



ISSN: 2230-9926

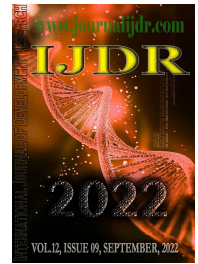
Available online at <http://www.journalijdr.com>

IJDR

International Journal of Development Research

Vol. 12, Issue, 09, pp. 58563-58566, September, 2022

<https://doi.org/10.37118/ijdr.25177.09.2022>



RESEARCH ARTICLE

OPEN ACCESS

THE COMBINATION OF TECHNOLOGY UTILIZATION AS A STRATEGY IN AGRICULTURAL LAND CULTIVATION AND PLANTATION

Citra Dewi* and Ikhtiar Hatta

Anthropology Study, Tadulako University Postgraduate Program

ARTICLE INFO

Article History:

Received 07th July, 2022

Received in revised form

13th July, 2022

Accepted 28th August, 2022

Published online 20th September, 2022

Key Words:

Configuration, Technology, Agriculture, Farming Society, social change.

*Corresponding author: Citra Dewi

ABSTRACT

This study discusses the internal logic of an agrarian society behind the conversion of traditional and modern technology use in an agrarian society. The disclosure of this logic becomes the basis for understanding the reasons for the farming community to combine the use of two technological configurations in an agrarian society. The method used in this study is in-depth interviews and observations. The findings of this study indicate that the use of two technology models, both simple technology and modern technology is a strategy to overcome and reach agricultural and plantation land at the same time. The duality of the use/application of technology also shows changes in the community's social system based on commodities and arable land.

Copyright © 2022, Citra Dewi and Ikhtiar Hatta. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Citra Dewi and Ikhtiar Hatta. 2022. "The combination of technology utilization as a strategy in agricultural land cultivation and plantation", *International Journal of Development Research*, 12, (09), 58563-58566.

INTRODUCTION

Changes and newness of technology today "as if" become a necessity in agrarian society tends to abandon the old conventional technology and choose a motorized one. Like farming communities, they are constantly experiencing new technology with the main goal of achieving maximum production results. However, this study shows differently that the application of technology does not have to leave the old technology which is still simple, and switch to a motorized technology to achieve more production. This study shows that the agrarian society enables itself by combining the application of technology between the simple and the motorized-still maximized in its function and context. Moreover, the agrarian community presents the duality of technology as a strategy in maximizing working time to be able to reach all the land they own, both on agricultural land and plantation land. Gradually, we can see agricultural technology tools continue to develop from simple technology to motorized systems and further digitally using computerized technology. Changes in the means of agricultural production have also occurred in several regions in Indonesia. Most of the farming communities in Indonesia in processing rice fields have used hand tractors. These changes are more towards the efficiency and effectiveness of work in the land management process. However, it is not uncommon for farming communities to condition the combination of motorization technology with conventional technology inherited from their ancestors. (Clammer, 2003) explains that "in the context of production activities, humans enter into a relationship with nature and their environment to

create the necessities of life. They develop production instruments for the food, clothing, and shelter needs. The instruments of production together with the factors of natural products, as well as humansthemselfs, are involved in the production process in society". The explanation above is closely related to the historical materialism developed by (Marx, 2004) in his dialectical approach. Marx explained that "concerning the production of the means of subsistence, man is in opposition to his nature through the act of changing the world, but at the same time he is dialectically one with nature because the act of changing nature means changing himself". However, with the development of the means of production, especially in agriculture, is it not possible with the conception of efficiency and effectiveness of work that uses modern agricultural production tools and is only operated by a small number of people not uprooting and deconstructing the social and cultural order and structure of the farming community. For the above, Marx's theory may forget that historically materialism has raised the degree of the human capacity to survive. This contradiction certainly raises the next social problem, namely whether the people who were previously involved in the production process can still survive in their work environment as farmers or farm laborers. Nevertheless, as an initial assumption, it can be explained that changes are always experienced by farmers in the area, both in terms of land quality, economic system, or technology used in cultivating the land. And as a logical consequence of these changes will have a socio-cultural impact on the users.

Theoretical Study

The utilization of technology and high-yielding varieties released in several papers causes changes (or damage) to ecological and

biotechnological systems. Changes in high-yielding varieties, for example, have destroyed various local varieties belonging to farmers who are considered low-yielding rice varieties. Hardiyoko explain that “The ban on planting local rice varieties by the government bureaucracy, such as the actions of the security forces uprooting local rice planted by farmers, has resulted in the extinction of various types of local varieties” Wahono in (Winarto, 1999). Meanwhile, the varieties of rice that are said to be superior varieties with high production require high input, care, and protection from pests and diseases. This rice requires high doses of nitrogen fertilizers and chemical pesticides to eradicate pests and diseases. It is very important to understand technology in relation to social systems. Farmers always compare their experience today and before being introduced with “government rice”, “short rice” which they recognize as VUTW rice, superior seeds. Farmers experienced great changes in terms of freedom to cultivate crops as those farmers who experienced both eras: before and after BIMAS. One of the most important indicators of farmer freedom, which is often used as an example of depriving freedom today, is the choice of rice varieties (Winarto, 1999). Ironically, this case attracts changes in agricultural technology which are also new. The theme in this study is in line with what was suggested and proposed by Gardner and Lewis (1996) in their book: *Anthropology, Development, and the Post-Modern Challenge*. This work inspires anthropologists to play a more significant role in studying discourse, development paradigms, their relation to knowledge and power, as well as efforts to involve residents in the entire development process. Gardner and Lewis' argument that underlies their discussion starts from the assumption that development is central to how the world is represented and controlled by those in power, and anthropologists have a lot to say about it (Winarto, 1999).

Through ethnographic studies and analysis, both within and outside the context of development institutions, anthropologists can do this based on the assumption that development discourse is flexible and can be changed. It remains now, the problems, what is the best alternative to do that. Development in agriculture is one example of how discourse, knowledge, and reproduction of power take place with the implementation of development from the top (top-down) without involving residents in the planning process, by not prioritizing the importance and potential of local knowledge, and most fundamentally, does not present the possibility area for the development of farmer culture. Once a farmer decides to try something new in his farming process, for example trying to plant a new type of rice, a series of learning processes begin during one growing season. Sometimes the learning process continues until the next season when it turns out that the same type of rice planted shows a different appearance or if the person concerned decides to adopt a different seed. This means that not only is there cultural impoverishment that occurs but their ability to manage their own farming business without having to deal with the government is also lost. Now they are government-managed actors; what to plant, when to start planting, and how to plant it (Winarto, 1999). Farmers only know about the benefits of pesticides in killing pests and protecting their crops from pests or diseases. Likewise, with the application of the duality of technology, they only know that by using this technology, time efficiency will be achieved. But it never occurred to them that it would then lead to the social dimension in the kinship system among farmers being loosened, and the cooperation system gradually disappearing.

The development paradigm that was promoted by the previous government in principle became one of the causes of the crisis in the agricultural sector. For example, in the paradigm of the New Order, the government emphasized the transfer of technology rather than the transfer of knowledge, and the achievement of the goals of the development program itself rather than increasing the knowledge and culture of farmers. (Li, 2002) revealed that farmers' ignorance occurs because there is no comprehensive transfer of knowledge about pesticides, and the use of an understanding scheme about the function of pesticides as 'medicine' with a function as a healer in two different domains: the domain of the human body and the domain of the plant

body. Therefore, farmers will strive for smooth growth of their plants, free from all kinds of diseases, medicine is a cure or prevention of disease in rice and not just a pest killer. As stated by Petrie and Oshlag (1993), what happens is a misunderstanding or incorrect use of metaphors that affect the further development of the transferred knowledge (Winarto, 1999).

Research Methods and Site Selection: Data collection was carried out using in-depth interviews, and observations were also made. This technique is used to record socio-cultural and environmental data, especially data on the physical environment; facilities and infrastructure; and the daily behavior of farmers with the duality of the agricultural technology system, forms of technology, farming methods, and conditions of agricultural land. Moreover, the observation technique also intended to record farmer behavior and model interactions among farmers. In the observation, a camera is used to take pictures and describe the situation of the observations. Regarding what is related to the Duality of Agricultural Technology Systems in Toli-Toli Regency and Morowali Regency. Those who are used as informants are of course categorized as farmers who practice the duality of agricultural technology and farmer leaders and have the ability to explain the study of the duality of agricultural technology systems. This study also conducted a literature review for information enrichment related to the focus studied in this study. The selection of literature that was written as the initial idea is a passion in this study, but it must be admitted that access to the latest literature is relatively limited for the focus of this study, especially regarding agricultural journals. This site of this study is located in the Toli-Toli Regency and Morowali Regency with the context of the study in an agrarian society. This location was chosen by considering the dynamics of the application of technology that is simple and has been operationalized. Another consideration of the agrarian communities in the two areas is also the knowledge of immigrant farming communities.

RESULTS AND DISCUSSION

Development and Diversity of Rice/ Rice Terraces Agricultural Technology: In general, in developing countries, agriculture is seen as a “hidden livelihood” Twyman & Slater 2005 in (Purwanto, 2014). Likewise, there is a farming life in Morowali Regency and Toli Toli Regency. The two lowland rice farming areas are the mainstay sectors along with other plantation sectors. Agriculture is an activity that has been carried out by the community for a long time. Before the arrival of a wave of migrants from various regions, the indigenous tribes in the two study areas were familiar with farming crops with upland rice commodities. At that time their ancestors were still familiar with shifting cultivation. However, the condition of commercial plantations causes cultivated land to shrink which influences the shrinkage of forest areas that become agricultural land areas for local communities (Zakaria and Soehendera, 2014). Since the wave of migration from other areas entered these two areas, the process of sedentary agriculture has begun to gradually replace shifting cultivation. Indigenous people in this area have also started to settle and eventually they adopted a new farming system using irrigation. Until now, the agricultural sector continues to experience changes in various ways, both the planting process, types of rice, institutionalization, work organization, and technology used. The existence of permanent irrigation with high water discharge can flow through the wider community's agricultural land and indefinitely changes the system and pattern of rice farming in the community. According to information, the current irrigation system also contributes to changing the community's agricultural model in addition to the use of renewable technology.

The ancient agricultural model with upland rice commodities slowly began to become unpopular, especially among residents in the two study locations. Since the wave of migrants entered the area, the program to increase agricultural production marked by irrigation has also colored the dynamics of community farming. The use of animal power in plowing fields was introduced. The dynamics of the use of technology continue to develop until it is integrated with motorization

technology such as hand tractors, for example, also followed by changes in rice varieties. More than that, it is also followed by the increasingly widespread use of "pesticides" (Winarto, 2015) and plant stimulants to produce fruit quickly. The presence of new technology in the farming community has turned out to be a strategy because it provides space to enable farmers to expand their arable land and/or cultivate their plantation land, which will be discussed further in the following section.

The combination of simple and modern technology application in farming communities: A Strategy: Cultural logic in applying the duality of agricultural technology to farming communities is a phenomenon of agriculture that does not stand alone. The community runs this duality functions as a strategy to continue to carry out other activities that are also of economic value. The number of commodities that have economic value, such as cloves, copra/coconut trees, cocoa, and finally pepper, demands that the community does not spend a lot of time in the processing of agricultural land. On the occasion, the application of new technologies makes it easier to provide opportunities for the community to accept openly; for example, the use of planting technology. The combination of technology utilization in the appropriate environment and land conditions cuts time in the planting process. It also reduces the amount of labor involved in the planting process as well. Compare, for example, the conventional planting process using human hands directly plugging rice seeds into rice fields that have been prepared. Such a simple technology model requires no less than two workers. While the technology of planting by spraying is only carried out by one person and can be done in a very short time. For a land area of about 1 hectare it can be completed by a strong farmer in just one day, a very difficult thing to do if using planting methods with simple technology or using human labor. Before using machine-based technology, there was also a planting technology which they called the "tabela" system (direct seed planting). This system was also quite successful in reducing the time and number of workers. It's just that the table technology is not more effective than the spray technology above. However, these two technologies have weaknesses when compared to planting methods that use human power. First in terms of neatness, planting with human power is neater than the application of the two planting technologies above. Second, the rice plant is much stronger or does not fall easily because it is firmly planted in the soil, compared to the use of planting technology; the plant is very easy to fall because the seeds are only planted on the surface. Therefore, the farming community in Toli-toli Regency and Morowali Regency continue to apply two forms of technology. Those are modern and traditional technology, which is a combination of technology that functions as a strategy to overcome time and natural conditions so that farmers have sufficient ability and time to cultivate farmland and plantations at the same time.

The farmers' reason in application of the configuration two technologies in an agrarian society: When society implements or practices something, it cannot be judged as pure practices or without special pretensions. Almost no action is taken either on a personal or group scale without the purpose and interests behind it that can support their lives. The previous section has explained that the configuration of the application of technology is nothing more than a ploy for them to "cut" their time on agricultural land, and shortly, they can cultivate other lands, namely plantation land. Thus, agricultural practices carried out by the community have their cultural reasons (reasons) that are contextual. Therefore, every action never exists in a vacuum or action that is spontaneous and unoriented/or aimless. Likewise, the application of technology that was carried out by the community in Toli-toli Regency and Morowali Regency has reasons both on a personal scale and on a community scale. On the data obtained, the combination of two technologies carried out by the community in overcoming agricultural practices in the community leads to two basic conceptions, namely: 1. Environmental penetration; 2. Commodity penetration; and 3. The strategy covers the achievement of the economy and the welfare of life.

Penetration of environmental aspects: The agricultural environment that becomes arable land has a unique natural character.

To perform fast handling requires a combination in the application of technology. For society, technology with a simple/manual system is not always ineffective or out of date. For farming communities in Toli-toli and Morowali districts, the most important thing about technology is its effectiveness and efficiency in using it. This means that not all of the technologies can be used properly for every agricultural land. As information conveyed by a senior farmer informant said that the application of the tractors is not always good, especially when the cultivated land has quite deep mud. It would be better to use field plow technology with animal power or human power. Likewise, with a narrow area, it would be better to use manual or simple technology because it is much more provident. When using a tractor on land with conditions as previously stated, the production costs will be higher because the tractor will have difficulty moving quickly. Tractors become more effective when used on large areas and also the land does not have deep mud. As previously explained, technology has been internalized as a supporting technology in processing agricultural land in the two research areas since the New Order era. According to information, this technology is very good and effective on land that has hard or not too muddy soil.

Commodity penetration: With the presence of various commodities planted by the community, both on agricultural land and on plantation land, it is undeniable that each has economic value. The diversity of commodities that must be cultivated on different lands attracts people to transform very quickly from one commodity to another; therefore, farmers need quick action and management. Fast handling requires a combination of technology that can make them effective in managing all of the commodities. One rice farmer usually does cocoa, clove, and coconut gardening activities. You can imagine how these commodities are managed if the technology applied is very limited. As one farmer said, farmers who also grow other commodities should not spend a lot of time on only one arable land, considering that commodities in other fields also require treatment to get maximum results. Therefore, today's community farming system has shifted from agriculture based on land processing to commodity penetration. This means that those who work as farmers will not have a deep intensive relationship with their land, on the contrary, they are more oriented to being able to cultivate agricultural/plantation land with many commodities to get a lot of results. This farming principle becomes operational at the same time as the harvest season for various commodities, such as harvesting cloves, coconuts, and cocoa, on the other hand, it also calls for attention to the processing of agricultural land.

The strategy covers the achievement of the economy and the welfare of life: However, the end estuary of using technology is a way/strategy to create maximum economic achievement for the existence of various diverse commodities. This means that the business of using a combination of two technologies aims to be able to convert all existing commodities to have maximum economic value. According to the economic calculations of the people in the two study areas, if they only process one commodity, they will experience a long period of famine and also leave the land empty. Such agricultural practice for them is an attitude of wasting economic potential. Therefore, to continue to support all agricultural and plantation sectors, they must activate many technologies that can support their work processes properly. Thus, they can earn income from various sources of livelihood.

CONCLUSION

The existence and application of technology in society so far have been understood by a number of people to provide effectiveness to its users. This study does not deny, even support this theoretical understanding. However, this study also succeeded in providing an understanding that the application of technology is not presented to answer itself in terms of technological phenomena, this study shows that the application of technology is also involved and builds logic through synthesis with other dimensions, including the diversity of commodities, economic systems, and social systems that govern local

life. The combination of the two economic systems does not replace or mainstream new technology among the old technology, but synergize to contribute to the sustainability of life and strengthen the economic capacity of the community, family, or individual.

REFERENCES

- Clammer, J. 2003. *Neo-Marxisme Antropologi: Studi Ekonomi Politik dan Pembangunan*. Yogyakarta: Sadasiva.
- Li, T.M. 2002. *Keterpinggiran, Kekuasaan dan Produksi: Analisis Terhadap Transformasi Daerah Pedalaman. Dalam Agrarian Transformation; Proses Transformasi Daerah Pedalaman di Indonesia*. Edited by T.M. Li. Jakarta: Yayasan Obor Indonesia.
- Marx, K. 2004. *Das Kapital. Sebuah Kritik Ekonomi Politik*. Jakarta: Hastamitra.
- Purwanto, S.A. 2014. 'Menanam Padi: Kajian Pengambilan Keputusan Petani dalam Menentukan Varietas Padi', *Antropologi Indonesia*, 0(55). doi:10.7454/ai.v0i55.3334.
- Winarto, Y.T. 1999. 'Pembangunan Pertanian: Pemasangan Kebebasan Petani.', *Antropologi Indonesia* [Preprint], (59). doi:10.7454/ai.v0i59.3377.
- Winarto, Y.T. 2015. 'Dinamika Pengetahuan Petani Padi dalam Pengendalian Hama', *Jurnal Agribisnis dan Pengembangan Wilayah*, (12), pp. 1–16.
- Zakaria, R.Y. and Soehendera, D. 2014. 'Menghitung Kembali Kontribusi Perladangan Berpindah dalam Proses Penyusutan Kawasan Hutan di Indonesia', *Antropologi Indonesia*. doi:10.7454/ai.v0i52.3317.
