

**PRODUK UNGGULAN INDUSTRI RUMAH TANGGA BERBASIS
PERIKANAN LAUT DI KABUPATEN TANAH LAUT KALIMANTAN
SELATAN**

**THE LEADING PRODUCTS OF HOME INDUSTRY BASED ON MARINE
FISHERY IN TANAH LAUT REGENCY SOUTH KALIMANTAN**

¹⁾**Leila Ariyani Sofia**

¹⁾ Study Program of Fisheries Agribusiness, Faculty of Fisheries and Marine Science,
Lambung Mangkurat University, Jl. A. Yani Km. 36 Banjarbaru
South Kalimantan, Indonesia
e-mail : sofialeila73@gmail.com

ABSTRAK

Penelitian ini bertujuan untuk: (1) mengidentifikasi jenis-jenis produk industri rumah tangga berbasis perikanan laut, dan (2) menentukan olahan perikanan laut yang dapat dikembangkan sebagai produk unggulan daerah. Empat kecamatan wilayah pesisir Kabupaten Tanah Laut dipilih secara sengaja sebagai lokasi studi yaitu Kurau, Jorong, Panyipatan dan Takisung. Pengumpulan data primer dilakukan melalui survey dan wawancara terhadap sampel industri rumah tangga hasil perikanan laut yang diambil secara acak sederhana. Pemilihan produk unggulan industri rumah tangga perikanan laut menggunakan teknik *Analytic Hierarchy Process* (AHP). Hasil analisis menunjukkan bahwa industri rumah tangga di wilayah pesisir Kabupaten Tanah Laut didominasi industri berteknologi sederhana dengan jenis produk yang dihasilkan berupa produk tradisional, seperti ikan asin, kerupuk ikan, kerupuk udang, udang kering, terasi, amplang dan abon ikan/udang. Alternatif produk unggulan industri rumah tangga hasil perikanan laut Kabupaten Tanah Laut yang ditentukan berdasarkan kriteria ketersediaan bahan baku, mutu bahan baku, nilai tambah produk, tingkat penguasaan teknologi, peluang pasar, serapan tenaga kerja, dan kondisi pengembangan produk industri saat ini menunjukkan bahwa produk kerupuk ikan terpilih sebagai produk yang dapat diunggulkan dengan nilai total 0,245, berikutnya kerupuk udang dan abon ikan masing-masing dengan nilai total 0,221 dan 0,152.

Kata kunci : *pengolahan, diversifikasi, pembangunan perikanan*

ABSTRACT

This study aims to: (1) identify the types of home industry products based on marine fishery, and (2) to determine marine fishery products that can be developed as regional leading products. Four sub-districts of coastal areas of Tanah Laut regency were chosen purposeful as study locations, namely Kurau, Jorong, Panyipatan and Takisung. Primary data collection was conducted through survey and interview to sample of marine fishery product home industry which was taken by simple random sampling. Selection of marine fisheries home industry superior product using *Analytic Hierarchy Process* (AHP) technique. The result of analysis showed that the home industries in the coastal area of Tanah Laut Regency is dominated by simple technology with the products produced in the form of traditional products, such as salted fish, fish and shrimp crackers, and "amplang" crackers, dried shrimp, shrimp paste, fish floss. The leading product alternatives of marine fisheries home industries in Tanah Laut regency are determined based on the criteria of raw material availability, raw material quality, value added product, technological mastery level, market opportunity, labor absorption, and current industrial product development condition shows that cracker product selected fish as a product that can be seeded with a total value of 0.245, the next shrimp crackers and fish/shrimp floss each with a total value of 0.221 and 0.152.

Keywords: *processing diversification, fisheries development*

INTRODUCTION

Tanah Laut regency is one of five coastal districts in South Kalimantan that has considerable potential of marine fishery resources. Marine fishery production in Tanah Laut regency during 2014 - 2016 reached 34,823 tons/year or about 28% of total sea fishery production of South Kalimantan Province (Central Bureau of Statistics Tanah Laut Regency, 2017). Some economically important fish species that can be found in marine waters Tanah Laut, such as mackerel, snapper, pomfret, mackerel tuna, and crustaceans. The potential of a large fishery resources is an opportunity for the economic improvement of coastal communities, most of whom rely on marine life.

Approximately 80% of fishery products are still sold in fresh conditions (logs) so that the resulting value added is still relatively low. In addition, the availability of fishery commodities is highly dependent on the season and quickly rot so it requires fast and precise handling. The abundant catch in peak season is very susceptible to price decline as a result of the decline in freshness of fish that is not sold out immediately. Such conditions would be very

detrimental to fishermen, and it becomes waste in the utilization of fish resources where fish are valued lower than the economic value should be. One of the activities to overcome the problem is processing.

Processed fish products that vary and have a long enough storage will be able to reach the market and consumers more widely so that the potential to increase the value added products (Effendi and Oktariza, 2006). However, generally the fishery product processing business undertaken by the community is still a household-scale industry with the type and volume of products highly dependent on the season, and it can only be sold in traditional markets.

Meanwhile, demand for fishery products, both in the domestic market and overseas markets are expected to increase, in line with the increase in the national economy and people's income, population growth, as well as increasing awareness that fish as a protein source. The estimated increase in fish consumption reached 4.32%/year indicates opportunities for fishery processing business (Nurminingsih and Wiganda, 2010; Umar, 2012). Therefore, to capture these opportunities it is necessary to determine the right type of

processed fishery products that can provide high added value by taking into account the potential resources and applied post-harvest technology, as well as the possibility of developing leading products.

This study aims to identify the types of home industry products based on marine fisheries and determine fishery processed products that can be developed as the leading products of Tanah Laut regency.

METHODS OF STUDY

Time and Location

Field data was collected from July - October 2017 covering four districts in the coastal area of Tanah Laut regency. And then in each district taken by purposing two village processing centers. Some of the study sites were selected because they are coastal areas with several types of fishery processing units conducted by fisher folk and local communities. The locations of the study are Kurau district (Bawah Layung village and Sungai Bakau village), Jorong district (Sebuhur village and Swarangan village), Takisung district (Takisung village and Kuala Tambangan village), and Panyipatan district (Batakan village and Tanjung Dewa village) (the location map is presented in Figure 1).

Technique of Collecting Data

Primary data were collected through direct interviews with respondents and using questionnaires. Respondents are people who perform processing of home fishery products, both fishermen and local communities. The number of respondents in each sample village is taken from 5 to 10 respondents by simple random sampling. While secondary data collected from various reports of previous studies and supporting data from relevant agencies.

Data Analysis

Selection of a leading home-based marine fishery product using Analytic Hierarchy Process (AHP) developed by Saaty (1980). The main principles of the AHP method consist of hierarchy, priority setting and logical consistency measurement. The process of selecting leading products begins with the determination of some of the alleged criteria as the deciding factor. These criteria are weighted by the AHP approach through full pairwise method with a comparative scale of 1 to 9 or the inverse.

The weight of the criteria is determined based on the opinion of the experts, namely the Marine and Fishery Service of Tanah Laut regency, the home industry of fish processing, and the

results of empirical research. Furthermore, the leading product alternatives are selected by AHP technique through direct method with

values 1 to 10. The data collected is processed using *Expert Choice 2000* software.

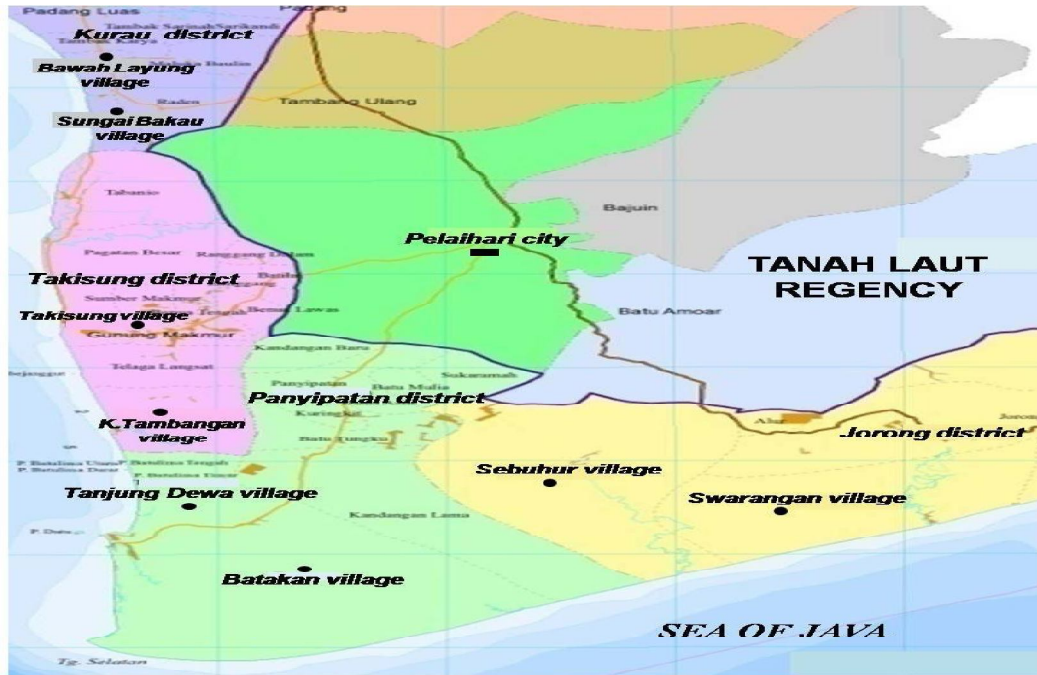


Figure 1. The location map of study

RESULTS AND DISCUSSION

Results

Fishery Products of Home Industries

Types of products processed marine fisheries in Tanah Laut generally in the form of salted fish, fish and shrimps crackers and “amplang”, dried shrimp (*ebi*), shrimp paste, and fish floss. Processing activities of marine fishery products can not be processed every day due to the availability of raw materials that tend to fluctuate due to seasonal changes. The operational components

and business feasibility of the home fishery industry can be seen in Table 1.

Salted fish.

Salted fish is a fish that is processed by salting and dried. There are two types of salted fish is large salted fish (butterfly shape) and small salted fish (trash fish). Large salted fish is salted fish to be consumed by humans, so the way of processing must be clean and not too salty. Types of fish for this product are the fish that have economic value such as mackerel, sea catfishes, thread fins, spotted spanish mackerel, and three finger thread fin. Meanwhile, trash salted

fish is a mixture of various types of low value fish, usually used for cattle feed mixture. Salted fish products are usually

packed using only sacks or baskets and sold in traditional markets, both local and outside the region.

Table 1. Component of operational and business feasibility of home industries of marine fishery product in Tanah Laut regency (per business unit) ¹⁾

No.	Component	Salted trash fish	Large salted fish	Shrimp crackers	Fish crackers	Dried shrimp	Fish paste	<i>Am-plang</i> crackers	Fish floss
I. Operational									
1.	Total operational processing per month (times)	10	10	30	20	5	3	10	10
2.	Number of working months per year	8 - 10	8 - 10	10	6	6	3	6	6
3.	One production cycle (days)	3 - 5	3 - 5	3	3	5	5	5	5
4.	Average amount of raw material per month (kg)	3,195	558	188	582	1,125	330	108	63
5.	Average production amount per month (kg)	1,065	279	188	582	375	220	108	42
II. Prices :									
1.	Raw material (thousand Rp /kg)	1	10	30	25	5	5	35	12
2.	Processing product (thousand Rp /kg)	3	32	40	45	35	20	70	100
III. Business feasibility ²⁾									
1.	Profit (million Rp /year)	36.92	3.99	42.94	48.23	29.38	0.81	21.37	18.92
2.	<i>Net Present Value</i> (million Rp)	147.78	162.77	148.49	162.44	103.30	0.48	95.63	5.49
3.	<i>Gross Benefit Cost Ratio</i>	1.36	1.49	1.29	1.29	1.73	1.03	1.26	1.62
4.	<i>Internal Rate of Return (%)</i>	30.49	33.48	28.55	28.48	37.94	19.27	27.90	35.86

Source: 1) Processed data of 2017; 2) Nohong & Sofia, 2015

Crackers

Crackers produced by home industry in the form of fish crackers and shrimp crackers. Types of processed fish such as swordfish (machetes), mackerel, and some types of shrimp, such as brown shrimp, sweet shrimp and white shrimp. Some processors have done according to the standard that the packaging is

relatively assured hygiene products and has registered its products in the local health service. Fish crackers and prawn crackers are usually marketed in traditional markets to modern markets.

Dried shrimp

Dried shrimp or known as *papai* is a processed product of small shrimp (*rebon*) that has been dried without using

salt. Dried shrimp processing is generally performed fishermen themselves or their family members to increase the sale value, especially when the volume of catches of shrimp abundance is in the months of April to October (season southeast), where the selling price of fresh shrimp tended to fall in the season.

In dry shrimp production process usually processing less attention to cleanliness. For example some processors do not use mats to dry the shrimp, but are directly placed on a paved road so that the product is mixed with sand and dust. In addition, the product to be marketed is also not packaged properly but just put in the sack.

Shrimp paste

Paste is one of fish fermentation product or shrimp which only undergo salting treatment (without followed by addition of acid) then left for some time to happen fermentation process (Afrianto and Liviawaty, 1989). The shrimp paste processing business is generally done by the fishermen themselves and/or together with their family members using traditional technology. Processing is done especially when the catch is abundant in hopes of increasing the added value of the catch. Products to be marketed are usually included in small bins so that the hygiene of the product is

less secure and sold only in traditional markets.

To further increase the marketing value of shrimp paste, some processors in Takisung village try to develop paste ready to eat. Paste ready to eat is shrimp cooked in advance. The process of cooking using oven to maturity level evenly and cause a distinctive flavor, more durable, and can be consumed directly. The production of shrimp paste ready to eat in the last year reached 15.000 - 18.000 packs with size ± 5 gr/pack.

Amplang

“Amplang” is one of Kalimantan typical fish cracker products made from fish. The preferred raw materials are good quality mackerel fish because the texture of the meat is solid and the dough can inflate perfectly when fried. In addition, the processing of “amplang” is slightly more complicated and takes longer time than usual cracker processing.

Processed “amplang” produced by the processor are quite hygienic and contain no preservatives or dyes that are forbidden to be consumed. This product is usually sold in the form of plastic packaging with the size of 100 gr/pack. This product has a durability of up to ± 1 year when packaged with standard packaging. But the packaging process is

often constrained by the lack of availability of packaged plastic packaging that meets the standards in the local market and the way packaging closures are still simple. As a result most processors have to use regular plastics and packaging is not airtight so the product's storage capacity becomes relatively shorter.

Fish/shrimp floss

Fish/shrimp floss became one of the diversification of processed products of fishery products and newly done by several groups of women processing at the study site. Raw material of this product is fish meat of mackerel or shrimp are good quality because raw material will affect to quality and appearance of product. Processed fish/shrimp floss produced by the processor are quite hygienic and contain no preservatives or dyes that are forbidden to be consumed. Fish/shrimp floss product is usually sold in plastic packaging with size ± 100 gr/pack.

Selection of Leading Products of Fisheries Home Industry

The result of weighting and scoring of marine fishery product that potential to be developed in coastal area of Tanah Laut regency shows that product added

value, availability and continuity of raw materials, and market opportunity are determinate factors in determining the leading product of home industry of fishery (presented in Table 2).

The results of the analysis of the priority sequence of the leading product priorities of the marine fishery home industry based on criteria of added value placed the first fish cracker product with the score of 0.346 and the large salted fish in the second with a score of 0.183 (see Table 3). In Table 3 it was found that the priority of the leading products of marine home industry based on the quality criteria placed "amplang" and fish/shrimp floss products in first place with a score of 0.308. Meanwhile, based on technological criteria put fish crackers in the first place (score 0.252) and "amplang" in second (score 0.223).

Table 2. The order of priority criteria for selection of leading home industry products based on marine fishery products in Tanah Laut regency

No.	Criteria	Description	Weight	Priority order
1	Raw material	Production volume and continuity of raw material supply throughout the season and raw material conditions	0.218	2
2	Quality	Quality of raw materials for fishery industry	0.087	4
3	Added value	Profit margin of fishery products industry	0.430	1
4	Technology	Mastery of technology to produce processed fisheries	0.077	5
5	Market	Product market opportunities produced by fishery industry	0.115	3
6	Labor	Absorption of labor by the processed fishery industry	0.041	6
7	Condition of fishery industry	Current condition of product development of fishery industry	0.032	7

Information : The criteria weighting is done by taking the opinions of related experts and analyzed by AHP technique

Table 3. The priority sequence of alternative home-based industry based products of marine fishery in Tanah Laut regency

No	Type of products	Added value	Raw material	Quality	Technology	Market	Labor	Condition of industry	Results
1	Trash fish	0.149	0.109	0.015	0.026	0.108	0.051	0.044	0.072
2	Salted fish	0.183	0.103	0.060	0.042	0.136	0.086	0.048	0.094
3	Shrimp cracker	0.165	0.403	0.136	0.157	0.182	0.207	0.295	0.221
4	Fish cracker	0.346	0.240	0.118	0.252	0.246	0.244	0.270	0.245
5	Dried shrimp	0.060	0.024	0.035	0.035	0.042	0.038	0.040	0.039
6	Fish paste	0.020	0.017	0.021	0.052	0.023	0.036	0.035	0.029
7	Amplang	0.043	0.053	0.308	0.223	0.090	0.169	0.132	0.145
8	Fish/shrimp floss	0.034	0.051	0.308	0.211	0.172	0.169	0.136	0.152

Information : The number on each alternative criterion is the opinion of the relevant experts and analyzed by AHP technique

Table 3 also shows that the priority order of processed products of home industry based on market criteria shows that the market share of fish and shrimp cracker products is higher than other products with priority scores of 0.246 and 0.182, respectively. Similarly, based on labor absorption criteria, fish cracker and shrimp cracker products are in first and second priority with scores of each 0.244 and 0.207. Meanwhile, the priority order of leading product of fishery industry based on criteria of fishery industry condition shows that the development of shrimp and fish cracker is better than

other fishery products with score 0.295 and 0.270 respectively.

The results of the analysis based on the overall criteria of eight alternative marine home industry products in the study location showed that fish cracker product is the main leading product with a total score of 0.245. While the second and third best products are shrimp crackers and fish floss with a total score of 0.221 and 0.152.

DISCUSSION

Fishery processing aims to increase the added value of fishery products (Effendi and Oktariza, 2006), therefore processed products that can provide high added value will be the choice of producers. Fish crackers can be a leading product for further development because they have a higher financial worthiness value than other products (see Table 1). The higher the financial feasibility of a business, the more interest it will be and convince investors to invest in the fish processing industry.

The raw material is a determining factor for the sustainability of the fish processing industry (Umar, 2012; Sutarni, 2013; Riana, *et.al*, 2014). Meanwhile, fish is not only for raw materials of processed products, but also as fresh food for the community. This condition raises competition in the availability of marine fishery processed raw materials with other direct sales, especially in famine season. Usually the catch of fishermen sold directly to the collector, so that the volume of fish that can be purchased directly by the processing unit in the fisherman relatively little. Therefore, most local processors (60% - 90%) are forced to buy from collectors even though the price is higher. In addition, some processors (10% - 40%) who have sufficient capital will do the storage of raw materials (stocking) by buying more

raw materials directly to the fisherman during the fishing season or even when the price of fish is low.

Some cracker processors in Takisung and Panyipatan sub-districts are even looking for raw materials to other areas or directly to the basis landing of fish (PPI) Banjar Raya in Banjarmasin which is about 86 km from their village. These efforts will certainly incur additional costs, while the capital owned by the processor is generally limited to only 2-3 times the production cycle only. Similar conditions occur in the provision of raw materials in the food and fish oil industry in Turkey, a very tough competition in the industry so that many manufacturing industries pay additional money before the fishing season begins to maintain their position in the industry; as well as the formation of vertical integration among fishermen, food industry and fish oil, and feed industry (Ceyhan and Emir, 2015). Therefore, to ensure the availability of raw materials and to avoid the scarcity of raw materials for the processing industry, a series of government policies are needed to create conditions that support the development of processing industries (Lubis, 2009), the cooperation of processing group with fishermen (supplier), the facilitation for the processor to get credit for small business

Product quality is determined by the quality of raw materials used. Generally crackers, “amplang” and floss processors prefer raw materials (mackerel fish) with the best quality, although with a more expensive price of Rp 70.000/kg. Processing crackers stated the use of low-quality raw materials will cause crackers and “amplang” not inflate properly, or fish floss product does not decompose well (relative to clot).

The average amount of labor used in the processing of crackers as much as 4 people. This is related to the processing procedure undertaken, where each person handles their respective parts of weeding of fish/shrimp, fish grease and smoothing, stirring (mixing meat and tapioca flour) to slicing and drying. On the technology side, only a handful of cracker processing groups are using semi-modern equipment and standardized production process, so that the productivity of the industry as a whole has not reached optimal condition and maximum profit.

Therefore, efforts should be made to improve the quality and standardization of products so as to meet consumer desires, namely through improvement of production processes; packaging and labeling of products (Soejono, 2008; De Silva, 2011), and improvement of storage methods and

facilities (Tesfay and Teferi, 2017). The production process and the resulting product standard should refer to Good Manufacturing Practices (GMP) and Sanitation Standard Operating Procedures (SSOP) (KKP, 2016). Meanwhile, product labeling is useful for providing information on food attributes in a transparent and value that gives consumers confidence to make their choices (Henneberry and Mutondo, 2007). The fulfillment of quality standards and safety of food products will facilitate the processing industry to obtain a product certificate that is expected to be a guarantee of product quality to be able to penetrate the wider market (Reardon, 1999). The government's efforts are expected to encourage GPM and SSOP implementation by the processing industry, among others the increase of socialization, coaching, training, technical monitoring in special locus, water facilitation and ice supply (Yuwono *et al.*, 2012). The socialization of quality control regulations to the processing industry will bring positive changes to the quality and safety of seafood products (Qatan *et al.*, 2015).

The results of the study show that quality improvement efforts with more modern methods of processing, as well as the way of packaging of products have been done through the guidance and

assistance of equipment in several joint business groups (*KUBE*) of fish processing, especially the processing of crackers under the guidance of field extension officers, such as *KUBEs* in Takisung district, Panyipatan district and Jorong district. Processors are continuously working to improve product quality, packaging and product labeling, so that several *KUBEs* have been granted Certificate of Production of Home Industry (*P-IRT*) from local health service.

In addition, the ability of processed fish products to expand the market depends on product design that can adapt to global tastes (Yuliani dan Riyadi, 2015). Cracker products produced by processors at the study sites are of great interest to consumers, both local and outside the region as they have a distinctive taste and are able to meet the tastes of all societies. Until now, cracker products have been marketed in several areas, covering areas inside Tanah Laut regency and outside, such as Martapura, Sungai Danau, Banjarmasin, upstream, and Central Kalimantan province such as Palangkaraya and Kapuas, even to East Kalimantan province. While the distribution system of the product up to the consumers mostly through collecting merchants (61.75%), retailers (20.25%)

and the remaining 18% directly sold to consumers.

CONCLUSION

Processed products based on marine fishery of home industry in coastal area of Tanah Laut regency are salted fish, trash salted fish, fish crackers, shrimp crackers, dried shrimp, shrimp paste, “amplang”, and fish/shrimps floss. Meanwhile, the processed marine fishery products that can be seeded based on the criteria of raw material availability, raw material quality, value added products, the level of technology mastery, market opportunities, labor absorption, and industrial product development conditions are fish cracker products with total score 0.245, second order and the third is shrimp crackers and fish/shrimps floss each with a total score of 0.221 and 0.152. The development of leading products should be supported by the assurance of raw material availability, both quality and quantity, as well as market expansion through standardized product packaging, labeling and product certification.

REFERENCE

- Afrianto, E dan Liviawaty, E. 1989. *Preservation and Fish Processing*. Kanisius. Yogyakarta. pp. 123. (in Indonesia)
- Central Bureau of Statistics Tanah Laut Regency. 2017. *Regional Statistics Tanah Laut Regency 2017*. pp. 34. (in Indonesia)
- Ceyhan, V. and Emir, M. 2015. Structural and economic analysis of Turkish fishmeal and fish oil industry. *Tourkish Journal of Fisheries and Aquatic Sciences*. 15: 835 – 844. DOI: 10.4194/1303-2712-v15_4_07.
http://www.trifas.org/uploads/pdf_838.pdf
- De Silva, D.A.M. 2011. *Value Chain of Fish and Fishery Products: Origin, Functions and Application in Developed and Developing Country Markets*. Food and Agriculture Organization. pp. 63.
http://www.fao.org/fileadmin/user_upload/fisheries/docs/VALUE_CHAIN-report1.doc
- Effendi, I dan Oktariza, W. 2006. *Management of Fisheries Agribusiness*. Penebar Swadaya. Jakarta. pp. 164. (in Indonesia)
- Henneberry, S.R. and Mutondo, J.E. 2007. Food labels: implications for U.S. agricultural imports. *Journal of Agribusiness*. 25 (2): 197 – 214.
<http://www.jab.uga.edu/Library/F07-06.pdf>
- KKP (Marine and Fisheries Ministry). 2016. Regulation of the Minister of Marine Affairs and Fisheries of the Republic of Indonesia No. 72/Permen-KP/2016 on Requirements and Procedures for Issuance of Processing Feasibility Certificates. Jakarta. pp. 31. (in Indonesia)
- Lubis, A.D. 2009. Scarcity of raw materials for shrimp processing industry in East Java. *Buletin Ilmiah Litbang Perdagangan*. 3 (1): 133 – 152. (in Indonesia).
<http://www.kemendag.go.id/files/pdf/2014/11/19/-1416389319.pdf>
- Nohong, N. dan Sofia, L.A. 2015. Analysis of the feasibility of developing fishery products processing business in Tanah Laut Regency. *Jurnal Mitra Bahari*. 1 (2): 51 – 63. (in Indonesia). <http://eprints.unlam.ac.id/id/eprint/1783>
- Nurminingsih & Wiganda, S. 2010. Fish processing business development strategies (Case study fish floss processing in KUB Hurip Mandiri, Pelabuanratu district, Sukabumi regency). *Majalah Forum Ilmiah Unija*. 14 (4): 30 – 40. (in Indonesia)
<https://caridokumen.com/download/strategi-pengembangan-usaha-pengolahan>
- Qatan, S., Bose, S., Mothershaw, A., 2015. Stakeholders' views on the status of the fish quality and safety regulatory schemes: The case of the sultanate of Oman. *Br. Food J.* 117, 1303–1314. <https://doi.org/10.1108/BFJ-12-2013-0359>
- Reardon, T., 1999. Global change in agrifood grades and standards: agribusiness strategic responses in developing countries. *Int. Food Agribus. Manag. Rev.* 2, 421–435. [https://doi.org/10.1016/S1096-7508\(01\)00035-0](https://doi.org/10.1016/S1096-7508(01)00035-0)
- Riana, I.G., Wiagustini, N.L.P. dan Meydianawathi, L.G. 2014. Fisheries-based SME master plan to improve the processing of fish products that have high value added. *Jurnal Ekonomi Kuantitatif Terapan*. 7 (2): 102 – 119. (in Indonesia)

<https://media.neliti.com/media/publications/44315-EN-master-plan-umkm-berbasis-perikanan-untuk-meningkatkan-pengolahan>

- Soejono, D. 2008. Pattern of marine-based agro-industry development in Puger district Jember regency. *Jurnal SEP*. 2 (1): 30 – 37. (in Indonesia) <https://jurnal.unej.ac.id/index.php/JSEP/article/view/415>
- Sutarni. 2013. Factors affecting production of salted anchovy fish preservation at Labuhan Maringgai subdistrict East Lampung regency. *Jurnal Ilmiah ESAI*. 7 (1): 1 – 14. (in Indonesia). <https://aryaulilalbab.files.wordpress.com/2015/03/faktor-faktor-yang-mempengaruhi-produksi-pengawetan-ikan-asin-teri.pdf>
- Tesfay, S., Teferi, M., 2017. Assessment of fish post-harvest losses in Tekeze dam and Lake Hashenge fishery associations: northern Ethiopia. *Agric. Food Secur.* 6. <https://doi.org/10.1186/s40066-016-0081-5>
- Umar, Z.A. 2012. Marketing mix strategy in increasing the sales volume of processed tuna at PT. Betel Citra Seyan Gorontalo. *Jurnal Inovasi*. 9 (1) : 1 – 19. (in Indonesia). <http://ejournal.ung.ac.id/index.php/JIN/article/view/707>
- Yuliari, G. dan B. Riyadi. 2015. Increase the added value of processed fish products with a diversification strategy based global market. *Prosiding Seminar Nasional "Optimalisasi Peran Industri Kreatif dalam Menghadapi Masyarakat Ekonomi ASEAN"*. Fakultas Ekonomi dan Bisnis Universitas 17 Agustus Semarang. (in Indonesia). <http://eb.untagsmg.ac.id/prosiding/index.php/feb/article/download/.../16>. Diakses 12-11-2017.
- Yuwono, B., Zakaria, F.R., dan Panjaitan, N.K. 2012. Study of the factors that influence the continuity of Good Manufacturing Practices and Sanitation Standard Operating Procedures application in processing of fish fillet in Java. *Manajemen IKM*. 7 (1): 10 – 19. (in Indonesia). <http://journal.ipb.ac.id/index.php/jurnalmpi/>.