Development of The Sustainable Minapolitan Potential of Lumajang Regency by Increasing Competitiveness Through Community-based Fresh Water Cultivation Fisheries

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ABSTRACT

Lumajang Regency is one of the areas in the southern part of East Java Province. The area in Lumajang Regency that has fishery potential to be developed into a minapolitan area is mainly located in the south part of Lumajang Regency and is directly adjacent to the Indonesian Ocean. One of them is Yosowilangun Sub-district which is famous for its fish and pond farming activities, especially in Meleman. In addition, Yosowilangun, Klakah, and Rowokangkung sub-districts have the potential for superior commodities and natural geographical locations suitable for fishery business. However, the areas included in disaster-prone areas and the marketing of processed fishery products is still low, this is not proportional to the high market demand for fishery products in Lumajang Regency. Freshwater aquaculture fisheries that have a high chance of being developed are catfish, gourami, and tilapia. Through data collection in the field, the existing data are analyzed through Linkages System Analysis, LQ, Growth Share, Disasters, PESTO, Paradigm Changes, and Value Proportion which are the basis for developing fishery commodity planning. To maximize the yield of freshwater fishery production in Lumajang Regency, a vision was formulated: "To create a sustainable Lumajang Regency minapolitan sector by increasing competitiveness through the development of community-based freshwater aquaculture superior commodities." The resulting recommendation plan includes socialization of strategies for controlling aquaculture activities in disaster-prone areas, procurement of biosecurity socialization for cultivators, optimization of marketing, development of fishery product facilities and infrastructure, development of sustainable tourism, empowerment of community-based fishery product processing cultivators, development of product processing facilities and infrastructure—fisheries and empowering cultivators in the use of technology through aquaculture groups.

Keywords: *Minapolitan, Community-Based, Competitiveness*

INTRODUCTION

Indonesia is a maritime country with areas reaches 5.8 million km2 of 0.3 million km2 of territorial waters, 2.8 million km2 inland and archipelagic waters, 2.7 million km2 of Exclusive Economic Zones (EEZ). The amount of this area is two-thirds of the total area of the country and lead Indonesia have a hug potential of marine and fisheries resources. However Indonesia use community based management as strategic to manage their fisheries community, but it still not optimall. Community-based management of fishery resources is a process of giving the community authority, responsibility, and opportunity to manage their fishery resources [1]. It aims to familiarize the community with decisions affecting and determining their welfare.

According to Peraturan Menteri Kelautan dan Perikanan Nomor PER.12/MEN/2010 tentang Minapolitan, minapolitan is a regional-based conception of marine and fisheries economic development. Based on the attachment to the Keputusan Menteri Kelautan dan Perikanan Republik Indonesia Nomor Kep.18/MEN/2011 Tentang Pedoman Umum Minapolitan, it is state that the issue that arises related to the management of marine and fishery resources. However, fisheries GDP has only reached 3,2% of the total national GDP, potential capture fisheries resources are 6,4 million tons per year, but anglers are still poor. Pond potential is 1.224.076 ha, but the realization is only

612.530 ha. Which also potential Marine cultivation fisheries cover an area of 8.363.501 ha, but the completion is only 74.543 ha, the workforce in the field of fish farming is 2.916.000 people, but land ownership per capita is low and their lives are apprehensive, and many other problems.

Minapolitan area development has been regulated in Peraturan Menteri No. 12 Tahun 2010 and Keputusan Menteri Kelautan dan Perikanan No. 35 Tahun 2013 tentang Penetapan Kawasan Minapolitan. However, in Keputusan Menteri Kelautan dan Perikanan No. 35 Tahun 2013 tentang Penetapan Kawasan Minapolitan, Lumajang Regency is still not included in the Minapolitan area, for the time being the development of the fisheries sector in Lumajang Regency is still carried out independently. Rencana Tata Ruang (RTR) Kawasan Strategis Minapolitan Kabupaten Lumajang (2017) states that in the development of the fisheries sector in Lumajang Regency, the source of funds used comes from the Regional Budget (APBD).

Lumajang Regency is one of the areas in the southern part of East Java Province that has fishery potential to be developed into a minapolitan especially is mainly located in the south part. One of them is Yosowilangun District which is famous for its fish and pond cultivation activities, especially in Meleman, which is renowned for its shrimp ponds as a source of income for the community. In addition, Yosowilangun and Rowokangkung sub-districts have the potential for superior commodities and a natural geographical location suitable for fishery business [2]. However, the marketing of processed fishery products is still low, this is not proportional to the high market demand for fishery products in Lumajang Regency [3]. Based on this, effective strategic planning is needed to empower the community to maximize the potential of fisheries in the Lumajang Regency.

LITERATURE REVIEW

Based on Peraturan Menteri Kelautan dan Perikanan No. PER. 12/MEN/2010 tentang Minapolitan, Minapolitan area, is a regional-based conception of marine and fisheries economic development based on the principles of integration, efficiency, quality, and acceleration. The definition is then further elaborated into 2 minapolitan conceptual elements, minapolitan as a regional-based concept of marine and fisheries sector development and minapolitan as a leading economic area with the primary commodities of marine and fishery commodities and products. Based on Peraturan Menteri Kelautan dan Perikanan No. PER. 18/MEN/ 2012 about Minapolitan, the concept of minapolitan is implemented based on 3 principles: the democratization of the marine and fishery economy for the people, the government's alignment with the small people through community empowerment, and strengthening of the role of the regional economy with the principle of solid regions – strong nations and countries. The Minapolitan Program is an essential innovation for areas with high marine and fishery potential in regional development. Thus, this program needs to implement correctly to achieve its vision of developing a prosperous and sustainable region [4].

In Indonesia fish have a very huge potential of economic. The freshwater cultivation fisheries management system continues to develop from extensive (traditional), semi-intensive to super-intensive cultivation fisheries systems. Polyculture and integrated cultivation systems have also been designed for land use and diversification of production. Community-based approaches to fisheries management have emerged as a critical strategy for managing diverse, dispersed, and dynamic small-scale fisheries. However, strengthening local community-based sustainability remains an enduring challenge [5].

METHOD, DATA, AND ANALYSIS

The research is qualitative and participatory, requiring interaction between researchers and respondents. The researcher must know who the key person is as a resource to get valid data. Data come from primary survey and secondary survey. The primary survey was conducted by visiting fish cultivators, interviewing resource persons at Lumajang Regency minapolitan support facilities, and interviews with the Regional Agency for Disaster Management (BPBD) of Lumajang Regency regarding disasters. Meanwhile, the primary survey was conducted by requesting data from the Department of Fisheries and Marine Affairs and data from the Lumajang Regency BPBD.

RESULT AND DISCUSSION

1. Overview of Cultivation Fisheries in Lumajang Regency

Based on Peraturan Daerah Kabupaten Lumajang No. 2 Tahun 2013 tentang Rencana

Tata Ruang Wilayah Kabupaten Lumajang Tahun 2012-2032, the Fishery Designated Area is a fishery cultivation area determined by area criteria that can be used for fishing activities, fisheries cultivation, fishery product processing industry and do not interfere with environmental sustainability. The following is a further explanation of the fishing area in the Lumajang Regency.

1.1. Location of Cultivation Fisheries

In Rencana Tata Ruang Strategis Minapolitan Kabupaten Lumajang Tahun 2017, it is stated that Yosowilangun and Rowokangkung Sub Districts have the potential for superior commodities and natural geographical locations suitable for fishery businesses. Yosowilangun sub-district is famous for its fish and pond farming activities, especially in Meleman, which is renowned for its shrimp ponds as a source of income for the community. Three sub-districts have their own cultivication, namely, Yosowilangun and Rowokangkung sub-districts as pond cultivation and also Klakah sub-district as floating net cage cultivation with tilapia, catfish, and carp fish as the primary commodities.

1.2. Types of Cultivation Fisheries

All efforts to raise and obtain fish are part of human existence, regardless of whether the fish are still living in the wild or have their location [6]. Lumajang Regency has freshwater cultivation fisheries spread in Yosowilangun District, Tempursari District, Pasirian District, Tempeh District, Kunir District, Rowokangkung District, and Klakah District. The largest production in the type of cage cultivation with a production value of 1.065.747 tons. Types of cultivation fisheries in Lumajang Regency including Pacific white shrimp, tilapia, goldfish, carp, pangas catfish, catfish, and ox frogs. The cultivation methods include brackish water cultivation, freshwater pond cultivation, river cages, and floating net cages.

1.3. Cultivation Fisheries Sub-system

Cultivation fisheries subsystems are described through upstream, downstream, and process subsystems. This subsystem will describe the cultivation fisheries process in Lumajang Regency.

1.3.1. Upstream Subsystem

The upstream subsystem is a series of cultivation fisheries processes in the Lumajang Regency. The upstream subsystem process discusses the fisheries potential of the Lumajang Regency. Cultivation containers in Lumajang Regency consist of coastal ponds, minapadi, cages, and floating nets. The most widely used container is Minapadi, with an area of 2.250 ha. Table 1 shows the data on the Lumajang Regency cultivation container.

Table 1. Cultivation Containers of Lumajang Regency

No	Cultivation Containers	Land (Ha)
1	Coastal Pond	800
2	Ponds	250
3	Mina Padi	2.250
4	Cages	4
5	Floating net	42

2. Process Subsystem

The fishery production business subsystem discusses the processes carried out to maintain cultivation fisheries, such as natural water sources, clean water supply, and the technology used during the cultivation process. Cultivating freshwater cultivation fisheries in Lumajang Regency tends to be traditional, which still uses simple technology. Simple technology is a fish farming technology that uses natural feed and low stocking density.

3. Downstream Subsystem

The downstream subsystem discusses processing and marketing. Fish marketing discusses the marketing of seeds and marketing of grow-out products. The following is a downstream grouper system in Lumajang Regency. Fish processing in Lumajang Regency includes curing, drying, smoking, and other processing. The largest processing is curing, which is 3.692 tons continues second places with fumigation of 470 tons in 2021. Marketing the results of cultivation fisheries activities in Lumajang Regency is seed marketing. The following describes the marketing of fish in the Lumajang Regency.

a. Marketing of Seeds

Marketing of fish seeds is usually directly to local farmers. The selling price for the grain itself depends on the size of the grain. The sources that are typically the most attractive to cultivators are the size of 5-6 cm or around the age of 1-1.5 months and are sold for 120 rupiah/head.

b. Marketing of Enlarged

Fish cultivators usually carry out fish marketing of cultivated fish in Lumajang

Regency to intermediaries where they sell fish to intermediaries by contacting intermediaries. The average yield of cultured carp fish in 1 period is 3 tons, catfish farming in 1 period is 1 ton and tilapia in 1 period can not be predicted. The selling price of carp to go-betweens is 27.000-30.000 rupiah/kg and the The selling price of catfish to middlemen is 16.000 rupiah/kg. Meanwhile, the selling price of tilapia to mediators is 20.000 rupiah/ kg. Fish marketing in Lumajang Regency has reached outside the city and the province, such as Pasuruan, Bogor, Bali, and Central Java.

4. Supporting Subsystem

One economic growth of the cultivation fisheries sector in Lumajang Regency is support by a network of facilities and infrastructure supporting activities. The supporting subsystem contains facilities and infrastructure not found in the upstream, process, and downstream subsystems. The following are supporting facilities and infrastructure in Lumajang Regency.

a. Public Utilities

The water resources network includes the raw water network used to provide clean water for cultivation fisheries activities in Lumajang Regency utilizing surface water, namely bore wells. Cultivators will use a water pump to suck and distribute water from the well to the cultivation fisheries pond if the weather is long enough. Some cultivators still rely on soil surface infiltration and flow directly to drainage by implementing sanitation and solid waste networks for cultivating fisheries waste in Lumajang Regency. The problem causes the effluent from cultivation fisheries not to stagnate and disturb the environment.

c. Public Service Facilities

Public service facilities in the Minapolitan area in Lumajang Regency consist of the classification of office and trade facilities and services. Table 2 shows the types of facilities available in the Districts of Yosowilangun and Rowokangkung, which consist of the Fisheries and Marine Service of Lumajang Regency, Fish Seed Center, Yosowilangun Market, Dawuhan Wetan Market, and Yosowilangun Market Service.

Table 2 Public Service Facilities for Minapolitan Area, Lumajang Regency

Type of Facility	Location	Description
Department of Fisheries and Marine Affairs, Lumajang Regency	Kepuharjo Village, Lumajang District	There are 3 fields, namely capture fisheries, cultivation fisheries, and fishery processing and marketing,
Fish Seed Center	Sidorejo Village, Rowokangkung District	1 unit, Pool area = 16.550 (m^2)
Yosowilangun Market	Yosowilangun Lor Village, Yosowilangun District	Selling tilapia, carp, and catfish commodities
Dawuhan Wetan Market	Dawuhan Wetan Village, Rowokangkung District	-
Klakah Market	Mlawang Village, Klakah District	Selling tilapia, carp, and catfish

Based on Table 2, the Department of Fisheries and Maritime Affairs of Lumajang Regency has the main task and function of assisting the Lumajang Regent in implementing development implementation in the Marine and Fisheries sector which involves efforts to increase Fishery Production in Business Development. Fishery cultivation, Development of Management of Fishery Resources, Development of Fishery Seeds, Development of Fisheries Business, and Extension or Guidance in the field of Fisheries. In addition, a Fish Seed Center (BBI) provide by the Lumajang District Fisheries and Marine Service in Rowokangkung District. Classification Trading and service facilities consist of Yosowilangun Market and Dawuhan Wetan Market. Yosowilangun market serves to meet the local community's needs in consuming fish. More than 5 fresh fish sellers at Yosowilangun Market sell catfish, tilapia, and gourami commodities.

d. Institutional Facilities

Institutional facilities in Lumajang Regency are based on Keputusan Kepala Dinas Perikanan Kabupaten Lumajang nomor

188 tahun 2022 tentang Penetapan Daftar Pokdakan, Poklahsar, Pokmaswas, dan KUB. Table 3 shows institutional facilities in Lumajang Regency that support cultivation fisheries activities.

Table 3 Fishery Institutional Facilities in Lumajang Regency

Type of Facilities	Amount		
	Districts		
	Yosowilangun	Rowokangkung	Klakah
Fish Cultivation Group (POKDAKAN)	23	23	15
Processing and Marketing Group (POKLAHSAR)	5	2	7
Community Monitoring Group (POKMASWAS)	2	-	2
Joint Business Group (KUB)	7	-	3

Based on the table, the existing institutions in Lumajang Regency are the POKDAKAN, POKLAHSAR, POKMASWAD, and KUB. Pokdakan has spread in all 3 sub-districts established in 2005 until 2021. The function of Pokdakan itself is to find out the number and condition of existing cultivators and to get assistance in the form of seeds, feed, tools, and funds.

2. Disasters in Lumajang Regency

Based on RPJMD Kabupaten Lumajang Tahun 2018-2023 document, Lumajang Regency threat disaster including volcanic eruptions, earthquakes, tidal waves/tsunamis, floods, landslides, and drought. Based on the survey results, disasters that affect the cultivation fisheries sector are volcanic eruptions and floods. The following explains the relation of disaster to cultivation fisheries in the Lumajang Regency.

1. Volcano Eruption

Active volcanoes surround Lumajang Regency with the potential for volcanic eruptions according to its geographical area. There are 2 volcano which is Mount Semeru, Lamongan,, Bromo and Mount Anyar. According to the preliminary survey results through interviews with farmers in Klakah District, the volcanic eruption will affect fish farming because the sulfur from Mount Lamongan will cause the fish to die. Meanwhile, in the District of Rowokangkung, the impact of the sulfur from the eruption of Mount Bromo has killed cultured fish.

2. Floods

In Lumajang Regency, areas that are vulnerable to soil movement are the areas around the Besuk Semut River and Besuk Tunggal River in Pronojiwo, Tempursari, Candipuro, Pasirian, Pasrujambe and Senduro. Based on the survey results, floods and landslides have occurred in the Minapolitan area, namely Yosowilangun District, Rowokangkung District, and Klakah District, due to high rainfall, causing overflows in rivers and ponds. For this reason, watershed management is needed by making terracing and planting productive perennials with the community

3. Analysis Related to cultivation fisheries in Lumajang Regency

3.1. Linkage System Analysis

Linkage system analysis aims to determine the flow pattern of raw materials, labor absorption patterns, processing flow patterns, and product marketing flow patterns in cultivation fisheries activities in Lumajang Regency. Analysis of the linkage system is divided into two, backward linkage and forward linkage. The following is a description of the linkage system analysis.

3.1.1. Backward Linkage Analysis

The leading commodities of cultivation fisheries activities in Lumajang Regency are catfish, tilapia, and carp. Some cultivated seeds are obtained from suppliers in other villages in the District of Rowokangkung, and some manage fish seeds individually. However, sometimes the community gets assistance with feed, seeds, and tools from the Lumajang District Fisheries Service. The time

it takes for fish to be harvested varies. Tilapia takes 6 months to reap, carp takes 9 years, and catfish harvest every 2-3 years. The problem experienced during the cultivation process is when the price of fish seeds is high and there is defective fish due to seasonal season.

3.1.2. Forward Linkage Analysis

Forward linkages are the linkages between the community and the users of production output (marketing linkages for populist economic products) along with the marketing destination areas to be used as inputs for other sectors. Forward linkage explains production and marketing to consumers. Based on the survey results, catfish, tilapia, and carp in Lumajang Regency are marketed to local markets/ middlemen and mediators outside the city in new conditions. Most cultivated fish are sold to local intermediaries in Lumajang Regency and outside the city, such as Probolinggo, Pasuruan, Bali, Surabaya, Bogor, Jember, and Banyuwangi, using land transportation, see Figure 1 for the diagram and and Figure 2 for the linkage map.

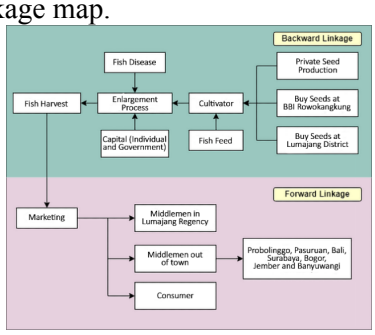

Fig. 1. Linkage System Analysis Diagram

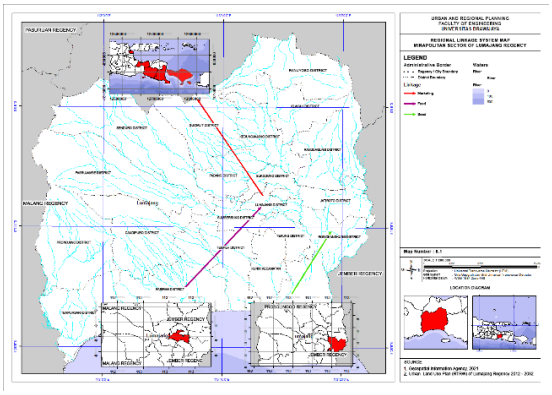

Fig. 2. Linkage System Map

3.2. LQ Analysis

Location Quotient (LQ) analysis is an economic base theory that can describe the ability of the base sector by looking at the size of the contribution of certain sectors to the economy in a region and determining the base sector that can export. The analysis use comparing the role of the same industry with a wider reference area (Table 4.).

Table 4 Calculation of LQ Analysis in cultivation fisheries in Lumajang Regency

Fish Types	LQ Value				Average LQ	Interpretation
	2018	2019	2020	2021		
Goldfish	0,0889	0,1835	0,1392	0,0005	0,1030	Non-base, non-seeded, not potential sector
Tilapia	2,4947	2,2451	2,1180	2,0874	2,2363	base & leading sector
Carp	0,8410	1,1991	1,7692	1,5913	1,3502	base & leading
Pangas Catfish	0,1792	0,4230	0,4502	0,0934	0,2864	Non-base, non-seeded, non-potential sector
Catfish	2,2233	0,6720	2,5838	0,8999	1,5947	Base & leading sector

This LQ analysis calculates freshwater cultivation fisheries commodities in Lumajang Regency. Based on the LQ calculation in the table, it is obtained results 3 commodities, namely tilapia, gourami, and catfish, have an average LQ > 1, which means that these commodities are basic & superior entities and have export market services

within and outside the Lumajang Regency area.

3.3. Growth-Share Analysis

Through the calculation of LQ, commodities that have the potential to be used as base commodities will be obtained. Furthermore, a Growth analysis is carried out to determine the growth rate of these commodities every year (at least within the last 3 years)—the following results from the Growth Share analysis of several cultivation fisheries base commodities in the Lumajang Regency as shown in Table 5 and Table 6.

Table 5 Results of Growth Analysis of Freshwater cultivation fisheries in Lumajang Regency

Types of Commodity	Production Volume				Growth			Average
	2018	2019	2020	2021	2018-2019	2019-2020	2020-2021	
Tilapia	52254740	52673090	53206560	55572029	0.80%	1.01%	4.45%	2.09 % +
Catfish	127846980	124444260	127539450	137549750	-2.66%	2.49%	7.85%	2.56 % +
Carp	24776930	23102000	23403690	25927110	-6.76%	1.31%	10.78%	1.78 % +

Table 6 Results of Share Analysis of Freshwater cultivation fisheries in Lumajang Regency

Type of Commodity	Value Commodity Production of. Lumajang Regency 2021	Commodity Production Value of East Java Province 2021	Share Analysis	
Tilapia	26431910000	944727838000	2.80%	+
Catfish	44254400000	1947175564000	2.27%	+
Carp	12166500000	584855506000	2.08%	+

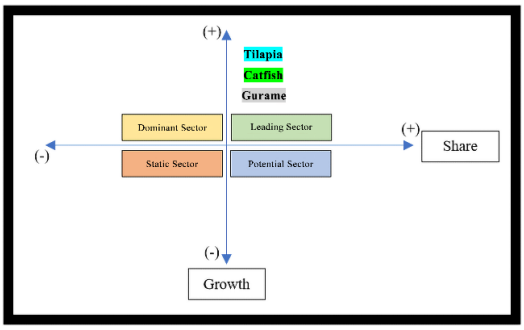

Fig. 3. Growth Share Diagram for cultivation fisheries Base Commodities, Lumajang Regency

Based on the calculation results of the growth analysis above, it is known that the basic commodities of cultivation fisheries, namely Tilapia, Catfish, and Gurame, have positive growth values. The data shows that most of the decline in production in 2019 and 2020 is due to the beginning of the pandemic and then increasing again little by little. The share analysis calculation based on the production value of Lumajang Regency and the production value of East Java Province in 2021 shows a value > 1 for the cultivation fisheries base commodity. The result means that the fisheries contribute to the economy of east java, the same as other industries and mades tilapia,catfish and gourami as the leading sectors.

3.4. PESTO Analysis

PESTO is an analysis of external factors covering the fields of politics, economy, society, technology, and others. These factors can be obtained from various policies and the study area. The following is a PESTO analysis for the minapolitan sector where the other factor used is a disaster.

Table 7. PESTO Analysis

Aspect	Planning Issues	Opportunities/ Threats
Political	a policy by the Minister of Marine Affairs and Fisheries concerning the procedures, requirements, and determination of cultivation fisheries areas as the potential regulation that can support cultivation.	Opportunities
	The establishment of the development of urban street vendors in Pasiran, Klakah, and Yosowilangun as a fishery function in Lumajang Regency	Opportunities
	Plans for developing fishery product processing and marketing areas in Tempursari, Pasirian, Yosowilangun, Rowokangkung, Klakah, and Lumajang Districts	Opportunities
Economic	There is a medium-term target for increasing the capacity of marine and fishery production centers for having superior commodities	Threats
	There is a medium-term target for increasing the availability of marine and fishery products also improving the safety quality of fishery products according to standards	Opportunities
	The fishery sector in East Java Province contributes only 4.67% of total income	Threats
Social	The Nutritional Need (RDA) for protein is 57 grams/day. The average protein consumption of the people of East Java is 61.93 grams/day	Threats
	Minister of Marine Affairs Decree No. 14 of 2012 states that the institutional growth and development of the main fishery actors refers to Planning, Organizational Ability, Institutional Access, Entrepreneurial Ability, Independence	Opportunities
Technological	Digital adoption in the fisheries sector will have a positive impact because it can increase the selling value also promote more efficient scheme by using technology.	Opportunities
	The use of technology causes an increase in the workload of pond farmers, at least in the semi-intensive cultivation method (production technology)	Threats
Disaster	Making absorption well as water catchment media and river restoration efforts	Threats
	Increasing the effectiveness of disaster prevention and mitigation	Opportunities

4. Analysis of Paradigm Changes

Paradigm has the meaning that it contains a view that can be influenced by ideological background, power relations (authority), and fundamental fanaticism related to the core issue of science. Paradigm can also be interpreted as part of an old theory used by scientists as inspiration in scientific practice as a reference for previous research and is presented based on the tests and interpretations of scientists based on the scientific method used. Table 8 shows the paradigm changes in fish cultivation.

Table 8 Analysis of Paradigm Changes

Aspect	Old Paradigm	New Paradigm
Infrastructure	In 2014, the infrastructure of ships for fishing needs used to be (more than 7,000 vessels) and the majority of production was from foreign vessels	Since 2019, 100% ownership of fishing and production needs vessels has been owned by local fishermen, domestic business actors, and local dishes.

Marketing	The marketing process for fish products is limited to marketing fresh fish to the market or UPI (Fish Processing Unit)	The marketing process finally producing a variety of frozen and processed products that are more practical and can be processed on their own.
Continuity	The management of the marine and fisheries economic sector in Indonesia is still carried out traditionally and is still oriented to financial factors without regard to environmental sustainability	Management of marine and fishery resources is carried out with sustainable principles, namely balancing ecological and economic interests to realize food security and national resilience (KKP)

6. Value Proposition Analysis

Value Proposition analysis is carried out based on the strategic issue analysis, PESTO analysis, and paradigm change analysis that has been done previously. Based on the results of the analysis that has been done, it is determined that the development of the Minapolitan sector in Lumajang Regency is a Leadership product. So with the leadership, the product is expected to improve the quality of the products found in Lumajang Regency, especially products from excellent commodities. The development of leadership products also encourages innovation in various aspects such as technology, management, marketing, and others. Table 9 shows indicators and information regarding aspects of leadership products in the Minapolitan Area of Lumajang Regency.

Table 9. Analysis of Value Proposition

Indicator	Description
Management	Development of capture fisheries and cultivation fisheries productivity in Lumajang Regency by optimizing products and services in fishery production activities.
Technology	The use of basic technology in the processing and marketing of captured fisheries commodities to produce quality products.
Economy	Development of more varied fishery products and fishery agribusiness
Marketing	Value enhancement export of products by utilizing the digital system
Institutional	Facilitating the institutional administration system of the fishery sector
	The private sector carries out shrimp hatchery by establishing a shrimp hatchery
	Development of fishery facilities for fish seed centers, product processing and marketing areas

4. Strategies to create sustainable Lumajang Regency minapolitan sector

Lumajang Regency has potential related to its minapolitan area. After considering the potential problems, strengths, weaknesses, threats, and options, the vision is formed "To create a sustainable Lumajang Regency minapolitan sector by increasing competitiveness through the development of community-based freshwater cultivation fisheries superior commodities." There some of the programs made by the following

4.1. Implementation of Socialization Regarding Strategies for Controlling Cultivation of fisheries Activities in Disaster-Prone Areas

It can be seen that there are disasters that impact the sustainability of Minapolitan activities. Therefore, an action plan is needed to overcome this. The action plan in question includes the socialization of preparedness mitigation of freshwater cultivation fisheries activities in disaster-prone areas and strengthening of early warning instruments against floods, extreme weather, and volcanic eruptions.

4.2. Provision of Biosecurity-related Socialization and Training for Freshwater Fish Cultivators

The action plan for this program is to implement biosecurity training for fish cultivators, both individual and group cultivation. Biosecurity is a set of rules,

equipment, or equipment that is very important to prevent, control, and eradicate infectious diseases that can cause huge economic losses. Biosecurity serves to maintain and increase the quantity and quality of fish.

4.3. Optimization of Marketing by Improving the Quality and Quantity of Production and Promotion of Fishery Products

Optimizing the marketing of cultivation fisheries products in Lumajang Regency are to increase the quality and quantity of production and carry out promotions program. The program do by maximizing the use of technology for freshwater cultivation fisheries. In addition to improving the quality and quantity of fishery production, it is necessary to promote the fishery products. By doing a promotion, fish cultivators will not sell their fish products to intermediaries but can sell them directly to consumers or fish traders. It is necessary to educate fish cultivators on this matter so it can benefit from higher fishery production than selling them to intermediaries.

4.4. Developing Fishery Products Marketing Infrastructure Facilities

Strategic marketing facilities can support the development of the Minapolitan Area so that it is wider and known by many parties. Lumajang Regency has several marketing facilities, such as the Dawuh Wetan Market in Rowokangkung District. However, there are still no fish sellers from tilapia, catfish, and gourami commodities in that market. Therefore, in the plan to provide marketing facilities that can reach people outside the sub-district, a modern fish market in the Lumajang Regency will be developed. The procurement of this fish market aims to facilitate the sale of fish and cut the distribution chain so that the price is lower. The program is supported by the planned development of the Cultivation fisheries and Catch Fish Market and a center for fishery products in the Rowokangkung District written in the KSK Minapolitan Lumajang RTR, 2017.

4.5. Procurement of Minawisata Facilities and Infrastructure in Klakah

Minawisata Subdistrict can be defined as the development of community and regional economic activities based on the integrated utilization of marine, fishery, and tourism potential resources in certain areas. So fisheries-based mina tourism and its combination can be in the form of developing marine cultivation fisheries tourism, such as seeing the process of fish cultivation, feeding fish, or fishing. The program for the procurement of facilities and infrastructure for minapolitan tourism in Klakah District can strengthen the management of marine potential in a sustainable, productive, and environmentally friendly manner, as well as encourage efficient management of natural resources through creativity and innovation.

4.6. Empowerment of Cultivators in Processing Freshwater Fishery Products through Fish Cultivator Groups Freshwater

Freshwater Fishery processing activities are carried out to increase the selling value of cultivation fishery's superior commodities in the Lumajang Regency. Freshwater fishery cultivator group in Lumajang Regency, no one has done the processing. Based on the interviews with farmers, this happened because they did not understand the stages of processing fish products. Therefore, it is important to carry out training activities for farmer groups. Training activities for cultivators must be carried out regularly, at least every six months. This training activity can be started by socializing the needs and stages of processing fishery products to the cultivation group.

4.7. Development of Processing Facilities and Promotion of Fishery Products Processing Products

In the fishing area of Rowokangkung District, Yosowilangun District, and Klakah District, there is no processing of fishery products, and this is because people still do not know the added value that will be obtained when fish are sold with processed products. Based on the strengths and opportunities that exist, the processing of cultivation fisheries products can be carried out in Lumajang Regency. Infrastructure facilities should be the initial capital for processing to support the community.

The main thing that must be done is to identify processed fish products that are popular with the community and sell well. The leading commodities of freshwater cultivation fisheries in the Lumajang Regency include catfish, tilapia, and carp. These fish can be processed into products, including sausages, crackers, and shredded. In addition to increasing the selling value, these processed products also have more resilience so that they can be stored and are not required to be sold quickly like fresh fish. The manufacture of processed fish products certainly requires supporting infrastructure. Providing these infrastructure facilities certainly requires a large amount of capital. Therefore, as initial capital, assistance should be provided from the Lumajang Regency government or related agencies.

4.8. Empowerment of Cultivators in the Use

of Technology through Fish Cultivator Groups

Processing fishery products is one way that fishery products can be maintained in quality so that they can be stored longer until they are processed or consumed. Fish catches that are further processed will increase the product's shelf life, improve taste, and produce a variety of new verified products whose results can be sold and marketed. Efforts to inhibit the process of fish spoilage include preserving and processing fishery products. Preservation is expected to produce products with high economic value and long shelf life. It is necessary to conduct training to process fishery products because it will provide a very large contribution, especially in the economic field. A variety of processed fish also improves nutrition and reduces people's consumption of instant food, affecting health.

It is important to consider the effectiveness of selling seafood because the supply of fishery products is not the same as the demand and affects the occurrence of price fluctuations. The issue to be considered because fishers can earn a fast and clear income if they have a quick and appropriate marketing system. Improvements in marketing should increase value, reduce marketing costs and generate selling prices in consumer purchasing power. In other words, the progress of the marketing department is aimed at increasing marketing efficiency. Marketing must be good and efficient because low prices waste production. Using social media for marketing can increase buying and selling opportunities by making it possible to bring sellers closer to potential buyers. In addition, you can reach a wider area of potential buyers through social media-based marketing.

CONCLUSION

Lumajang Regency has the potential for freshwater fisheries but has not been fully utilized. Potential minapolitan areas are Klakah District, Yosowilangun District and Rowokangkung District. Freshwater fisheries commodities that have the opportunity to be developed are catfish, gourami, and tilapia after analyzing the potential problems in the minapolitan area of Lumajang Regency. Furthermore, the potential and existing issues are expected to be the basis for formulating strategies that will be carried out. To create sustainable aquaculture, a strategy was developed that focuses not only on aquaculture systems but also on improving the quality of human resources through community-based fisheries. Thus the results of fishery production in Lumajang Regency can have a competitive advantage amid market competition

IMPLICATION/LIMITATION AND SUGGESTIONS

The research has several limitations which need to be interpreted with caution. Some of the rules in this study include the limited primary survey time due to the Covid-19 pandemic. This causes limited access to collect in-depth information from fish farmers and authorized agencies so that the data collected has the potential to not describe the existing conditions. Future research can focus on the quality of fish cultivators' human resources for sustainable fishery production. Such research can contribute to identifying specific strategies for successful fisheries management.

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