



# Characteristics of the Household-Scale Fisheries Industry in West Java, Indonesia

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## Authors' contributions

*This work was carried out in collaboration among all authors. Author Junianto designed the study, conducted statistical analysis and wrote the protocol. Authors APA and DN conducted interviews with informants, managed research analysis, managed literature searches and drafted manuscripts. Author Junianto corrected the manuscript. All authors read and approved the final manuscript.*

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## ABSTRACT

**Aims:** The fact that level of fish consumption in Indonesia is relatively low in 2021 at 55.16 kg/capita compared to the fishery production which has reached 21,872,810.30 tonnes. One of the causes is the lack of various types of processed fishery products on the market which makes people tend to get bored consuming fishery products, one of the efforts that can be taken is to increase the household-scale fisheries industry. Therefore, it is necessary to carry out further research on the characterization of the household-scale fisheries industry to determine its characteristics as well as to be used as a reference for increasing fish consumption in the future.

**Study Design:** A Case study.

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**Place and Duration of Study:** Several areas in West Java, such as Sumedang Regency, Bogor Regency, Bandung City, and Depok City, 1 March 2023 - 31 March 2023 (1 month).

**Methodology:** This research was conducted by taking random samples and analyzing using descriptive analysis with 6 interviewees (4 men and 2 women).

**Results:** The procurement of raw materials is purchased by business owners at the nearest local market with cash payments and an open system. The use of the means of production is still simple. Own innovation recipe. Some have implemented a factory layout, some don't have a factory layout. Doing market segmentation properly, targeting all groups, products are distributed directly to consumers. Promotion techniques are carried out online following existing technological developments. Determine the cost-plus pricing method. The majority have competitors located around the industry.

**Conclusion:** The duration of opening a business and the level of education can affect a person's experience and understanding of doing business. Always prioritizing cleanliness, the quality of raw materials, the technology used, and the quality of the final product can affect the progress of an industrial business.

*Keywords: Home industry; marketing; process technology; raw material procurement.*

## 1. INTRODUCTION

Indonesia has abundant fish potential, thus Indonesia has a great opportunity in developing the fisheries industry, both on a household scale and on an industrial scale. However, in reality, the level of fish consumption in Indonesia is relatively low, which will have an indirect impact on the level of fishery-based industries in Indonesia. Based on statistical data from the Ministry of Maritime Affairs and Fisheries for 2022, fish consumption in Indonesia in 2022 has increased by 2.39%, namely 56.48 kg/capita from 55.16 kg/capita in 2021 [1]. Even though the amount of fish consumption increases every year, the level of fish consumption in Indonesia is relatively low compared to the potential of fishery resources. Because Indonesia is a maritime country with a water area of 5.80 million km<sup>2</sup> and a land area of 2.01 million km<sup>2</sup> [2] it can produce a lot of fishery production. According to data statistics from the Ministry of Maritime Affairs and Fisheries, Indonesia's fishery production in 2021 has reached 21,872,810.30 tonnes [3]. The low level of fish consumption per capita in Indonesia is caused by two things related to weak supply and low demand. On the availability side, the low consumption of fish by the Indonesian people is due to the uneven supply of quality fish, lack of sales infrastructure, good and hygienic fish distribution, which can reach all corners of the region, and the existence of fish substitute products [4]. Meanwhile, on the demand side, several factors are likely to play a role in the formation of a culture of eating fish which is still low in Indonesia today, including (1) the low availability of fresh fish on the market, (2) taboo behavior and culture of eating fish in certain communities, (3) knowledge of nutrition among

mothers is still low, (4) the price of fish and its products is relatively more expensive than others, and people's purchasing power is low, (5) the low variety of fish species and diversification of processed fishery products and mastery technology is still minimal, (6) prestige and preference problems among certain people who think that fish products are inferior food, (7) fear of heavy metal contamination from polluted waters [5]. Among the factors that influence the low consumption of fish in Indonesia is the low variety of processed fishery products in Indonesia. So that many innovations are needed, both in terms of diversification and fortification of fishery products. One effort that can be taken to increase the low variety of types of processed fishery products is through the fisheries industries. The availability of a household-scale fishing industry is considered one of the appropriate efforts to increase the diversity of types of fishery products. Because the household-scale fishing industry is uninvolved in a particular market segmentation such as the large-scale fishing industry, it has a higher motivation, high flexibility, minimal bureaucracy, serves local or domestic markets, and produces ordinary products [6]. This article will discuss procurement of raw materials, process technology, marketing, promotion, and pricing in the household-scale fishery products industry. The definition of production raw material procurement procedures is a company effort in the form of procuring raw materials (raw materials) used in a series of production processes to be processed into semi-finished goods and finished goods, either in the form of goods or services [7]. Marketing is a meeting between sellers and buyers to complete transactions of goods or services [8]. So,

understanding the market is not just a place, but the activities of sellers and buyers or meeting activities when a product is offered to consumers. Kotler and Keller state that marketing is about identifying and meeting human and social needs [9]. One of the best and shortest definitions of marketing is profitable need satisfaction. Marketing management is an activity of analyzing, planning, implementing, and monitoring each activity or program to achieve a profitable level with target buyers to achieve business goals [10]. Promotion is a marketing strategy that plays an active role in an industrial business [11]. Product promotion must be increased so that the market reach can be further expanded and more consumers will come and maximize the profits. Thus, it is necessary to have research that is used to analyze the characterization of the home fisheries industry to serve as a basis or opportunity for development in the future. This study aims to identify and determine the characterization of the household-scale fisheries industry in West Java, to hold development in the future and increase the number of fish consumption in West Java.

## 2. METHODOLOGY

This research was conducted in two districts and two cities in West Java, such as Sumedang

Regency, Bogor Regency, Bandung City, and Depok City, As a consideration of the low level of fish consumption in West Java, the location chosen was not the center of the fishery processing home industry, but the area was close to researchers and close to several processed fishery product producers. Total fishery processing home industries in West Java amounted to 8.873 industries in 2019, with a total of 287 fishery processing home industries in the city of Bandung, 104 in Bogor City, 108 in Sumedang Regency, and 204 in Bogor Regency [12]. Informants were randomly selected from as many as six fishery processing industry entrepreneurs with the results being two women and four men. The data obtained are primary data taken from the output of direct observation (observation), discussions, and interviews with respondents who are direct business owners. Some of the questions used as the basis for the analysis are regarding the procurement of raw materials, process technology, and marketing. This sampling study was carried out by random sampling or by randomly selecting household-scale fisheries industries to be analyzed. The analysis used in this research is descriptive. Descriptive analysis is used to determine the processes related to the household fisheries industry being observed [4].

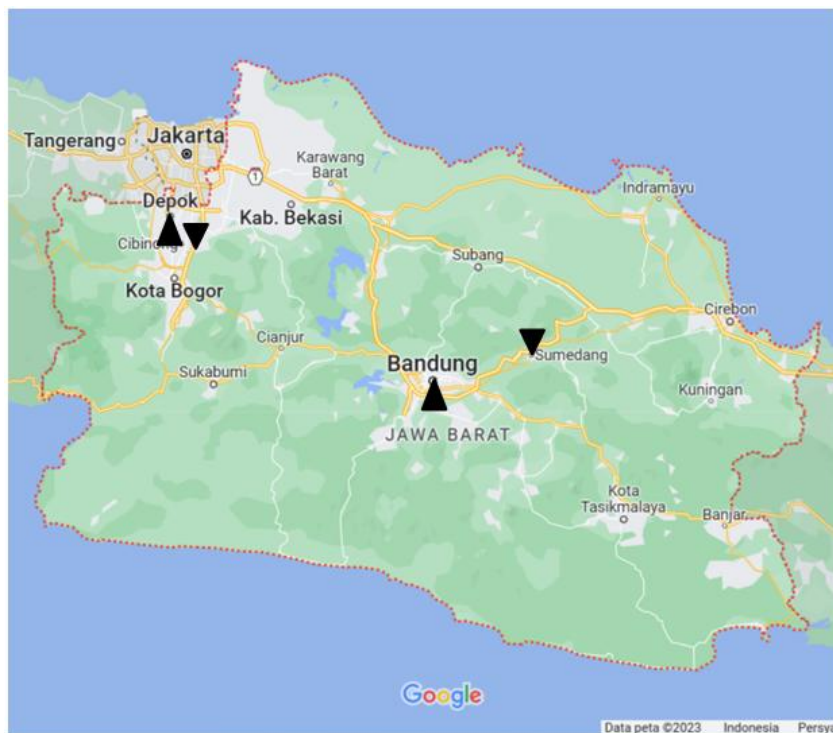


Fig. 1. Case study locations in 4 regions in West Java, Indonesia  
Sources: Google Maps

### **3. RESULTS AND DISCUSSION**

#### **3.1 Business Profile**

The profile of a business generally consists of some basic information such as the name of the business owner, the age of the entrepreneur, the last education completed, and the length of time the business has been established. It aims to determine the background of an industry. Interviews have been conducted with several fishery processing business owners in West Java and the results are as shown in Table 1.

Based on the business owner data above, it can be concluded that most fish processing entrepreneurs in West Java have been doing business for more than 2 years. The length of business is the first time a fish entrepreneur opens his business in fish processing which is calculated in years. Meanwhile, business experience is the length of time a person tries to trade processed fish and is measured in years [13]. The longer a person has been in the trading business, the more knowledge he has about consumer tastes and behavior, and learning the strategies that must be done so the industry can grow [14]. Thus, the time >2 is enough to say that fish processing entrepreneurs in West Java have experience in doing business [15].

From the data in the table above, the average age of business owners is around 45.6 years old, and they are counted in the productive age category, which ranges from 15-64 years old [16]. This is contrary to the opinion, where a person's productive age is 40 years and under because, at the age of 40 and over, an individual's physical abilities decline [17]. Thus, regeneration is needed for development, guidance, and successors for processed fish entrepreneurs at an age full of new ideas, innovation, and high enthusiasm to compete, to strengthen the competitive position of processed fish in the following year [17].

Education is an effort to develop the thinking ability of a workforce [18]. The last average education taken by business owners is Senior High School/equivalent. This explains that the fish processing home industry has sufficient human resources to adapt to science and technology developments to increase competitiveness and product innovation [19].

#### **3.2 Procurement of Raw Materials**

The Procurement of raw materials for fish processing home industries in West Java can be seen in Table 2.

Almost all business owners procure fish raw materials by purchasing them at the nearest traditional market, and only one business owner produces fish product raw materials independently. Purchases of raw materials are also made with cash payments without credit or debt. There are several advantages to shopping at traditional markets, such as no market monopoly by certain producers, local ingredients do not contain preservatives and are best for health, more environmentally friendly, low prices but high quality, a complete variety of goods, and a bargaining system which shows the familiarity between the seller and the buyer [6], empowering traders and business turnover, showing pride in buying local products, supports local materials to compete with imported materials, can help the country's national income, and buyers can access markets easily [20].

#### **3.3 Process Technology**

Process technology includes machines and equipment that help process materials into products. Process technology in the food industry includes high-temperature processing, low-temperature processing, drying, fermentation, roasting, heating, frying, and preservation [21]. Data was collected regarding process technology in home industries in West Java, namely process technology tools, sources of recipe formulas, and factory layouts. Table 3 contains process technology in the fish processing industry in West Java.

In general, the tools used in the production process are still relatively simple or conventional, because home industries only have a small workforce and not much capital. The lack of modern tools that support it will also affect the production of these businesses. If you have modern supporting tools, it allows the workforce to save time and effort, produce more products, and make the production process faster. Some business owners in West Java already have a factory layout, some don't. The average business owner who has implemented a factory layout is an entrepreneur with an undergraduate education level. This event occurred because the knowledge for applying factory layout had been obtained in lectures. A good layout factory can

support the application of the company's business strategy, effective use of tools and space, cleanliness of the place, the working atmosphere will be good and increase employees satisfaction, and fast movement [22]. The product recipe is made from the innovation of the business owner, which combines several sources and creates a distinctive taste according to the wishes of the entrepreneur.

### 3.4 Marketing

There is a 4p marketing mix concept consisting of Price, Product, Place, and Promotion [23]. The marketing that will be discussed consists of several points, namely market segmentation, promotion, competition, and pricing.

**Table 1. Business profile of fish processed home industry in West Java 2023**

Business owner name	Age (2023)	Last education	Length of business	Type of business
Anom Binoro	50	Bachelor	3 years	Processed catfish (fillet and spices)
Husni	56	Bachelor	11 years	Pempek Palembang (A)
Muhroji	53	Senior High School	9 years	Fish dumpling
Utina	36	Senior High School	6 months	Pempek Palembang (B)
Indah Apriliani	34	Diploma 3	3,5 years	Pempek Palembang (C)
Eka	45	Junior High School	3 months	Fish meatball

**Table 2. Procurement of raw materials for fish processed home industries in West Java 2023**

Type of business	Raw materials	Raw material supply system
Processed catfish (fillet and spices)	Self-Production (Aquaculture)	Producing raw materials themselves
Pempek Palembang (A)	Purchases at Traditional Markets	Purchase in cash with an open system
Fish dumpling	Purchases at Traditional Markets	Purchase in cash with an open system
Pempek Palembang (B)	Purchases at Traditional Markets	Purchase in cash with an open system
Pempek Palembang (C)	Purchases at Traditional Markets	Purchase in cash with an open system
Fish meatball	Purchases at Traditional Markets	Purchase in cash with an open system

**Table 3. Process technology for processed fish household industry in West Java 2023**

Type of Business	Production Process Tools	Recipe formulation sources	Factory layouts
Processed catfish (fillet and spices)	Fillet knife, kitchen knife, cutting board, scissors, tweezers, basin, blender, refrigerators, vacuum sealer, mica box, and plastic press	Own innovation	Yes
Pempek Palembang (A)	Knives, scales, refrigerator, strainers, steamers, pots, pans, stoves, napkins, blenders, tongs, basins, cutting boards, spatulas, spoons, and mica plastic.	Own innovation	Yes
Fish dumpling	Knives, strainers, steamers, pots, stoves, napkins, cutting boards, tongs, blenders, basins, spatulas, and spoons.	Own innovation	Yes
Pempek Palembang (B)	Dough Container, Mixing Spatula, Knife, Cutting Board, Frying Pan, and Spatula	Own innovation	No
Pempek Palembang (C)	Dough Container, Mixing Spatula, Knife, Cutting Board, Frying Pan, and Spatula	Own innovation	No
Fish meatball	Knives, boilers, pots, stoves, milling machines, napkins, tongs, basins, cutting boards, spatulas, forks, and spoons.	Own innovation	No

### 3.4.1 Market segmentation

In the analysis of market structure, there are elements of market share, concentration, and barriers to market entry [24]. The purpose of market segmentation is to suppress marketing efforts by prioritizing buyers who are very interested in buying. Segmentation is also carried out to link needs and actions [25]. The following is in Table 4.

From the presentation of the table, the six interviewed informants have implemented all market segmentation properly. The target market for entrepreneurs is for all people, regardless of economic and social status. Distribution of products that are carried out on average is directly aimed at consumers. The advantage of selling directly or direct selling is that it can increase consumer loyalty because face-to-face interactions can maintain good relations, know consumer needs, get input and suggestions directly to improve product quality, reduce costs and marketing personnel, and reduce store rental and maintenance costs.

### 3.4.2 Promotion

Digital or online advertising media influence purchasing decisions because sales advertising media is a tool for communicating products, goods and services so that they are better known by the public. Digital or online advertising media, both physical and traditional, and digital, are all

directed at making it easier for the public to know about these products [26]. The marketing strategy for the fish processing industry in West Java can be seen in Table 5.

The Majority, fish processing business owners in West Java promote their products. By taking advantage of technological advances, business owners can promote their products without spending a lot of money. Almost all of them use social media as a means of promotion, such as WhatsApp®, Instagram®, online stores, and online food applications. The advantage of a promotion on social media is that it can increase Brand Awareness, producers are closer to consumers, become the first product that comes to the minds of consumers, attract consumers' interest, can increase sales, and minimize costs and labor.

### 3.4.3 Pricing and competition

The calculation of the cost of production is an important consideration because competition between companies is increasing in the production of high-quality products at quite competitive prices [27]. In the Cost-Plus Pricing method, the selling price per unit is determined by calculating the total cost per unit and a certain amount or percentage that covers the desired profit from the unit [28]. The method of determining prices and product competition for processed fish products in West Java can be seen in Table 6:

**Table 4. Segmentation of the fish processed home industry market in West Java 2023**

Type of business	Target market	Distribution
Processed catfish (fillet and spices)	All people	1. Producer to consumer 2.Producer → retailer → consumer
Pempek Palembang (A)	All people	Producer to consumer
Fish dumpling	All people	Producer to consumer
Pempek Palembang (B)	All people	Producer to consumer
Pempek Palembang (C)	All people	Producer to consumer
Fish meatball	All people	Producer to consumer

**Table 5. Marketing of fish processed home industry products in West Java 2023**

Type of Business	Promotions
Processed catfish (fillet and spices)	Yes
Pempek Palembang (A)	Yes
Fish dumpling	No
Pempek Palembang (B)	Yes
Pempek Palembang (C)	Yes
Fish meatball	No

**Table 6. Price determination and competition in fish processed home industry in West Java 2023**

Type of business	Pricing	Competition
Processed catfish (fillet and spices)	cost-plus pricing	No
Pempek Palembang (A)	cost-plus pricing	No
Fish dumpling	cost-plus pricing	Yes
Pempek Palembang (B)	cost-plus pricing	Yes
Pempek Palembang (C)	cost-plus pricing	Yes
Fish meatball	cost-plus pricing	Yes

All processed fish entrepreneurs in West Java use a pricing system using the cost-plus pricing method to make a profit. Then, based on the data above, the majority of fish processing businesses have competitors located around industrial locations.

#### 4. CONCLUSION

Conclusions that can be drawn regarding fishery product home industries in West Java, namely: Age of business owner 45.6 years old with last education Senior High School with more than two years of business experience. Procurement of raw materials purchased or obtained by business owners at the nearest local market using cash payments and an open system. The use of production tools is still simple and conventional. The recipe used is a recipe of its innovation. Three out of six employers have implemented a factory layout. The marketing has done good market segmentation, the target market is for all people, and there is no distribution or products directly distributed to consumers. Promotion techniques are carried out online or online following existing technological developments (using social media such as WhatsApp® chat, direct messages on Instagram®, online store applications, and online food applications). The pricing method is carried out using cost-plus pricing (to make a profit). The majority have competitors located around the industry.

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#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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