

Original Research Article

Development Prospects Of Smoked Fish Business In Sinjai District, South Sulawesi Province, Indonesia

ABSTRACT

Aims: To analyze the characteristics of smoked fish businesses and to determine the appropriate strategy for the development of smoked fish businesses in the coastal areas of Sinjai district.

Study design: This research is qualitative and descriptive in nature where qualitative research aims to obtain a complete picture of a matter according to the human views studied.

Place and Duration of Study: Sampling was conducted in North Sinjai and East Sinjai Districts of Sinjai Regency.

Methodology: Data analysis techniques use qualitative data analysis and SWOT analysis, where qualitative analysis uses data collection while SWOT analysis is used to systematically identify various factors and formulate a company's strategy.

Result: The results showed that the characteristics of smoked fish businesses are dominant using parrotfish and ray raw materials, fish in whole and fillet form, using wood as fuel, simple equipment, local marketing, varying fish prices and not yet having business legality and a workforce aged 33-70 years, the position of smoked fish processing business development in Sinjai Regency is in quadrant I. The strategy carried out is the development of smoked fish processing MSMEs with training and extension programs, establishing partnership cooperation between MSME players and promoting products, implementing processing technology innovations and updating infrastructure and participating in training. The strategy carried out is the development of smoked fish processing MSMEs with training and counseling programs from related agencies, establishing partnership cooperation between MSME players in promoting products, implementing processing technology innovations and updating infrastructure and attending training.

Keywords: SWOT Analysis, Smoked Fish, Development Strategy.

1. INTRODUCTION

Sinjai Regency is one of the districts in South Sulawesi province with a fairly large coastal and marine area and is in the position of 5° 19' 30" to 5° 36' 47" South latitude and 119° 48' 30" to 120° 0' 0" East longitude. The area covers ±819.96 Km² or 1.29% of the land area of South Sulawesi. Geographically, Sinjai Regency consists of coastal areas, lowlands and highlands which have a coastline of ± 31 km consisting of a 17 km mainland coastal area and the Sembilan Island area with a coastline length of ± 14 km. with an estimated potential utilization of 38,000 tons / year.

Comment [U1]: This statement should preferably be written as 'this research analyses the characteristics of smoked fish business and determines the appropriate development strategy for the business in the coastal areas of Sinjai District'

Comment [U2]: Continue this statement with the previous as 'using qualitative and descriptive designs while sampling North Sinjai and East Sinjai Districts of Sinjai Regency from ----- to -----'

Comment [U3]: Include the time or duration within which the research was conducted

Comment [U4]: Consider revising statement for clarity

Comment [U5]: Restructure this statements for points to be properly understood

Comment [U6]: Delete, a repetition of the immediate statement

Comment [U7]: These keywords are not sufficient as pointers to the context of the work. Consider increasing the number

Comment [U8]: Reference missing [1,2,3]

The smoked fish processing business has become one of the industries that is quite interesting to study. Smoked fish is a processed product that has high economic value and stable demand in the local market [4,5]. The process of smoking fish not only extends the shelf life of fish products, but also provides a distinctive flavor that is in demand by consumers. The unique taste and texture of smoked fish make it a favorite choice in a variety of cuisines and dishes, both in restaurants and households [6,7].

The problems encountered in the field are that they use a direct smoking system that requires more wood as a source of smoke, the utilization of smoke is not effective (it takes a relatively long time) because the smoke does not go directly to the center of the fish, but more is wasted due to the influence of wind direction, the smoke released causes air pollution and causes discomfort for workers and the environment, simple equipment, limited production with local marketing, limited capital and manual processing that sometimes ignores sanitation resulting in low quality [8,9].

2. METHODS

This research will be conducted in Sinjai Regency. The research implementation time is from July to August 2024.

Comment [U9]: Why will be? Is it still under investigation?



Image 1 Map showing study Location

2.1. Data Collection Techniques

Data collection techniques in this study include:

2.1.1. Analysis of Smoked Fish Characteristics

Collecting smoked fish samples from various producers in Sinjai Regency. Samples were taken randomly to ensure representativeness. Developed a questionnaire that included questions about perceived quality, flavor, texture, and consumer satisfaction with smoked fish products. Distribute questionnaires to consumers. Distribution can be done through direct interviews. Interviews with smoked fish businesses to understand the smoking methods used, the raw materials selected, and the production process.

Literature study by collecting and reviewing books, journals, reports and other documents relevant to the smoked fish processing industry in Indonesia and globally. Conducting interviews with smoked fish businesses to gain insight into the current state of the industry,

Comment [U10]: Data collection within the course of the study includes:

Comment [U11]: Consider changing to Characteristics of smoked fish producers

Comment [U12]: of

market opportunities, and challenges faced. Interviews with local government officials and related agencies to understand policy support and existing development programs. Collecting market data from the Fisheries Agency, the Office of Cooperatives, SMEs and Manpower and the Office of Trade, Industry and Energy and Mineral Resources of Sinjai Regency on smoked fish production, consumption and market trends. Collecting economic data from the Central Bureau of Statistics (BPS) to understand the contribution of the fisheries sector to the local economy.

Comment [U13]: writeup should be as a report. The statements are disjointed and not tantalizing to the hearing

2.1.2. Analysis of Appropriate Strategies for Smoked Fish Business Development in Sinjai District

Selecting several smoked fish businesses in Sinjai Regency as case study subjects. Direct observation of the production process, business management and marketing strategies applied by the businesses used as case studies. Conducting interviews with business owners to obtain information on development strategies, innovations applied and challenges faced and with consumers to obtain direct feedback on products.

Collecting and analyzing financial reports, production data, and sales data from the smoked fish business that became the case study to understand business performance and determinants of success. Conduct a SWOT Analysis with the following description:

1. Strengths and Weaknesses: Identified the internal strengths and weaknesses of the smoked fish business through interviews and observations.
2. Opportunities and Threats: Identifying external opportunities and threats through literature review and stakeholder interviews.

Comment [U14]: present this as a report

2.2. Data Analysis

2.2.1. Smoked Fish Characteristics

Calculating the frequency and percentage of consumer responses related to flavor quality, texture, and satisfaction with smoked fish products. Calculated the average score for each question using a Likert scale to assess consumer perceptions of the product. Data were categorized based on topics such as smoking method, raw material selection, and product quality.

Comment [U15]: report this statement

2.2.2. Appropriate Strategy for Smoked Fish Development

1. Identify the internal strengths and weaknesses of the smoked fish business and the external opportunities and threats facing the industry. Data from interviews, case studies, and observations were used for this analysis.
2. Create a SWOT matrix to link internal and external factors and develop strategies based on a combination of strengths, weaknesses, opportunities and threats.
3. Comparing the strategies used by successful smoked fish businesses with other businesses to identify best practices and success factors.
4. Analyzing operational data from the case studies to identify production process efficiency, resource management, and effective marketing strategies.
5. Marketing Strategy Analysis: using STP (Segmenting, Targeting, Positioning) Analysis to identify appropriate market segments, define target markets, and formulate positioning of smoked fish products in the market.
6. Analyze the elements of 4P (Product, Price, Place, Promotion) in marketing strategy to determine the products offered, pricing, distribution, and effective promotion.

Comment [U16]: how were the data obtained analysed?

Comment [U17]: Particular tool used for analysis is missing. That should be stated and explained how they were being utilized

3. Result and Discussions

3.1. Result

Table 1. Data on Fisheries Micro, Small and Medium Enterprises (MSMEs) in 2023

Source: Fisheries Statistics, 2023.

No	Name of Business Unit/Group	Chairman	Address	Number of Members	Product Type
1	Tenggiri	Risda	Lappa	19 People	Fish Meatballs, Shredded, And etc.
2	Sumber Mitra	Junaedi	Lappa	18 People	Smoked fish, ShreddedAnd etc.
3	Putra Mandiri	Abd. Salam	Lappa	13 People	Wet Fish
4	Komila	Sulaiman	Lappa	13 People	Dried Fish
5	Carmin	Nurliah	Lappa	10 People	Wet Fish
6	Baronang	Nurchahaya	Lappa	10 People	Wet Fish
7	Laskar Sehati	Mariam	Lappa	10 People	Wet Fish
8	Bintang Kejora	Ritawati	Lappa	10 People	Wet Fish
9	Teri Lappa	Lisnayanti	Lappa	20 People	Dried Fish
10	Damai Sejahtera Bersama	Srianti	Lappa	19 People	Wet Fish
11	Sipakatu	Mindawati	Tongke - tongke	14 People	Wet Fish
12	Samataring Jaya	Hj.Lina	Tongke - tongke	15 People	Wet Fish
13	Khas Mangrove	Sulfirayana	Tongke - tongke	11 People	Seaweed Crackers
14	Tulu Mario	Hj.Mare	Tongke - tongke	10 People	Smoked fish
15	Mutiara Laut	Trisnawati	Tongke - tongke	20 People	Fish Crackers
16	Tiram Laut	Armawati	Samataring	13 People	Oyster Satay
17	Karya Sejati	Rohani	Samataring	15 People	Smoked fish
18	Sinar Bangko	Fatmawati	Panaikang	16 People	Fish Meatballs/Fish Crackers Tuna
19	Sipakalebby	Hasni	Panaikang	16 People	Fish Crackers
20	Massahakue	Nurjannah	Pasimarannu	17 People	Dried Fish
21	Permata	Hasniah	Pasimarannu	13 People	Fish Crackers
22	Mallimpoe	Irsa	Pasimarannu	13 People	Fish Crackers
23	Rayhana Reski Food	Ade Setia Anugerah	Sinjai Tengah	20 People	Fish Meatballs, Otak - otak, And etc.
24	Mutiara	Nahira	Pulau Buhung Pitue	19 People	Dried Fish
25	Daun Bambu	Hasyim/Ro syidiana	Pulau Buhung Pitue	15 People	Dried Fish
26	Samaturu	Rosmani	Pulau Kanalo 1	15 People	Dried Fish
27	Bunga Mawar	Safina	Pulau	14 People	Dried Fish

Comment [U18]: Move to the bottom of the table

No	Name of Business Unit/Group	Chairman	Address	Number of Members	Product Type
			Persatuan		
28	Sabar Menanti	Dulmi	Pulau Burungloe	15 People	Dried Fish
29	Buhung Pitue II	Hj. Hariani	Pulau Burungloe	15 People	Dried Fish
30	Usaha baru	Sarina	Sanjai	13 People	Fish Crackers
31	Mawar Merah	Nurfaidal	Sanjai	10 People	Fish Crackers
32	Usaha Maju	Mawarna	Sanjai	14 People	Wet Fish
33	Bina Putri	Nismawati	Sanjai	11 People	Shredded ikan, Fish Meatballs
34	Burung Camar	Nukmawati	Sanjai	13 People	Shredded ikan, Fish Meatballs
35	Harapan Baru	Nurlinda	Sanjai	15 People	Fish Crackers
36	Wanita Citra Sejati	Buati	Sanjai	13 People	Fish Meatballs
37	Teratai	Nirwati	Sanjai	13 People	Wet Fish
38	Wanita Sejati	St. Aminah	Sanjai	10 People	Dried Fish
39	Tassiwata	Magfirah	Amanagappa St	10 People	Meatballs
40	Bawal	Sitti Sudarmi	Desa Tongke - tongke	11 People	Crackers
41	Bintang Laut	Farida	Yos Sudarso St	12 People	Dried Fish

Table 2. Production and Production Value of Marine Fisheries in Sinjai Regency in 2019-2023.

Source: Sinjai Fisheries Statistics, 2023

Years	Product (Tons)	Production Value (Rp.1.000,-)
2019	35.935,50	484.255.673,-
2020	36.632,12	659.378.160,-
2021	37.760,20	546.494.975,-
2022	38.873,40	819.016.910,-
2023	40.047	926.380.174,-

Table 3. Production Volume of Processed Fish Raw Materials of Marine Fisheries Businesses by Treatment Method in 2019-2023

Source: Sinjai Fisheries Statistics, 2023

Comment [U19]: Remove all lines within the table, only allow adjoining lines bothering the parameters under discourse

Comment [U20]: Move to the bottom of the table

Comment [U21]: Move to the bottom of the table

Main Commodities	Years (Tons)					Average Increase (%)
	2019	2020	2021	2022	2023	
Drying/Salting	3.814,25	4.916,56	3.302,45	897,23	1.244,5	(9,5)
Scavenging	25,87	28	66,00	44,46	48,30	29,9
Processing of Fish Crackers, Fish Chips and Peyek	-	-	-	28,47	29,14	2,0
Fumigation	228,5	231,23	120,62	217,96	130,50	(1,5)
Freezing	250,3	252,1	998,00	280,5	600,00	84,5
Other Processing (Fish Floss)	3,45	3,74	20,26	16,48	14,75	(7,0)
Surimi & Fish Jelly Processing	1,78	1,83	19,30	36,9	33,74	(17,2)
Others (processed king crab)	1,2	1,24	-	-	-	-
Fresh Product Handling (Fillet)	20,45	21,60	24,98	4,28	4,21	(50,5)
Total	4.345,80	5.456,30	4.551,61	1.526,27	2.104,98	(4,8)

Comment [U22]: Remove internal lines within the table

3.2. Discussions

3.2.1. Profile of Fish Processing Businesses in Sinjai District

There are 41 fisheries processing and marketing groups in Sinjai Regency, consisting of 576 fish processors (Sinjai Fisheries Statistics, 2023). There are 5 (five) smoked fish processing groups, with fish species such as parrotfish, stingray, barracuda and others. This smoked fish is one of the most popular products in the community. This is supported by the potential of fish catches in Sinjai Regency which is also quite large. Catch production in 2022 reached 38,873.40 tons and increased in 2023 by 40,047 tons (Anonymous, 2023). Part of this catch is the raw material for smoked fish.

Comment [U23]: Discuss your results based on if it agrees or disagrees with other similar findings of other researchers

3.2.2. Characteristics of Smoked Fish Processing Business

Fish smoking is one of the potential fishery product processing businesses in Sinjai Regency. Smoked fish began to be produced in the 80s. The fish smoking business is one type of household-based community business, the house is not for just home life, but is a place for production. Household industries generally start from family businesses that are generally hereditary and can automatically benefit the livelihoods of the surrounding villagers.

Fish processed into smoked fish are stingray, barracuda, tuna, cendro, skipjack, mackerel and cockatoo. Fish are smoked using firewood, belts and coconut shells with the aim of preserving and giving flavor to the fish. According to Hadi et al. (2022), smoking uses smoke

Comment [U24]: This pattern of intext referencing is different from what was previously used. Be consistent

produced from burning wood or other organic materials to preserve and flavor the fish. The availability of raw materials is quite abundant at relatively low prices, the processing process is quite easy and the market absorption is quite high, making the fish smoking business one of the promising business opportunities.

The smoked fish processors in Sinjai District carry out the production process simply. Smoked fish production has not been marketed outside the district because current production only meets local needs. Traditional markets are the marketing place for smoked fish such as Bikeru market, Lancibung Market, Mannanti Market and Lappae Market. People who buy smoked fish are more due to the different aroma and taste of smoked fish compared to raw fish that is grilled by themselves.

3.2.3. Characteristics of Smoked Fish Processors

Table 4. Characteristics of smoked fish processors in Sinjai District.

Source: primary data processed, 2024

No.	Name	Age (years)	Education	Business Experience (Years)	Number of Family (People)
1.	Sauna	48	Junior High School	26	5
2.	Hasniar	40	Elementary School	15	4
3.	Asmaniar	42	Elementary School	17	5
4.	Hasmiati	45	Elementary School	16	4
5.	Hj. Mare	70	-	47	2
6.	Hj. Herlina	58	High School	35	3
7.	St. Aminah	54	Elementary School	12	4
8.	Mawati	33	Elementary School	14	3
9.	Nirwati	46	Junior High School	3	2
10.	Marwah	53	Vocation High School	3	4

3.2.4. Consumer Characteristics

Table 5. Consumer characteristics based on age, gender, education and occupation.

Source: primary data processed, 2024

No.	Age	Gender	Education	Jobs
1	20	P	D3	Self-employed
2	22	P	High School	Student
3	23	P	High School	Mahasiswa
4	24	P	D3	Self-employed
5	26	P	D4	Self-employed
6	27	P	D3	Self-employed
7	27	L	S1	Self-employed
8	53	L	S1	Civil servants
9	56	P	SMEA	Self-employed
10	59	L	S2	None

3.2.5. SWOT Analysis

1. Identification of Strengths and Weaknesses

Table .6 Internal Factors of SWOT Analysis

Source: primary data processed, 2024

Internal Factors (Strength & Weakness)					
	No.	Strategic Factors	Weight	Rating	Score
S	1.	Long business experience	0.104	4.00	0.415
	2.	Competitive Price	0.090	3.80	0.357
	3.	Fish resources available	0.076	3.80	0.294
	4.	The product has appeal	0.123	3.00	0.369
	5.	Production tools available	0.136	3.00	0.407
					1.843
W	1.	Limited business capital	0.097	1.80	0.174
	2.	The production process is still traditional	0.131	1.60	0.210
	3.	Short product economic life	0.130	1.60	0.208
	4.	Less promotion	0.108	1.40	0.151
					0.744
Total			1.000		2.586

Comment [U25]: Move to the bottom of the table

2. Identify Opportunities and Threats

Table 7 External Factors SWOT Analysis

External Factors (Opportunity & Threats)					
O	1.	Continuity of existing raw materials	0.121	4.00	0.486
	2.	Smoked fish products are favored by the public	0.105	4.00	0.419
	3.	Government support in fisheries sector development	0.107	2.00	0.214
	4.	Joining a fisheries business group	0.179	3.00	0.536
					1.655
T	1.	Erratic weather	0.186	2.20	0.409
	2.	Competition in the processed fish industry	0.136	3.00	0.407
	3.	Changes in government policy	0.167	2.40	0.400
					1.216
Total				1.000	2.870

3.2.6. Prospects for Smoked Fish Business Development in Sinjai Regency

In determining the prospects for smoked fish development, the focus is on the SO (Strength and Opportunities) strategy, namely optimizing the strengths and opportunities possessed. The strategies obtained based on the SWOT matrix include: the development of SMEs in smoked fish processing with training and counseling programs from related agencies. Establishing partnership cooperation between MSME players in promoting products. Application of processing technology innovations by updating infrastructure and attending training.

The resulting strategy based on SWOT Analysis is presented through the SWOT Matrix in Table 7. Figure 1 shows several alternative strategies that can be applied in the development of smoked fish processing businesses in Sinjai Regency. Quadrant 1 is a very favorable situation, where the company has opportunities (Opportunities) and strengths (Strengths) so that it can take advantage of existing opportunities. The strategy that must be applied in this condition is to support an aggressive growth policy (growth oriented strategy).

This strategy is in line with the criteria contained in the SWOT Cartesian Diagram in Figure 2. Smoked fish processors have opportunities in the medium category that can be utilized in running their business by maximizing their average strengths. The SWOT diagram shows that the smoked fish processing business is in quadrant 1, where the strategy has strengths and opportunities so that it can take advantage of existing opportunities. The strategy applied in these conditions supports aggressive policies, where the type of formulation applied is SO (Strength Opportunities), which is a strategy that focuses on using strengths to take advantage of opportunities.

Comment [U26]: Discuss based on already published findings of other researchers

4. CONCLUSION

Based on the description and description of the results of the discussion, the conclusion of this research is that the characteristics of smoked fish businesses in Sinjai Regency are products that have a distinctive taste, smoked fish in whole and fillet form, using wood as fuel, simple equipment, local marketing, varying fish prices, not yet having business legality and a workforce aged 33-70 years.

Comment [U27]: Check this

Comment [U28]: and

The SO (Strengths Opportunities) strategy is the right strategy used in the prospect of developing smoked fish processing businesses in Sinjai Regency, including: developing smoked fish MSMEs with training and counseling programs from related agencies, establishing partnership cooperation between MSME players in promoting products and implementing processing technology innovations by renewing infrastructure and participating in training.

Comment [U29]: correct the statement presentation. There is no need for presenting results here gain

Comment [U30]: fair enough

References

1. Adawyah, R. (2007). Fish Processing and Preservation. In Bumi Aksara. Bumi Aksara.
2. Hadi, A., Khazanah, W., Andriani, A., & Husna, H. (2022). The effect of various smoking sources on protein, microbiological and organoleptic content of smoked tilapia (*Oreochromis niloticus*). *AcTion: Aceh Nutrition Journal*, 7(2), 179–186.
3. Rangkuti, F. (2016). Techniques for dissecting business cases SWOT Analysis. Jakarta: Gramedia.
4. Sinjai, D. P. K. (2023). Fisheries Statistics of Sinjai Regency. Fisheries Service of Sinjai Regency.
5. Kusmindari CD, Faizal M. Feasibility study of canned smoked fish as the micro enterprises in south Sumatra province, Indonesia. *Jurnal Optimasi Sistem Industri*. 2022 May 31;21(1):10-9.
6. Anam BK, Setiadi A, Santoso SI. Feasibility analysis of sustainability and development strategy of fish smoke centers in Demak Regency. *InIOP Conference Series: Earth and Environmental Science* 2023 Sep 1 (Vol. 1246, No. 1, p. 012031). IOP Publishing.
7. Adeyeye SA, Oyewole OB. An overview of traditional fish smoking in Africa. *Journal of culinary science & technology*. 2016 Jul 2;14(3):198-215.
8. Patekkai M, Arief AA, Fachry ME. The analysis of smoked fish katsuwonu pelamis feasibility in Bone Regency. *Int. J. Sci. Res. Publ.* 2019;9(3):755-9.
9. FALODUN OM. Analysis of Marketing Channels and Efficiency of marketing system for smoked fish market in Ogun state, Nigeria. Undergraduate Research Project. Department of Aquaculture and Fisheries Management, College of Environmental Resources Management, University of Agriculture Abeokuta. 2011 Jun.

Comment [U31]: MAKE SURE TO STCK TO A PARTICULAR REFERENCING FORMAT. You are not consistent with usin APA 7 here. Correct your references accordingly

Comment [U32]: correct this. Pattern should be consistent



Fig 1. Alternative strategies that can be applied in the development of smoked fish processing



Fig 2. SWOT Cartesian Diagram