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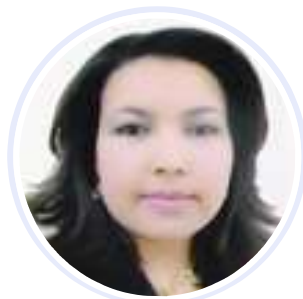
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 : **10.9790/2402-1302021924**  
 : **(http://www.doi.org/)**



**Abstract:** This review shows regards of the recently experienced concerning the environments of ammonia oxidizing bacteria (AOB), ammonia oxidizing archaea (AOA) microorganisms, and denitrifying microbes. The advancements of molecular biology techniques have encouraged staggeringly to the fast recent developments in the sector. Various methods for implementing so are discussed. The function of AOB, AOA, and denitrifying microorganism composition was investigated through a high throughput of the 16S rRNA amplicon sequencing protocol. There is potential to observe.....

**Key words:** Molecular techniques, ammonia oxidizing bacteria, ammonia oxidizing archaea, chemolithoautotrophic bacteria.

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Citation

Abstract

Reference

Full PDF (../papers/Vol13- Issue 2/Series-2/D1302022529.pdf)

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 Title : Diversification Of Processed Fish Product : Financial Feasibility Crackers Processing Of Snakehead (Channa Striata)  
 Country : Indonesia  
 Authors : Muhammad Ikhwan || Erma Agusliani || Leila Ariyani Sofia  
 : **10.9790/2402-1302022529**  
 : **(http://www.doi.org/)**



**Abstract:** The research is aimed to determined the financial feasibility cracker processing of snakehead (Channa striata) in Melayu Village, South Kalimantan province. Crackers of snakehead (Channa striata) has a potential to devolope but constrained by raw material of snakehead (Channa

## Diversification Of Processed Fish Product : Financial Feasibility Crackers Processing Of Snakehead (Channa Striata)

Muhammad Ikhwan<sup>1</sup>, Erma Agusliani<sup>2</sup>, Leila Ariyani Sofia<sup>2\*</sup>

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**Abstract:** The research is aimed to determine the financial feasibility of snakehead cracker processing (Channa striata) in Melayu Village, South Kalimantan province. Crackers of snakehead (Channa striata) has a potential to develop but is constrained by raw material of snakehead (Channa striata). Results showed that the cracker processing of snakehead (Channa striata) is still feasible to continue for the next 5 years until the interest rate of 9%. The absolute profit value is IRR group I of 37.14%, group II of 36.14% and group III of 64.41%. It is suggested that this research needs additional funds (KUR) to increase the production of cracker processing of snakehead (Channa striata).

**Keywords:** Snakehead (Channa striata), Crackers, Ikan Gabus, the financial feasibility.

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### I. Introduction

Fish is one of the world's sources of protein. Fish make up 10% -15% of the food needs of the world community (Wilson, 2007). Then the handling of fish consumption provides employment for millions of people (Al-Jufaili MS and Opara LU, 2006). Indonesian fish consumption in 2017 reached 46.49 kg / capita increased from 2016, i.e., 43.94 kg / capita. Indonesia is targeting an increase in fish consumption of Indonesian society in 2018 amounted to 50.65 kg / capita (Ministry Of Marine Affairs And Fisheries Republic Of Indonesia, 2018). There are 4 types of freshwater fish that are predominantly consumed by the people of Indonesia are Tilapia, Catfish, Common Carp and Snakehead such as snakehead (*Channa striata*) (FAO, 2015). Snakehead (*Channa striata*) is a freshwater fish that belongs to the family *Channidae*. Snakeheads like *Channa striata* have high value as a food, especially in India, China, and Southeast Asia such as Indonesia. Because of its popularity as a consumption fish in the southern China region, and Southeast Asia, so that many are exported to several countries such as the Indian Ocean to Hawaii, Canada and the United States which are sold live in certain ethnic and restaurant markets. Based on its original distribution, fish with the Channa Genus are spread in the northern region of eastern Afghanistan, Pakistan, India, Southeast Nepal, Bangladesh, Myanmar, Thailand, Laos, Malaysia and Indonesia. In the region of Indonesia *channa striata* is scattered on the island of Borneo, Sumatra, and Java (Courtenay and Williams, 2004).

Snakehead (*channa striata*) is one of the potential foods because it helps to accelerate the wound healing process and energy recovery during illness (Mustafa *et al*, 2013). Extraction of *channa striata* has been introduced and significantly proven to increase levels of albumin in patients with hypoalbuminemia and accelerate wound healing (Mustafa *et al*, 2012). 20% of fish consumption of Indonesian society is a freshwater fish which 70% was served fresh and 30% is consumed in processed (FAO, 2015). The variety of processed *channa striata* can be found in Banjar Regency, South Kalimantan Province. Currently, the most dominant processed fish is salted dry fish reaching 863,316 Kg / Year (Marine and Fisheries Agency of Banjar District, 2017). However, salted fish products are generally still packed using sacks and only sold in traditional markets either locally or outside the region (Sofia, 2018).

Other *channa striata* processed products are fish crackers. Even the crackers into a commodity to be bartered by Indonesia to obtain Russian Sukhoi (Liputan 6, 2017). Crackers in Indonesia are also booked by Korea and China, crackers ordered are fish crackers and shrimp crackers (Kompas, 2016). Based on these conditions, the processed *channa striata* has the potential to be developed. But now the processing of crackers is constrained by the availability of raw materials for *channa striata* that only rely on natural catches. The availability of *channa striata* is also influenced by the season. Therefore it's necessary to develop an appropriate business development plan and to develop a plan for cracker processing business, a financial feasibility analysis

## II. Research Methods

**Object and Location of The Research.**The research object was set intentionally at crackers processing in Melayu Ulu Village, Martapura Timur District with the consideration that this area was crackers processing center of Banjar Regency (Appendix 1). The study was conducted in January - September 2018 for all crackers processing in Melayu Ulu Village, i.e., 13 people processing crackers.

**Method of collecting data.**The data collection method used in this study is a survey method directly through interviews with questionnaire guidelines. Data were collected cross-section data or data collected at certain times to describe the state or activities at that time. Data retrieval is done repeatedly ie 3 times the retrieval of data in the same respondents, in order to obtain 39 data of crackers processing.

**Data Analysis.** This study used two approaches in data analysis are (1) to gain business where profits derived from total revenue minus total costs ( $\pi=TR-TC$ ) (Soekartawi, 2003) and (2) The financial feasibility of the business through an investment criteria analysis approach, i.e., Net Present Value (NPV), Net Benefit Cost Ratio (NBCR), dan Internal Rate of Return (IRR) (Kadariah et al, 1999) for an estimate of the next 5 years used *discount factor* 7% and 9% (as the maximum period of repayment of credit and the effective interest rate per year for micro credit micro scale in the study area). Analysis of the benefits and feasibility of the business is divided into three levels, the first level is with the production of < 25 Kg/Production, The second level is with the production of 25-< 50 Kg/Production, and The third level is the production of >50Kg/Production.

## III. Result

**Investment and business profit.** Fish crackers are processed products of fishery products with raw materials of fish that through the processing, boiling and drying. The fish cracker processing business in MelayuUlu Village has been running for quite a long time with an average business of more than 5 years. There are 3 cracker processing businesses on first level, then 6 cracker processing businesses on second level and 4 cracker processing businesses on level three. Each level has different costs investment, the lowest investment costs is the first level and the highest investment costs is three level (table 1). Various investment equipments are purchased such as basins, trays, pans, grinding tables, stoves, meat grinders, knives, packaging equipments freezers, drying tools, scales, cracker cutters and transport vehicles.

**Table1.** Investment Cost for Fish Crackers Processing Business

Investment Costs					
Processing Business Level I		Processing Business Level II		Processing Business Level III	
1.	Rp 18.760.000,00	1.	Rp 43.840.000,00	1.	Rp 37.540.000,00
2.	Rp 18.765.000,00	2.	Rp 37.755.000,00	2.	Rp 47.475.000,00
3.	Rp 21.415.000,00	3.	Rp 22.300.000,00	3.	Rp 30.970.000,00
		4.	Rp 38.565.000,00	4.	Rp 36.815.000,00
		5.	Rp 22.075.000,00		
		6.	Rp 25.200.000,00		
	Rp 19.646.666,67		Rp 31.622.500,00		Rp 38.200.000,00

The business of processing Snakehead fish crackers in MelayuUlu Village is capable of producing 360 Kg - 2160 Kg of Crackers / year and producer of Snakehead fish crackers obtain gross income ranging from Rp. 25,200,000 - Rp. 194,400,000 per year. The production of snakehead fish crackers providing an average profit of Snakehead fish cracker level I producer is Rp. 6,187,555.56 / year, then for Snakehead fish cracker producer Level II is Rp. 13,931,555.56 / Year, and for Snakehead fish cracker level III producer is Rp. 32,623,320.00 / year. The average production cost for level I processing business per year is Rp. 15,220,500.00, then the production cost of level II cracker processing business is Rp. 54,331,500.00 / year and the production cost of level II cracker processing business is Rp. 38,200,000.00 / year (Table 2). Costs incurred include purchasing raw materials of cracker, labor costs, transportation costs, and electricity costs.

**Table2.** Business Profits of Processing Snakehead Fish Crackers

Analysis (Year)	Group I	Group II	Group III
Production Average (Kg)	360	1.074	2.025
Average Acceptance	Rp 25.200.000,00	Rp 75.180.000,00	Rp 152.550.000,00
Average production costs	Rp 19.0112.444,44	Rp 61.284.444,44	Rp 119.926.679,44
Average profit	Rp 6.187.555,56	Rp 13.931.555,56	Rp 32.623.320,83

**The financial feasibility of the business.** The analysis of the financial feasibility of Processing Snakehead Fish Crackers business in MelayuUlu Village based on NPV criteria for the next 5 years with a discount rate of 7% and 9% give the lowest profit on the level I cracker processing business with a 9% discount rate of Rp. 27,439.382.92 and the highest profit in the level III cracker processing business with a 7% discount rate, which is Rp. 69,204,006.69 so that the Processing Snakehead Fish Crackers business is feasible to be developed. When viewed from the analysis of Net BCR 7% and 9% for the level I, II, and III fish cracker processing business which found a ratio value more than 2, so that the fish cracker processing business is feasible to have a profit value greater than the required cost. Then from the results of the IIR analysis it is known that the fish cracker processing business will still benefit even though it is in the interest rate of 7% and 9%. The IRR value of fish cracker processing business exceeds the prevailing loan interest rate. Based on this, the business of the fish cracker processing business in MelayuUlu Village is feasible to continue to be developed in the long term.

**Table 5.** Financial Feasibility of Processing Snakehead Fish Crackers According to Investment Criteria in a 5 Year Period

Investment Criteria	Nilai			Kelayakan
	Business Level I	Business Level II	Business Level III	
NPV i = 7% (Rp)	30.737.213,99	36.195.725,19	69.204.006,69	NPV > 0, business is feasible to run
NPV i = 9% (Rp)	27.439.382,92	32.282.023,42	63.888.028,41	NPV > 0, business is feasible to run
Net BCR i = 7%	2,56	2,14	2,81	Net BCR > 1, business is feasible
Net BCR i = 9%	2,40	2,02	2,67	Net BCR > 1, business is feasible
IRR (%)	37,14	36,14	64,41	IRR > credit interest, worth trying

#### IV. Discussion

The total number of processing workdays is once a week or 4 times in one month or with the number of production cycles per year is 48 times. Raw material requirements depend on production volume, at least 10 kg / week and at most 60 kg / week, while the average raw materials used by 13 processors is 33.38 kg / week. The price of Snakehead fish is quite high, Rp. 25,000 - Rp. 45,000 / kg, if the bigger the fish, the greater the price.

The procedure for processing snakehead fish crackers made by producer is generally same and accordance to [15] SNI 2713.3: 2009, as follow : (1) pulverizethe meat by blending or grinding using a grinding machine; then, put the pulverized fish meat into a container and added salt, sugar, eggs and mashed garlic (making fish porridge); (2) making a starch by mixing tapioca flour (10% of the amount of flour) in cold water; (3) Making batter, fish porridge mixed into starch and stirred, then add tapioca flour little by little until homogeneous; (4) Molding, the batter was smooth and not sticky in the hand then molded in cylindrical shape and steamed until cooked; Steaming is done for 1 hour or more; the mark of the cracker batter is ripe if there is no batter cracker stick when pressed with a stick; The cooked batter is allowed to stand for one night so that the batter is solid and strong so that it is easier to cut; the strong batter is thinly sliced and then dried; the drying process can take a full day if the weather is sunny.

The biggest advantage of processing fish crackers in MelayuUlu Village at the third level is Rp. 32,623,320.83 / year. However, to produce that needed a high investment cost of Rp. 38,200,000.00. The benefits for level I and level II crackers producers are still lower than the provincial minimum wages (UMP) in South Kalimantan 2018, which is Rp 2,454,671.80 / month. Needed to strengthening of the capital business of processing snakehead fish crackers in UluMelayu village, one of the ways are by applying for the People's Business Credit (KUR). The credit can be done because based on the results of the feasibility analysis with a discount rate of 7% and 9% of the business of processing snakehead fish crackers, it is feasible to run.

The profit of a business is determined by 3 things, namely production, selling price, and production cost. Production is a factor that can be controlled by producers, but prices are formed by market mechanisms (sutarni, 2013). The increase in production will provide greater benefits, as illustrated by the business of processing sea fish crackers with production reaching 582 kg per year, marine fish cracker processing business gains up to Rp. 48,230,000.00 per year. however, if seen from the IRR value of Snakehead fish cracker processing business is much better even though the production is much lower than the processing of sea fish crackers.



**Table 6.** The Comparison of Fish Crackers Processing Business

	The Processing Snakehead Fish Crackers Level I	The Processing Snakehead Fish Crackers Level II	The Processing Snakehead Fish Crackers Level III	The Processing of Sea Fish Crackers
Production per month (Kg)	40	119.33	225	582
Profit (million Rp/Year)	6.187.555,56	13.931.555.56	32.623.320,83	48.230.000,00
Net Present Value (million Rp/Year)	27.439.382,92	32.282.023,42	63.888.028,41	162.440.000,00
Benefit Cost Ratio	2,40	2,02	2,67	1.29
Internal Rate Of Return (%)	37,14	36,14	64,41	28.48

Sofia, 2018

## V. Conclusion

Result showed that the need to further improve the processing of crackers production, increased production can be done with additional a fund or kreditusaharakyat (KUR). KUR can do for crackers processing business feasible to rate at 9% interest.

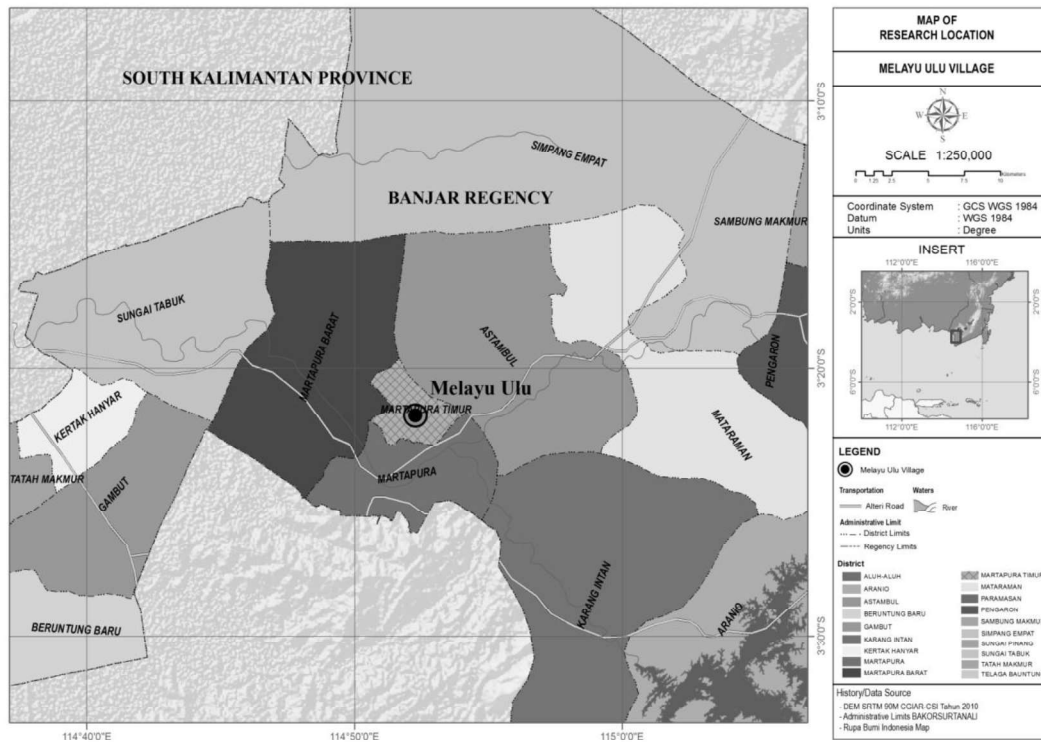
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Lampiran 1. Desa Melayu Ulu



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