



Global Advanced Research Journal of Agricultural Science (ISSN: 2315-5094) Vol. 4(11) pp. 787-795, November, 2015.
Available online <http://garj.org/garjas/home>
Copyright © 2015 Global Advanced Research Journals

Full Length Research Paper

Development of Economic Potential an integrated coconut processing to Improve Welfare coconut farmers society in North Buton Regency

Mukhtar^a, La Hatani^b, Achmad Selamat Aku^c, Deki Zulkarnain^c, Dasmin Sidu^a, La Ode Geo^a, and La Ode Santiaji Bande^a,

^aFaculty of Agriculture, Halu Oleo University, Southeast Sulawesi of Indonesia

^bFaculty of Economics and Business, Halu Oleo University, Southeast Sulawesi of Indonesia.

^cFaculty of Animal Science Halu Oleo University, Southeast Sulawesi of Indonesia

Accepted 21 November, 2015

Coconut (*cocos nucifera*) has the economic potential that the strategy to be developed by farmers with Integrated Processing so as to Improve Welfare of farmers. Objective the research is to explore the potential for coconut production and describe farmer's characteristics, coconut plantation, and coconut processing business in North Buton. Specifically, this study aims to analyze the economic potential of coconut processing and explains the strategy of developing an integrated coconut processing. The approach of this research is explanatory research with collecting data by survey method. The sampling technique used purposive sampling with 112 respondents Family Head coconut farmers. Data analysis method used is descriptive and financial feasibility analysis NPV; NBCR, and IRR. These results indicate: (1) the potential for coconut crop production in North Buton, tend to decrease due to old age of the plant, (2) the characteristics of coconut farmers on average are in the productive age, experienced but still low level of education of farmers. Moreover pattern coconut crop cultivation is done in monoculture, with a single processing business is the production of copra; (3) the economic potential of coconut processing in financial terms both of NPV, and IRR NBCR, and deserves to be developed. Therefore the development strategy of coconut processing can be done in an integrated manner through potential optimization aspects of cultivation, diversification of products, marketing, farmer empowerment and institutional strengthening. The practical implications of this research may provide insight and information for coconut farmers in practice in an integrated coconut processing and development of economic potential strategies so as to improve the welfare of farmers. Moreover studied very specific commodities namely people coconut then consideration seasonal factors and the involvement of coconut farmers need to be given serious attention.

Keywords: Integrated Coconut Processing, Productivity, Increase Income

INTRODUCTION

Coconut (*Cocos nucifera*) is a strategic commodity that has the role of social, cultural, and economic life of Indonesian society. Benefits of coconut plant do not only lie in the flesh

that can be processed into coconut milk, copra and coconut oil, but all parts of the coconut crop have great benefits. Thus the benefits of coconut plants so there were

named as the tree of life or a heaven tree (Kuswari, 2005; Mangunwidjaya and Sailah, 2008). Coconut besides dubbed the "tree of life", also named as the "tree of heaven". Coconut is a tropical plant that has long been known of Indonesia society. Around the sixties, coconut plant is a plant that has a strategic position primarily as a raw material for the manufacture of cooking oil. In that era until the eighties, coconut can be called prevail, so that the planting acreage of land dominating in various areas including in the area of Sulawesi Islands. However, the current position of the coconut as the main raw material of cooking oil has been shifted by palm oil (CPO). Consequently copra needs over time decrease. Coconut (*Cocos nucifera*) is a *palm-arenan* species or *Arecaceae* is the sole member of the *Cocos* genus. This plant is used almost all of parts by humans that is considered as a versatile plant, especially for coastal communities. Coconut also is the name for the fruit produced by this plant. Coconut plants belong to the same of *Palmae* class to plant coconut plantation.

Coconut is a tropical plant that has long been known of Indonesia society. This fact is evident from the spread of the coconut crop in almost all parts of the archipelago, namely in Sumatra with an area of 1.20 million ha (32.90%), Java 0.903 million ha (24.30%), Sulawesi 0.716 million ha (19.30%), Bali, NTB, and NTT 0,305 million ha (8.20%), Maluku and Papua 0.289 million ha (7.80%), and Borneo 0.277 million ha (7.50%). Coconut farmers cultivated either in the garden or yard (DGP, 2010; Nur Asni et al., 2011, and Diana Rochintaniawati, 2012). He also explained that a coconut plantation crop with the largest acreage in Indonesia, wider than the rubber and palm oil, and tops the list for the crop after rice. Coconut occupies an area of 3.70 million ha or 26% of the total area of 14.20 million ha of plantations. Approximately 96.60% palm plantations managed by farmers with an average ownership of 1 ha/household (Duwilla, 2011; Linda and Nur Asni, 2012), and most are cultivated in monoculture (97%), or as a mixed garden plants.

Product development geared to generate production according to market needs, the location of industrial development take precedence on the location of production centres estates, business development tailored to the potential of the region. Coconut product development at the community level and farmer groups need support processing tool to generate a variety of primary products. It is estimated that every area of 100-150 hectares of coconut, allocated a coconut processing equipment unit. At the national Coconut acreage of 3.8 million hectares, it takes about 25,350 units of coconut processing in the countryside. Marketing development efforts carried out on the local market, the domestic and overseas markets. The

research result (Lay and Post, 2012, 2013), that is based on the marketing of coconut products and the opportunities the added value of the products that will be developed dominant local/domestic market is the product of young coconuts, coconut cocktails, coconut jam, baby food supplement, flour coconut pulp, soft drinks, nata de coco, soy sauce coconut milk, pure coconut oil, coconut shell charcoal, liquid smoke shell, briquettes charcoal, coconut wood, biodiesel and organic fertilizers coconut waste. While the dominant export market, among others, copra, white copra, crude coconut oil, activated charcoal and coir fibber.

Coconut plantations in North Buton very strategic and has an important role to increase people's income. As in some other areas in Indonesia, coconut is the one superior public commodity highly prospective and potential for the development of agro-industry, because it can improve the socio-economic welfare of society. North Buton which is one of the areas in Southeast Sulawesi as other areas in the region, people are generally economically dependent on agriculture and plantations, especially those who live in rural areas. There are 18 types of plantation crops developed in North Buton are: coconut, coffee, cotton, pepper, cloves, cashew, hazelnut, sugar cane, tobacco, cocoa, cotton, nutmeg, areca, palm/juice, tamarind, ginger, vanilla, and hybrid coconut (BPS, 2014). Of the 18 types of plantation crops at the top, which has a relatively large production and production potential for export, namely coconut, coffee, pepper, cloves, cashew nuts, chocolate, and hazelnut.

Cococnut production reached 3,593 tons with planted area amounts to 4,105 hectares. Meanwhile, the cashew crop planting area reached 7044 hectares of obtaining production by 2,505.8 tons, while total cocoa crop production in 2014 reached 851.7 tons. Based on the strategic plan for the development of North Buton, especially in agriculture, plantations and agro-industry, one of the potential that can be developed is an integrated coconut processing as one of the economic resources of society in North Buton. Based on objective conditions, it is important that the research undertaken economic development potential of integrated coconut processing to improve the welfare of society in North Buton. Because of the key issues examined in this study were: (1) how much potential coconut production in North Buton? (2) How the characteristics of farmers, coconut plantation, and coconut processing business in North Buton? (3) How the economic potential of an integrated coconut processing in North Buton? (4) How the development strategy of integrated coconut processing?

The aim of this research was to determine the production potential and describe the characteristics of farmers, coconut plantation, and coconut processing business in North Buton. Further analyzing the economic potential of an integrated coconut processing and explains the strategy of developing an integrated coconut processing in North

*Corresponding Author's Email: hatani1974@gmail.com

Buton. Contributions are expected in this research for the coconut farmers, as information in conducting the production process, especially in the next harvest season. Investors, as information material in making investment based on comparative advantage in the area of North Buton, especially the coconuts commodity. Finally, for local governments as information in developing strategic programs and policies in agriculture especially on the development of coconut agro-industry.

MATERIAL AND METHODS

This study was conducted in North Buton. The study population was all coconut farmers in North Buton. Sampling technique is purposive sampling is done with the consideration that the coconut farmers scattered in all districts in North Buton. Therefore, the determination of sample locations were selected in five districts which is an oil producing regions, namely Sub Kambowa, Bonegunu, North Kulisusu, West Kulisusu, and the District of North Wakorumba. Furthermore, in all districts chosen respondents were 112 family head coconut farmers, which is representative of the total population. Determination of the number of respondents in each village conducted accidental sampling technique, namely choosing a sample based on objects found in the field (Sugiyono, 2012). Details of the amount of sample (respondents) in each district:

1. District of Kambowa as many as 25 family head coconut farmers with details of the village: Bubu = 4, Morindino = 4, Lagundi = 4, Pongkawulo = 4, Kambowa = 5, and Baluara = 4.
2. District of Bonegunu as many as 22 family head coconut farmers with details of villages: Damai Laborona = 4; Bonegunu = 4, Tatombuli = 4, Wa Ode Kalowo = 4, Ronta = 3, and Rante Gola = 3.
3. District of West Kulisusu as many as 9 family head coconut farmers with details of the village: Kasulatombi = 2, Lapandewa = 3, Lambale = 1, and Kotawo = 3.
4. District of North Kulisusu as many as 27 family head coconut farmers with details of the village: Labelete = 3, Lelamo = 4, Wa Ode Buri = 4, Petetea`a = 4, Pebaoa = 4, Lanosangia = 4, and Lamoahi = 4.
5. District of North Wakorumba as many as 27 family head coconut farmers with details of the village: Labuan Wolio = 3, Matalagi = 4, Lasiwa = 4, Labuko = 4, Laeya = 4, Labaraga = 4, and Sumampeno = 4.

The type of data this research is primary data obtained directly from the coconut farmers, while the secondary data obtained through registries in the relevant institutions, scientific papers and other literature sources that has to do with this research. Data collection techniques that will be used in research are through the method of interview and documentation. Interview method used in primary data for direct discussions with the coconut farmers, through the

auxiliary questionnaires that had been prepared beforehand. Documentation methods used on secondary data is taking data that has been provided on a variety of data sources, be it in the form of soft copy files or through registries directly. In addition, the data collection can also be done by studying the literature such as the publication of scientific journals relevant to the study.

Variables that were examined in this study were: (1) the characteristics of coconut farmers, include: age, education, experience to farm business, and number of family; (2) Characteristics of coconut plantations, covering: population of coconut, coconut acreage of land ownership, cropping (monoculture), and the production of coconut plantations; (3) the characteristics of copra processing business, include: price and copra production, costs on copra processing business; (4) economic potential coconut development, including: revenue and income copra processing business, and business feasibility assessment criteria copra processing; and (5) the development strategy of integrated coconut processing. Data analysis technique used this study:

1. Descriptive analysis to determine the production potential, characteristics of farmers, palm, coconut processing business, and the development strategy of integrated coconut processing in North Buton.

2. Financial feasibility studies to analyze the development of the economic potential of an integrated coconut processing. The financial feasibility criteria that are used as a measure of the success of the coconut processing are:

Net Present Value (NPV)

$$NPV = \sum_{t=0}^n \frac{Bt - Ct}{(1 + i)^t} \dots\dots\dots (1)$$

Where: NPV = net present value, Bt = benefit (benefits or receipts) in year t, Ct = cost or cost in ke-1, t = years of entry into force of an investment, i = the interest rate applicable, n = life of the investment/ economic life of the business (Umar, 2007).

Net Benefit Cost Ratio (NBCR)

$$Net\ B/C = \frac{\sum_{t=0}^n \frac{Bt - Ct}{(1 + i)^t} \quad (positif)}{\sum_{t=0}^n \frac{Bt - Ct}{(1 + i)^t} \quad (negatif)} \dots\dots\dots (2)$$

Where: Net B/C = the net benefit cost ratio; Bt = Benefit of business in year t; Ct = Cost or cost in year t; t = year investment enactment; i = the interest rate applicable or in percent and n = age of investment.

Internal Rate of Return (IRR)

$$IRR = Df^+ + \frac{NPV^+}{NPV^+ - NPV^-} (Df^- - Df^+) \dots\dots\dots (3)$$

Where: IRR = Internal rate of return of the business; Df + = Discount factor that produces a positive NPV; Df - = Discount factor that produces a negative NPV; NPV + =

Net present value is positive and NPV - = Net present value negative.

RESULTS AND DISCUSSION

North Buton consists of mountains slightly curved to the north-south, almost half (92,799 ha), or 48.26 percent of the area of North Buton is located at an altitude of 100-500 meters above sea level with huge potential coconut plants development. Potential coconuts production is an illustration overview on the development of acreage, production and productivity of coconut. On the development of coconut production in North Buton can be seen in Table 1.

Coconut plantation area in North Buton has increased every year. In 2012 the total area of 4,457 hectares of coconut plantations, and in 2014 increased to 4.982 hectares, or an increase of 525 hectares. This condition indicates that the coconut farmer in North Buton has been doing effort extension or the opening of new plantation land. The condition also indicates that people in North Buton suspected to have committed in the rejuvenation of coconut plants unproductive. But increasing palm plantation area in North Buton, inversely or not accompanied by an increase in production and productivity of coconut. Coconut commodities fluctuate and tend to decrease in 2012 coconut production reached 3.238 tons, and in 2014 decreased to reach 2.469 tons. Then in terms of productivity, also decreased from 2012 coconut productivity reached 0.73 tonnes/ha, while in 2014 declines until it reaches 0:50 tons/ha.

Profile of respondents coconut farmers in this study, include: age, education level, experience to farm and the number of family members that may affect the planning and decision-making process of the farm management. Characteristics of respondent's coconut farmers in North Buton can be seen in Table 2. Results of the research that farmer's age range of respondents varied, ranging from 38-85 years old with an average age of 53 years. Table 1 shows that the majority of respondents (56.25%) aged 15-54 therefore the farmer respondents are in the productive age. The fact indicates that the coconut farmers in North Buton relatively successful in managing their farming (Kuswari, 2005) indicate that if an activity is carried out by farmers who farm relatively younger age or productive (15-54 years) affect the increase in the achievement of their farming production. The results showed that the formal education of farmers who never passed the respondents varied between 6-19 years with an average of 8 years or did not finish junior high school. This fact gives the information that most of the coconut farmers have inadequate levels of education. Therefore certainly affect the workings and mindset of farmers in managing their farm.

The results showed that the respondents' experience in the coconut to farm varies, ranging from 10-57 years with an average experience of over 29 years. The experience of farmers to farm the respondents are presented in Table 1 shows that the majority of respondents (98.21%) have the experience to farm over 10 years. If seen in terms of experience to farm, it can be said that the coconut farmers who have greater chances in achieving success in their farming activities. Farmers who are experienced and young age has a capacity of farm management more mature and more cautious in acting than the farmers who are relatively older and less experienced.

Finally characteristic coconut farmers of number of family farmer's respondents ranged between 1-8 people; with the average number of family are 4 people. Table 1 shows that of the 112 respondent's farmers, there are 48.21% that have a number of families 4-6. This situation illustrates that the number of family dependents being classified in category. This statement is in accordance with the opinion of (Saragih, 2010) which states that the number of family members divided into 3 groups, namely small family (<4), the family is (4-6 people) and large families (>6). Therefore the more the number of family members dependents head of the family, it will require a head of the family to work harder.

Characteristics coconut plantations are referred to in this study is a population of coconut crop, arable land area, planting patterns, and the amount of production and productivity in coconut farming. The following will be spelled out in detail the characteristics of farming palm plantations which can be seen in Table 3. The results showed that the number of stands of trees on each respondent coconut farmers ranged between 75-140 trees per hectare, with an average of 102 trees per hectare. The size of the total population of productive coconut farmers owned respondent will certainly determine the size of the total production (palm fruit). Furthermore, from the results of the study also obtained information that of total respondents (a total of 112 samples of coconut farmers spread in each area in Buton) there are 28,525 productive stands of palm trees with a total land area of 282 hectares.

These conditions show that in every county in North Buton regency has allocated ideal for technology/tool coconut processing at each production centre points. Productive land area of coconut farmers in North Buton range between 0.5-36 hectares with an average of 2.5 hectares. The majority of respondents (72.32%) have a land area of 0.5-2 hectares. This shows that in terms of broad, palm farmers were moderate (Hanafie, 2010) states that the agricultural land area is categorized into three groups, namely: a narrow area (<0.5 hectare) of land were (from 0.5 to 2.0 hectares) and extensive land category (> 2.0 ha). In addition, the area of land that is being implicated in the production and productivity generated. But do not

Table 1. Land Area, Production and Productivity of Coconut Plantation

Year	Land Area (Ha)	Production (Ton)	Productivity (Ton/Ha)
2012	4,457	3,238	0.73
2013	4,832	3,354	0.69
2014	4,982	2,469	0.50

Source: BPS North Buton, 2014

Table 2. Profile of Respondents coconut farmers

Profile of coconut farmers	Frequency	Percent	
Age (year)	15 – 54	63	56.25
	> 54	49	43.75
Education (year)	0 - 6	64	57.14
	7 - 9	23	20.54
	10 - 12	23	20.54
	>12	2	01.79
Experience (year)	5 - 10	2	01.79
	> 10	110	98.21
Numbers of family (person)	< 4	49	43.75
	4 - 6	54	48.21
	> 6	9	08.04

Notes: n = 112

Table 3. Characteristics of coconut plantations

Coconut Characteristics	Plantations	Frequency	Percent
Land Area (ha)	0.5 - 2	81	72.32
	> 2	31	27.68
Plant Pattern	Monoculture	83	74.11
	Intercropping	29	25.89
Production Coconut Farmers:			
1. Top Production		= 4.480 (fruit /ha/year)	
2. Low Production		= 2.400 (fruit /ha/year)	
3. Average Production		= 3.253 (fruit /ha/year)	

Notes: n = 112

rule out the possibility that the land is narrow or medium, will obtain higher productivity and more efficient if managed more intensively than the vast land. (Soekartawi, 2002) states that the agricultural area will affect the scale of operations and efficient or not an agricultural business.

Planting pattern coconut farmers in North Buton is monoculture. Results of the study showed the majority of respondents who have plants farmers in the expanse between palm plantations, which is as much as 25.89% and the remaining 74.11% is still cultivated in monoculture.

Economically plant pattern like this will provide a multiplier effect and value added in the fulfilment of household income for farmer's respondent. The amount of coconut production known to each respondent varied ranging from 2,400-4,480 fruit/ha/year, with an average production of 3,253 pieces /ha/year. Variations in the amount of production are due to differences in the average use of production factors such as acreage or number of coconut trees.

Table 4. Average Labour Costs in Copra Processing Business

Activity Description	Costs of Labour (Rp/ha/ year)
1. Maintenance	750,000
2. Harvest	976,033
3. Production Process	1,464,050
Total	3,190,083

Notes: n = 112

Copra processing business pursued by the coconut farmers is the amount of copra production (kg/ha/year). The use of both fixed costs and cost of operational costs incurred by the respondent farmers during the production process in one year expressed in units of rupiah per hectare per year. Fixed costs in this study consist of the cost of equipment and land taxes, while the variable costs consist of, labour costs (including labour costs in maintenance activities coconut). The survey results revealed an average price of dry copra production is Rp 7.000- per kilogram, where the buyer directly came to the site farmers to do the weighing and payment of the proceeds. These conditions will certainly help farmers in the search market, but the consequence of the pricing. Farmers do not have the bargaining position in determining the size of the product price, but buyers who act as price takers.

The amount of copra production obtained each respondent varied, ranging from 600- 1,120 kg/ha/year, with an average production of 813 kg/ha/year. Variations in the amount of production can be due to differences in the raw material in the form of coconut seeds by each of the coconut farmers. The size of copra production depends on the size of land ownership by all coconut farmers. In addition, this study also obtained information that all respondents in doing copra processing done traditionally. This condition can certainly affect the level of production is generated. Differences in production obtained farmers to farm can be caused by differences in knowledge and mastery of the use of technology (Saragih, 2010). By him, the products do not meet the standard of market demand. As a result, the selling price is not always that a farmer wants, and ultimately whatever price is offered buyer, farmers still make the sale. This fact done because farmers have no bargaining position is strong against the buyer.

Furthermore, in conducting farming activities, the role of the equipment is very important, especially in terms of land preparation, weeding or harvesting. At study sites in North Buton, the equipment used in conducting the coconut farming is the chopping knife/sickle to do weeding or

harvesting and coconut peeler (crowbar). The amount of equipment that is used depends on the amount of labour used in each stage of production activities. Based on the research results obtained information that on average the cost of equipment used Rp 125,000/year. Meanwhile, the cost of agricultural land tax has been established by the Government of North Buton, where the amount depends on the area of land owned by each farmer. The average tax value of agricultural land/plantation in North Buton is Rp 20,000/ha/year. In addition to the cost of the equipment, there are also costs used for the procurement of manufacture of para-para. The average size of the manufacturing cost of para-para Rp 500.000/year. This condition is used to perform copra roasting activities during the rainy season or drying without the use of sunlight, but only a small fraction.

Labour used in the farming coconut farmer respondents consisted of family labour and hire workers. Family labour is important in farming activities, especially in the case, maintenance and harvesting. The more the number of workers in a family and live productive, the more intensive farming activities is also carried out. While labour lease in coconut farming is generally used at the time of harvesting and processing of copra. Labour costs mean in this research is the magnitude of the entire labour costs incurred by the farmer respondents during production activities in units Rp/ha/year.

Calculation of the cost of labour used in this study refers to the agreement that has been set/created by the owner of the coconut farmers and labour rent. Labour costs harvest (climbing and gathering) an average of Rp 300/coconuts, while labour costs copra production processes an average of Rp 450/coconuts. Details of labour costs are presented in Table 4 shows that the average amount of total labour costs by coconut farmers in North Buton Rp 3,190,083/ha/year. In addition, based on the results of research and interviews with farmer respondents, obtained information that the average amount of coconut plant maintenance costs per hectare per year is Rp 750,000, while for harvesting costs between Rp 720,000 to Rp

Table 5. Average Cost, Revenue and Earnings in Copra Processing Business

Description	Investment years (In millions Rp)			
	0	1 - 4	5	6 - 30
1. Production Costs Average	3.98	0.52	2.58	3.38
2. Revenue Average	0	0	2.85	5.69
3. Total Income Average	-3.98	-0.52	0.27	1.81

Table 6. Values NPV, NBCR and IRR in Copra Processing Business

Investment	(df 12%)	Value	Result
1.	NPV	Rp. 2,654,905	Feasible
2.	NBCR	1.48	Feasible
3.	IRR	15.91%	Feasible

1.344.000/ha/year, with an average of Rp 976.033/ha/year. Meanwhile, labour costs for production processes ranging from Rp. 1,080,000-2.016.000, with an average of Rp. 2.016.000/ha/year.

The economic potential of coconut development that is referred to in this research is the financial feasibility of the business processing of copra per hectare by farmers of respondents in North Buton. Components of the economic potential of copra processing business referred to in this research is the reception and processing of copra business income, business feasibility assessment criteria copra processing, and sensitivity analysis. Acceptance of coconut farmers is the average amount of gross income from copra processing business, which is obtained by multiplying the amount of production with the production price.

Table 5 shows that the average total cost of production of the biggest is in the activities-0, which amounted to Rp 3.975.000. This condition can be understood because in that year is the year of the initial investment. In 0 is the allocation of the biggest cost is the cost of land acquisition and labour, respectively Rp 2.000.000 and Rp 500,000. Meanwhile, the cost of the smallest located on land tax amounting to Rp 20,000. Table 5 also obtained information that in 0 to 4 years of copra processing business has not gained acceptance. This is because during this period the plant has not been producing coconut, so that the amount of revenue is equal to the cost of the negative. At copra processing business in North Buton obtained the highest revenue value in the 6th until the 30th year which is an average of Rp 5.691 million, with a net income of Rp 1,810,187. Feasibility assessment criteria copra processing referred to in this research is the assessment of the

investment using criteria NPV, IRR and NBCR and sensitivity analysis.

NPV or net present value analysis is an analysis that takes into account the difference between revenue and the cost of the interest rate (discount factor) at a specific time. The analysis shows that the value of the NPV on a discount factor (df) 12% of Rp 2,654,905. This means that the copra processing business in North Buton feasible to develop. It can be seen from the value of NPV > 0. The results of the analysis showed that in the 5th, copra processing businesses have experienced gains.

NBCR used to determine the level of profit or efficiency of investment by calculating the ratio between the value of current benefits and cost value now at the level prevailing discount factor. In this study, NBCR represents the value of net income from copra processing businesses each year that shows how many times the net income to be gained from every rupiah is sacrificed in farming activities. NBCR analysis results obtained value of 1.48. This indicates that any expenditure of Rp 1, - will cause an increase in net income of 1.48 times. Because the value of NBCR > 1, then the copra processing business in North Buton feasible to develop.

IRR is the interest rate that results in NPV equal to zero, and how far the business's ability to repay the loan of capital resources. Interpolation Calculation, the analysis shows that the IRR obtained by 15.91%. This means that the ability to recover the capital invested for copra processing business in North Buton amounted to 15.91% annually. Because the value of IRR is greater than the value prevailing interest rates (12%), it is well worth the effort to continue. But keep in mind that, if the interest rate

Table 7. Summary of the results of the sensitivity analysis in Copra Processing Business

Investment (df 12%)	Fixed 10% up Cost	Benefit Result	Fixed 10% Benefit	Cost up Result
1. V	NP			
2. CR	NB Rp -2,202,490	Loss	Rp 5,349,095	Feasible
3. R	IR 0.68 8.50%	Loss	1.96 19.06%	Feasible Feasible

applicable on the sources of capital above 15.91%, then the copra processing business will lose money, because farmers cannot afford to repay the loan.

Sensitivity analysis or sensitivity analysis is an investment in the farming assessment criteria. Sensitivity analysis aims to see what will happen with the effort that is being executed if something changes in the fundamentals of cost or benefit calculations. In the sensitivity analysis is every possibility should be tested, which means that each time had to be held back analysis. It is very necessary and important for the project analysis (business) is based on projections that contain a lot of uncertainty about what will happen in the future such as climate change, government policies on pricing, inflation and so on. In this study, a sensitivity analysis is done in two stages of the simulation, the stage at which benefits rose 10% fixed cost and fixed cost benefits rose 10%. Based on Table 7, then there are two basic elements that can be described as follows:

1. Fixed benefit and 10% up Cost, if in the process of doing business copra price changes occur, in which case the whole of 10% up production inputs and fixed farmers income, and then the copra processing business will lose money. It can be seen from each value of investment criteria, namely NPV <0, NBCR <1, and the value of IRR is less than the applicable interest rate (8.50% <12%). In this condition, it can be concluded that each additional fee of Rp. 1 it will cause a loss of 0.68 times. By him that, if the exploitation of copra a situation like this, it is suggested that this effort does not continue.

2. Fixed cost and 10% up benefit, conditions in the simulation two phase the opposite results to the conditions in the first simulation. If in the process of doing business copra processing changes the reception result of rising prices of copra production (10% up benefits) and fixed production costs, then the copra processing business will be more profitable (feasible). It can be seen from each value of the investment criteria that NPV > 0, NBCR > 1, and the value of IRR is greater than the prevailing interest rate (19.06% > 12%). In this condition, it can be concluded that each additional fee of Rp. 1, it will lead to an increase in net income by 1.96-fold. In addition, if farmers make

loans (business loans) to the owners of capital with loan interest of 19.06%/year, then the copra processing business is still feasible to proceed.

Results of interviews with respondents, it is known that the problems faced by coconut farmers in North Buton generally consist of: (a) the age of the coconut crop has entered the non-productive age is above 25 years; (b) the main product of coconut fruit only in the form of copra is simple processing; (c) marketing is still very dependent on the village traders; and (d) the lack of institutional functioning of farmers and other supporting facilities not optimal. Various problems are economically very influential on the productivity of coconut farmers so as to impact on the low income of farmers. Efforts to increase the income of coconut farmers is through an integrated coconut processing business that will result from coconut plants not only produce copra alone but can produce more than one product that is guaranteed in terms of quality and continuity

Build an integrated coconut processing business would require in-depth study of the strategies that can be applied so that the business can run properly in accordance with the expected goals of improving the income of farmers rather than create new problems both for society and for local governments. Therefore, the strategy of integrated coconut processing can put the music performed agribusiness concept approach:

1. Optimization of the aspects of farming with a rejuvenation coconut program is old and no longer productive. The rejuvenation program needs to be followed by fertilization program initiated by the Department of Agriculture conducted on farmers' fields as an example of the results can be disseminated to all coconut farmers in North Buton. It is important for farmers to know the type of fertilizer and how to use the right to plant palm so that coconut production can be increased. Crop diversification is part of the optimization of the aspects of coconut cultivation is done through diversification of farming well with other plants and animals. The survey results revealed that the various types of plants that can be intercropped with coconut crops such as cashew, cocoa, clove and

nutmeg. While the types of animals that can be cultivated on land coconut plantations.

2. Diversification of products and marketing. The application of these coconut farmers in North Buton is a product produced only one type form of copra, so that farmers' income is largely determined by the amount of sales of copra obtained every three months. Product diversification efforts through integrated coconut processing is intended to increase farmers' revenue sources besides copra oil products such as shells, fibbers, coconut water and coconut wood. Integrated coconut processing business would not only solve the problem of diversification of products but also must arrive at effective marketing. In this case, the direct involvement of farmers in marketing activities needs to be cultivated so that marketing activities are not dominated by traders who make the village more helpless farmers. The role of local authorities is indispensable in providing the widest possible access for farmers in developing marketing partnerships with other parties outside the region such as companies that use products from the coconut as raw material. Because the local government of North Buton can invite investors to establish coconut processing that can partner with farmers.

3. Empowerment of farmers and institutional. Integrated coconut processing business requires efforts to empower farmers and the strong institutional support. This relates to the efforts to improve the ability of farmers in the mastery of technology and information and access to sources of financing and marketing. Increased mastery of technology, especially in the integrated coconut processing is expected to improve the quality of the products produced mainly copra as a flagship product, for example through the introduction of technology in making white copra that are more competitive in the market. The empowerment can be done either to an individual or a group of farmers in the form of an institutional nature such as cooperative economic and non-economic institutions such as associations. The role of government in this case is as a facilitator and policy makers while operational from farmers and business partners.

CONCLUSIONS

Based on the results of research are: (1) potential coconut plants production in North Buton, tends to decrease as a result of the age of the plants that are old; (2) the characteristics of coconut farmers in North Buton, on average, are in the productive age, low education levels, experienced, and has a number of family burden is relatively moderate. The pattern of cultivation of coconut done monoculture, with a single processing business is the

production of copra; (3) the economic potential of coconut processing in North Buton, declared financially viable; (4) The development strategy of integrated coconut processing is done by optimizing the potential aspects of cultivation, diversification of products and marketing, as well as the empowerment of farmers and institutions. Finally recommendation needs to be done of the results of this study are: (1) Procurement of seeds and fertilizer manufacture plant coconut for the pilot project program rejuvenation and expansion of planting area; (2) provision of technology and an integrated coconut processing industry; and (3) needs improvement more adequate infrastructure.

REFERENCE

- Central Statistics Agency [BPS] (2014). North Buton Regency by the Numbers. Buranga.
- Central Statistics Agency [BPS] (2014). Southeast Sulawesi the Numbers. Kendari.
- Coconut Indonesia Society [MAPI] (2006). The concept of the integrated oil development. Coconut Indonesia Society (MAPI). Bogor.
- Diana R (2012). In the manufacture of Coconut Oil Fermentation, <http://file.upi.edu/Direktori>
- Directorate General of Plantation [DGP] 2010. The strategic plan of plantation development. Ministry of Agriculture. Jakarta.
- Duwillia (2011). Optimizing the use of white copra processing furnace types break fireproof Baristand Manado. http://insentif.ristek.go.id/new_insinas
- Hanafie R (2010). Introduction to Agricultural Economics. Publisher Andi. Yogyakarta.
- Kuswari (2005). Agribisnis Coconut Development in the Context of Poverty Reduction in Indragiri Hilir. Thesis. Pacasarjana school. Bogor Agricultural Institute. Bogor.
- Lay A, Pairs PM (2013). Strategy and implementation of the future development of coconut products. Oil Crops Research Institute and the Palma Other Manado. pp 1-25.
- Linda Y, Nur A (2012). Coconut Shell Charcoal Processing Technology, Institute for Agricultural Technology. Jambi
- Mangunwidjaya, Sailah (2008). Introduction agricultural technology. Publisher Penebar Organization, Jakarta.
- Nur A, Linda Y, Endrizal (2011). Improved Quality and Value Added Products Processed Oil to Support Agro-industry in Jambi Province, Institute for Agricultural Technology (BPTP). Jambi
- Saragih B (2010). Agribusiness New Paradigm Based Economic Development of Agriculture. IPB Press. Bogor.
- Soekartawi (2002). Principles of Marketing Management Results of Agriculture; Theory and Application. King Grafindo Persada. Jakarta.
- Sugiyono (2012). Research Methods Combined (Mixed Methods). Alfabeta. Bandung.
- Umar H (2007). Business Feasibility Study. Gramedia Pustaka Utama. Jakarta.