




Analysis of Financial Management of the Flying Fish Egg Business at PTSJA, South Sulawesi, Indonesia

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Abstract. This study aims to analyze financial management in the flying fish egg business of PTSJA, which partners with assisted fishermen in the Galesong area, Takalar Regency, South Sulawesi. Flying fish eggs are a high-value export commodity in high demand in international markets, such as Japan, South Korea, and China. PTSJA capitalizes on this opportunity by developing a profit-sharing partnership system with fishermen and managing a fishing fleet of 270 vessels. This study uses a qualitative descriptive approach with a case study method. Data were collected through in-depth interviews, questionnaires, field observations, and a review of the company's financial documents. The results show that PTSJA's financial management is effective and profitability-oriented. The company is able to maintain profit margins despite market price fluctuations. The partnership scheme and profit-sharing system implemented not only benefit the company but also improve the welfare of assisted fishermen. However, challenges remain, such as limited digitalization in financial recording and dependence on fishing seasons. Therefore, the development of a more integrated and digital-based financial management system is needed to support operational efficiency and long-term competitiveness. This research contributes to the financial management model for an adaptive and sustainable partnership-based fisheries business.

Keywords: Financial Management, Flying Fish Egg Business, PTSJA, Fishermen, Partnership.

1 Introduction

Flying fish eggs are considered a luxury food in East Asian countries such as Hong Kong, Japan, Korea, Taiwan, and China. In Indonesia, this dish is commonly found in the Makassar region. Locals call it "torani." Local fishermen have been catching flying fish eggs for a long time and have made a regional specialty. Flying fish eggs are caught using fish aggregating devices (FADs). FADs are fish-gathering devices that use attractants such as coconut leaves, areca nut leaves, nipah palm leaves, and other solid objects to attract fish [1].

PTSJA, a company engaged in the trade of fishery products, particularly flying fish eggs, has capitalized on this potential by developing a partnership system with assisted fishermen in Galesong District, Takalar Regency. PTSJA's partner fishermen's fishing areas extend to the Arafura Sea, including: The catch covers Bone Bay, the Flores Sea,

the Makassar Strait, and even as far as Fakfak, Tual, and Dobu. Flying fish egg catching is divided into three periods: Period 1 (March to June), Period 2 (July to September), and Period 3 (October to December).

High market demand, both nationally and internationally, has made flying fish eggs highly sought after by fishermen. Prices are also quite high, with the price of dried flying fish eggs reaching nearly 500,000 rupiah per kilogram at the fisherman's level in 2022. Data from the Fish Quarantine, Quality Control, and Fishery Product Safety Agency (BKP) in 2022 shows that total exports of fresh flying fish eggs in 2020 reached 889.2 tons and dried ones 1,377 tons, with a total export value of 565 billion rupiah. Nine countries are export destinations for flying fish eggs: Belarus, China, Japan, South Korea, Lithuania, Malaysia, Russia, Taiwan, and Thailand. China and South Korea dominate fish egg imports, followed by Russia and Belarus. [2, 3]

Based on the results of interviews with PTSJA, the success of financial management at PTSJA can be seen at a glance from the financial reports which in the last 3 years have tended to increase, especially in 2024. This is because PTSJA can take advantage of high market demand with the resources it has. PTSJA manages 270 fishing vessels (75 owned vessels and 195 assisted fishing vessels) compared to similar companies that do not manage and only employ assisted fishermen in the trading sector. Furthermore, the success of PTSJA's financial management in the flying fish egg business has generally brought economic benefits to its partner fishermen. However, despite the company's success in increasing turnover and profitability, several fundamental issues remain in financial management. Dependence on fishing seasons, undigitized financial records, and the lack of a comprehensive management system are challenges that can impact the company's efficiency and competitiveness in the long term. Another issue is how the profit-sharing system between the company and assisted fishermen can continue to ensure fair and sustainable profits for both parties. Therefore, an in-depth analysis of the financial management system implemented by PTSJA is needed, particularly in the aspects of planning, working capital management, and distribution of business results so that it can become a model for effective fisheries financial management in Indonesia.

Previous research emphasized that the problem of flying fish egg fisheries in Tual PPN can be solved by using environmentally friendly fishing gear for flying fish resources and developing a flying fish egg fishery business for fishermen [4], and the economic benefits as added value from flying fish egg fishing activities for the coastal communities of Fak Fak are the opening of other business opportunities such as coconut leaf providers, fuel and food providers [5]. In contrast, this study specifically focuses on the analysis of company financial management in the context of a partnership-based flying fish egg business, which has not been widely studied before. Direct analysis is based on empirical data from the company, including profit and loss statements, financing schemes, and profit-sharing systems with a case study of a company that manages 270 vessels. The focus and objectives of the research on the profit-sharing system, funding structure, seasonal financial planning, and its contribution to company profits and the welfare of fishing partners. This makes research more applicable and strategic in the context of flying fish egg financial management.

2 Literature Review

Financial literacy requires an understanding of financial products and concepts through the use of information and advice, enabling individuals to identify and understand financial risks, thereby empowering them to make informed financial decisions [6]. According to Purba et al. [7], financial management is the planning, organizing, directing, and controlling of financial activities, such as the procurement and utilization of business funds. Meanwhile, according to Anwar [8], financial management is a discipline that studies corporate financial management, including the search for funding sources, fund allocation, and profit sharing. Meanwhile, Astuty [9] emphasizes that the primary goal of financial management is to maximize company value and long-term profitability.

The principles of financial literacy and financial management become highly relevant in the context of the fisheries industry, particularly in flying fish egg businesses such as PTSJA, which face unique challenges related to seasonality, fluctuations in export prices, and reliance on community-based human resources. Therefore, an adaptive and flexible financial strategy is essential. This type of partnership approach, if managed with the principles of transparency and accountability, can create long-term, mutually beneficial relationships. Furthermore, the partnership scheme between PTSJA and fishermen makes financial literacy crucial not only for the company as capital manager but also for the partners (fishermen) to understand the profit-sharing system, financing, and production planning. Cude [10] explains that financial literacy is the ability of an individual or organization to understand, manage, and make financial decisions wisely and effectively. According to Jitender Kumar & Garima Rani [11], modern financial research trends emphasize sustainable financial behavior, with financial literacy playing a crucial role in organizational efficiency and sustainability. A lack of financial literacy among fishermen can lead to unhealthy dependency, business inefficiency, and potential profit-sharing conflicts.

Therefore, the financial management of PTSJA in the flying fish egg business emphasizes the availability of raw material resources first and the management of fostered partner fishermen as a means to obtain flying fish eggs. Starting from the business activity plan which is the fishermen's working capital in searching for fish eggs, the company's funding sources used for working capital, to the profit-sharing system applied to fostered fishermen. With the ultimate goal of obtaining profits from sales or exports to buyers or end users of flying fish eggs.

3 Research methods

This research was conducted in January – March 2025, conducted at the PTSJA Office or a gathering place for PTSJA fostered fishermen partners located in Galesong, Takalar – South Sulawesi. The research method used in this study is field research and uses a qualitative descriptive method with a case study approach, namely the analysis of the data obtained (in the form of words, pictures, or behavior), and is not expressed in the form of numbers or statistical figures, but by providing an explanation or

description of the situation or condition being studied in the form of a narrative description [12]

The data collection techniques used in this study are document observation and interviews. Document observation is data collection by examining various documents related to the company, such as PTSJA financial reports, and others. Beside document observation, interviews were also conducted, which involve conducting question-and-answer session with parties directly involved with PTSJA. The interviews were based on a draft interview prepared by the author and were open-ended to obtain information related to the company's strategies.

The data analysis technique used in this study was descriptive analysis. This study utilized both primary and secondary data. Primary data were obtained through questionnaires and in-depth interviews with several key informants (owner or founder of PTSJA), while secondary data was obtained from previous studies relevant to this study. Figure 1 shows the conceptual framework of this study.

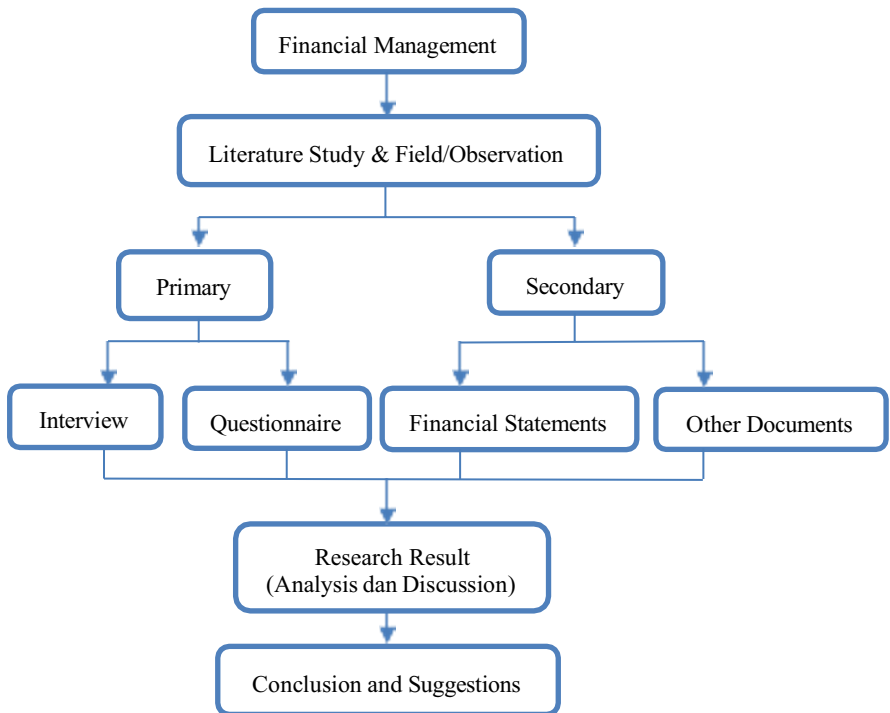


Fig. 1. Conceptual Framework

4 Results

4.1 Fishing Areas and Potential Resources of Flying Fish Eggs

Analysis of the potential resources of flying fish eggs Based on the Decree of the Minister of Maritime Affairs and Fisheries Number 19 of 2022 [13] concerning the Estimation of Potential Fish Resources, Allowable Fish Catches, and Fishing Grounds for Fish Resources in the Fisheries Management Area of the Republic of Indonesia, the estimated potential of small pelagic fish resources including flying fish in all Fisheries Management Areas of the Republic of Indonesia (WPPNRI) is estimated at 4,193,675 tons. The estimated potential of flying fish is 73,526.54 (seventy-three thousand five hundred twenty-six point five four) tons/year with the highest estimated potential coming from WPPNRI 718 at 31,070.70 (thirty-one thousand seventy point seven) tons/year and WPPNRI 573 at 24,765.02 (twenty-four thousand seven hundred sixty-five point zero two) tons/year. The detailed estimate of flying fish potential in WPPNRI is as listed in Table 1.

Based on the Regulation of the Minister of Maritime Affairs and Fisheries Number 18/PERMEN-KP/2014 [14] concerning the Fisheries Management Area of the Republic of Indonesia, Indonesia is divided into 11 (eleven) WPPNRI. The average percentage of flying fish catch in each WPPNRI for the period 2015 with the average percentage of flying fish catch in each WPPNRI in 2023 is as shown in Figure 2.

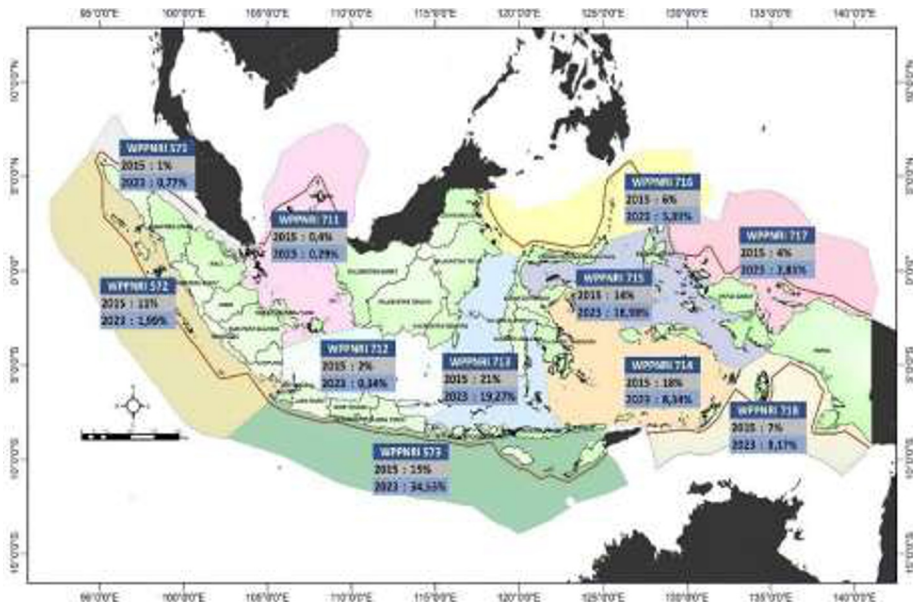


Fig. 2. Average Flying Fish Catch in Each WPPNRI

(Source: 2015 Capture Fisheries Statistics and 2023 KKP Data Center)

Table 1. Estimated potential of flying fish in WPPNRI

No	WPPNRI	Estimated Small Pe- logic Potential (Tons/Year)	Estimated fish po- tential fly (tons/year)
1	WPPNRI 571	157,151.00	212.46
2	WPPNRI 572	479,503.00	912.24
3	WPPNRI 573	624,366.00	24,765.02
4	WPPNRI 711	536,917.00	146.37
5	WPPNRI 712	275,486.00	52.20
6	WPPNRI 713	284,302.00	4,127.33
7	WPPNRI 714	222,881.00	1,522.39
8	WPPNRI 715	443,944.00	6,731.12
9	WPPNRI 716	197,012.00	2,803.11
10	WPPNRI 717	135,140.00	1,219.60
11	WPPNRI 718	836,973.00	31,070.70
Total		4,193,675.00	73,562.54

Source: Decree of the Minister of Maritime Affairs and Fisheries Number 19 of 2022

Based on data from the Marine and Fisheries Product Quality Control and Supervision Agency (BPPMHKP) regarding the volume of flying fish egg exports in the 2016 – 2022 [15] period, which is divided into wet/frozen flying fish eggs and dry flying fish eggs, it can be seen in Table 2.

Table 2. Flying Fish Egg Export Volume

Year	Dried Flying Fish Eggs (Kg)	Wet/Frozen Flying Fish Eggs (Kg)
2016	597,896	842,659
2017	682,511	56,035
2018	680,411	48,509
2019	15,000	133,382
2020	952,355	626,418
2021	994,086	1,042,898
2022	113,269	187,467

Source: BPPMHKP 2023

4.2 Financial Management of Flying Fish Egg Business

Financial Management Pattern. PTSJA manages the finances of its flying fish egg business through a profit-sharing partnership system with its partner fishermen. The company acts as both financier and vessel owner, providing vessels (75 owned by the company and 195 provided by partner fishermen), equipment, and operational costs. This financing scheme allows partner fishermen to go to sea without incurring large initial costs, thereby reducing production barriers at the fisherman level. The purchase price set between PTSJA and partner fishermen ranges from IDR 600,000 to IDR

850,000/kg, depending on market price fluctuations for flying fish eggs. The profit-sharing system between PT. SJA and partner fishermen can be seen in Table 3.

Table 3. Profit Sharing System Pattern of PT. SJA with Fostered Fishermen Partners

Information	Investor Profit Sharing	Vessel Rental Revenue Sharing
Fishermen Have Vessel	10% cut from the capital owner's profit capture results	-
Don't Have a Vessel	10% cut from the capital owner's profit capture results	25% discount after deducting 10% of the capital owner's profit, as the vessel owner's profit

Source: Based on the results of interviews with PTSJA

Capital Sources and Financial Planning. To carry out its operations, PT. SJA obtains working capital from two main sources: internal company capital and financing from financial institutions (banks). Each fishing season is planned together with partner fishermen based on estimated business activities and vessel capacity (generally 30 GT). This planning includes fuel costs, logistics, wages, as well as estimated catch and selling prices. The estimated business activity plan is as shown in Table 4.

Table 4. Business Activity Plan

No	Cost Components	Need	Unit	Price	Amount
1					IDR
	- Solar	12.000	Liter	IDR 9.500	114.000.000
	- Engine Oil	750	Liter	IDR 67.500	50.625.000
	Amount				IDR 164.625.000
2	Equipment				IDR
	- Rumpon	5.500	Sheet	IDR 9.200	50.600.000
	- Rope/Fishing Gear	650	Kg	IDR 48.000	31.200.000
	- Electrical Tools	1	Set	IDR 15.000.000	15.000.000
	Amount				IDR 96.800.000
3	Consumption Costs				IDR
	- Rice	1.200	Kg	IDR 13.500	16.200.000
	- Food Material	1	Unit	IDR 55.000.000	55.000.000

Amount				IDR	
				71.200.000	
4	Departure Fee (Labor)				
	- Crew	7	Person	IDR 10.000.000	IDR 70.000.000
	- Travel Cost	1	Unit	IDR 5.000.000	IDR 5.000.000
	- Licensing	1	Docu- ment	IDR 5.000.000	IDR 5.000.000
	Jumlah				IDR 80.000.000
5	Maintenance Costs				
	- Vessel Ser- vice	1	Ma- chine	IDR 45.000.000	IDR 45.000.000
	- Machine Ser- vice	1	Ma- chine	IDR 25.000.000	IDR 25.000.000
	- Communica- tion dan Navi- gation Equip- ment Service	1	Unit	IDR 7.500.000	IDR 7.500.000
	Amount				IDR 77.500.000
Total Working Capital of Fishermen/Boat					IDR 490.125.000

Source: Processed Data from Fishermen and PTSJA

PT. SJA's financial management is reflected in the income statement, which shows its financial performance for the 2022 – 2024 period. The Company's primary focus is on the sale of dried flying fish eggs as its primary commodity, while the cost of goods sold consists of raw material purchases/inventories, direct labor wages, and overhead costs. A comparison of PTSJA's income statement with a profit-sharing system with fishermen based on their catch can be seen in Table 5.

Table 5. Financial Management Projection for PTSJA Flying Fish Egg Business

Information	Cycle Period 1	Cycle Period 2	Cycle Period 3	Period in a Year
Average Catch/Vessel (Kg)	650	325	163	1.138
Number of Ships	270	270	270	270

Total Goods from 270 Ships (Kg)	175.500	87.750	44.010	307.260
Number of PTSJA Ships	75	75	75	75
Total Goods from 75 Ships (Kg)	48.750	24.375	12.225	85.350
Number of Fishermen's Vessels	195	195	195	195
Total Goods from 195 Ships (Kg)	126.750	63.375	31.785	221.910
Investor Profit Sharing	10%	10%	10%	10%
Ship Owner Profit Sharing	25%	25%	25%	25%
Profit Sharing as Investor of 175 Ships (Kg)	12.675	6.338	3.179	22.191,00
Profit Sharing as Investor of 75 Ships (Kg)	4.875	2.438	1.223	8.535,00
Profit Sharing as a Ship Owner 75 Ships (Kg)	10.968,75	5.484,38	2.750,63	19.203,75
Total Profit Sharing	28.518,75	14.259,38	7.151,63	49.929,75
Fishermen's Net Catch (Kg)	146.981,25	73.490,63	36.858,38	257.330,25
Purchase Price to Fishermen (IDR)	850.000	850.000	850.000	850.000

Profit Sharing Value (IDR)	24.240.937.500	12.120.468.750	6.078.881.250	42.440.287.500
Purchase of Raw Materials (IDR)	124.934.062.500	62.467.031.250	31.329.618.750	218.730.712.500
PTSJA Selling/Export Price (IDR)	900.000	900.000	900.000	900.000
Sales (IDR)	157.950.000.000	78.975.000.000	39.609.000.000	276.534.000.000

Source: Processed Data

5 Discussion

Financial management in the flying fish egg business by PTSJA is a partnership business model that simultaneously integrates production cost control, resource utilization, and sales target planning. Under this scheme, fishermen do not need to provide initial funds, as all financing or funding structures are obtained from the company's own capital or from financial or banking institutions, which are used to cover seasonal operational working capital needs, such as fuel purchases, boat logistics, and fishermen's consumption while at sea. In return, the catch is subject to a discount system: 10% of the catch is given to the company as the capital owner, and an additional 25% if the vessel used is owned by PTSJA. The remainder is the full right of the fostered fishermen partners. The company's profit and loss report, which shows a trend of increasing margins, also signals that this model is not only profit-oriented but also provides economic value to the fishing partners who are part of the production ecosystem and evidence that PTSJA's financial management is effective.

Based on data from the Marine and Fisheries Product Quality Control and Supervision Agency [15] regarding the export volume of flying fish eggs in the 2016 – 2022 period, the highest export volume of dried flying fish eggs was in 2021, namely 994,086 kg, while at PTSJA the average annual catch of fostered partner fishermen with 270 vessel management was 307,260 kg, which means PTSJA's market share in the flying fish egg business is around 31%. With a market share of 31%, PTSJA is included as a major player in the flying fish egg export value chain in Indonesia. This position gives PTSJA bargaining power in determining prices, selecting buyers (especially from Japan, Korea and China), and establishing long-term strategic cooperation. By using the maximum purchase price from fishermen of IDR 850,000/Kg, and assuming a minimum export selling price of IDR 900,000/Kg, the company still obtains a gross margin of IDR 50,000/Kg. If the total volume of raw materials obtained reaches 307,260 Kg/year, the catch using the agreed profit sharing system, the average projection of the total net catch of fishermen each year is 257,330.25 Kg, and the remaining

49,929.75 Kg is the property of PTSJA, then the gross income from sales is around IDR 276.5 billion, while the cost of goods sold component (purchases from fishermen) is around IDR 218.7 billion, so that the gross margin obtained by the company can reach IDR 57.8 billion per year, before deducting overhead, direct labor wages, and other operational costs.

The margin value shows that the partnership strategy with a profit-sharing system is not only able to guarantee the continuity of raw material supply. But also provides significant economic added value for the company, without having to bear all operational costs at the start. This illustrates how the principle of financial literacy can support effective financial management.

The purpose of financial management is essentially to realize predetermined goals [9], while financial literacy is the ability to use knowledge and skills to effectively manage financial resources for lifelong financial well-being [10]. This financial management illustrates that the success of PTSJA depends not only on the size of revenue, but more on how the company manages risk, builds trust with fishermen, and creates an efficient and fair production ecosystem. This shows that financial management is not only in favor of company profits but also encourages local economic inclusion. However, it is important to note that this success remains dependent on external factors such as fishing seasons, fluctuations in global market prices, and the sustainability of the flying fish egg supply. With the large scale of transactions involving hundreds of vessels and assisted fishermen, and the large monetary value, an integrated and predictive digital financial and record-keeping system is required to mitigate the risk of recording errors, uncertainty, fraud, or inefficiency.

Most of the income is managed through working capital mechanisms, with a certain percentage allocated to cover working capital costs, and the highest total production in one fishing season is 1,575 kg and the lowest is 270 kg. This finding is in line with the results of research conducted by Tebaiy, et al [5] regarding the economic prospects of flying fish eggs. The income system of the flying fish egg business in Fak Fak Regency is based on a profit-sharing system. Similarly with the research results conducted by Miryam Menila Zai, et al [16], financial literacy and management provide additional understanding to each individual or business actor so that they remain sustainable. The results of her research show that financial management and its impact on the sustainability of micro, small and medium enterprises in Semarang Regency, is the basis for further development of knowledge and skills in financial management, which enables these businesses to encourage growth and sustainable development.

6 Conclusion and Suggestions

PTSJA's financial management in the flying fish egg business can be concluded as effective and profitability-oriented, where PTSJA is able to maintain margins amid fluctuating market prices, and the increase in sales recorded in the financial statements is one proof of this. In addition, a partnership approach with a profit-sharing system is well-structured and works well between investors (companies) and fishermen, both those who own vessels and those who do not. This system provides certainty and fair

profit sharing and motivates fishermen to increase productivity. Furthermore, the partnership scheme in financial management besides reducing the company's operational risk also helps the company secure a sustainable supply of raw materials and foster good relationships with the local fishing community. The partnership and profit-sharing pattern not only benefits the company, but also has a positive impact on the income and welfare of the fishermen assisted, strengthening the local economy, especially in the Takalar area and its surroundings.

Limitations in this PTSJA study are manual recording and the lack of an adequate management information system, as well as dependence on third parties or consultants. Due to these limitations, this study lacked valid data verification and thus could not conduct a more in-depth analysis. Therefore, it is recommended to start building and implementing a digital system for financial recording, production management, and logistics that will improve operational efficiency and transparency in reporting.

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