Farmers empowerment level analysis in farming during the Covid-19 pandemic and its impact on farm income

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Abstract. This study aims to analyze the level of farmer empowerment in carrying out farming activities as the main livelihood and its impact on farm income during the Covid-19 pandemic. The research was conducted online by distributing questionnaires in the form of google form in various affordable areas. There were 113 responses obtained by returning the google form on time. The three regions that sent the most responses were farmers in Ambon City, West Seram Regency, and Central Maluku Regency. After analyzing using qualitative descriptive analysis, the results showed that the level of farmer empowerment during the Covid-19 pandemic decreased, especially in terms of marketing of crop products for fruit and vegetable commodities, while for food commodities such as rice tended to be stable. This has an impact on farm productivity and income. The main factor causing a decrease in the level of farmer empowerment is the decreasing purchasing power of the community during the Covid pandemic19; Accessibility of farmers to markets is difficult, there are even times when farmers cannot go to the market due to large-scale social restrictions, the frequency of presence of collectors is reduced, access to plant production facilities is hampered unlike before the Covid pandemic19. This condition requires serious attention from the government so that farmers do not experience difficulties in marketing agricultural products and can maintain the stability of farm income. The solution at the farmer level is to form farmer groups so that the marketing of farm products and the fulfillment of plant production facilities can be done through farmer groups.

1. Introduction

The Covid-19 pandemic has brought changes to almost the entire world community, especially social and economic life, including in Indonesia. Almost all development sectors in Indonesia cannot realize the planned programs, including the agricultural sector. Even so, the agricultural sector is one of the sectors that is able to continue to grow during the Covid-19 pandemic. Data from the Ministry of Agriculture of the Republic of Indonesia shows that the growth of the agricultural sector's Gross Domestic Product (GDP) increased by 16.4% every quarter and 19% per year in the second quarter of 2020[1]. This condition illustrates that there is hope for agricultural development at a time when the number of farm households continues to decline from year to year. This means that the agricultural sector is a sector that can accommodate workers who are forced to lose their jobs due to the COVID-19 pandemic.

The agricultural sector cannot be separated from the farmer’s existence. Farmers as the main actors are one of the determining factors for the success of agricultural development. Prior to the Covid-19 pandemic, most farmers in Indonesia had indeed faced various problems, including a lack of capital, limited knowledge and skills, inability to innovate, and difficulties in marketing their agricultural
products. These various problems are caused by the level of farmer empowerment is still relatively low so that they have not been able to solve the existing problems. The empowerment of farmers is closely related to their capacity. Farmers with high capacity will be more empowered in managing the farm and achieve good performance in farming. This is in line with the opinion [2] that the capacity of a person or organization will affect the performance of the person or organization. In addition, this problem also causes farm management to be unable to maximize its impact on farm productivity and income.

Similar to farmers in Indonesia in general, farmers in Maluku also face the same problems. If before the Covid-19 pandemic Maluku farmers had to face sharing farming problems, what about during the Covid-19 pandemic? This is interesting to analyze considering that during the Covid-19 pandemic, all aspects of people's lives were affected.

Based on this, this study aims to analyze the empowerment of farmers in managing their farms during the Covid-19 pandemic and their impact on farm income. In this case, farmer empowerment is intended as the ability of farmers to manage their farms by fulfilling their input needs including labor and marketing of farm products. The results of the analysis are complemented by solutions to increase farmer empowerment in facing the Covid-19 pandemic that has not ended and is in the future.

2. Methods

The research was conducted during the Covid-19 pandemic. The existence of large-scale social restrictions and government policies requiring work from home have made online surveys chosen in an effort to collect data.

The survey was conducted using google form in July 2020 for one full month. Thus the location determination was not carried out because the expected respondents were farmers who could access the google form. Information about the distribution of questionnaires via google form is provided to parties who can be contacted via telephone and social media, namely farmer group leaders, agricultural extension agents, students who at that time returned to their home areas due to the policy of learning from home, and acquaintances/team. Furthermore, this information is conveyed to farmers so that they can participate in the survey they are conducting.

It is done every day to check the forms returned by the farmers while tabulating the data in the questionnaire. The form checking ends after a full month and the survey is closed.

There are obstacles to going to the research location and only relying on data that is distributed online, causing data analysis to only be carried out using qualitative descriptive analysis with simple tabulation support.

3. Results and discussion

3.1. Number and Distribution of Respondent Locations

The number of forms (questionnaires) returned during the data collection period was 113 forms, meaning that there were 113 farmers as respondents in this study. All respondents come from the Maluku region with the distribution of numbers and regions shown in Table 1.

| No. | Responden location         | Number | |
|-----|----------------------------|--------|--------|
|     |                            | People | %      |
| 1.  | Ambon city                 | 37     | 33     |
| 2.  | West Seram District        | 47     | 42     |
| 3.  | Center Maluku District     | 18     | 16     |
| 4.  | Tual city                  | 7      | 6      |
| 5.  | Buru District              | 4      | 3      |
|     | Total                      | 113    | 100    |

Table 1. Number and Distribution of Respondent Locations
The distribution of respondents’ areas is influenced by the availability of internet networks and the ability of farmers to use information technology, in this case the use of cell phones. There are three regions that mostly send back questionnaires online, even though in each district there are farming centers.

Table 1 indicates the need for improvements in the field of information and communication technology, both the availability of a relatively stable internet network throughout the Maluku region and the ability of farmers to use information and communication technology. Mastery of information and communication technology will be able to broaden farmers’ insights through available extension messages and can be accessed by farmers. Especially during the industrial revolution 4.0 and even more so when the Covid-19 pandemic could not be predicted when it would end, making information and communication technology one of the right choices to help farmers survive or develop their farming. In addition, the high cost of communication via the internet also makes farmers limited in using internet-based information technology.

3.2. Respondents Distribution by Commodity
There are three main types of commodities cultivated by farmers, namely fruits, vegetables, and rice, with the distribution of respondents as shown in Figure 1. Farmers with the main commodity of rice (lowland rice) are in West Seram Regency, precisely in Waimital Village and Buru Island dominated questionnaire returns.

![Figure 1. Respondents Distribution by Commodity](image)

Waimital village is one of the lowland rice production centers in Maluku with farmers who are familiar with farming technology and information and communication technology, in this case communication via the internet. Vegetables and fruits are dominated by farmers in Ambon City, Central Maluku Regency and Tual City. Vegetables that are predominantly cultivated by farmers are kale, mustard greens, spinach, long beans, green beans, tomatoes, chilies, and eggplant. Fruits are dominated by papaya, banana, mango, pineapple, avocado, coconut, durian, langsat, and duku.

3.3. Empowerment of Farmers Before and During the Covid-19 Pandemic
Farmers’ empowerment is the farmer's ability to carry out farm management starting from cultivating land, planting, to marketing farm products. Farmers with a high level of empowerment have the ability to solve various farming problems, which in this case are grouped into three problems, namely: (1) fulfillment of production inputs, (2) fulfillment of labor, and (3) marketing of farm products. For these three problems, the empowerment of farmers before and during the Covid-19 pandemic is presented in Figure 2.
Figure 2. Farmer’s Main Problems Before and During Pandemic Covid-19

Figure 2 shows that the main problems faced by farmers before the Covid-19 pandemic were dominated by meeting labor needs. This condition can be explained that before the Covid-19 pandemic, most of the young workforce preferred to work outside the agricultural sector, such as migrating to the city to become shopkeepers, working in restaurants, cafes, and other service sectors. This causes the availability of labor in the village to decrease. This is especially true for rice farmers during the growing season and fruit farmers at harvest time. On the other hand, during the Covid-19 pandemic, the availability of labor in villages increased due to the implementation of several policies that had an effect on reducing economic activity in cities. The reduction in economic activity has resulted in many business sectors laying off employees for an unknown period of time (until activities return to normal as before the Covid-19 pandemic). Likewise, the application of learning from home causes many students and students to return to the village and have the opportunity to become laborers in the agricultural sector. This causes the fulfillment of labor needs not to be the dominant problem for farmers during the Covid-19 pandemic, but rather the marketing of agricultural products which is a problem for most farmers (Figures 3a and 3b).
As is well known, another policy taken by the government was large-scale social restrictions that resulted in prohibiting public transportation activities between cities within districts and within provinces. Meanwhile Ambon City is the main marketing destination for agricultural products not only for farmers in Ambon City, but also outside Ambon City, such as those from West Seram District, Central Maluku, Buru Island, and Southeast Maluku including Tual City. This will affect the supply chain and decrease demand [3]. In other words, the Covid-19 pandemic has an impact on the increasing number of farmers who face obstacles in marketing their crops, both for rice, vegetable and fruit farmers. The worst conditions are felt by farmers of fruit and vegetables, which are perishable commodities [4], [5]. Papaya farmers on the outskirts of Ambon City bear huge losses because they cannot sell their crops as usual. Likewise, vegetables and fruit that are usually imported from outside the city of Ambon, namely from the West Seram District, Central Maluku, Buru Island, and Tual City cannot enter the market in Ambon City, while the markets in the village and in the capital of the local sub-district / regency cannot afford to accommodate all agricultural products from the local area. As a result, farmers lose their income because their crops are wasted [5]. This condition is also experienced in various countries such as Pakistan [6].

Fulfilling production facilities problem before the Covid-19 pandemic was higher than during the Covid-19 pandemic (Figure 2), especially for vegetable and fruit farmers (Figure 3a and Figure 3b). This is because the intensity of planting and planting area continues to increase but is not followed by an increase in business capital so that the fulfillment of production facilities, especially fertilizers and pests and disease eradication drugs, becomes an obstacle for farmers. During the Covid-19 pandemic, the problem of fulfilling production facilities decreased due to reduced planting intensity and planting area as a result of constraints in marketing crop yields. In other words, vegetable and fruit farmers (except for long-lived fruit crops) reduce their farming activities for fear of not being able to sell their crops. Constraints to the fulfillment of production facilities during the Covid-19 pandemic are not only caused by limited capital capacity of farmers, but also because farmers cannot access production facilities due to restrictions on transportation activities and the closure of shops/stalls selling plant production facilities during large-scale social restrictions such as experienced by rice farmers. Based on the conditions faced by farmers according to Figure 2, Figure 3a, and Figure 3b, it can be said that the Covid-19 pandemic has an impact on the level of farmer empowerment, especially in the marketing aspect of agricultural products.

3.4. The Covid-19 Pandemic Impact on Farm Productivity and Income

In systems theory, disruption of one or more subsystems will affect the system as a whole. Likewise in the farming system, disturbances in the marketing system of farm products will interfere with the whole farm management, especially those managed by farmers with limited ability (empowerment). This disruption has an impact on decreasing farm productivity and income during the Covid-19 pandemic. The impact of the decline in productivity and farm income due to the COVID-19 pandemic was experienced by fruit and vegetable farmers (Table 2).

| Commodity | Productivity decreased (harvest) (%) | Income decreased (harvest) (%) |
|-----------|-------------------------------------|-------------------------------|
| Vegetables| 15 – 25                              | 30 – 40                       |
| Fruits    | 10 – 20                              | 50 – 60                       |
| Rice      | 5 – 10                               | 10 – 15                       |

3.5. The Main Causes of Decreasing Farmers’ Empowerment Levels during the Covid-19 Pandemic

There are four factors that cause the decline in the ability of farmers to overcome farming problems, namely: (1) farmers find it difficult to reach the market, even during large-scale social restrictions, access to markets is closed for a certain period of time. (2) The purchasing power of the local market for farmers’ crops is limited. When access to local markets is opened, the ability of local markets to accommodate farmers’ crops is limited so that not all farmers can sell their crops or not all of their crops
can be sold; (3) traders rarely even sometimes don't come, like before the Covid 19 pandemic, to buy farmers' crops. This is also due to large-scale social restrictions that close all community activities outside the home including economic activities; (4) shops/kiosks for plant production facilities are closed and if any are still open but the availability of goods needed by farmers is limited.  

The decline in the ability of farmers to manage their farms during the Covid-19 pandemic which directly impacts on farm productivity and income (Table 2) if it continues in the long term will have an impact on decreasing the quality of life of farmer family members and can increase the poverty rate as happened in China. [7]. In addition, it can also affect food security [8], [9], [4], both at the household and regional and national levels. In this regard, a strategy is needed to increase farmer empowerment, not only in facing the Covid 19 pandemic, but also in a sustainable manner to create resilient farmers in every situation and condition of life.

A strategy that can be implemented is to make farmers, especially vegetable and fruit farmers aware of the importance of farmer groups, so that farmers can form farmer groups with their own desires. Farmer groups are tools that can help farmers achieve farmer goals through their function as a vehicle for learning and collaboration. Through farmer groups, farmers can collaborate with cooperatives or other parties that can help farmers manage their farms. An example is a rice field farmer group that has been proven to be able to help farmer group members manage their farming. The strategy from the government's point of view is seriousness in fostering farmers, including strengthening the capacity of farmers by improving the quality of human resources (farmers) by increasing the quantity and quality of agricultural extension agents. The quantity and quality of agricultural extension workers in Maluku have not been able to meet the needs of farmers [10], even though the presence of agricultural extension agents must be felt by farmers and beneficial to farmers. It is time to improve the capacity of extension workers in conducting internet-based extension which must also be balanced with the ability of farmers to access information via the internet. The covid-19 pandemic places information and communication technology as one of the right choices for farmers [11], [4] and agricultural extension agents. More than 60% of farmers in Ambon City have low knowledge and skills to use cell phones [12] and need to be improved, which of course needs to be followed by the provision of a supportive internet network in every agricultural production center. In 2020, Government attention is also needed in overcoming difficulties for farmers to market their crops by providing buyers who will buy farmers' crops through existing farmer groups or farmer cooperatives. Apart from that, the purchase of plant production facilities through farmer groups is also facilitated. Thus, there is continuity between the formation of farmer groups and the implementation of the functions of farmer groups with the benefits that can be obtained by farmers by becoming members of farmer groups [13]. This is important because many members of farmer groups do not feel the benefits of being members of farmer groups.

4. Conclusion

The Covid-19 pandemic has an impact on decreasing the ability of farmers, especially in carrying out marketing functions. Before the Covid-19 pandemic, farmers had various choices in marketing their farm products, including selling to collectors who came during the harvest period, selling to traders in the market, or selling directly to consumers in the market; however during the Covid-19 pandemic there was no single option available at the time large-scale social restrictions were imposed. This condition is very detrimental to farmers of vegetables and fruits, which are perishable products. Apart from the marketing aspect, the decline in farmer empowerment is also in the fulfillment of plant production facilities due to the absence of public transportation and restrictions on community economic activities so that plant production facilities shops / kiosks also do not serve buyers.

Reflecting on this, the government and related parties need attention so that they can help farmers in situations such as the Covid-19 pandemic. Farmers play a very important role in maintaining food security, therefore farmers should be supported in order to keep farming optimally in all situations where it is possible to do business by increasing farmer empowerment. Increasing farmer empowerment can be done by encouraging farmers to form farmer groups to facilitate farmer development, in this case agricultural extension agents play an important role.
It is time to equip farmers with mastery of information and communication technology so that farmers can broaden their horizons about modern digital-based agriculture to reduce the range of control over the absence and absence of agricultural instructors.

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