Financial Prospects of Porang Cultivation in East Lombok Regency, Indonesia

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ABSTRACT
Porang or Amphophallus, locally known as porang or suweg, is a plant widely cultivated using traditional ecological knowledge in East Lombok Regency, West Nusa Tenggara Province. However, the increasing number of farmers in several villages in East Lombok Regency is still not followed by knowledge and skills in accordance with good agricultural practices. This study investigated the prospects of porang cultivation in East Lombok Regency, West Nusa Tenggara Province. The research used quantitative methods through a feasibility study approach on financial aspects. Data were collected by FGDs and interviews with 25 farmers, including key informants who were purposively selected considering having expertise and knowledge about porang in East Lombok Regency. The results showed that the prospect of porang through financial aspects in East Lombok Regency is prospective and profitable. This is evidenced by the R/C ratio of 2.1, the B/C ratio of 1.01, and the BEP of Rp27,471,818/Ha.

Keywords: Agricultural Development, Farm Management, Porang


INTRODUCTION
Porang is a tuber plant belonging to the species Amorphophallus muelleri Blume in the same genus as suweg, walur, and iles-iles. The type of porang often found in Indonesia to be cultivated and utilized as food and industrial materials is A. campanulatus (Desnnt.) Nicols (Rahman et al., 2022). Not only in Indonesia, but porang is also cultivated in several countries in South Asia, such as India, Malaysia, and the Philippines, as an ingredient in the food and non-food industries (Bidarti et al., 2021; Mulyaningsih et al., 2022). Porang is known to contain glucomannan which can be further utilized in various types of processed and semi-finished food products with high selling value, one of which is as a substitute for gelatin (Putri, 2021).

In Indonesia, porang has been known and used since the Covid-19 pandemic and has become increasingly popular since some farmers have succeeded in exporting porang tubers (Riptanti et al., 2022; Yunia Rahayuningsih, 2021). Ministry of Trade (2021) reported that in the last five years, Indonesia has been in the fifth position as a supplier of porang in the world at 2.2% after Costa Rica (5.2%), Fiji (9.9%), Ecuador (14.9%), and the People's Republic of China (PRC) (56.2%). In 2020, Indonesia's exports were known to have reached USD 3.1 million, with several destination countries such as Thailand (59.3%), China (17.9%), and Malaysia (12.1%). Based on the product type, Indonesia's exports in the unfrozen state accounted for 99.4% of Indonesia's total exports in 2020.
Lombok Island is one of the areas where farmers cultivate porang and shows a positive effect on farmer income and this is also evident in other islands such as Java and Sulawesi (Dwiridotjahjono et al., 2022; Suhartini et al., 2022). Porang also has high economic value for farmers, especially in rural communities. Generally, porang can be cultivated in two systems, either left to grow wild in the forest or by farming (Ps et al., 2020; Supriyono et al., 2022). The increasing interest of farmers in porang cultivation is also supported by soil conditions in several Community Forests (HKm) on Lombok Island, which is quite fertile, loose, and contain high organic matter (Rohmaya et al., 2022; Yasin et al., 2021).

However, although porang has many benefits, a high selling value, and fertile HKm conditions, porang cultivation has yet to be carried out intensively, especially in East Lombok Regency. Likewise, in Bali, the problem faced in exporting porang is the need for porang production due to less intensive porang cultivation and the longer growth period of porang compared to other plants, which is three years (Millenia & Handinoto, 2022).

Various studies on porang have become a trend since this commodity was popularized during the Covid-19 pandemic, ranging from land preparation, input combination, post-harvest processing, farming feasibility, and development potential to the impact of commodity existence on the health and welfare of the community (Akbar, 2022; Fathurrahman et al., 2022; Gusmalawati et al., 2021; H et al., 2022; Nimpuna et al., 2021; Sukartono et al., 2022). In the aspect of business feasibility, some researchers used farming analysis, such as Sari et al. (2022), who found that porang farming has an R/C ratio value of 2.99 which indicates that porang is a viable commodity to be cultivated in Selur Village, Ponorogo Regency. Furthermore, Marsadi et al. (2021) analyzed that porang farming in Watu Manggar Village has an R/C ratio value of 1.72 which also means that the commodity is included in the feasible category (>1). In addition, Minggus et al. (2022) found an R/C ratio value of 4.85 in Joni Farm Nita, Sikka Regency, the highest R/C ratio value in research on the feasibility of porang commodities. However, there needs to be research that analyzes business feasibility entirely by including the R/C ratio, B/C ratio, C/M ratio, and BEP values. This study fills this research gap by applying a holistic feasibility analysis, including an assessment of the area of fertile land (LLG) and hectares and in a broader scale of farming, namely at the district scale in East Lombok Regency.

Increasing the interest and number of porang farmers in East Lombok Regency, West Nusa Tenggara Province, is very important to conduct a study on the prospects for the development of porang cultivation from a financial aspect to see the feasibility and efficiency of porang cultivation which will affect the income and welfare of farmers. Therefore, this study aims to analyze the financial prospects for the development of porang cultivation in East Lombok Regency, West Nusa Tenggara Province, Indonesia.

**METHODS**

This quantitative research uses a feasibility study approach on the financial aspect. The data used are primary and secondary data. The research data were collected through interviews using questionnaires, field observations, and literature studies. The population in the survey was porang farmers in East Lombok Regency, totaling 25 people. The small population size caused all farmers in the population to be used as data sources or respondents. Respondents are porang farmers who have been cultivating and producing and include key informants, namely the Porang Nusantara Farmers Association (P3N) Chairman of East Lombok Regency. In this study, the prospect of porang cultivation will be analyzed from an economic aspect using quantitative descriptive methods. In answering the research objectives, this research will describe the economic or financial aspects using a feasibility study approach using Revenue Cost Ratio (R/C) analysis, Benefit Cost Ratio (B/C), and Break Even Point (BEP).
RESULTS AND DISCUSSION

According to the Head of P3N of East Lombok Regency, the distribution and area of porang cultivation in East Lombok Regency reached 228.30 hectares spread across several sub-districts. However, in some places, there is still a combination of porang farmers who have just started farming and porang farmers who have produced or sold. Based on Figure 1, Pringgasela District has the highest distribution and land area, as much as 30% (67 ha) of the total porang cultivation land area in East Lombok Regency.

Figure 1. The land area of porang cultivation distribution in East Lombok Regency

Analysis of the prospects for porang cultivation in East Lombok Regency is based on the results of interviews, Focus Group Discussions conducted twice, and filling out research questionnaires on 25 people as respondents consisting of farmers, porang business actors, East Lombok Branch P3N administrators, and financial analysis using R/C ratio, B/C ratio, and BEP.

R/C and B/C Ratio Analysis

Table 1 shows that the porang cultivation business has an R/C ratio value of 2.01, meaning that every Rp1 (one rupiah) spent on porang cultivation generates an income of Rp2.01. Then the B/C ratio shows a value of 1.01, meaning that every Rp 1,- (one rupiah) spent on porang cultivation generates a profit of Rp 1.01. Because the R/C and B/C ratio values are greater than 1, porang cultivation in East Lombok Regency is feasible. These results are in line with the findings of Hamdhan (2021), Minggus et al. (2022), and Marsadi et al. (2021), which found that the R/C ratio of porang farming was 2.96, 4.85, and 1.72, respectively, which was categorized as profitable.

Furthermore, the variation in the value of the analysis shows that porang farming in East Lombok Regency can still be developed, seeing that there are areas that are able to get R/C ratio values of 2.96 and 4.85. The high ratio is due to the higher selling price of farmers and higher land productivity. In the research by Hamdhan (2021), the selling price for farmers was IDR 13,000/kg, which was IDR 10,000 higher than the selling price in East Lombok despite the productivity of only 10 tons/ha/3 years. Meanwhile, in the results of Minggus et al. (2022), the selling price is slightly higher than that of East Lombok at IDR 5,000/kg but with twice the productivity of 30 tons/0.25 ha/3 years or the equivalent of 40 tons/ha/year. This means that
porang farming stakeholders in East Lombok Regency need to think about ways to increase their land's selling price and productivity to achieve greater profit possibilities.

Table 1. Financial analysis of porang cultivation in one unit of arable land area (LLG)

<table>
<thead>
<tr>
<th>No</th>
<th>Description</th>
<th>Unit</th>
<th>LLG</th>
<th>Ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Land area cultivated (Ha)</td>
<td></td>
<td>0,64</td>
<td>1,00</td>
</tr>
<tr>
<td>2</td>
<td>Production volume (kg)</td>
<td></td>
<td>18.640</td>
<td>29.926</td>
</tr>
<tr>
<td>3</td>
<td>Price per kg</td>
<td></td>
<td>3.140</td>
<td>3.140</td>
</tr>
<tr>
<td>4</td>
<td>Variable cost</td>
<td></td>
<td>16.306.440</td>
<td>25.304.842</td>
</tr>
<tr>
<td>5</td>
<td>Variable cost/unit</td>
<td></td>
<td>875</td>
<td>875</td>
</tr>
<tr>
<td>6</td>
<td>Fixed Cost</td>
<td></td>
<td>12.770.800</td>
<td>19.818.125</td>
</tr>
<tr>
<td>7</td>
<td>Total Cost (4+6)</td>
<td></td>
<td>29.077.240</td>
<td>45.122.967</td>
</tr>
<tr>
<td>8</td>
<td>Revenue (2x3)</td>
<td></td>
<td>58.529.600</td>
<td>93.967.640</td>
</tr>
<tr>
<td>9</td>
<td>Profit (8–7)</td>
<td></td>
<td>29.452.360</td>
<td>48.844.673</td>
</tr>
<tr>
<td>10</td>
<td>Margin contribution (CM) (8-4)</td>
<td></td>
<td>42.223.160</td>
<td>68.662.798</td>
</tr>
<tr>
<td>11</td>
<td>CM Ratio (10/8)</td>
<td></td>
<td>0,72</td>
<td>0,73</td>
</tr>
<tr>
<td>12</td>
<td>CM/Unit (3-5)</td>
<td></td>
<td>2.265</td>
<td>2.265</td>
</tr>
<tr>
<td>13</td>
<td>R/C Ratio</td>
<td></td>
<td>2,01</td>
<td>2,08</td>
</tr>
<tr>
<td>14</td>
<td>B/C Ratio</td>
<td></td>
<td>1,01</td>
<td>1,08</td>
</tr>
<tr>
<td>15</td>
<td>Harga BEP (Rp) jual (6/11)</td>
<td></td>
<td>17.702.839</td>
<td>27.471.818</td>
</tr>
<tr>
<td>16</td>
<td>Harga BEP (Rp/kg) (15/2)</td>
<td></td>
<td>1.600</td>
<td>1.507</td>
</tr>
<tr>
<td>17</td>
<td>Produksi BEP (Kg) (6/12)</td>
<td></td>
<td>9.237</td>
<td>14.370</td>
</tr>
</tbody>
</table>

BEP Analysis

Break Even Point (BEP) is used to help set business goals and objectives. In addition, BEP is also used as a basis or basis for planning operational activities in achieving the desired profit and as a consideration in determining the selling price of porang. BEP analysis also determines at what point sales revenue equals total costs. Or the company operates in a state of profit or loss, or profit equals zero. Through the BEP point, we will know the relationship between fixed costs, variable costs, profits, and volume of activity (sales or production). Based on the BEP analysis of porang cultivation in East Lombok Regency, the following results were obtained:

a) BEP Price

Based on the data in Table 1, the BEP price is Rp 27,471,818/ha or Rp 1,507/kg. This shows that the BEP selling price of porang is Rp 1,507/kg. The lowest price for porang in the market is Rp 3,000/kg. Based on the BEP price, it can be concluded that porang cultivation is feasible (Rp 3,000/kg > Rp 1,507/kg).

b) BEP Production

The production BEP is 14,370 kg/ha, this indicates that the BEP for porang production produced per business unit in one production cycle is 14,370 kg/ha. At the same time, the average production produced by farmers in one production cycle is 29,926 kg/ha. Based on production BEP, it can be concluded that porang cultivation in East Lombok Regency is feasible (29,926 kg > 14,370 kg/ha).

Income Analysis Based on Potential Land Area in East Lombok Regency

Based on data on the potential land area that can be cultivated by porang in East Lombok Regency consisting of the potential area of Community Forest (HKm) = 1,230 ha, excluding HKm = 28,827 ha, and the total land potential is 30,057 ha. Estimation of the potential amount of production and income can also be done by using assumption data based on experiences that have been carried out by farmers and porang business actors from other regions in Indonesia (Apu et al., 2022; Izza et al., 2022; Utami, 2021).
Table 2. Estimation of porang production potential from the existing land area in East Lombok Regency (every season)

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential land area (ha)</td>
<td>30.057</td>
</tr>
<tr>
<td>Average production (ton/ha)</td>
<td>20</td>
</tr>
<tr>
<td>Total production (ton)</td>
<td>601.140</td>
</tr>
<tr>
<td>Selling price (IDR/ton)</td>
<td>3.140.000</td>
</tr>
<tr>
<td>Total Revenue (Rp)</td>
<td>1.887.579.600.000</td>
</tr>
<tr>
<td>Fixed Cost (Rp)</td>
<td>370.188.000.000</td>
</tr>
<tr>
<td>Variable Cost (Rp)</td>
<td>785.107.050.000</td>
</tr>
<tr>
<td>Total Cost (Rp)</td>
<td>1.155.295.050.000</td>
</tr>
<tr>
<td>Profit potential (Rp)</td>
<td>732.284.550.000</td>
</tr>
<tr>
<td>Profit percentage (%)</td>
<td>39</td>
</tr>
</tbody>
</table>

Estimation calculations based on the potential land area that can be planted with porang in East Lombok Regency obtained an estimated total production of 601,140 tons in one growing season with an estimated income of 1.89 trillion with a potential profit of 732 million. Meanwhile, the capacity of factories in East Lombok for baking is 10 tons per day or 300 tons in one month or 3,600 tons per year. This means that with a production potential of 601,140 tons per year, the porang factory in East Lombok Regency will be able to operate continuously without experiencing a shortage of porang raw material supply. In addition, the potential surplus of 597,540 tons of production shows the magnitude of investment opportunities for companies by establishing processing plants or exporting porang abroad.

CONCLUSION

Based on financial analysis, the prospect of porang cultivation shows favorable results, where the R/C ratio value is 2.01 and the B/C ratio value is 1.01. This means that porang cultivation in East Lombok Regency is feasible. While BEP, based on the price obtained is IDR 27,471,818 / ha. And BEP production occurs when farmers produce porang at 8,749 kg/ha, while the average production is 29,926kg/ha > 8,749kg/ha. This shows the need to intensify porang commodities in East Lombok Regency.

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