Copra processing issue of migrant farmers in tidal land of South Sumatra

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Abstract. The study was carried out in the tidal land region of Pendowo Harjo Village, Sungasang District, Banyuasin District, South Sumatra Province, with the goal of calculating the production costs and income gained, as well as determining the financial feasibility of the copra processing business. Simple random selection was used to choose sample farmers, with 45 sample farmers managing the copra processing business chosen from a total of 235 population members. All sample farmers were Bugis ethnic migrant farmers. The analysis results showed that with an average area of 1.15 hectares, an income of IDR 2,530,886.98 was obtained. The production costs incurred were IDR 1,756,328.15 resulting in an income of IDR 774,558.83 per arable area per production process (for a period of 3 months). The NPV value was IDR 102,638,789.00, with the IRR value was 49.92 per cent, and the Net B/C value was 2.28. These figures show that a copra processing business can be developed in the area financially.

1. Introduction

Coconut (Cocos nucifera L.) is a crop product and socioeconomic commodity that has been grown in practically every section of Indonesia for decades and has a high use value in people's life. Of the total area planted with coconut, 98 per cent are people's crops, either planted as garden plants or plantation plants that involve the livelihood of 1.3 million heads of families who depend on coconut plantations for their lives [1]. In Indonesia, coconuts are typically assigned to satisfy the demands for fresh coconut and copra. Old coconut flesh, a trade commodity of economic value as raw material for oil, is called copra, where the oil content ranges from 60 to 65 per cent [2]. At the same time, the flesh of young fruit has an oil content of about 43 per cent. Data from the Ministry of Agriculture [3] estimated that 89.7 per cent of coconut production was processed into copra. Coconut processing into copra has a higher price point, can be held longer, and can be further processed into consumer items such as edible oil, butter, cheese, and soap as a raw material [4]. Coconut commodity experienced glory from 1960 to 1970 with copra as the main product [3]. For business actors, the copra industry has a bright future ahead of it. These business actors remain motivated to engage in the coconut business, which is turned into copra or other derivative products, due to the enormous potential of coconut. Farmers of copra are looking for international consumers who can accept their products, such as Malaysia and Thailand.

The tidal land area of South Sumatra Province of Indonesia can be treated as marginal land due to the water management technology, nutrient and fertiliser management, soil amelioration, cultivation improvement, and improved farming systems [5]. Managing copra in the area, especially in Pendowo Harjo Village, is straightforward but able to increase the managers' income in meeting the needs of the daily life of farmers, which happens to be the majority of Bugis migrants. Most of the Bugis migrants
in the area are more skilled in managing coconut farming than the local inhabitants. Because coconut trees often thrive in the yard of the home and on the banks of the river close to where people live, the copra industry is highly advanced. As a result, many farmers are involved in the copra business. The most significant fact that supports Bugis' migration to this area from Sulawesi is planting coconuts for copra. This is related to Sani's statement [6] that the Bugis diaspora occurred because of the control of the copra trade in Sumatra. The migration carried out by the Bugis is not only for the sake of profit but also as an effort to seek knowledge, wealth, and improve fate. Migration is one way for the Bugis to achieve a higher social status [7].

The authors are encouraged to research the effort of Bugis migrants in managing the copra businesses in the area. However, there was still limited research regarding this matter. Furthermore, the research focused on the financial feasibility of the copra processing business. Therefore, the research is expected to provide an overview of the copra business carried out by Bugis migrants and explain the economic network formed as a result of their migration activities. The study looked at how much production costs were, how much money the Bugis migrants made running a copra processing business in Pendowo Harjo Village, and whether their management was financially viable.

2. Materials and methods

2.1. Materials

This study took place on tidal land in Pendowo Harjo Village, Sungsang District, Banyuasin District, Indonesia's South Sumatra Province. The location was determined purposively, considering that most of the population was doing copra processing business. The time of the survey and observation was from June to July 2017.

2.2 Methods

The survey method was employed in this study. A survey approach entails interviewing a small group of people and collecting a large number of samples using questionnaires, interviews, and direct observation of the study region.

There are two types of data collected: primary data and secondary data. Direct interviews with copra business actors were conducted utilizing a list of questions (questionnaires) that had been prepared ahead of time. At the same time, secondary data was gathered from the research service, agencies, and universities. Simple random sampling [8] was utilized in this investigation, with a total sample of 45 households drawn from 465 members of the copra processing business community.

Data collected in the field is tabulated and then descriptive-quantitatively analysed (processed, analysed, and drawn conclusions that describe the object under study). To answer the first objective, the following formula is used:

1. Production cost:

\[ TC = FC + VC \quad \text{(1)} \]

remarks:
- \( TC \): Total cost per production period (in IDR)
- \( FC \): Fixed cost per production period (in IDR)
- \( VC \): Variable cost per production period (in IDR)

2. Income

\[ TR = Py \cdot Q \quad \text{(2)} \]

remarks:
- \( TR \): Total revenue (in IDR)
- \( Py \): Product price (in IDR)
- \( Q \): The amount of production (output) produced (in kg)

3. Revenue
To answer the second objective, which is to analyze the level of business feasibility, the research was utilised the financial data for ten years from 2008 to 2017. The formula is used as follows:

1. Income in the coming years

\[
NPV = \left[ \sum_{t} \frac{bt - ct}{(1+i)^t} \right] - ko \quad \text{...........}(4)
\]

To answer the second objective, which is to analyze the level of business feasibility, the research was utilised the financial data for ten years from 2008 to 2017. The formula is used as follows:

1. Income in the coming years

\[
TI = TR - TC \quad \text{...........}(3)
\]

Remarks:
TI: Total Income (in IDR)
TR: Total Revenue (in IDR)
TC: Total Cost (in IDR)

2. Applicable interest rate

\[
IRR = i_1 + \left[ \frac{NPV_1}{NPV_1 - NPV_2} \right] X (i_2 - i_1) \quad \text{...........}(5)
\]

Remarks:
NPV_1: NPV at the highest discount rate (positive)
NPV_2: NPV at the highest discount rate (negative)
i_1: Discount rate NPV_1
i_2: Discount rate NPV_2

Criteria:
IRR > Cost of Capital, feasible to be developed
IRR < Cost of Capital, not worth developing

3. Profit rate

\[
Net \ B/C = \frac{\sum B - \frac{C}{1+i} (+)}{\sum B - \frac{C}{1+i} (-)} \quad \text{...........}(6)
\]

Criteria:
Net B/C > 1 Feasible
Net B/C = 1 Break-Even Point
Net B/C < 1 Not Feasible

3. Results and discussion

Copra is coconut flesh (endosperm) which is white and soft dried through a drying process with a thickness of 8 to 10mm. Good quality copra comes from ripe coconuts, with fruit ages 11 to 12 months [9]. According to the findings of the field research, the manufacturing of copra takes one week to complete, starting with the separating of coconuts, trimming, and drying. Although the copra production process is enjoyable, the discussion below will focus on the economic calculations of the copra processing business.

3.1. Revenue and income
From an economic point of view, production utilizes all available resources to achieve guaranteed quality and quantity results, which are well managed so that the resulting commodities can be traded [10,11]. Copra, which is wrapped in sacks, is one among the products produced by Bugis migrants. The business generated 532.37 kg of copra on average in one production process (3 months), with an average sale price of IDR 4,754.00, resulting in revenue of IDR 2,530,886.98 and income of IDR 1,756,328.15. The calculation results show that with the production costs spent amounting to IDR 774,558.83, the revenue obtained can cover them, which means that it is profitable. More details can be seen in the following Table 1. This relates to the livelihoods of Bugis migrants, which are efforts made by individuals to earn income, which includes capabilities, quantifiable assets, and incalculable assets such as claims and access [12].

Table 1. Average revenue and income of Bugis Migrants copra processing business in Pendowo Harjo Village, Sungsang Sub-district, Banyuasin District.

| No | Components          | Value        |
|----|---------------------|--------------|
| 1  | Production (kg.)    | 532.37       |
| 2  | Price (IDR/kg.)     | 4,754.00     |
| 3  | Revenue (IDR/kg.)   | 2,530,886.98 |
| 4  | Total Cost (IDR/kg.)| 1,756,328.15 |
| 5  | Income (IDR/kg.)    | 774,558.83   |

3.2. Financial Feasibility

This assessment also evaluates the business's economic, ecological, and technical (financial) feasibility to evaluate whether it can be developed or not. For example, if a business is profitable but not necessarily developable, use the NPV, IRR, and Net B/C Ratio methodologies to financially examine it. According to the local community, this copra processing business has an environmental impact since coconut water cannot be effectively utilised (coconut water is thrown away), resulting in an unpleasant stench. Therefore, product diversification should be carried out [13–15]. In terms of the business of processing copra, the tools utilized are still quite primitive, and raw materials are purchased from climbers who come personally to copra business operators. The quantity and quality of copra, on the other hand, continue to be prioritized [16,17].

The financial calculations yielded an NPV value of IDR 19,668,343.86, which represents the earnings earned from the business over a ten-year period (2008-2017) at an interest rate of 18% per year at the time. To assure and analyse the degree of investment generated, IRR analysis was employed. The IRR was found to be 49.92%. These findings recommended that the business can continue to operate because it is still lucrative (above 18%). The amount of investment equal to NPV (NPV = 0) ranges from 18 to 49.92%, implying that the business revenue will be depleted at a 49.92% interest rate. The net BC ratio analysis compares the net benefits that have been discounted positively (+) and the net benefits that have been discounted negatively (-). The calculation results show a positive Net B/C value of 2.28, which means that the copra business managed by Bugis migrants deserves to be developed.

Table 2. Financial feasibility of Bugis Migrant copra processing business in Pendowo Harjo Village, Sungsang District, Banyuasin District

| No | Components | Value  |
|----|------------|--------|
| 1  | NPV (IDR)  | 102,638,790 |
| 2  | IRR (%)    | 49.92  |
| 3  | Net B/C    | 2.28   |

From the income and financial feasibility, the business is promising for the farmers. For the sustainability of this business, the financial feasibility needs to be supported by appropriate and pro-
environmental social institutional conditions as well as adaptive to negative shocks from external factors. It is recommended that the copra processing business use both the coconut meat and the coconut water to be processed into other products such as nata de coco to maximise added value and income from coconut products. The copra that is produced can be turned into vegetable oil. Coconut oil production can meet vegetable oil needs, even though the manufacturing process in Pendowo Harjo Village is still traditional.

4. Conclusions
In the copra processing business, the production cost was IDR 1,756,328.15, and the income was IDR 774,558.83 per production process. Financially, for ten years, the copra-processing business is feasible to develop with an NPV value of IDR 102,638,790, IRR value of 49.92%, and net B/C value of 2.28. Several policies and institutional supports to maintain the feasibility of copra-processing business are necessary, such as those relating to environment and adaptation to external factors.

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