Feasibility Analysis of Rice Farming by Dewi Sri Farmer Group, Bohar Village, Taman District, Sidoarjo Regency

Hamidah Hendrarini*, Teguh Soedarto, Risqi Firdaus Setiawan

Agribusiness Study Program, Faculty of Agriculture, Universitas Pembangunan Nasional “Veteran” Jawa Timur, Surabaya 60294, Indonesia

*Corresponding author:
E-mail: hamidah_h@upnjatim.ac.id

ABSTRACT

Farming cannot be separated from the receipt, income, and profits of farming. The existence of acceptance, income, and farming profits is used as an indicator of the feasibility of farming. This study aimed to determine the feasibility of rice farming of the Dwi Sri Farmer Group in Bohar Village, Taman District, Sidoarjo Regency. This research method uses a sampling method of Dewi Sri Farmer Group members. Determination of the number of samples, as many as 29 people from a total population of 40 people, is calculated by the Slovin method with an error rate of 10%. The results showed that (1) the R/C ratio of rice farming of the Dewi Sri Farmers Group was 1.7, meaning that the farming was feasible, (2) the BEP of the rice farming revenue of the Dewi Sri Farmers Group was Rp. 3,850,040 and less than the income, meaning that farming was feasible. Carried out, (3) BEP production of rice farming of the Dewi Sri Farmers Group is 1,042.7 kg and less than the total production means that the farming is feasible to run, (4) BEP of the price of rice farming of the Dewi Sri Farmers Group is Rp. 3,056, and less than the product's price means the business is worth running.

Keywords: Rice farming, BEP, farmer groups, feasibility

Introduction

Agriculture is one of the cultivation sectors developed in Indonesia. The agricultural sector is one of the sectors that supports the country’s food that is relied upon. In line with the opinion of (Imam Ma’ruf et al., 2019), the agricultural sector brings prosperity to farmers and the entire community by supporting poverty cases either directly or indirectly. The agricultural sector has a central role in meeting the population's food needs and is a source of livelihood for most people, especially in rural areas. To strengthen food security and farmer welfare, farmer groups have an important role in coordinating sustainable agricultural efforts. In environmental dynamics and global challenges, efforts to develop and modernize the agricultural sector are becoming increasingly important. One of the main food commodities that continues to be sought to increase production is rice. Rice is not only the staple food of society but also has a significant economic and social role (Amili et al., 2020).

The Dewi Sri farmer group in Bohar Village, Taman District, Sidoarjo Regency, has become an integral part of efforts to develop rice farming. This group has been active in adopting modern practices in rice cultivation, using the latest agricultural technology, and collaborating to increase crop yields and productivity. Although several achievements have been achieved, these efforts' sustainability and effectiveness must be thoroughly evaluated (Nearti Y. et al., 2020).

Farming cannot be separated from the income, income, and profits of farming. Revenue, income, and profits are the goals of farmers in carrying out their farming business as best as possible to obtain maximum results (Mamondol, 2018). The existence of income, income, and profits from farming is
used as an indicator of the feasibility of farming. Farming feasibility is an effort made to analyze the benefits carried out by farmers. The feasibility of farming is also often interpreted as the feasibility of a business gaining profits from farming, whether financial profits in the form of money or non-financial profits in the form of harvest results, farming experience, and so on (Nasirudin & Qomariyah, 2021).

According to Imam Ma’ruf et al. (2019), the income from rice farming obtained by farmers is different from the effort made by farmers while farmers carry out farming activities. Farming income in Indonesia still depends on the size of the land cultivated. This research aims to determine how feasible rice farming is being run by farmers who are members of the Dewi Sri Farmers Group, Bohar Village, Taman District, Sidoarjo Regency. Therefore, it is necessary to carry out a feasibility analysis of farming so that farming does not experience losses.

**Material and Methods**

This research was conducted in Bohar Village, Taman District, Sidoarjo Regency. Bohar Village was taken into consideration because the village is one of the rice centers in Sidoarjo Regency. The population used was all farmers in the Dewi Sri Farmer Group, totaling 40 people. The determination of respondents used special characteristics (purposive), namely the entire population of Dewi Sri Farmer Group members who had a land area of 0.3-0.5 ha. Determining the number of samples in the population uses the Slovin method. After applying the Slovin formula, the number of samples that will be used as respondents is 29 farmers. The data used in this research are primary data and secondary data. Primary data was obtained from interviews with the Dewi Sri farmer group. Meanwhile, secondary data comes from the records and bookkeeping of the Dewi Sri Farmers Group. This research uses several data analysis methods (Oktania et.al., 2021), including:

1. **Farming Cost**
   The sum of fixed and variable costs includes all costs incurred for farming during one planting season, calculated in rupiah units. The formula is as follows:
   \[ TC = FC + VC \]
   Information:
   - **TC**: Total Cost
   - **FC**: Fixed Cost
   - **VC**: Variabel Cost

2. **Farming Revenue**
   All income comes from the sale of rice, so revenue is obtained from multiplying the amount of production or harvest in one planting season with the selling price, calculated in rupiah units. The formula is as follows:
   \[ TR = Q \times P \]
   Information:
   - **TR**: Total Revenue
   - **Q**: Number of Harvest Results (Kw)
   - **P**: Selling price (Rp/Kw)

3. **Feasibility of farming**
   R/C Ratio Analysis Shows how much farming revenue the farmer will get from every rupiah spent on rice farming activities. Calculation of farming feasibility uses the following formula:
   \[ R-C \text{ Ratio} = \frac{Total \ Revenue}{The \ amount \ of \ costs} \]
   Decision criteria:
   - **R/C > 1**, meaning the farming is feasible (additional revenue is greater than additional costs)
R/C < 1, meaning farming is not feasible (additional costs are greater than additional revenues)
R/C = 1, meaning the farm breaks even (additional revenue equals additional costs).

4. **BEP (Break Even Point)**
   The point at which a company, in its operational activities, does not make a profit but also does
   not experience a loss. The BEP value can be calculated using the following formula:
   a. BEP Revenue: \[ \frac{FC}{1 - \frac{AVC}{TR}} \]
   b. BEP Production: \[ \frac{TC}{P - AVC} \]
   c. BEP Price: \[ \frac{TC}{Y} \]

   Information:
   FC : Fixed Cost
   AVC : Average Variable Cost
   TR : Total Revenue
   P : Price
   TC : Total Cost
   Y : Production

**Results and Discussion**
The respondents in this research were 29 farmers who were members of the Dewi Sri farmer
group, Bohar Village, Taman District, Sidoarjo Regency. Rice farmer respondents who own rice fields
in Dea Bohar are dominated by male farmers aged 51 - 60 years, amounting to 44.8 percent. This shows
that the respondent farmers are in the productive age range for farming activities. Most respondent
farmers have a formal education level of completing junior high school, namely 52 percent. The
remainder have completed elementary and high school, respectively, 17 percent and 31 percent. The
level of formal education influences rice farming patterns because the higher the level of education,
the faster the respondent farmer accepts new technology.

**Rice Farming Costs**
Farming costs are all costs intended to carry out farming production activities. This cost includes
all costs incurred by farmers for one rice production process (Sholihah et al., 2022). The components
of rice farming costs include fixed costs and variable costs. Fixed costs are cost components that are
not influenced by the size of the production quantity. The prices of seeds and fertilizer can influence
the size of the fixed farming costs. Apart from that, it can also be influenced by land ownership status
because when a farmer’s land is rented, it can increase fixed farming costs (Munizar et al., 2019).

On the other hand, for the variable cost component, the amount depends on the activity and
production output. Variable costs are influenced by the various supporting needs for cultivating rice,
such as labour, fertilizer, and pest control costs. The components of rice farming costs for the Dewi Sri
farmer group are in Table 1.

<table>
<thead>
<tr>
<th>Description</th>
<th>Total (Rp)</th>
<th>Average (Rp)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Cost</td>
<td>111,640,000</td>
<td>3,849,655</td>
</tr>
<tr>
<td>Variable Cost</td>
<td>124,135,000</td>
<td>4,280,517</td>
</tr>
<tr>
<td><strong>Total Cost</strong></td>
<td><strong>235,775,000</strong></td>
<td><strong>8,130,172</strong></td>
</tr>
</tbody>
</table>

Source: Primary Data processed, 2023
Table 1 above shows that the fixed costs generated from 29 sample farmers in the Dewi Sri farmer group amounted to IDR 111,640,000, with an average of IDR 3,849,655. Meanwhile, the variable costs incurred in rice farming during one production process are IDR 124,135,000 with an average per farmer of IDR 4,280,000/Ha/Production Process. So, the total costs incurred by farmers during one rice production process is IDR 8,130,172/Ha.

**Rice Farming Revenue**

Revenue is obtained from farming production multiplied by the selling price (Lagebada et al., 2017). In the rice farming business of the Dewi Sri farmer group, the source of income for farmers is obtained from the sale of rice harvests. Rice sales results are determined by the season. The harvest will also be large when the season and weather are good. However, when the season and weather are bad, harvest will decrease. Apart from that, the sales proceeds are also determined by the middleman. When a middleman purchases the harvest from the same area as the farmer, the price is set higher, whereas when an intermediary purchases the harvest from a different area, the price is set slightly lower—components of sugar cane farming revenue in Table 2.

Table 2. Analysis of Rice Farming Income from the Dewi Sri Farmer Group in Bohar Village, Taman District, Sidoarjo Regency

<table>
<thead>
<tr>
<th>Description</th>
<th>Total</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production result (Kg)</td>
<td>77.200</td>
<td>2.662</td>
</tr>
<tr>
<td>Product Price (Rp/Kg)</td>
<td>Rp 153.700</td>
<td>Rp 5.300</td>
</tr>
<tr>
<td><strong>Average Number of Receipts</strong></td>
<td><strong>Rp. 14.108.600</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: Primary Data processed, 2023

The analysis results in Table 2 show that the average revenue from rice farming is IDR 14,108,600/Ha in one production process. This shows that the Dewi Sri farmer group can obtain profits or income from rice farming of 43% of the total income or IDR 6,068,428/Ha in one rice production process.

**R/C Ratio Analysis**

Table 3. Analysis of the R/C Ratio of Rice Farming by the Dewi Sri Farmer Group in Bohar Village, Taman District, Sidoarjo Regency

<table>
<thead>
<tr>
<th>Description</th>
<th>Value (Rp)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Revenue</td>
<td>4.108.600</td>
</tr>
<tr>
<td>Total Cost</td>
<td>8.130.172</td>
</tr>
<tr>
<td><strong>R/C Ratio</strong></td>
<td><strong>1.7</strong></td>
</tr>
</tbody>
</table>

Source: Primary Data processed, 2023

According to Nugroho and Ramadhan (2021), R/C analysis compares farming revenues and production costs. Based on revenue and explicit and implicit costs incurred, the R/C ratio value obtained is 1.7, as calculated by the R/C ratio analysis results in Table 3. According to Jamil et al. (2019), the revenue ratio to costs (R/C ratio) shows how much revenue will be obtained from every rupiah spent on business production. Then, from the ratio of revenue to costs, it can be seen whether the business is profitable or not. Based on the calculation of the results of the R/C ratio analysis, a value of 1.7 is obtained, so for every IDR 100,000 of costs incurred by rice farming, there will be revenue of IDR 170,000. This shows that every rupiah spent on production will provide benefits in the amount of the
revenue obtained. The R/C ratio calculation results obtained were 1.7. This shows that if the R/C ratio value is greater than 1 (R/C > 1), the Dewi Sri Farmer Group’s rice farming is profitable and feasible.

**Analysis of BEP revenue**

Break Even Point (BEP) analysis is an economic analysis method that is useful in the relationship of total variable costs (TVC) and total fixed costs (TFC) to production output or other aspects of business and industrial activities. According to (Asnidar & Asrida, 2017), BEP is a condition where the company neither makes a profit nor experiences a loss. In this case, there are 3 BEP calculations: Revenue BEP, Production BEP, and Price BEP.

Table 4. BEP Analysis of Rice Farming Revenues from the Dewi Sri Farmer Group in Bohar Village, Taman District, Sidoarjo Regency

<table>
<thead>
<tr>
<th>Description</th>
<th>Value (Rp)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Cost</td>
<td>3,849,655</td>
</tr>
<tr>
<td>1 – (Average Variable Costs/Total Revenue)</td>
<td>0.999</td>
</tr>
<tr>
<td><strong>BEP Revenue</strong></td>
<td><strong>3,850,040</strong></td>
</tr>
<tr>
<td>Source: Primary data processed, 2023</td>
<td></td>
</tr>
</tbody>
</table>

Based on the calculation results in Table 4, the BEP Revenue value is IDR 3,850,040 with total income from red rice farmers amounting to IDR 14,180,600, of which IDR 14,180,600 > IDR 3,850,040, it can be concluded that the Dewi Sri Farmer Group’s rice farming is profitable to operate, with revenues exceeding IDR 3,850,040.

**Analysis of BEP Production**

Table 5. BEP Analysis of Rice Farming Production by the Dewi Sri Farmer Group in Bohar Village, Taman District, Sidoarjo Regency

<table>
<thead>
<tr>
<th>Description</th>
<th>Value (Rp)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Cost</td>
<td>3,849,655</td>
</tr>
<tr>
<td>Selling Price – Average Variable Cost</td>
<td>8,130,172</td>
</tr>
<tr>
<td><strong>BEP Production</strong></td>
<td><strong>1,042.7</strong></td>
</tr>
<tr>
<td>Source: Primary Data processed, 2023</td>
<td></td>
</tr>
</tbody>
</table>

Based on the calculation results in Table 5, the Production BEP value is 1,042.7 kg. Where the total rice production is 2,662 kg > 1,042.7 kg, it can be concluded that rice farming is profitable. Rice farming will make a profit if the production of red rice is above 1,042.7 kg. Thus, it can be concluded that this amount is greater than the production BEP, and this business is said to be profitable.

**Analysis of BEP Price**

Table 6. BEP Analysis of rice farming prices for the Dewi Sri Farmer Group in Bohar Village, Taman District, Sidoarjo Regency

<table>
<thead>
<tr>
<th>Description</th>
<th>Value (Rp)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Cost</td>
<td>8,130,172</td>
</tr>
<tr>
<td>Total Production</td>
<td>2,662</td>
</tr>
<tr>
<td><strong>BEP Price</strong></td>
<td><strong>3.056</strong></td>
</tr>
<tr>
<td>Source: Primary Data processed, 2023</td>
<td></td>
</tr>
</tbody>
</table>
Conclusion

Based on the results of this research, it can be concluded that rice farming carried out by the Dewi Sri farmer group in Bohar Village, Taman District, Sidoarjo Regency, has a total income of IDR 6,068,428/Ha in one production. Meanwhile, the results of the rice farming feasibility analysis were obtained. The results of the R/C ratio analysis were 1.7, BEP Revenue was IDR 3,850,040, BEP Production was 1,042.7 Kg, and BEP Price was IDR 3,056. The results of the rice farming analysis show that rice farming is feasible in Bohar Village, Taman District, Sidoarjo Regency.

References


