THE FEASIBILITY ANALYSIS AND RISK OF PATCHOULI FARMING PRODUCTION IN ALADADIO VILLAGE AERE DISTRICT EAST KOLAKA REGENCY

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ABSTRACT

This study aims to analyze the feasibility and risks of patchouli farming production. The study was conducted in Aladadio Village, Aere District, East Kolaka Regency. The location of the study was determined intentionally or purposively with the consideration that the study location was one of the villages whose main livelihood was as patchouli farmers. The population in this study was all patchouli farmers in Aladadio Village, which amounted to 174 households. At the same time, the number of respondents was 35 patchouli farmers, who were taken simply by random sampling. Variable research includes production, receipts, revenue, fixed costs, variable costs, total costs, RC ratio, sources of risk, frequency of risk events, risk events, quantitative impacts, qualitative impacts, risk levels, and risk management efforts. The first data analysis technique uses RC Ratio calculation analysis. Frequency x Impact is used to determine the risk and risk level of patchouli farming and risk management efforts using descriptive analysis. The results showed that the RC Ratio obtained was 1.53, which means that every 1 unit spent by farmers for patchouli farming costs will result in revenues of 1.53 units because the RC Ratio value is greater than 1, patchouli farming is still feasible to cultivate. The source of risk in farming is found in land management, planting, maintenance, harvesting, and post-harvest with a calculation of frequency x impact to produce a number 4 or the level of risk in patchouli planting, which is a high level. Efforts to manage production risks are carried out by avoiding risks so that the risk of planting does not occur sustainably. The highest risk is caused by climate/weather, where the risk avoidance method is by paying attention to the patchouli plant seeds used. If patchouli seedlings are taken from patchouli plants that have diseases, then when planting, it is most likely that patchouli is challenging to grow. Besides, weather and climate conditions are also very influential. When planting is carried out in the rainy season, it can produce good results. Still, if the weather conditions are hot, the number of deaths in the crop will be higher, so farmers plant patchouli by cutting to avoid the mortality rate in patchouli plants.

Keywords: farming; feasibility; patchouli; production risk.

INTRODUCTION

All the output produced, the agricultural sector is reasonably high compared to other sectors. This has been tested when an economic crisis hit Indonesia. Products from the agricultural sector are precisely one of the sources of foreign exchange income for the country. Generally, these commodities come from plantations, one of which is plantation products in the form of essential oils (Sukawati, 2019). Patchouli is one of the commodities producing essential oils from the plantation subsector, the flagship in Indonesia. In its history, patchouli developed from Sumatra Island, especially in Aceh, west sumatra, and north sumatra provinces, then developed on the islands of Java and Sulawesi (Direktorat Jenderal Perkebunan, 2019).

Southeast Sulawesi Province is an area with patchouli, the third largest in Indonesia. Aceh Province is the largest patchouli-producing province in Indonesia, followed by West Sumatra Province with a contribution of 18.78%, Southeast Sulawesi with a contribution of 15.93%, Jambi with a
contribution of 13.89%, North Sumatra with a contribution of 11.95% and West Java with a contribution of 11.69% (Direktorat Jenderal Perkebunan, 2019).

Aladadio Village is one of the villages in the Aere District, where most of the population works as patchouli farmers. Around 90% of people cultivate patchouli because Aladadio Village has fairly good land conditions. Although the land planted is good, this farming business has not been fully developed as expected. This condition must be feared because it will reduce the production enthusiasm of patchouli farmers and cause the non-achievement of national production targets. This is unlikely to happen if farmers know that trying to farm patchouli is very promising economically if appropriately managed to obtain maximum profits.

Business feasibility is influenced by the level of production, cost of farming, selling price, and the purchase price of production facilities, significantly affecting farmers’ farming income. Business feasibility is carried out to determine the level of feasibility of farming and whether it still needs to be maintained or harms farmers (Palobo et al., 2019); (Kurniawan, 2019); (Woentina, 2015). Price uncertainty significantly affects patchouli farmers’ income and dramatically influences a farming business's feasibility level. The selling price of patchouli in Aladadio Village fluctuates, affecting farmers’ incomes (Hendrastuti et al., 2012). Patchouli farming in Aladadio Village is one of the main livelihoods farmers are currently engaged in because the condition of the cocoa plant is no longer suitable for production. Hence, farmers change commodities to seasonal crops, namely patchouli plants. Business feasibility is fundamental to know how many farming activities are carried out, provide benefits, and can be said to be feasible to run (Masith et al., 2021); (Rahmawati & Hartanti, 2021).

Business feasibility analysis and production risks are used to determine the effect of patchouli farming and the benefits that farmers can obtain. Business feasibility is an effort to determine the level of feasibility of a type of business by looking at specific feasibility criteria to determine whether a business is feasible to be carried out (Ratnawati et al., 2019). Production risks often occur due to several factors, including climate and weather, pest and disease attacks. This risk can cause farming losses during a specific period (Mubarokah et al., 2017). Sources of risk in farming activities are classified into several groups, including climate change and weather that is not following plant needs, attacks of pests and plant diseases, high prices of saprodies, low prices of output, low availability of capital, low mastery of technology and low managerial management of farmers (Windani et al., 2016). Risk management strategies are essential for farmers to reduce the amount of risk they face. Risk management strategies are grouped into 3, namely ex-ante strategies, which farmers carry out before the risk occurs. Farmers carry out an interactive strategy in the event of a shock. And finally, the ex-post strategy is a strategy that farmers can do after glucagon (Windani et al., 2016). This research aims to determine the feasibility of patchouli farming carried out by farmers in Aladadio Village, Aere District, East Kolaka Regency, knowing the risks at every stage of patchouli farming in Aladadio Village, Aere District, East Kolaka Regency and knowing the efforts made by patchouli farmers to manage the production risks of patchouli farming in Aladadio Village, Aere District, East Kolaka Regency.

MATERIALS AND METHODS

This research was carried out in Aladadio Village, Aere District, East Kolaka Regency, with the consideration that the main livelihood of farmers is patchouli plants. Data collection was carried out in October-November 2021. The population in this study was all patchouli farmers, namely 174 households. The sample determination used simple random sampling by taking an error of 15% of the total population of 35 respondents. Research variables include respondent identity: age, level of education, number of family dependents, and patchouli farming experience. Business characteristics: production, receipts, income, fixed costs, variable costs, total costs, RC ratio. Production risk: frequency of risk, source of risk, quantitative impact, qualitative impact, level of risk, and risk management efforts. The data were analyzed using the RC Ratio calculation analysis to determine the feasibility level of patchouli farming. Frequency x Impact was used to determine the risk at each stage and level of risk. Qualitative descriptive analysis was used to determine the risk management efforts carried out by patchouli farmers identified in conditions before, at the time, and after the risk occurred.

RESULTS AND DISCUSSION

Characteristics of Respondents

The characteristics of respondents owned by patchouli farmers are age, education, farming

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experience, number of family dependents, and land area.

Table 1. Characteristics of patchouli farming in Aladadio Village

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Number of Farmers (Person)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (Years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21 – 50</td>
<td>32</td>
<td>91.40</td>
</tr>
<tr>
<td>51 – 55</td>
<td>3</td>
<td>8.60</td>
</tr>
<tr>
<td>Education Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No School</td>
<td>2</td>
<td>5.70</td>
</tr>
<tr>
<td>Elementary School</td>
<td>16</td>
<td>45.70</td>
</tr>
<tr>
<td>Junior High School</td>
<td>5</td>
<td>14.30</td>
</tr>
<tr>
<td>Senior High School</td>
<td>11</td>
<td>31.40</td>
</tr>
<tr>
<td>Bachelor</td>
<td>1</td>
<td>2.90</td>
</tr>
<tr>
<td>Farming Experience (Years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 – 3</td>
<td>9</td>
<td>25.71</td>
</tr>
<tr>
<td>4 – 7</td>
<td>26</td>
<td>74.28</td>
</tr>
<tr>
<td>Family Dependents (Person)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 – 3 (Small family)</td>
<td>14</td>
<td>40.00</td>
</tr>
<tr>
<td>4 – 6 (Moderate family)</td>
<td>21</td>
<td>60.00</td>
</tr>
<tr>
<td>Land (Ha)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Narrow Land &lt;0.5</td>
<td>17</td>
<td>48.60</td>
</tr>
<tr>
<td>Medium Land &gt;0.5 – 1</td>
<td>18</td>
<td>51.40</td>
</tr>
</tbody>
</table>

Source: Primary Data Processing Results, 2021

Table 1 shows that respondent farmers in Aladadio Village, Aere District, and East Kolaka Regency are in the productive category. This can be seen from the age level of 21-50. Menurutrop Popydilah et al. (2013), productive age ranges from 21 – 50 years. The age of the respondents greatly affected their ability to work, their way of thinking, and their level of response to the risks of patchouli farming. Patchouli farmers of a productive age will usually be better at minimizing the risks they will face to produce maximum production. Respondents of an unproductive age are cautious in managing their farming business because they already have higher experience, so that they can reduce risks in their farming business. Other opinions regarding the respondents' age were put forward (Mardani et al., 2017): the first group of productive age was 25 – 55 years, and the second group of unproductive age was 56 – 65 years. The level of education in Aladadio Village is dominated at the elementary level of 45.7%.

Education is one of the supporting factors for success in developing the quality of human resources and increasing work productivity. The higher the education of farmers, the higher the pattern of thinking and the more comprehensive their ability. According to Hidayat et al. (2017), the level of education also generally shows the creativity of human beings in thinking and acting. Low education leads to a lower level of knowledge of farmers in utilizing available natural resources, and farmers are more in line with previous farming experiences.

The experience of trying to farm patchouli in Aladadio Village can be categorized as experienced, as seen in Table 1. Farming experience is the length of time farmers carry out various farming activities. Farming experience also affects the success of the business. Although their education is low, the farming experience will help their success because, with higher experience, farmers are used to facing risks and knowing how to overcome problems if they have difficulty trying to farm (Cepriadi & Yulida, 2012). A farmer is said to be quite experienced if he has been involved in 4-7 years, while under 4 years old is categorized as still inexperienced.

The number of life dependents and the most significant percentage for the composition of the patchouli farmer families in Aladadio Village is a moderate scale of 21 people (60%) with many dependents of 4 -6 people. According to Puspitasari et al. (2013), the number of family members is categorized into three categories, namely small families (1 -3 people), medium families (4-6 people), and large families (> 7 people). The number of family members can affect the farmer's motivation to work. The more family members, the more dependents and the amount of responsibility that must be borne by the head of the family (Faló & Nubatonis, 2017).

The area of agricultural land is significant in the farming process because it is included in the production and factories of agricultural products. Land area is expressed in hectares (ha). The land area in farming will affect the amount of production that will be produced and the welfare that farmers will get (Mandang et al., 2020). Table 4 shows that the highest land area of patchouli farming in
Aladadio Village is medium land, with 0.5 – 1 Ha of 51.4%. Grouping of the land area according to (Hernanto, 1991). There are three groups, namely < 0.5 Ha (narrow land), 0.5 – 1 Ha (medium land), and > 1 Ha (large land).

Feasibility Analysis of RC Ratio

Analysis Revenue Cost Ratio (RC) compares the overall receipts with the production amount. RC ratio is an analysis used to determine whether the business being run is feasible or not feasible. It can calculate the total receipts by sharing the total cost (Taha & Alam, 2016). The RC ratio of patchouli farming samples in Aladadio Village can be seen in Table 2.

Table 2. Average number of receipts, production costs, adjustment, and rc ratio of patchouli business in Aladadio Village, Aere District, East Kolaka Regency

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Average Amount (IDR/Month)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Admission</td>
<td>1,965.714</td>
</tr>
<tr>
<td>2.</td>
<td>Production</td>
<td>1,285.387</td>
</tr>
<tr>
<td>3.</td>
<td>Revenue</td>
<td>680.327</td>
</tr>
<tr>
<td>4.</td>
<td>RC ratio</td>
<td>1.53</td>
</tr>
</tbody>
</table>

Source: Primary Data Processing Results, 2021

Table 2 shows that the average receipts were IDR1,965,714, and the average production cost was IDR1,285,387, with an average income of IDR680,327. The calculation results obtained that the RC Ratio of 1.53 means that every 1 unit issued by farmers for patchouli farming costs will result in revenues of 1.53 units because the RC Ratio value is greater than 1 (RC > 1) then patchouli farming is feasible to run. Similarly, the research conducted by Rosmawaty et al. (2020) shows that the RC Ratio value of seaweed cultivation in the South Konawe District is 1.64, which means it is worth developing. Similar research conducted by Kurniawan (2019) shows that the RC Ratio value of patchouli farming in Pule District, Trenggalek Regency, is 1.54. It is worth developing because the RC Ratio value is greater than 1.

Risks in Patchouli Farming

Success in a farming business is primarily determined by how the system is in its cultivation. The risks of farming can be seen at the stage of farming. Patchouli farming risks will be described based on the type of risk, source or cause of the risk, frequency of risk occurrence, impact, and risk management efforts.

a. Types of Patchouli Farming Risks

Risk is a potential adverse event caused by the uncertainty of an event. The risks in the patchouli cultivation stage start from land management, planting, maintenance, harvesting, and post-harvest (patchouli sales).

Risks at the Time of Land Cultivation

According to Mohamad et al. (2018), land management should be done properly and correctly so that it is not excessive and the influence caused by frequent land management is not significant enough and serious. Frequent soil management results in reduced soil microorganisms, and the soil condition will be poor in nutrients, resulting in plants not growing too well.

Farmers cultivate their farmland without using additional labor from outside the family because using outside labor will increase costs. Farmers work on agricultural land for quite a long time because they do it themselves. But even so, farmers still do it themselves. The land conditions are good enough for patchouli crops, so farmers plant patchouli between cocoa plants, and some farmers have also cut down cocoa trees and changed plants to patchouli plants.

Risks at the Time of Planting

Based on the results of the response interview, the risk arises from the death of patchouli plants (failing to grow) during sowing because farmers do not nurse first. According to farmers, seeding will take time, effort, and considerable costs for the purchase of polybag, so farmers plant directly using patchouli plants that have been planted covered with used drink glasses or cut. This results in plant death, so farmers often embroider dead plants.

The risk of planting in farming activities is categorized into several groups, including climate change and weather that does not suit the needs of plants, attacks of plant-disturbing organisms, high
prices of saprodi, low prices of output, limited availability of capital, low managerial capabilities of farmers. Use seeded seedlings, choose quality, know reasonable planting distances, and use fertilizers non-excessively (Windani et al., 2016).

Weather conditions are also the main factor in planting risk, where in the dry season, the risk of death in patchouli plants is higher than in the rainy season. One of the reasons farmers close patchouli that has been planted is that patchouli plants are not exposed to direct sunlight and rainwater. The closure is carried out for one week. After one week, the farmer opens the glass of the used drink, and when there is a dead plant, the farmer replants or embroiders patchouli.

Risks at the Time of Maintenance

Based on the results of respondents’ interviews, the risks faced by farmers are pests and diseases. Changes in weather and climate likely cause plants to be affected by pests and diseases. Diseases that exist in patchouli plants, namely bulog disease, are caused by viruses. Symptoms of the disease can be characterized by swollen stems of the plant and wrinkled and thick leaves with a yellowed upper surface due to nutrient deficiency. Pests on patchouli plants, such as aphids and tunggau, can cause leaves to wrinkle (curl) and curl, significantly affect plant growth (Nuryani, 2006). When it happens, farmers are vigilant to spray so that the plants can improve again. From the interview results, this risk is likely to occur if the farmer is not on standby in monitoring the development of patchouli plants.

Risks at harvest time

Based on the results of respondents’ interviews, the patchouli harvesting process was carried out 3 times in 1 year. The first harvest was carried out when the plant was 6 months old, and the next harvest was carried out within 3 months after the first harvest. Patchouli plants can last 2-3 years, so after they are 2-3 years old, the farmer pulls out his patchouli plants and then replants them to produce high production. The risks faced are likely to occur because farmers continue to harvest even though the conditions of the patchouli planted are not very good. Crop failure is caused by plant growth disruption due to pest and disease disturbances. In patchouli farming, this risk has a small probability of occurring due to pest disturbances and diseases in patchouli plants.

Risks in Post-Harvest

Based on the results of respondents’ interviews, patchouli sales often experience risks where the patchouli sales process experiences a price decline that can occur at any time, and farmers still have to sell to meet their daily needs.

The risk of fluctuations or price fluctuations is a risk that often occurs in agriculture. Patchouli farming businesses often experience price fluctuations where the selling price of patchouli cannot be predicted when it will fall, and this increase causes farmers to continue to sell patchouli even though prices are relatively low due to the ongoing necessities of life.

Farmers have no solution or tactics because they are in a weak position. This can be seen from the economic aspects of the lacking farmers, so it affects the proactivity of farmers who produce small-scale patchouli or on a household scale only. The most important thing for farmers is that their patchouli products can be sold out to get a quick return on investment and meet their daily needs from the profits obtained from selling the harvest from patchouli production (Shinta et al., 2012).

b. The Magnitude of Risks in Patchouli Farming

Risks in patchouli farming are analyzed descriptively by multiplying the frequency of events and the impact caused. The impact of risk is calculated using production yields multiplied by the percentage of stunting of patchouli plants. The risks in patchouli farming are found in Table 3.

Based on Table 3, the risks to patchouli farming in Aladadio Village, Aere District, occur at the stage of planting risk stemming from external risks, namely weather that is difficult to predict, results in plants dying, and the use of doses at the time of fertilization. This type of risk is a pure or unintentional risk. Frequency scores and impact scores at each patchouli farming stage are provided to find the criteria for the highest and lowest risk scores. The multiplication of the frequency score and impact score indicates the highest risk occurs at the patchouli planting stage because the patchouli planting process often dies. In one year, farmers often harass patchouli plants due to their failure to grow. The risk score falls within a high level or criterion with a score of 4.

The magnitude of the risk is known according to the severity of the risk, for the level of frequency of risk is divided into five groups, namely sporadic, rare, moderate, frequent, and very frequent. As for the level of impact, it is also divided into five groups, namely tiny, minor, medium, large, and very large impacts. To determine the level of risk, a multiplication is carried out between
the frequency and impact of risk so that the risk can be determined at each stage of being included in the category of very low, low, high, medium, and very high risk (Sirait dan Susanty, 2016)

<table>
<thead>
<tr>
<th>Stages of Risk</th>
<th>Frequency of Risk Events</th>
<th>Impact of Loss</th>
<th>Magnitude of Risk (risk score x impact score)</th>
<th>Risk Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Management</td>
<td>Did not happen (1)</td>
<td>Agricultural tools used are still traditionally (1)</td>
<td>1</td>
<td>Very Low</td>
</tr>
<tr>
<td>Planting</td>
<td>Frequent occurrences (4)</td>
<td>Failed to grow 1.132.050 (1)</td>
<td>4</td>
<td>Tall</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Sometimes it happens (3)</td>
<td>Stunted and yellowing plants (1)</td>
<td>3</td>
<td>Keep</td>
</tr>
<tr>
<td>Harvest</td>
<td>Sometimes it happens (3)</td>
<td>Low production quality (1)</td>
<td>3</td>
<td>Keep</td>
</tr>
<tr>
<td>Post-harvest</td>
<td>Sometimes it happens (3)</td>
<td>Unstable price (1)</td>
<td>3</td>
<td>Keep</td>
</tr>
</tbody>
</table>

**Risk Management Efforts in Patchouli Farming**

Risk management is used as a basis for being able to estimate the danger that will befall with accurate calculations based on various analyses of various variables of the possibility of risk occurrence with careful consideration of various initial information before the occurrence of an event that can result in a loss (Wati, 2021).

Risk management in patchouli farming is carried out by risk aversion so that the risk of planting does not occur sustainably. The results showed that the risk was highest due to climate/weather. To avoid risks, pay attention to the patchouli plant seeds used. If patchouli seedlings are taken from patchouli plants that have diseases, then when planting, the patchouli will likely be challenging to grow. Weather and climatic conditions are also very influential. When planting is carried out in the rainy season, it can produce good results. Still, if the weather conditions are hot, the number of deaths in the crop will be higher, so farmers plant patchouli by cutting it to avoid the mortality rate in patchouli plants.

Risk management efforts are in line with Lestari et al. (2019). Risk management strategies carried out by farmers can be grouped into three: the ex-ante strategy, which farmers carry out before the risk occurs. This effort is carried out to prepare the farming business so that it is not in a position that is too vulnerable when there is a risk shock. Interactive strategy is a strategy carried out by farmers when there is a risk that involves reallocating resources so that the impact of risk on production can be minimized. Ex-post strategy is a strategy that farmers can carry out after a risk occurs that is directed to minimize the following impact.

Risk management efforts are in line with Dewi (2017) and are carried out using risk control, as when planting, one must pay attention to the quality of the seedlings used so that at the time of planting, it can reduce plant mortality. Risk control aims to take actions that reduce the loss of risks that are likely to exist. Risks will still exist, but the impact is minimized as much as possible.

**CONCLUSION**

Based on the results and discussion obtained, it can be concluded as follows: The feasibility of patchouli farming in Aladadio Village, Aere District, is financially feasible to be cultivated based on the calculation of the R/C Ratio showing a figure of 1.53, meaning, every 1 unit issued by the farmer for patchouli farming costs will result in a revenue of 1.53 units because the RC Ratio value is greater than 1 (RC > 1) then patchouli farming is feasible to run. The risks that occur are found in the planting stages, as well as the types and sources of risk in patchouli farming that do not occur and are likely to occur, namely land management, maintenance, planting, harvesting, and post-harvest. The amount of risk is 4, meaning the risk level is high. Risk management efforts in patchouli farming are carried out by avoiding risks so that the risk of planting does not occur sustainably. The results showed that the risk was highest due to climate/weather. The risk avoidance method is to pay attention to the patchouli plant seeds used. If patchouli seedlings are taken from patchouli plants that have diseases, then when planting, the patchouli will likely be challenging to grow. Weather and climatic conditions are also very influential. When planting is carried out in the rainy season, it can produce good results.
Still, if the weather conditions are hot, the number of deaths in plants will be higher, so farmers plant patchouli by cutting to avoid the mortality rate in patchouli plants.

REFERENCE


