

PROSPECTS FOR TURMERIC AGROINDUSTRY IN LAMTEUBA, SEULIMUM SUB-DISTRICT ACEH BESAR DISTRICT

Widyawati¹, Rahmi Khoiriah Nasution², Anwar Deli³

^{1,2,3} Agribusiness Department, Universitas Syiah Kuala, Banda Aceh, Indonesia

Corresponding Email: widyawati@unsyiah.ac.id

Abstract

Turmeric is a medicinal plant that has many benefits. There are more turmeric production centers in Indonesia in Java and Sumatra, it does not rule out the possibility of turmeric production centers in Aceh Province, one of which is in Seulimum Sub-District. The limited knowledge possessed by turmeric farmers, both technology and the market, makes turmeric farmers prefer to sell directly their turmeric harvests rather than processing them first into other products. The purpose of this study was to determine the processing techniques, costs and benefits derived from the turmeric powder processing industry in Lamteuba, Seulimum Sub-District, Aceh Besar District. The scope of this research is limited to processing techniques, business feasibility analysis of turmeric powder. Based on the research results, it was found that the turmeric powder processing techniques in Lamteuba already used machine technology such as washing machines, slicing machines, ovens and milling machines. Production costs incurred amounting to IDR 22,047,273/month with a monthly profit of IDR 4,952,727. The R/C Ratio value is 1.22, meaning that the business is feasible to run. The ROI value is 22.46% and the BEP price and BEP the amount of production obtained are IDR 48,993/Kg and 367 Kg/month. 46% and BEP price and BEP the amount of production obtained respectively IDR 48,993/Kg and 367 Kg/month. 46% and BEP price and BEP the amount of production obtained respectively IDR 48,993/Kg and 367 Kg/month.

Keywords: *Turmeric, Income, Profit*

1. INTRODUCTION

Turmeric (*Curcuma domestica* Val) is a medicinal plant that is widely known by the public for its various benefits. Apart from being used as a medicinal plant, turmeric is also used as a mixture of cooking spices, coloring agents and natural food preservatives, basic ingredients for making herbal medicine, raw materials for the food and beverage industry and cosmetics. The need for turmeric in the community is quite high, with the role of the community in developing turmeric plants to meet the needs it is hoped that it will increase the production of these plants.

Table 1. Land Area, Production and Productivity of Turmeric in Indonesia in 2013 – 2017

Year	Land Area (Ha)	Production (Tons)	Productivity (Tons/Ha)
2013	5,428.55	120,726.11	22,2
2014	5046.45	112088.18	22,2
2015	5,657.86	113101.18	19,9
2016	5170.96	107,770.47	20,8
2017	6,496.73	128,338.94	19,7

Source: Ministry of Agriculture, (2015); Central Bureau of Statistics (2017) processed

Based on Table 1, that the production of turmeric in Indonesia has experienced ups and downs. The lowest production in the last five years occurred in 2016, namely 107,770.47 tons, but in 2017 turmeric production increased by 19.09 percent. From the table above it is also seen that productivity has also increased and decreased. According to Thamrin (2014), the factors that influence the increase and decrease in productivity are the use of fertilizers and labor factors. Meanwhile, according to Makruf et.al (2012) states that the factors that affect productivity are the area of land, the amount of fertilizer used, the number of workers, the amount of pesticides, and the number of seeds. The limited knowledge possessed by turmeric farmers, both technology and the market, makes turmeric farmers prefer to sell directly their turmeric harvests rather than processing them first into other products. Even though seen from a business opportunity, turmeric plants have a fairly high selling value if processed further. Agro-industry is the process of processing agricultural raw materials into semi-finished or ready-to-use materials which will increase the selling value of the products produced. The existence of agro-industry itself is expected to have a positive impact on agricultural commodities in the future, because the agro-industrial sector plays a role in processing agricultural products into goods that are more useful in meeting community needs (Widianti et.al, 2008).

Seulimum Sub-District is one of the areas that has a turmeric powder processing industry in Aceh Province, especially Aceh Besar district. The location of the turmeric powder processing industry is in Mukim Lamteuba. The area of the turmeric plant in Lamteuba according to the local Agricultural Extension Agency (BPP) is approximately 80 hectares and produces as much as 10 tonnes per hectare. Mr. Sulaiman is a keuchik in Gampong Blangtingkeum and at the same time the originator of the formation of turmeric powder processing in the Lamteuba area. The reason he formed this business was because the selling price offered by retailers (buyers) was relatively cheap. So he thought more creatively to increase the selling value and together with local residents formed a Joint Business Group (KUB) Lamteuba Creative People in producing turmeric powder, where this turmeric powder product is called ASLAM (Original Lamteuba). The formation of this local turmeric powder product has not been able to dominate the Aceh market, due to the involvement of a number of intermediary institutions, especially wholesalers and retailers which will later affect the quantity, price and scope of the target market. Thus causing turmeric powder products from outside Aceh to dominate the market. For this reason, it is necessary to see whether this turmeric agro-industry business is feasible to run in line with competition from similar businesses from outside Aceh. Thus causing turmeric powder products from outside Aceh to dominate the market. For this reason, it is necessary to see whether this turmeric agro-industry business is feasible to run in line with competition from similar businesses from outside Aceh. Thus causing turmeric powder products from outside Aceh to dominate the market. For this reason, it is necessary to see whether this turmeric agro-industry business is feasible to run in line with competition from similar businesses from outside Aceh.

2. LITERATURE REVIEW

2.1. Agro-industry

Agro-industry has a major role in the development of the agricultural sector, especially in the future where agriculture is the mainstay sector in national development. The role of agro-industry will be even greater in efforts to realize a strong, advanced and efficient agricultural sector so that it can become a leading sector in national development, must be supported through agro-industry development, towards a strong, advanced and efficient agro-industry (Kartasasmita, 2011). According to Austin in Hidayat (2012) agro-industry is a process of processing both vegetable and animal products. Agro-industry includes the Agricultural Product Processing Industry, the Agricultural Equipment and Machinery Industry and the Agricultural Sector Service Industry. In the agricultural product processing industry, there are plantation crops, forest products, fisheries

and animal husbandry. In addition, agro-industry is an interconnected activity starting from production, processing, transportation, storage, financing, marketing and distribution of agricultural products.

The development of agro-industry requires several prerequisites, as pre-conditions for its development. According to Mosher in Mardiharini and Erizal (2012) in classic literature which reads "Getting Agriculture Moving", there are basic requirements and facilitating conditions which are one of the mandatory requirements for the development of agro-industry in the regions. The main requirements for agricultural development are: (1) the existence of a market to accommodate farm production, (2) the availability of technology, (3) the availability of raw materials and means of production locally, (4) the existence of production incentives for farmers and (5) Availability of smooth and continuous transportation. In addition, the conditions for facilitating agricultural development include: (1) development education, (2) production credit, (3) community activities,

2.2. Business Feasibility Study

According to Umar in Winantara et.al (2014), business feasibility analysis is an activity in which this activity not only analyzes whether or not a business is feasible, but also when it is operationalized routinely in order to achieve maximum profit for an unspecified time. The puIDRose of doing this business analysis according to Gray and Larson (2007) is (a) To find out the level of profit that can be achieved through investing in a project (b) To avoid wasting resources such as implementing unprofitable activities (c) To conduct an assessment of opportunities existing investments so that they can choose the most profitable alternative activities (d) Determine investment priorities. According to Nurmalina et.al (2009), in a business feasibility study an assessment is made of various aspects ranging from non-financial to financial (financial) aspects. Non-financial aspects include: market, technical, management and legal, socio-economic-cultural, environmental aspects.

1. Market Aspect

The market aspect ranks first in the feasibility study, a business development is said to be feasible, it needs the right place to market processed products so that they can be reached by consumers.

2. Technical Aspect

Technical aspects include the process of technical business development and operation. In the technical aspect, it is said to be feasible if the place/location of a company is able to support business development. In addition, the layout of the company must be suitable so that it can expedite the production process, as well as selecting the right technology so as not to hinder a business.

3. Management and Legal Aspects

Aspects of management in the development of a business can be said to be feasible if the management of human resources available in the business has been managed properly, provides appropriate salaries, and has financial reports. In terms of legality, it is feasible to carry out if you already have an environmental permit from the RT, RW, or village. In addition, a permit from the Office of Cooperatives, Industry and Trade in the area where the business is carried out.

4. Social, Economic, Cultural and Environmental Aspects

Business development is said to be feasible in terms of social, economic, and cultural aspects if it is able to increase employment opportunities, community income, and local revenue. In addition, in the development of a business it is hoped that it will not conflict with the culture of the community.

2.3. Advantage

According to Mulyadi (2010), production costs are all costs incurred in processing raw materials into finished or ready-to-use materials. Production costs are divided into two parts, namely fixed costs and variable costs. According to Kuswadi (2005) fixed costs and variable costs are included in groups based on their behavior patterns. Fixed costs are costs incurred that do not change if at any time the company's production increases or decreases. While variable costs are costs incurred both large and small, the amount always changes depending on the required production volume. In this study fixed costs consist of equipment depreciation costs while variable costs consist of raw material costs, labor costs, equipment fuel costs, transportation and packaging costs. For every business actor, profit is a goal to be achieved. According to Roza in Jannah (2012) profit is the total revenue earned minus the total costs incurred. The size of the profits obtained by a business is a measure of the success of its managers in running a business. If the total revenue is reduced by the total costs incurred, the result is negative, then the business is said to have suffered a loss, otherwise if the result is positive, then it can be said that the business is making a profit. To get a big profit can be done by reducing production costs incurred or reducing the selling price. According to Rahardi in Fun (2013) Production costs are costs that must be incurred by business owners to pay for the needs in the production process, both fixed costs and variable costs.

3. RESEARCH METHODS

3.1. Time and Place of Research

This research will be carried out in the ASLAM Turmeric Powder Processing Industry, Seulimum Sub-District, Aceh Besar District. The location determination was carried out purposively (purposive sampling) with the consideration that Seulimum Sub-District is one of the districts that produces turmeric, both raw and processed materials. The research activities in the field were carried out in April - May 2019.

3.2. Objek and Scope of Research

The object of this research is the ASLAM turmeric powder processing agro-industry in Lamteuba and the traders involved in the marketing process. The scope of this research is limited to processing techniques, business feasibility of turmeric powder in Lamteuba, Seulimum Sub-District, Aceh Besar District.

3.3. Population and Sample

The population of this study is the owner of the ASLAM turmeric powder agroindustry in Lamteuba, Seulimum Sub-District, Aceh Besar District. Sampling in this study used the Case Study method where this method will later provide detailed information and descriptions, the characteristics and characteristics that are typical of cases which will later be made into a general matter (Nazir in Meutia, 2013).

3.4. Data Collection Method

The data collection method used in this study consisted of primary data and secondary data. Primary data is obtained through interviews while in the field, while secondary data is data obtained from literature related to research and related institutions.

3.5. Method of Analysis

Profit Analysis

This analysis aims to calculate how much profit the turmeric powder processing industry can get by using the formula according to Suehereo in Triady (2016) as follows:

$$\pi = TR - TC \dots\dots\dots (1)$$

Where :

π = Profit (IDR/Month)

TR = Total Revenue from selling Turmeric Powder (IDR/Month)

TC = Total Cost (IDR/Month)

a. Total revenue (Revenue) using the formula:

$$TR = PXQ$$

Where :

TR = Total revenue obtained from the sale of turmeric powder (IDR/month)

P = Selling Price of Turmeric Powder (IDR/Kg)

Q = Sales of Turmeric Powder (Kg)

b. Total cost (Cost) using the formula:

$$TC = FC + VC$$

Where :

TC = Total costs used (IDR/month)

FC = Fixed Costs (IDR/Month)

VC = Variable Cost (IDR/Month)

Revenue Cast Ratio (R/C)

This analysis aims to see whether the turmeric powder industry in Lamteuba is feasible or not. It can be calculated by the formula according to Hernanto in Agustian (2014) as follows:

$$R/C \text{ Ratio} = \frac{\text{Total Revenue}}{\text{Total Cost}} \dots\dots\dots (2)$$

Description of satisfaction criteria, namely:

1. $R/C < 1$, then the turmeric powder processing industry is not feasible and unprofitable.
2. $R/C > 1$, then the turmeric powder processing industry is feasible and profitable for the industry.
3. $R/C = 1$, then the turmeric powder processing industry is in a state of balance (no profit or no loss).

ROI (Return of Investment)

ROI serves to calculate the comparison of profits with costs incurred in obtaining these benefits using the formula according to Kamir and Jakfar (2003) as follows:

$$ROI = \frac{\text{Turmeric Powder Industry Advantages}}{\text{Total Cost of Turmeric Powder Industry}} \times 100\% \dots\dots\dots (3)$$

BEP (Break Evening Point)

This analysis aims to see the return on capital of a business, so the BEP production price formula and the BEP production amount are used according to Fauzi in Asyik (2013)

$$BEP \text{ price} = \frac{\text{Total Cost of Turmeric Powder Expenditure}}{\text{Total Production of Turmeric Powder}}$$

$$BEP \text{ number of production} = \frac{\text{Total Cost of Turmeric Powder Expenditure}}{\text{Selling Price of Turmeric Powder}}$$

4. RESULTS AND DISCUSSION

4.1. Overview

Seulimum is one of the sub-districts in Aceh Besar District with an area of 40,435 Ha. Seulimum District has regional boundaries, namely:

- North : Malacca Strait
- South side : Jantho City District
- West Side : District of Kuta CotGlee, Indrapuri District and Great Mosque District
- East : District of Seulawah Valley and Pidie Regency

Seulimum Sub-District is located very far from the market area and the community, causing difficulties for farmers to market their crops to other areas in Aceh Province. Because the distance that must be traveled from Seulimum Sub-District to the Regency Capital is 12 km and the distance from Seulimum Sub-District to the Provincial Capital is 42 km.

4.2. Turmeric Powder Production Process

The prospect of processing turmeric rhizome into turmeric powder in Lamteuba requires an overview along with the necessary information regarding the production process of the turmeric powder. The process of processing turmeric rhizome into turmeric powder in Lamteuba, Seulimum Sub-District, Aceh Besar District includes several stages, which can be seen in the scheme below.

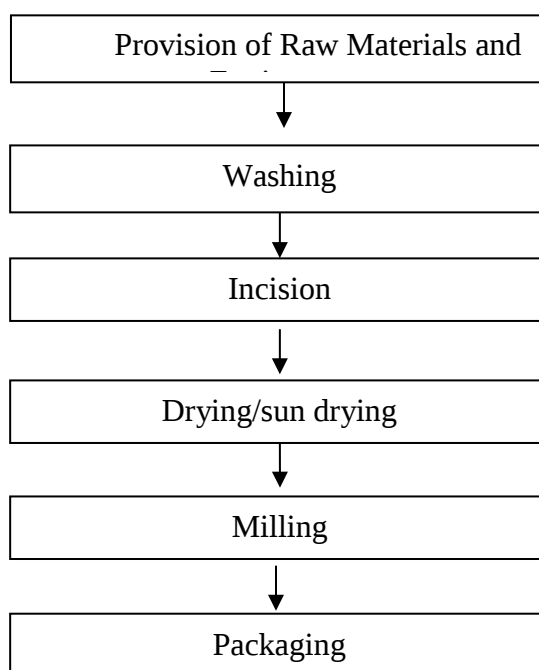


Figure 1. Schematic of the Turmeric Rhizome Processing Process into Turmeric Powder in Lamteuba, Seulimum Sub-District, Aceh Besar District

In 2015 to 2016 they still used simple tools during the washing process such as washing buckets, taIDRaulins, water hoses and others, while in the slicing process they still used knives and relied on workers who on average were women. In the process of drying, milling to packaging, they also still rely on sunlight, pounding and packing also still rely on the labor of the workers. However, in 2017 until now the turmeric powder processing industry has used modern tools such as the washing process using a rhizome washing machine (Vertical Type), the slicing process already using a slicing machine (Vertical Blade Type), Likewise, when drying, they already use a drying machine (20 rack oven) and the milling process also uses a grinding machine (Disk Mill FFC-37). These machines were obtained from a grant/dedication from Bank Indonesia for the country and the usual workforce used in this industry is 3-5 people.

4.3. Financial Aspect

Production cost

Equipment depreciation costs are all costs incurred for equipment used in a company or business if it is damaged due to prolonged use, with a total cost of IDR. 7,273 rupiah/month.

Table 2. Cost of Depreciation of Turmeric Powder Equipment in Lamteuba Seulimum, Aceh Besar District.

No.	Equipment	Cost (IDR/Month)
1.	Big Bucket	IDR 1,666
2.	Plastic Basket	IDR 3,361
3.	TaIDRaulin	IDR 416
4.	Raw Material Scales	IDR 667
5.	Turmeric Powder Scales	IDR 1,004
Amount		IDR 7,273

Source: Primary Data (processed), 2019

Raw material costs are all costs incurred to obtain the main materials used for a production. All costs incurred to purchase raw materials for turmeric rhizome can be seen in the table below:

Table 3. Details of Raw Material Costs for the Turmeric Powder Processing Industry in Lamteuba, Seulimum Sub-District, Aceh Besar District.

No.	Raw material	Amount (Kg/Month)	Purchase Price (IDR/Month)	Total cost (IDR/Month)
1.	Turmeric Rhizomes	3,000	9,000	9,000,000

Source: Primary Data (processed), 2019

In the process of processing turmeric powder in Lamteuba, it does not use or mix other additional ingredients into turmeric powder (pure turmeric powder). According to Subijanto (2011) Labor is everyone who is able to do work to produce goods or services that are used both by the community and by themselves. While labor costs are all costs incurred in utilizing labor in carrying out the production process. The costs incurred for labor can be seen in the table below:

Table 4. Turmeric Powder Labor Costs in Lamteuba, Seulimum Sub-District, Aceh Besar District.

No.	Description of activities	Total Cost (IDR/Month)
1.	Fixed Labor Costs	IDR 480,000
2.	Laundering Wholesale Wages	IDR 1,500,000
3.	Slicing Wholesale Wages	IDR 1,500,000
4.	Drying Wholesale Wages	IDR 1,500,000
5.	Milling Wholesale Wages	IDR 450,000
6.	Packaging Wholesale Wages	IDR 225,000
Amount		IDR 5,655,000

Source: Primary data (processed), 2019

The total costs above have been calculated based on the number of workers, the amount of raw materials, prices and the number of production activities in a month. Furthermore, for the cost of fuel oil incurred by the turmeric powder processing industry for machines, be it washing

machines, slicing machines and milling machines in production process activities. With a total issued of IDR 5,865,000 per month.

Table 5. Details of fuel costs for the Turmeric Powder Processing Industry in Lamteuba, Seulimum Sub-District, Aceh Besar District.

No.	Machine	Total cost (IDR/Month)
1.	Washing	IDR 105,000
2.	Incision	IDR 2,880,000
3.	Milling	IDR 2,880,000
Amount		IDR 5,865,000

Source: Primary data (processed), 2019

Transportation costs are all costs incurred by the turmeric powder processing industry in distributing their products to consumers. The details of the average transportation costs incurred by the industry are as follows:

Table 6. Transportation costs for the Turmeric Powder Processing Industry in Lamteuba, Seulimum Sub-District, Aceh Besar District.

No.	Activity	Total cost (IDR/Month)
1.	Month Farmers Market 1	IDR 200,000
2.	Month Farmers Market 2	IDR 100,000
3.	Month Farmers Market 3	IDR 100,000
4.	Deliver products to retailers	IDR 200,000
Amount		IDR 600,000
Average		IDR 150,000

Source: Primary Data (processed), 2019

The amount of transportation that varies per month is the distance traveled to and from the turmeric powder processing industry in Lamteuba to the points where the product is sold in Banda Aceh. The type of transportation used was using a private car owned by Mr. Sulaiman as the founder of the turmeric powder processing industry, the Lamteuba Creative Insan Sentra. For marketing activities at the farmer's market in the first month it is carried out 2 times a month but it can be seen in the 2nd & 3rd month that the marketing at the farmer's market is carried out only once, so that there is a price difference in that month, namely IDR 200,000 and IDR 100,000 per month. While packaging costs are all costs incurred by the company/industry to obtain the required packaging.

Table 7. Cost of Turmeric Powder Packaging in the Lamteuba Human Creative Center, Seulimum Sub-District, Aceh Besar District.

No.	Package Size	Total Cost (IDR/Month)
1.	60 Grams	IDR 50,000
2.	80 Grams (bottle)	IDR 525,000
3.	110 Grams	IDR 100,000
4.	250 Grams	IDR 150,000
5.	500 Grams	IDR 200,000
6.	1000 Grams	IDR 225,000
7.	Plastic size 50 grams	IDR 120,000
Amount		IDR 1,370,000

Source: Primary Data (processed), 2019

Based on the explanation above, there are two costs incurred in the total production costs, namely fixed costs and variable costs. The total costs incurred for fixed costs (equipment depreciation costs) amounted to IDR 7,273/month, while the total variable costs incurred were IDR 22,040,000/month. With a total of IDR 22,047,273/month.

Income

Revenue or receipts are said to be the total amount of money earned or earned by the company (industry) from sales and are usually calculated every month or year Samuelson and Nordhaus (2013). To calculate the total income obtained from multiplying the amount of turmeric powder production per month with the price of turmeric powder per month. The table below explains the details of production quantities, prices and total income of the turmeric powder processing industry in Lamteuba, Seulimum Sub-District, Aceh Besar District, as follows:

Table 8. Details of Production Amount, Price and Total Income of the Turmeric Powder Processing Industry in Lamteuba, Seulimum Sub-District, Aceh Besar District.

Amount of Raw Materials	Buy Price Rhizomes	Purchase Value	Production Amount	Selling price	Total income
(IDR/Month)	(IDR /Kg)	(IDR /Month)	(IDR /Month)	(IDR /Kg)	(IDR /Month)
3,000	9,000	9,000,000	450	60,000	27,000,000

Source: Primary Data (processed), 2019

Based on the table above, the average raw material used is 3,000 kg with a production of 450 kg per month, the income earned is IDR 27,000,000 per month.

Profit

Based on the profit analysis calculation, it can be seen that the average profit earned by the turmeric powder processing industry in Lamteuba is IDR 4,952,727/month

$$\begin{aligned}
 \pi &= TR - TC \\
 \pi &= \text{IDR } 27,000,000 - \text{IDR } 22,047,273 \\
 \pi &= \text{IDR } 4,952,727
 \end{aligned}$$

Furthermore, to calculate the Revenue Cast Ratio (R/C), see whether this business is said to be a feasible and profitable turmeric powder processing industry, as follows:

$$\begin{aligned}
 \text{R/C Ratio} &= \frac{\text{Total Revenue}}{\text{Total Cost}} \\
 \text{R/C Ratio} &= \frac{\text{IDR } 27,000,000}{\text{IDR } 22,047,273} \\
 \text{R/C Ratio} &= 1.22
 \end{aligned}$$

Based on the results of the R/C Ratio analysis above, the average R/C Ratio value is 1.22. This shows that the expense of the turmeric powder processing industry in Lamteuba of IDR 1 will generate a total revenue of IDR 1.22 and it can be concluded that this turmeric powder processing industry business is feasible and profitable. Meanwhile, to calculate ROI (Return of Investment), the following formula is used:

$$\begin{aligned}
 \text{ROI} &= \frac{\text{Turmeric Powder Industry Advantages}}{\text{Total Cost of Turmeric Powder Industry}} \times 100\% \\
 \text{ROI} &= \frac{\text{Rp } 4,952,727}{\text{Rp } 22,047,273} \times 100\% \\
 \text{ROI} &= 22.46\%
 \end{aligned}$$

Based on the ROI results, the ability of the turmeric powder processing industry in Lamteuba to return on business capital that has been issued is 22.46%. This shows that every IDR. 1 of business capital issued by the turmeric powder processing industry will generate a profit of IDR 22.46.

In order to see when a BEP (Break Even Point) business returns, use the BEP formula for production prices and BEP for the amount of production using the following:

$$\text{BEP price} = \frac{\text{Total Cost of Turmeric Powder Expenditure}}{\text{Total Production of Turmeric Powder}}$$

$$\text{BEP price} = \frac{\text{IDR 22,047,273/Month}}{450 \text{ Kg/Month}}$$

$$\text{BEP price} = \text{IDR 48,993/kg}$$

Based on the BEP price calculation results above, it shows that the average turning point for the turmeric powder processing industry is IDR 48,993/kg. This means that this price has been able to cover the total production costs of the turmeric powder processing industry.

$$\text{BEP number of production} = \frac{\text{Total Cost of Turmeric Powder Expenditure}}{\text{Selling Price of Turmeric Powder}}$$

$$\text{BEP number of production} = \frac{\text{IDR 22.047.273/Month}}{\text{IDR 60.000/Kg}}$$

$$\text{BEP total production} = 367 \text{ kg/month}$$

Based on the BEP calculation, the amount of production above shows that the average turning point for the turmeric powder processing industry is 367 kg/month. This means that this amount of production has been able to cover the total production costs of the turmeric powder processing industry.

5. CONCLUSION

Based on the results of the analysis that has been carried out, it can be concluded that:

1. Turmeric powder processing techniques in Lamteuba are included in the modern category because there are tools and machines that make the processing easier.
2. The average profit obtained by the turmeric powder processing industry in Lamteuba, Seulimum Sub-District, Aceh Besar District is IDR 4,952,727 per month. This turmeric powder business is feasible to run because the R/C ratio obtained is 1.22 indicating that this business is profitable.

REFERENCES

- Anggun W, C. (2012). Turmeric Plant Cultivation (*Curcuma domestica* Val) and Its Efficacy as Traditional Medicine at PT. Indmira Citra Tani Nusantara. Agropharmaca Agribusiness Diploma III Program. Eleven March University Faculty of Agriculture. Surakarta.
- Fun, M. (2013). Profit Analysis of Dried Sea Cucumber Business in SIMEULUE District. Department of Socio-Economic Agriculture, Agribusiness Study Program, Syiah Kuala University. Banda Aceh.
- Central Bureau of Statistics, (BPS). (2013). Statistics of Indonesian Biopharmaceutical Plants 2013. Retrieved February 24, 2019, from <https://www.bps.go.id/publication/2013/10/02/1680a8fab1c2d22f1e359b34/statistik-tanaman-biofarmaka-indonesia-2013.html>
- Central Bureau of Statistics, (BPS). (2014). Statistics of Indonesian Biopharmaceutical Plants 2014. Retrieved February 24, 2019, from <https://www.bps.go.id/publication/2014/10/02/1680a8fab1c2d22f1e359b34/statistik-tanaman-biofarmaka-indonesia-2014.html>
- Central Bureau of Statistics, (BPS). (2015). Statistics of Indonesian Biopharmaceutical Plants 2015. Retrieved February 24, 2019, from <https://www.bps.go.id/publication/2015/10/02/1680a8fab1c2d22f1e359b34/statistik-tanaman-biofarmaka-indonesia-2015.html>
- Central Bureau of Statistics, (BPS). (2016). Statistics of Indonesian Biopharmaceutical Plants 2016. Retrieved February 24, 2019, from <https://www.bps.go.id/publication/2016/10/02/1680a8fab1c2d22f1e359b34/statistik-tanaman-biofarmaka-indonesia-2016.html>
- Central Bureau of Statistics, (BPS). (2017). Statistics of Indonesian Biopharmaceutical Plants 2017. Retrieved January 22, 2019, from <https://www.bps.go.id/publication/2017/10/02/1680a8fab1c2d22f1e359b34/statistik-tanaman-biofarmaka-indonesia-2017.html>
- Gray and Lakson. (2007). Introduction to Project Evaluation Revised Edition. Publishing Institute, Faculty of Economics, University of Indonesia. Jakarta.
- Hartati, SY, Balittro. (2013). Efficacy of Turmeric as Traditional Medicine and Other Benefits. News on Research and Development of Industrial Plants. Journal of Plantation Research and Development Center. 19 : 5-9.
- Hidayat. (2012). Increasing the Competitiveness of Labor in the Agro-Industry Sector in Indonesia through Certification. Faculty of Economics, Wijaya Putra University, Surabaya. Journal of Management Applications. Vol. 10. No. 2.
- Jannah. (2012). Analysis of Farming Profits and Household Income Distribution of Cassava Farmers in Tapioca Agro-Industry Centers in Central Lampung Regency. Lampung Agricultural Technology Study Center. Agricultural informatics, Vol. 21 No. 2.
- Kamir and Jafar. (2003). Business Feasibility Study. golden. Jakarta.
- Kartasmita M. (2011). Definition of Agroindustry According to Personal Views and Examples of Agroindustry Products. <http://mawardikartasmita.blogspot.com/2011/10/understanding-agro-industry-according-to.html>. Accessed on 20 January 2019.
- Ministry of Agriculture, [MoA]. (2015). Agricultural Statistics Database. Retrieved January 22, 2019, from <https://data.go.id/dataset/basis-data-statistik-pertanian>.
- Mardiharini. M and Erizal Jamal. (2012). Performance and Prospects of Agro-industry Development in the Perspective of National Agricultural Development. Agricultural Policy. Vol 10. No. 1. Pg. 75-86.
- Nurmalina, R., T. Sarianti and A. Karyadi. (2009). Business Feasibility Study. Bogor: Department of Agribusiness. Faculty of Economics and Management. Bogor Agricultural Institute

PROSPECTS FOR TURMERIC AGROINDUSTRY IN LAMTEUBA, SEULIMUM SUB-DISTRICT ACEH BESAR DISTRICT

Widyawati, Rahmi Khoiriah Nasution, Anwar Deli

- Samuelson and Nordhaus. (2013). The Indonesian Economy, 2nd edition, Erlangga. Jakarta.
- Please. J. (2005). Marketing Analysis of Turmeric (*Curcuma domestica*, Val) Case Study: Gurilla Village, Siantar Martoba District, Pematang Siantar Municipality. *UMA Journal*.
- Subijanto. (2011). The Role of the State in Indonesian Labor Relations, *Journal of Education and Culture* (vol 17 no 6, page 708).
- Supriatna, A. (2005). Performance and Marketing Prospects of Mango Commodity (Case study of mango farmers in West Java Province). Center for Agricultural Technology Assessment and Development (BBP2TP). West Java.
- Winanti, C, and Nurdjanah, N. (2005). Opportunities for Spices and Medicinal Plants as Functional Food Sources. *Journal of Agricultural R&D*. 24(2), 47- 55.
- Winarno, FG (1993). Food Nutrition, Technology and Consumers. Main Library Gramedia. Jakarta.