The characteristic and feasibility of Banda’S nutmeg agro-industry in Banda Island of Maluku Province

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Abstract. This research aims to identify the characteristics of the agro-industrial business of Banda’s manufactured nutmeg pulp products and to analyze the income and feasibility of the agro-industrial business of Banda’s manufactured nutmeg pulp products. The results show that agroindustry is feasible to develop because the average value of ratio B-C is 1,8. The feasibility of investment analysis shows that the NVP value is Rp.2.569.750, the IRR value is 36,24%, the value of Ratio Net B/C is 1,8, and the payback period is 3,44. Based on the analysis of the factors that influence nutmeg agroindustry producer’s income rates, the factors include raw material prices, supporting material prices, production, labor wages, and working capital. The determination coefficient is 55,7, which means that the income rates are influenced by the variable of ages, the education levels, the number of family members, the business experiences, and the business capitals counted as 55,7 %. The rest 44, 3 %, is influenced by the other factors out of the model.

1. Introduction

Agricultural commodities, in general, are commodities in the form of raw materials and quickly expired, so they must be consumed directly. To overcome this problem, various manufacturing processes have emerged that can assign added value to the agricultural commodities. This process is a part of the Agro-industry sub-system. Agro-industry is an activity that processes raw materials from agricultural commodities into manufactured products that are more attractive and have added value. Agroindustry emphasizes the food processing management in a manufactured product company which the main raw materials are agricultural products [1].

States that manufacturing in agro-industry is a stage of the transformation and preservation process through physical or chemical transformation, storing, packaging, and distribution of the generated products. In other words, manufacturing is an operation or series of operations which is performed on a raw material to change its shape and/or composition [2].

Manufacturing of agricultural commodities consists of simple manufacturing, such as cleaning, grading, packaging, as well as more sophisticated manufacturing such as milling, powdering, extracting, roasting, spinning, canning, and other manufacturing processes. Recently, one of the up-and-coming Agro-industries in Maluku is the well-known nutmeg pulp manufacturing business in the Banda Islands. Nutmeg, as a spice plant and source of essential oil, is a type of plants that has an important role in the life of the people of Banda. The part of the nutmeg plant that has economic value is the fruit [3]. The status of the nutmeg plant as an important material for industry and as a trading
commodity had caused European nations to fight over the areas of nutmeg producer in Indonesia, one of which is the cluster of Banda Neira Islands [4].

Indonesia is the world’s largest producer of nutmeg (70-75%), of which around 98% is generated by smallholder-owned plantations. The area of nutmeg plantations in Indonesia in 1996 had reached 60,735 acres, which then decreased to 43,873 acres in 2000 [5].

As a potential export commodity for the Maluku local government, Banda Nutmeg (Myristica fragrans Houtt) is a source of economic and regional income growth.

Nutmeg is a spice plant native to the Maluku islands [6] which has been cultivated from generation to generation in the form of smallholder plantations in most of the Maluku’s region. Indonesia’s nutmeg commodities are among the leading commodities in the world market because the distinctive aroma and high level of oil yield. Nutmeg plantations are dominated by smallholder-owned plantations which operated by farmers in small scale (area less than 0.5 acres). In 2017, the plantation area for smallholder-owned plantations (PR) was 169,103 acres and state-owned plantations (PBN) was 484 acres, with a total area of 169,587 acres (Directorate General of Plantation, 2015-2017).

The added value of the nutmeg can be increased through the diversification of the nutmeg pulp manufacturing. Banda is a center of household-scale business which is engaged in the manufacturing of nutmeg pulp into candied, syrup, juice and jam. In addition, the manufacturing results can provide additional income for the people. Based on data from Maluku’s Central Bureau of Statistics (BPS Maluku) in 2016, the nutmeg production reached 464 tons and the number of households involved this business was 1,211. The purpose of this research is to identify the characteristics of the agro-industrial business of Banda’s manufactured nutmeg pulp products and to analyze the income and feasibility of the agro-industrial business of Banda's manufactured nutmeg pulp products.

2. Methods

This research is conducted from October to December 2018, in the Sub-district Banda withe focus on four villages, namely Nusantara Village, Dwiwarna Village, Merdeka Village and Kampung Baru. The sample selection is performed using the method of purposive sampling, because the majority of the household industries in those four villages produce nutmeg candied, nutmeg syrup, nutmeg juice, and nutmeg jam. The sampling process is carried out by applying census techniques to all nutmeg pulp producers in Banda Island. The number of samples in each village is as follows: Kampung Baru (1 respondent), Dwiwarna Village (1 respondent), Merdeka Village (10 respondents), and Nusantara Village (18 respondents). The total respondents in this research are 30 people.

Qualitative and quantitative analysis methods are applied to analyze the data which have been obtained through sampling. Qualitative analysis is used to identify data on the characteristics of the producers of manufactured nutmeg pulp products, while quantitative analysis is used to analyze the feasibility and income of the producers of manufactured nutmeg pulp products.

3. Results and discussion

3.1. Characteristics of Banda’s Nutmeg Agro-Industry Producer

Age can affect a person’s performance in work both physically and non-physically. The collected data in the research state that most of the producers are in the category of productive age: the oldest is 68 years old and the youngest is 27 years old. It can be observed in Figure 1 below. Due to this condition, innovations are more easily accepted by the producers in the research location.

The level of producers’ formal education in the research locations is classified as low. A total of 46.6% producers only went to elementary school. Figure 1 shows that a low level of education means that respondents have limited options for jobs. This is the main reason for most respondents to be involved in the nutmeg agro-industry business. However, despite being low educated, producers are willing to embrace innovation to ensure the continuity of their business.

The number of family members affects the welfare of producers. The more family members a producer has, the greater his/her needs are. In order for all these needs to be fulfilled (whether it is clothes, foods, or educations), a producer must be supported by adequate income in each production
process. Figure 1 shows that the percentage of family members of the medium category (4 - 6 people) is 46%. Experience in managing business is also an important determinant of a producer’s income. Adequate experience enables producers to calculate and anticipate risks in managing the business. Figure 1 shows that the highest percentage of the period of managing the business among the respondents is in the category of 0-10 year, namely 64.3 percent.

![Figure 1. Chart of Characteristics of Banda’s Nutmeg Agro-Industry Producers](image)

3.2. Characteristics of Banda Nutmeg Agro-Industry Business

The distinctive fragrant aroma and the considerable amount of essential oil content within the nutmeg and mace make this plant an export plantation commodity which is largely targeted by international market [7]. These two commodities can be manufactured essential oil which is used as raw materials for the beverage, medicine and cosmetic industries. Besides that, it can also be used as a mixture in soft drinks. Meanwhile, the nutmeg pulp can be manufactured into snacks such as candied, syrup, juice, and jams.

**Raw Materials:** The main commodities of the nutmeg plant, which have high economic value, are the nutmegs and maces, while the pulp is considered a by-commodity or even waste. However, along with the development of science and technology, the nutmeg pulp is no longer considered a waste. In Banda, almost all households have nutmeg trees in their yards, so most households in this area are involved in agro-industrial business of manufactured nutmeg pulp products such as wet nutmeg candied, dried nutmeg candied, nutmeg syrup, nutmeg juice and nutmeg jam. Currently, there are thirty home industries engaged in the manufacturing the nutmeg pulp. The monthly requirement for this business is 300 kg or 6000 pieces which can be obtained from the producer’s own harvest or through purchases from other nutmeg tree owners. Although nutmeg trees are very common in Banda, the availability of raw materials for this industry is highly dependent on the harvest season. It is abundant in the harvest season but rare in the other periods. The price of the nutmeg itself is relatively stable at around Rp. 5,000.00 / kg.

**Supporting Materials:** Supporting materials are other materials which are manufactured in unison with raw materials in a production process. The Supporting material used in the manufacturing of nutmeg pulp is sugar which functions as a preservative materials. The use of sugar for each type of product varies in terms of quantity and composition. Consequently, the required amount of sugar for each product is different, namely around 1 kg to 1.5 kg. Another Supporting material is Sodium Benzoate for the manufacture of nutmeg juice products. Sodium Benzoate functions as a preservative material, so that the products is durable. The required amount of sodium benzoate ranges from 0.5 g to 0.8 g for each nutmeg juice products.
Sources of Capital and Equipment: The decision on choosing the source of capital is strongly influenced by the considerations of each producer, with the main consideration being the most profitable source of capital. Since the start of their business until now, most producers prefer to use their private funds as the source of capital. There are 90 percent of respondents who use their private funds as the source of capital. Concerns over the risk of loan repayment and an unwillingness to bear an extended debt burden are the main reasons the respondents choose this source of capital. Meanwhile, 10 percent of respondents obtain their capital through business capital loans from the National Community Empowerment Program (PNPM-Mandiri).

With the existing business scale, capital is not an obstacle to running the business, because the amount of capital required is not too sizable, both for the procurement of equipment (fixed assets) and current assets. The unstable availability of raw materials also limits production capacity so that the producers may still rely on their private funds to support the continuity of the production. Although the desire to increase the amount of capital from external sources, provided the capital does not have interest, producers prefer to borrow money from family or neighbors if necessary.

Labor: Usually, the labors in this business are family-based labors. The non-family-based labors are merely employed when the demand for products is increasing at certain times such as during the holiday season at which the number of visiting tourists is increased. These workers can be categorized as permanent workers and temporary workers. In average, the existing business employs two permanent workers and two temporary workers. Their wages are IDR 30,000 / day and paid in cash. They are usually employed in one production process, for example in the phase of nutmeg peeling as a part of the manufacturing of wet and dried nutmeg candied.

Technology: The technology applied in the nutmeg agro-industry business is classified as simple, both from the fruit harvesting phase to the labeling and packaging phases. This is related to the amount of available capital and educational level of the workers. In the production process, most producers still work manually or use equipment with very simple technology (mostly household tools), so that the quality of the generated products cannot be controlled. In addition, the small scale of the business causes the producers to be unable to apply technology optimally in the production process. For the manufacturing process, producers are fostered by government institutions in Maluku Province such as the Food Security Agency, the Office of Agriculture, the Office of Health, and the Office of Industry and Trade.

Production: Production activities can take place on condition that raw materials and Supporting materials are available. The number of products generated depends on the number of materials available, while the ability of the equipment to support the production process is relatively equal. The products produced are of good quality and attractive to consumers. The type of product and the amount of production in the nutmeg agro-industry can be seen in Tables 1 and 2.

| Table 1. Types of Products and Amount of Nutmeg Agroindustry Production (Wet Nutmeg Candied and Dried Nutmeg Candied). |
|---------------------------------------------------------------|
| Products | Production Quantity (Packs/Months) | Percentage (%) |
|---------------------------------------------------------------|
| Wet Nutmeg Candied | 805 | 64.81 |
| Dried Nutmeg Candied | 437 | 35.18 |
| **Total** | **1,242** | **100** |

Source: Primary Data, 2019 (processed).

Table 1 shows that the most generated product is wet nutmeg candied. It is due to the fact that its production process is simple and does not require particular knowledge. In addition, because of its simplistic nature, the production process does not consume too much time. Therefore, producers of wet nutmeg candied can easily and quickly master the manufacturing process of this product.
Meanwhile, the number of dried nutmeg candied products generated is less than the wet nutmeg candied, because its production process consumes more time and requires larger quantities of sugar.

### Table 2. Types of Products and Amount of Nutmeg Agroindustry Production (Nutmeg Syrup, Nutmeg Juice, and Nutmeg Jam).

| Products         | Production Quantity (Bottles/Months) | Percentage (%) |
|------------------|-------------------------------------|----------------|
| Nutmeg Syrup     | 78                                  | 29.21          |
| Nutmeg Juice     | 150                                 | 56.17          |
| Nutmeg Jam       | 39                                  | 14.62          |
| **Total**        | **267**                             | **100**        |

Source: Primary Data, 2019 (processed).

The number of syrup, juice and nutmeg jam products is relatively small because it is influenced by several factors, such as: lengthy production time, minimum knowledge of the manufacturing process of the products, a small number of producers, low consumer’s interest on the products, high production costs and selling prices, small marketing opportunities, and difficult business licensing process. The producer self-determines the selling price of the nutmeg manufactured product based on the calculation of the production costs. Consumers of manufactured nutmeg pulp products are retailers, ship passengers and tourists. The retailers will then resell the products in Ambon and other cities around Banda. Table 3 shows the selling price of the nutmeg manufactured product.

### Table 3. Prices of Manufactured Nutmeg Pulp Products at the Production Site.

| Products         | Price (IDR)                     |
|------------------|--------------------------------|
| Wet Nutmeg Candied | 5,000/Packs                   |
| Dried Nutmeg Candied | 5,000/Packs                 |
| Nutmeg Syrup     | 30,000/625 ml                 |
| Nutmeg Juice     | 8,000/110 ml                  |
| Nutmeg Jam       | 20,000/250 gram                |

Source: Primary Data, 2019 (processed).

Table 3 shows that the product that has the highest selling price is nutmeg syrup. This is due to several factors, namely: more syrup volume, the composition of nutmeg’s pulp essence which is only mixed with granulated sugar and does not use preservatives, and long production times.

Marketing: In contrast to marketing on the primary commodities, such as seeds and mace, nutmeg manufactured products are more likely to attract consumers directly, thus it is typically traded single-handedly by the producers and the scope of marketing locations for the products varies widely. Producers usually set the price independently by each product. The price of each type of the product depends on the price of raw materials and supporting materials. If the price of raw materials and supporting materials rises, the producer will practically increase the selling price of the product in order to keep on gaining benefit.

The price of each type of product depends on the price of raw materials and Supporting materials. If the price of raw materials and auxiliary materials rises, the producer will practically increase the selling price of the product in order to continue to benefit. Pricing for each product is usually carried out independently by producers and traded individually. Most of the sales of manufactured nutmeg pulp products are carried out at Banda’s harbor during “ship days” (the schedule of PT Pelni’s ship to dock at Banda’s harbor). Producers usually sell their manufactured nutmeg pulp products at previously constructed stalls / tents that are aligned along the harbor, or directly on the ship that is docked. Generally, those interested in nutmeg manufactured products are those from outside of Banda Island, such as retailers, ship passengers and tourists.
The problem that occurred is depending on the ship schedule of PT. Pelni, the product marketing opportunities are very minimal, because sales activities will end when the ship departs. This has even led to most producers would rather start production when they get orders, because the certainty of benefits is more guaranteed, than starting production and waiting for the ship’s schedule to dock which is only twice a week and lasts 2-3 hours per ship.

Meanwhile, a small portion of them are marketed in leading supermarkets in Ambon City such as Sinar Makro, Citra, Planet 5000, Indojaya, and Toko Hidayat as well as in other cities around Banda such as Masohi, Dobo and Tual. Promotional activities can affect the sustainability of the Banda nutmeg agroindustry in the future, thus promotion is one of the efforts that need to be performed by the current Banda nutmeg producers [8]. The promotion of Banda nutmeg products usually occurs at certain activities in Banda. Therefore, in order to deal with market uncertainty, which impacts on product negligence and losses for producers, producers must actively promote products and establish cooperative relationships with supermarkets in Ambon city and other cities around Banda.

Products ordered from the cities of Ambon, Masohi, Tual and Dobo are usually sent by the businessman via ships that stop at these delivery areas. Commonly, the producer will entrust it to an acquaintance within the ship’s crews, who will then deliver it to the customer upon arrival at the destination. Shipping costs are borne by the manufacturer as a token of remuneration because the product has been purchased by the customers.

Payment transactions in this marketing channel are carried out after a decided period of time between producers and supermarkets, based on the number of products sold. Proceeds from sales of products on this channel are paid to the producer by transfer. The large number of supermarkets selling the same product results in the risk of unsold products, which lead to losses, becoming a significant risk that must be faced by producers as a result. Thus, the strategy of developing a distinctive taste and hygienic packaging of the products are important things that must be considered by producers. Product marketing channels can be described as follows:

i. Producer → Retailer → Consumer
ii. Producer → Consumer
iii. Producer → Supermarket → Consumer

Figure 2. Marketing Channels of Banda’s Nutmeg Agro-industry Business

The scope of the marketing area for processed nutmeg products is very limited, only in cities within Maluku province. Some of the factors that become obstacles for producers to market their products outside Maluku are: difficult business licensing, unsecured product quality, limited working capital and production capabilities, lack of or no cooperation, and risk of loss due to the payments which is based on the number of sold products. According to the research, there are far more producers who choose to directly sell the products to the consumers than the ones who use other marketing channels.

The percentage of respondents in each marketing channel for manufactured products can be seen in the following table:

### Table 4. Number of Producers Involved in Each Marketing Channel in the Banda Neira Sub-district.

| Marketing Channel               | Producers (people) | Percentage (%) |
|---------------------------------|--------------------|----------------|
| i. Producer, Retailer, Consumer | 4                  | 13.34          |
| ii. Producer, Consumer          | 18                 | 60             |
| iii. Producer, Supermarket, Consumer | 8                | 26.67          |
| Total                           | 30                 | 100.00         |

Source: Primary Data Analysis, 2019 (processed)
Table 4 shows that the number of marketing channels most often used by producers is the second marketing channel (producers → consumers), which is 18 respondents (60 percent). This is due to the tendency of the producers to sell their products directly to consumers at the harbor of Banda. Meanwhile, the second largest marketing channel is the marketing channel through supermarkets in Ambon city and cities around Banda. There were 8 respondents who chose to use this channel (26.67 percent). Meanwhile, the marketing channel chosen by the fewest respondents was the marketing channel through retailers with 4 respondents (13.34 percent). Meanwhile, the marketing channel chosen by the fewest respondents was the marketing channel through retailers with 4 respondents (13.34 percent). The resulting products can be seen in Figure 3.

![Figure 3. Banda's Manufactured Nutmeg Pulp Products ;(a) Wet and Dried Nutmeg Candied, (b) Nutmeg Juice (c) Nutmeg Jam (d) Nutmeg Syrup](image)

3.3. Feasibility Analysis of Nutmeg Agro-Industry Business

To determine the feasibility of the nutmeg agro-industry in terms of income, the R / C ratio and B / C ratio measuring instruments are used. The results of data analysis in Table 4 show that the R / C ratio and B / C ratio of each product are different. The product with the highest R / C ratio and B / C ratio was the wet nutmeg candied product, while the smallest was the nutmeg jam product. The RCR value in the table means that if the production cost of production is IDR 1, it will generate an income of IDR 3.19 for wet nutmeg candied, IDR 3.12 for dried nutmeg candied, IDR 2.32 for the nutmeg syrup, IDR 2.67 for nutmeg juice and IDR 2.64 for nutmeg jam. The RCR value in the table means that if the production cost of production is IDR 1, it will generate a profit of IDR 2.19 for wet nutmeg candied, IDR. 2.12 for dried nutmeg candied, IDR 1.32 for the nutmeg syrup, IDR 1.67 for nutmeg juice, and IDR 1.64 for nutmeg jam.

| Products            | Revenue (IDR) | Total cost (IDR) | Benefit (Rp) | R/C | B/C |
|---------------------|---------------|------------------|--------------|-----|-----|
| Wet Nutmeg Candied  | 3830000       | 1200000          | 2630000      | 3,19| 2,19|
| Dried Nutmeg Candied| 3900000       | 1250000          | 2650000      | 3,12| 2,12|
| Nutmeg Syrup        | 4750000       | 2050000          | 2700000      | 2,32| 1,32|
| Nutmeg Juice        | 2540000       | 950000           | 1590000      | 2,67| 1,67|
| Nutmeg Jam          | 2115000       | 800000           | 1315000      | 2,64| 1,64|

Sumber: Data Primer, 2019

Table 5 shows that of the five agro-industrial products of nutmeg, three of them, namely sweetened wet nutmeg, dried nutmeg candied and nutmeg syrup are considered feasible. Meanwhile, nutmeg juice and nutmeg jam are considered not feasible, because it is influenced by several factors, namely:
the absence of continuity of production (only producing when there is an order), the lack of expertise in the use of technology so that the generated products are not durable, and the low purchasing power of consumers.

3.4. Feasibility Analysis of Nutmeg Agro-Industry Investment

To determine the financial feasibility of nutmeg agro-industry, a business analysis was carried out using investment criteria measuring instruments including: NPV, Net B / C Ratio, IRR, and Payback Period. Each investment criteria is based on the assumption that individuals or companies would rather have benefits that can be gained instantly than benefits gained in a long-term. Therefore, the value of NPV, Net B / C ratio, IRR, and Payback Period shows future results but is calculated using its present value by multiplying it with the discount factor. In the business feasibility analysis, the data used are primary data for 12 months with a discount factor equal to the current interest rate in the government-owned banks (16%). NPV shows the level of profit that will be gained by producers in the nutmeg agro-industry for 12 months which is calculated at present value. The results obtained from the financial analysis of the nutmeg agro-industry are as follows:

**Tabel 6. Calculation Result NPV, Net B/C Ratio, IRR, and Payback Period**

| No. | Kriteria Investasi     | Hasil    |
|-----|------------------------|----------|
| 1   | NPV (16%) (Rp)         | 2,569,750|
| 2   | Net B/C Ratio (%)      | 1,80     |
| 3   | IRR (%)                | 36,24    |
| 4   | Payback Period         | 3,5 bulan|

Sumber: Data Primer, 2019 (dianalisa).

From the results of data analysis, it can be seen that the difference between the benefit (revenue) and the cost (expenditure) which has been multiplied by the discount factor is 16% or represented by 2,569,750 (> 0 or positive). This means that at the current interest rate, which is 16%, this business will generate a profit of IDR 2,569,750, so this business is feasible to be maintained and developed. With the NPV of IDR 2,569,750 in a period of 1 year, the business was able to generate substantial profits, considering that the initial capital issued was only Rp. 1,560,000.

Based on the result of the analysis, it is known that the comparison between the presentvalued net profit from month 0 to month 12, with the presentvalue net cost in the same year (Net B / C ratio) is 1.8. That means, every IDR 1 spent for investment in the nutmeg agro-industry for 1 year will generate benefits of Rp. 1.8 and because the Net B / C Ratio is > 1, the agro-industry investment is considered feasible.

In IRR calculation, a discount factor of 16% and 34%, with a difference between the discounts of 18% is used to obtain the correct interpolation of the numbers. IRR can also be used to compare the percentage of profits if deposited in the Bank. From the analysis it is known that the IRR is 36.24%, which means that the nutmeg agro-industry provides a return on capital of 36.24% and is feasible to develop because it is higher than the current loan interest rate in the Bank.

Payback period is the period required to return all costs incurred in investing in a project. From the analysis of available data, it can be observed that the payback period is 3.5, which means that the payback period for investment costs is 3.5 months. Thus, the nutmeg agro-industry business is considered feasible because the payback period for investment costs is shorter than required.

3.5. Factors Influencing the Income Level of Banda’s Nutmeg Agroindustry

3.5.1 F Test (Simultaneous)

The F test is used to test all independent variables such as the price of raw materials, the price of supporting materials, production, labor wages and working capital. All of these variables simultaneously affect the income level variable with the calculated F value = 3.156 > F table of 2.62.
3.5.2 Coefficient of Determination (R2)

The percentage of influence of all independent variables on the dependent variable is indicated by the magnitude of the coefficient of determination (Adjusted R²). The coefficient of determination (Adjusted R²) shows the magnitude of the influence of the independent variable on the dependent variable which is expressed in percent (%) [9].

The results of the analysis show that the level of income is 55.7% influenced by variables of raw material prices, prices for supporting materials, production, labors' wages and business capital by and the remaining 44.3% is influenced by other factors outside the model.

3.5.3 T test (partial)

The factors that influence the income level of the nutmeg agro-industry producers are the price of raw materials (X1), the price of supporting materials (X2), production (X3), labor wages (X4), and business capital (X5).

The classical assumption test analysis of the regression model determines whether there are deviations from the model in the income level data of Banda nutmeg agro-industry producers. The results of multiple regression analysis can be seen in Table 7.

Table 7. Results of Multiple Regression Analysis on the Income Level of Banda’s Nutmeg Agroindustry

| Model      | Unstandardized Coefficients | Standardized Coefficients | Collinearity Statistics |
|------------|-----------------------------|----------------------------|-------------------------|
|            | B              | Std. Error | Beta   | t      | Sig | Tolerance | VIF  |
| (Constant) | 18.594,16     | 1.456E6   | .0130  | 0.990  |     |           |      |
| X1         | -784.22       | 19813.994 | -0.010 | -2.150 | 0.045| .468      | 2.138 |
| X2         | -21.277,95    | 83128.791 | -0.061 | -2.256 | 0.024| .499      | 2.004 |
| X3         | 34,570,85     | 79315.395 | 0.083  | 2.436  | 0.016| .793      | 1.261 |
| X4         | -5,995,08     | 19909.844 | -0.064 | -2.301 | 0.019| .637      | 1.570 |
| X5         | 1.268,0       | 0.406     | 0.549  | 3.123  | 0.005| .930      | 1.075 |

Table 7 shows several things, such as:

- The regression coefficient of the raw material price variable is 784.22, which means that if the price of raw materials increases, the income will decrease by IDR 784.22. The t-test result of -2.150 > 2.06 indicates that the price of raw materials has a significant and negative influence on income. Fluctuation in the price of raw materials influences the producer’s income because the higher the price of raw materials, the lower the producer’s income, and vice versa.

- The regression coefficient of the Supporting material price variable is 21,277.95, which means that if the price of Supporting materials increases, the income will decrease by IDR 21,277.95. The t-test result of -2.256 > 2.06 indicates that the price of Supporting materials have a significant and negative influence on income. Fluctuation in the price of raw materials influences the producer’s income because the higher the price of supporting materials, the lower the producer’s income, and vice versa.

- The regression coefficient for the production variable is 34,570.85, which means that if the number of production increases, the income will increase by IDR 34,570.85. The t-test result of 2.436 > 2.06 indicates that production has a significant and positive influence on income. The number of production influences the producer’s income because the more the number of production, the higher the producer’s income, and vice versa.

- The regression coefficient of the labors’ wage variable in the multiple regression equation is 5,995.08, which means that if the labor wage increases, the income will decrease by IDR 5,995.08.
The t-test result of 2.301 > 2.06 indicates that labors’ wages have a significant and negative influence on income. Labors’ wages influence the producer’s income because the higher the labors’ wages, the lower the producer’s income and vice versa.

- The coefficient of the business capital variable in the multiple regression equation is 1.268, which means that if the business capital increases, the income will increase by IDR. 1,268. The t-test result of 3.123 > 2.06 indicates that business capital has a significant and positive influence on income. The higher the business capital, the greater production capacity which leads to bigger sale and higher income, and vice versa.

4. Conclusion

Based on the results of the feasibility analysis of the business, the agro-industry is considered feasible. Nutmeg agro-industry business can be said to be profitable because the payback period of investment costs is shorter than required. The coefficient of determination is 55.7, which means that the income level is influenced by 55.7% by the variables of raw material prices, supporting material prices, production, labors’ wages and business capital and the remaining 44.3% is influenced by other factors outside model.

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