assist in funding and infrastructure and facilitate access to resources and information. Local residents can contribute by actively participating in the group's activities, sharing knowledge and expertise, and promoting the group's products within their networks. Collaborative efforts between the group, the Village Government, and the local community are essential for the successful and sustainable development of agriculture in Waru Village. By working together

and leveraging their strengths, they can overcome challenges, optimize resources, and create a thriving agricultural sector that benefits the entire community.

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