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THE EFFECT OF THE PLASMA CORE SYSTEM AND CULTIVATION DEVELOPMENT STRATEGY ON THE INCOME OF TILAPIA FISH FARMERS IN EKA MARGA VILLAGE, LUBUKLINGGAU CITY

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Abstract (English)

The core-plasma system is a type of partnership introduced to improve production yields and competitive advantage for fish farmers. In this system, small-scale fish farmers collaborate with partners/plasma partners who provide technical support, capital, and market access. While this system offers opportunities, dependence on a second party can also pose risks. Lubuklinggau City is one of the cities with significant freshwater fisheries potential. One example is the Eka Marga Village in Lubuklinggau Selatan II District, home to numerous tilapia farmers. Eka Marga Village in Lubuklinggau City is a potential aquaculture area due to its supporting facilities and infrastructure, such as irrigation systems, land for pond construction, and production roads.

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Cultivation, plasma core system, Tilapia Fish

INTRODUCTION

Tilapia is a leading freshwater fishery commodity in Indonesia and enjoys high market demand. Tilapia's advantages lie in its favorable characteristics, such as high reproductive capacity, rapid growth, tolerance to less-than-ideal environmental conditions, and resilience to high salinity levels (Rahmadi Aziz, 2021). However, the development of tilapia farming faces challenges, one of which is the high cost of commercial feed, a frequent complaint among farmers (Rodríguez, Velastequí, 2019).

The continued growth of tilapia production in various regions requires support from proper cultivation techniques, innovation, and management, thus reducing production costs and increasing business profits. Tilapia is an intensive cultivation system that requires optimized feeding and increased fish population density in ponds (Suprayudi et al. 2019). Efforts to achieve fish production targets require appropriate maintenance methods to improve the quality and production of tilapia cultivation. Therefore, the aim of this study is to obtain optimal tilapia cultivation management (Hendriana, 2022).

The core-plasma system is a type of partnership introduced to improve production yields and competitive advantage for fish farmers. In this system, small-scale fish farmers collaborate with partners/plasma partners who provide technical support, capital, and market access. While this system offers opportunities, dependence on a second party can also pose risks.

Lubuklinggau City is one of the cities with vast freshwater fisheries potential. One example is the Eka Marga Village, South Lubuklinggau II District, which is home to many tilapia fish farmers. Eka Marga Village, Lubuklinggau City, is a potential aquaculture area due to its supporting facilities and infrastructure, such as irrigation systems, land for pond construction, and production roads. Although Eka Marga Village physically possesses the facilities and infrastructure needed for aquaculture, in reality, there are still obstacles to fish farming, namely capital and market access.

In research(Saputra et al., 2024).PT. Timur Mandiri Aquaculture has great potential with strengths such as abundant water resources and a strategic location, but faces challenges such as limited capital, seeds, and promotion, as well as competition with fresh sea fish and price fluctuations. The most attractive strategy is "Increasing Production Efficiency and

Reducing Operational Costs" with the highest Attractiveness Score, promising success for the Company's tilapia business.

In responding to opportunities and minimizing threats, the main strategy is to expand the production partnership network to increase production and increase community income.(Pramono et al., 2019).

The core-plasma partnership model is a mutually beneficial form of cooperation between large business actors (nucleus) and small business actors (plasma). The core provides production facilities, technology, guidance, and market access, while the plasma carries out production according to the agreement. According to Hafsah (2003:68), this model aims to strengthen the economic position of small business actors through support from large business actors. In the context of tilapia cultivation in Eka Marga Village, the core-plasma model helps small farmers overcome capital and marketing constraints. However, Hafsah (2003:7) also highlights that its implementation is often less than ideal due to a lack of transparency and an unequal relationship between the core and plasma.

Therefore, this pattern must be implemented fairly, openly, and supervised in order to truly empower small farmers.

This form of cooperation/partnership helps cage farmers who lack the capital to establish their own tilapia farming businesses. This collaboration allows cage farmers to meet their daily needs. Similarly, capital owners, through this form of cooperation, do not need to work hard directly, and most importantly, it helps cage farmers who lack capital.(Bahtiar, 2020).

According to Partnership Theory, partnerships between large companies (nucleus) and small businesses or farmers/cultivators (plasma) aim to create mutually beneficial relationships by sharing roles, risks, and results (Source: Mubyarto, 1991; Suhardini, 2012) and according to Institutional Economics Theory, the core-plasma system reflects the institutional role (core institutions) in providing inputs (seeds, feed, training) and market access for plasma, which ultimately affects productivity and income (Source: North, 1990).

The core-plasma system is a form of partnership between companies or

Andre Gunder Frank's dependency theory explains that developing countries depend on developed countries, causing economic inequality. Foreign capital, although intended for development, often reinforces dependency because developing countries must provide large profits to foreign investors. This theory shows how these three components work together to strengthen patterns of economic dependency, making it difficult for developing countries to escape the influence and domination of developed countries.(Agu et al., 2023).

According to Law No. 20 of 2008, partnership is a voluntary collaboration between two or more parties that need, strengthen, and benefit each other, so that no party is disadvantaged and all parties benefit from a synergistic business relationship.

In research (Shrimp, 2024), it was shown that shrimp farmers experienced an increase in income, although not significant, after establishing partnerships, but still faced major obstacles in the form of disease attacks on shrimp.

The nucleus-plasma system has three main models (Trobos Aqua, 2020). The nucleus-plasma system has three main models: the provision of capital, broodstock, or seeds by the nucleus-plasma, with the agreement that the seeds produced will be resold to the nucleus-plasma. This model helps farmers increase production and guarantees marketing of their produce, thus benefiting both parties.(Beno et al., 2022).

Research results(Bahtiar, 2020), demonstrating that the cooperative system is based on Islamic economic principles, where profit sharing is mutually agreed upon by the parties. However, there are practices involving unwritten agreements that are deemed contrary to Islamic values and have the potential to lead to injustice in their implementation.

In research(Ariadi et al., 2020), said that cooperative partnerships can provide mutual benefits for both parties by fulfilling the rights and obligations of each partner. More broadly, this partnership model is considered capable of driving improvements in various aspects of the tilapia (O. niloticus) hatchery business, particularly in terms of business management and technical cultivation operations during the partnership period.

The 2022 Smart Fisheries Village (SFV) program successfully established partnerships through a nucleus-plasma scheme, with BRPI as the nucleus and farmer groups as the plasma. This program integrates research, training, and technology to create a connected fisheries ecosystem from upstream to downstream, supporting sustainable fisheries.(Sopian et al., 2024).

SThe nucleus-plasma system is a strategic partnership capable of increasing the efficiency and productivity of aquaculture businesses, particularly in the fisheries sector. By dividing the roles between the nucleus as the provider of production facilities and training, and the plasma as the cultivator, this system can create a mutually beneficial relationship. Furthermore, the nucleus-plasma system also supports farmers' access to technology, capital, and markets that were previously difficult to reach independently. Therefore, the relevance of the nucleus-plasma system to increasing the income of tilapia farmers is important to further examine, given that its effectiveness can directly impact productivity, cost efficiency, and the sustainability of aquaculture businesses. The question of the extent to which the nucleus-plasma system influences the income of tilapia farmers is a primary focus to determine whether this partnership model is truly capable of providing significant economic benefits to farmers.

In research(Dan et al., 2023)The core-plasma partnership method applied in PKMS activities demonstrates the effectiveness of the relationship between fish farmers as plasma partners and partners providing production inputs, such as feed. The implementation of this program resulted in increased group capacity in administrative management, the application of innovative cultivation technologies, and the strengthening of partnership networks. Overall, this activity has had a positive impact on increasing production, understanding institutional governance, and the ability to develop data-based work programs and establish formal collaborations through memoranda of understanding.

Based on the research results(Saputra et al., 2024). That the QSPM analysis of various alternative business development strategies, the strategy considered most attractive is "Increasing Production Efficiency and Reducing Operational Costs," with the highest Total Attractiveness Score (TAS) of 6.75. This indicates that this strategy has the greatest potential in driving the success of the tilapia fish farming business at PT. Timur Mandiri Akuakultur.

Aquaculture is a human effort to increase aquatic productivity. This definition positions human activity in producing and increasing aquatic productivity, especially freshwater fish, for profit. Aquaculture typically involves raising fish in ponds, fishponds, and rice paddies, but more generally encompasses human activities to cultivate fishery commodities in reservoirs, rivers, or the sea (Hermawan et al., 2019). Research results(Anugriansyah et al., 2022), indicating that the Aki Dalang tilapia fish farming business has the economic feasibility to be developed. Likewise, research conducted by(Sjahruddin et al., 2022). The tilapia cultivation carried out by villagers together with the Village-Owned Enterprise (BUMDes) and community service groups has successfully provided additional income.

RESEARCH METHODOLOGY

Population is a group of objects or subjects that have certain characteristics and traits according to the researcher's determination, which are the target of observation and then conclusions are drawn (Sugiyono, 2020).

In this study, the researcher applied a non-probability sampling technique, namely purposive sampling, to determine the research sample. According to Sugiyono (2020),

purposive sampling is a method of selecting samples based on specific criteria or considerations. These criteria include:

Data sourceaccording to(Sugiyono, 2020) can be divided into two, namely:

1) Primary data, namely data obtained directly by conducting interviews with the relevant parties and relating to the problem being researched.
2) Secondary data, namely data obtained from outside the company in the form of books and literature that is relevant to the problem being discussed and also serves as the theoretical basis for the researcher.

The research instrument used in this study was a questionnaire or survey using a Likert scale with the number of questions for variable X1 being 10, X2 being 10, and variable Y being 10 statements. The Likert scale is used to measure the attitudes, opinions, and perceptions of a person or group of people regarding social phenomena.(Sugiyono, 2020), and the answers given and scores are as follows:

a. Strongly agree (SS) scored 5
b. Agree (S) scored 4
c. Disagree (KS) scored 3
d. Disagree (TS) given a score of 2
e. Strongly disagree (STS) scored 1

Table 3.1

B. Data Analysis Methods

Data analysis is a crucial stage in scientific research, as it is through this process that the information contained in the data can be organized, interpreted, and conclusions drawn. According to Yapanto et al. (2023:11), data analysis is a systematic process for discovering meaningful patterns, trends, and relationships that can be used to answer research questions. In research on the nucleus-plasma system and tilapia cultivation development strategies, data analysis plays a crucial role in identifying the extent to which partnership patterns and cultivation strategies influence farmer income.(Ariyaldi, 2017).

The data evaluation approach used in this study is a statistical test analysis method and a SWOT analysis method with a quantitative approach. A SWOT analysis attempts to systematically identify aspects that play a significant role. The focus is on exploiting existing potential and opportunities while minimizing potential vulnerabilities and challenges.

SWOT Analysis

A contextual analysis and field data-based strategy based on quantitative results were conducted. The data evaluation approach used in this study involved a SWOT analysis method with a mixed qualitative and quantitative approach. This approach includes identifying significant internal and external factors in formulating a strategy. A SWOT analysis attempts to systematically identify the aspects that play a significant role. The focus is on exploiting existing potential and opportunities while minimizing potential vulnerabilities and challenges. This strategy is known as a situational analysis, and the method is commonly used.

The initial step in the internal factor analysis was to identify strengths and weaknesses that would influence the tilapia cultivation development strategy in Eka Marga Village, Lubuklinggau City. Strengths included having sufficient ponds or land to support fish cultivation, as well as the necessary equipment. Meanwhile, weaknesses included insufficient knowledge and skills in risk management, marketing, or new technologies. Next, an external factor analysis aims to identify opportunities and threats that could shape the development strategy for tilapia fish farming in Eka Marga Village, Lubuklinggau City. Opportunities encompass all factors that could support the development of tilapia fish farming in the area. Meanwhile, threats encompass factors that could hinder the success of tilapia fish farming development.

To determine the appropriate strategic direction, the next step involves analyzing the business or institution's position using quadrants. Comparing the weighted scores of internal and external factors generates strategic alternatives based on their position within the quadrant. These four quadrants help identify the development situation:

1. Quadrant I: This situation is highly favorable because the farmer possesses both internal strengths and external opportunities. Under these conditions, the strategies implemented will support aggressive growth.
2. Quadrant II: Despite facing external threats, farmers still possess internal strengths that can be leveraged. A diversification strategy may be an option to capitalize on long-term opportunities.
3. Quadrant III: At this stage, despite significant market opportunities, farmers also face internal constraints. The right strategy may involve balancing capitalizing on opportunities and addressing constraints.
4. Quadrant IV: This situation is less favorable because farmers face external threats and have internal weaknesses. Action needs to be taken to address these challenges.

With this approach, appropriate strategies can be formulated based on quadrant analysis, helping farmers navigate internal and external conditions more effectively. A SWOT analysis diagram can be illustrated as follows:

SWOT Analysis Quadrant Diagram

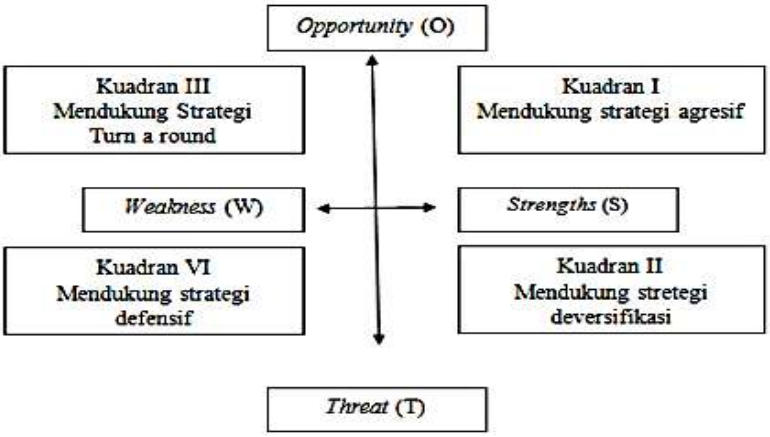


Figure 3.2 SWOT Diagram

After gathering important information regarding tilapia cultivation development in Eka Marga Village, Lubuklinggau City, the next step is to utilize the data to plan a strategic approach. A more detailed SWOT analysis requires a SWOT framework. Its function is to support the development of various strategies that need to be implemented by grouping each aspect of the problem. This framework matrix serves as a tool to summarize crucial project factors using the SWOT framework. Through this analysis, the external opportunities and challenges faced by the project can be integrated with the existing internal potential and weaknesses. From this matrix, four boxes emerge containing various possible strategic options.

Table 3.2SWOT Matrix

Internal Factors / **External Factors**	**Strength (S)** Determine 5-10 strength factors internal	**Weakness (W)** Identify 5-10 weaknesses internal
Opportunity (O) Determine 5-10 external threat factors	**SO Strategy** determine strategy by using strengths to take advantage of opportunities	**WO Strategy** determine a strategy that can minimize weaknesses to take advantage of opportunities
Threat (T) Determine 5-10 external threat factors	**ST Strategy** Determine strategy by using strengths to overcome the threat	**WT Strategy** Determine strategies that can minimize weaknesses and avoid threats.

In the process of selecting crucial external and internal factors, considerations are based on the field situation, including an assessment of the Opportunities, Difficulties, Threats, and Weaknesses (ODTW) and the community's readiness to develop tilapia cultivation, as well as data collected through both primary and secondary research. After this stage, significant external and internal factors are organized into a SWOT matrix.

The SWOT matrix serves to illustrate how external opportunities and threats can be linked to internal strengths and weaknesses. Therefore, strategic steps can be made based on key external and internal factors.

After the SWOT analysis, there are four strategic alternatives: SO (Maximizing Strengths - Exploiting Opportunities), ST (Exploiting Strengths - Overcoming Threats), WO (Minimizing Weaknesses - Exploiting Opportunities), and WT (Minimizing Weaknesses - Avoiding Threats). Strategic priorities are determined by adding up the weighted values of the SWOT matrix. The strategy with the highest total score is the most prioritized.

SWOT analysis is conducted to identify strategic development options through the following steps:

1. Identifying the strengths, weaknesses, opportunities and threats of tilapia fish farming development in Eka Marga sub-district, Lubuklinggau City.
2. Conducting a SWOT analysis by analyzing internal factors (strengths and weaknesses) and external factors (opportunities and threats) of tilapia fish farming development in Eka Marga sub-district, Lubuklinggau City.
3. Draw conclusions from the SWOT analysis through the IFAS (Internal Factor Analysis Summary) and EFAS (External Factor Analysis Summary) tables.

In the context of the SWOT matrix:

1. SO strategy focuses on exploiting opportunities by relying on the internal strengths of the farmer.
2. ST strategy is concerned with using internal strengths to overcome external threats.
3. WO strategies involve exploiting external opportunities to overcome internal weaknesses.
4. WT strategy refers to minimizing internal weaknesses and avoiding external threats.

RESULTS AND DISCUSSION

Results of Data Analysis Techniques

a) Simple Linear Regression

A simple linear regression model was used to see how the role of the plasma core system and the farmer development strategy significantly influenced the income of tilapia farmers in Eka Marga sub-district, Lubuklinggau City.

The formula used is: Y = a + bX1

1 Plasma Core System Variable (X1) on Cultivator Income Tilapia (Y)

Table 4.15
Simple Linear Regression Calculation Results
Coefficientsa

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	15,786	2,378		6,639	,000		
	TOTX1	,647	,064	,887	10,181	,000	1,000	1,000

a. Dependent Variable: TOTY

Source: Data processing results, 2025, SPSS 22

From the regression equation above, it can be explained as follows:

1) Constant value (a) = 15.786
2) Regression coefficient X1 = 647

   From these values, they can be arranged into the following equation:

   Y = a + bx1

   Y = 15.786 + 0.647X1

From the equation of the estimated value of the regression function above, it can be seen that the constant value of X1 obtained is 15.786. This illustrates that without being influenced by the plasma core system variable (X1), the income of tilapia fish farmers (Y) is 15.786. The regression coefficient value representing the plasma core system variable obtained is 0.647, indicating that any change in the plasma core system will change the income of tilapia fish farmers in direct proportion.

2. Variable of Cultivation Development Strategy (X2) on the income of tilapia fish farmers (Y)

Table 4.16
Simple Linear Regression Calculation Results
Coefficientsa

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	10,100	4,326		2,335	,027		
	TOTX2	,769	,112	,793	6,886	,000	1,000	1,000

a. Dependent Variable: TOTY

Source: Data processing results, 2025, SPSS 22

From the regression equation above, it can be explained as follows:

1) Constant value (a) = 10,100
2) Regression coefficient X2 = 796

From these values, they can be arranged into the following equation:

Y = a + bX2
Y = 10.100 + 0.796X2

For the constant X2 obtained 10.100. This illustrates that without being influenced by the cultivation development strategy variable (X2), the income of tilapia fish farmers (Y) is 10.100. The regression coefficient value representing the cultivation development strategy variable obtained is 0.796, indicating that every change in X2 will change the income of tilapia fish farmers in direct proportion.

a. Correlation Coefficient Test Results

Testing the contribution of the influence of the independent variable (X) on the dependent variable (Y) can be seen from the correlation coefficient where $0 < r2 < 1$. This shows that the closer r2 is to -1, the stronger the influence of the independent variable (X) on the dependent variable (Y). Conversely, if r2 is closer to 0, the weaker the influence of the independent variable (X) on the dependent variable (Y).

Table 4.17
Model Summary

Model	R	R Square	Adjusted R Square	Standard Error of the Estimate
1	,887a	,787	,780	2,018

a. Predictors: (Constant), TOTX1
b. Dependent Variable: TOTY

Source: Data processing results, 2025, SPSS 22

Table 4.18
Model Summary

Model	R	R Square	Adjusted R Square	Standard Error of the Estimate
1	,793a	,629	,615	2,667

a. Predictors: (Constant), TOTX2
b. Dependent Variable: TOTY
Source: Data processing results, 2025, SPSS 22

Based on the results of the correlation coefficient test in tables 4.17 and 4.18 obtained from the processing results with SPSS 20 for windows, it is known that the R value is 0.887 and 0.793, the correlation coefficient value of 0.887 and 0.793 is in the coefficient interval of 0.80 - 1.00 for X1 and in the coefficient interval of 0.60 - 0.799 for X2, which means the relationship between the core plasma system variables, and cultivation development strategies on the income of tilapia fish farmers shows a very strong and strong relationship, a positive correlation value means the correlation or relationship between the core plasma system, and cultivation development strategies on performance is in the same direction.

b. Partial t-test

1. **The Effect of the Plasma Core System on the Income of Tilapia Fish Farmers in Eka Marga Village, Lubuklinggau City**

To see the partial influence of each independent variable on the dependent variable, it can be explained using the t-test. The following are the results of the t-test calculation;

Table 4.19
Results of the t-test for X1 and Y

Model		t	sig
1	(constant)	6,639	.000
	Plasma Core System	10,181	.000

a. Dependent variable: income of tilapia fish farmers
Source: Data processing results, 2025 SPSS 22

So it can be explained that the plasma core system variable on the income performance of tilapia fish farmers in Eka Marga sub-district, this is indicated by the t-count value greater than t-table, which is 10.181> 0.683 (t-test table can be seen in the appendix) with dk = 30 and a significant level of sig = 0.000, meaning that partially the plasma core system variable has a significant influence on the income of tilapia fish farmers in Eka Marga sub-district, Lubuklinggau City. This shows that the hypothesis in this study is proven or the hypothesis is accepted.

2. The Influence of Cultivation Development Strategy on the Income of Tilapia Fish Farmers in Eka Marga Village, Lubuklinggau City

To see the partial influence of each independent variable on the dependent variable, it can be explained using the t-test. The following are the results of the t-test calculation;

Table 4.20
Results of the X2 and Y t-test

Model		t	sig
1	(constant)	2,335	.027
	Cultivation development strategy	6,886	.000

a. Dependent variable: income of tilapia fish farmers
Source: Data processing results, 2025 SPSS 22

So it can be explained that the variable of cultivation development strategy on the income of tilapia fish farmers in Eka Marga Village, this is indicated by the t-count value is greater than t-table, which is 6.886> 0.683 with dk = 30 and a significant level of sig = 0.000, meaning that partially the variable of cultivation development strategy has a significant influence on the income of tilapia fish farmers in Eka Marga Village, Lubuklinggau City. This shows that the hypothesis in this study is proven or the hypothesis is accepted.

c. SWOT Analysis

To determine strategies that can be implemented to increase farmer income, researchers used a SWOT analysis. The results of the study indicate that the supporting factors, both strengths and opportunities for developing tilapia farming strategies, include:

Strength	Weakness
1. Tilapia is easy to cultivate 2. Feed can be made from local ingredients 3. Market demand is stable	1. Dependence on artificial feed 2. Susceptible to disease 3. Limited access to business capital

Opportunity	Threat
1. Government support 2. Open export market 3. Partnership with the private sector	1. Price competition in the market 2. Climate change and environmental pollution 3. Feed price fluctuations

Source: Processed Primary Data, 2025

To determine the strategy for developing tilapia cultivation, a SWOT analysis is used, classifying data into four groups: strengths and weaknesses (internal factors) (IFAS), and opportunities and threats (external environmental factors). These are then analyzed in IFAS and EFAS tables. The following SWOT analysis table shows the IFAS and EFAS:

Table 4.21Recapitulation of Strengths and Weaknesses Calculation Results

NO	Internal Factors	Weight	Rating	Score
Strengths				
1	Tilapia is easy to cultivate	0.18	4.50	0.81
2	Feed can be made from local ingredients	0.17	4.40	0.748
3	Market demand is stable	0.17	4.40	0.748
Total		0.52		2,306
Weaknesses				
1	Dependence on artificial feed	0.14	4.20	0.588
2	Susceptible to disease	0.17	4.47	0.759
3	Limited access to business capital	0.17	4.37	0.743
Total		1.48		2,090
TOTAL IFAS		**2**		**4,396**

Source: Processed Primary Data, 2025

Table 4.15. Recapitulation of Opportunity and Threat Calculation Results

NO	External Factors	Weight	Rating	Score
Opportunities				
1	Government support	0.17	4.43	0.753
2	Open export market	0.16	4.27	0.683
3	Partnership with the private sector	0.17	4.40	0.748
Total		**0.50**		**2,184**
Threats				

NO	External Factors	Weight	Rating	Score
1	Price competition in the market	0.17	4.43	0.753
2	Climate change and environmental pollution	0.17	4.40	0.748
3	Feed price fluctuations	0.17	4.53	0.770
Total		**0.51**		**2,271**
TOTAL EFAS		**1**		**4,455**

Source: Processed Primary Data, 2025

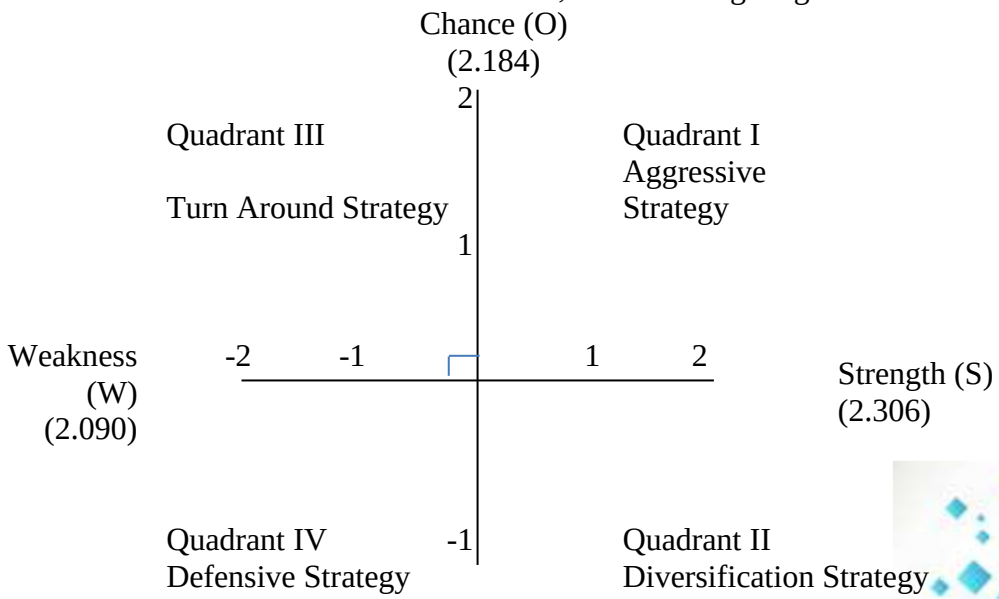
After knowing the internal and external factors of the development of tilapia fish farming in Eka Marga Village, Lubuklinggau City, which are stated in the SWOT matrix, the next step is to determine the quadrant coordinate points. Determination of the quadrant coordinate points is based on the recapitulation of the results of the weighting and rating of IFAS and EFAS, then determining the coordinate points of internal and external analysis by: the total score of strengths is subtracted from the total score of weaknesses for IFAS, and for EFAS, the total score of opportunities is subtracted from the total score of threats.

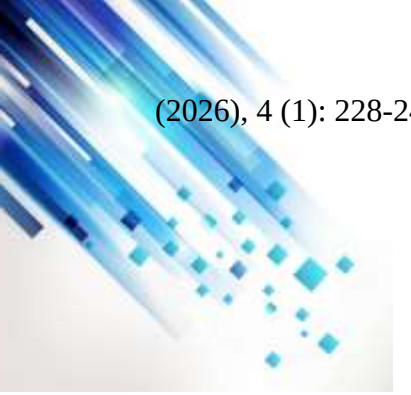
Table 4.16. Coordinate Internal and External Analysis

	x-axis		**y-axis**	
strategic factors	Strengths	Weaknesses	Opportunities	Threats
Mark	**2,306**	**2,090**	**2,184**	**2,271**
coordinate points	**X-axis**	**Y axis**		
	0.02	**-0.09**	**quadrant III**	
			Turn Around strategy	

Source: Processed research data 2025

From the results of these calculations, the following diagram is formed:





-2
Threat (T)
(2.271)

Figure 4.4 Cartesian SWOT diagram

Table 4.17.SWOT Analysis Results

Internal Factors / **External Factors**	**Strength (S)** 1. Tilapia is easy to cultivate 2. Feed can be made from local ingredients 3. Market demand is stable	**Weakness (W)** 1. Dependence on artificial feed 2. Susceptible to disease 3. Limited access to business capital
Opportunity (O) 1. Government support 2. Open export market 3. Partnership with the private sector	**SO Strategy** 1. Increase the productivity of tilapia cultivation by using better technology and improving seed quality. 2. Increase cooperation with related industries, such as the feed and processing industries, to increase efficiency and productivity. 3. Developing tilapia exports to international markets to increase revenue and expand markets.	**WO Strategy** 1. Developing collaboration with related industries, such as the feed and processing industries, to increase efficiency and productivity. 2. Develop an effective supply chain system to ensure the quality and availability of tilapia. 3. Developing better technology to increase the efficiency and productivity of tilapia cultivation.
Threat (T) 1. Price competition in the market 2. Climate change and environmental pollution 3. Feed price fluctuations	**ST Strategy** 1. Motivating farmers by providing capital or feed requirements to support tilapia cultivation efforts. 2. Increase product and market diversification to reduce dependence on one type of product and market.	**WT Strategy** 1. Maximize adequate targets and infrastructure, such as ponds, water systems, and processing facilities, to increase efficiency and productivity. 2. Improving access to capital for tilapia farmers, so they can scale up their businesses and adopt better technology.

Source: Processed research data 2025

Explanation of SWOT Analysis Results:

a. SO Strategy

This is a very advantageous situation because the organization has the opportunities and strengths to take advantage of the opportunities that exist. The strategy that must be implemented is:

Supporting an aggressive growth policy (growth-oriented strategy). Based on the results of field research using questionnaire techniques, the strategy for developing tilapia fish farming is based on the SO (Strengths - Opportunities) strategy. Alternative strategies that can be implemented include: Increasing the productivity of tilapia fish farming by using better technology and improving seed quality. Increasing cooperation with related industries, such as the feed and processing industries, to increase efficiency and productivity. Developing tilapia fish exports to international markets to increase income and expand the market.

b. ST Strategy

Despite facing threats, tilapia fish farmers still have internal strengths. The strategy that must be implemented is to use strengths to take advantage of long-term opportunities by means of a verified strategy (product/market). Based on the results of field research using a questionnaire technique, the strategy for developing tilapia fish farming in Eka Marga sub-district, Lubuklinggau City, the ST (Strengths-Threats) strategy is an alternative strategy that can be implemented, including: Motivating farmers by providing capital or feed needs to support tilapia fish farming businesses. Increasing product and market diversification to reduce dependence on one type of product and market.

c. WO Strategy

Tilapia fish farmers face enormous opportunities, but on the other hand, they face several internal constraints/weaknesses. Based on the results of field research using questionnaire techniques, the strategy for developing tilapia fish farming in Eka Marga sub-district, Lubuklinggau City, the WO (Weaknesses-Opportunities) strategy is an alternative strategy that can be implemented, including: Developing cooperation with related industries, such as the feed and processing industries, to increase efficiency and productivity. Developing an effective supply chain system to ensure the quality and availability of tilapia fish. Developing better technology to increase the efficiency and productivity of tilapia fish farming.

d. WT Strategy

Farmers are in a very unfavorable condition, facing various threats and internal weaknesses. Farmers must implement a defensive strategy to ensure their business continues to exist, by making various internal improvements to face future threats. An example of a defensive strategy: farmers reduce operating costs by reducing employees (rationalization). Based on the results of field research using questionnaire techniques, the strategy for developing tilapia fish farming in Eka Marga Village, Lubuklinggau City, the WT (Weaknesses-Threats) strategy is an alternative strategy that must be implemented, including: Maximizing supporting facilities and infrastructure for tilapia fish farming, by providing facilities and infrastructure in the form of - Comfortable ponds for tilapia, with appropriate sizes and depths to provide sufficient space for tilapia to swim, grow, and develop. A good water management system to maintain water quality and provide sufficient oxygen for

Tilapia. Equipment for monitoring water quality, such as pH meters and oxygen meters. Adequate transportation routes to facilitate the delivery of feed and harvested produce. Adequate lighting to facilitate supervision and maintenance.

By having adequate facilities and infrastructure, tilapia cultivation can run smoothly and efficiently, thereby increasing productivity and the quality of the harvest.

From the results of the formulation of the location of the quadrant coordinate points above, it can be concluded that the urgent strategy that needs to be implemented in the development of tilapia cultivation in Eka Marga Village is in Quadrant III, namely the WO (Weaknesses-Opportunities) strategy, alternative strategies that can be carried out include: Building good coordination and communication between tilapia cultivators and Feed and Seed Suppliers: Coordination with suppliers to ensure the availability of quality feed and seeds. Buyers: Coordination with buyers to understand market needs and determine competitive prices. Government Agencies: Coordination with relevant government agencies to comply with regulations and obtain the necessary support.

C. Discussion

From the results of data analysis, it is known that the plasma core system has a significant effect on the income of tilapia fish farmers in Eka Marga Village, Lubuklinggau City, this is proven by the calculated t value being greater than the t table, namely 10.181 > 0.683.

In line with research conducted by (Ariadi et al., 2020), stated that cooperative partnerships can provide mutual benefits for both parties by fulfilling the rights and obligations of each partner. More broadly, this partnership pattern is considered capable of encouraging improvements in various aspects of the tilapia (O. niloticus) hatchery business, particularly in terms of business management and technical cultivation operations during the partnership period. Likewise, the results of the 2022 Smart Fisheries Village (SFV) Activity succeeded in establishing a partnership through a core-plasma scheme, with BRPI as the core and farmer groups as the plasma. This program integrates research, training, and technology results to form a connected fisheries ecosystem from upstream to downstream, in order to support sustainable fisheries.(Sopian et al., 2024).

Furthermore, the cultivation development strategy has a significant influence on the income of tilapia fish farmers in Eka Marga Village, Lubuklinggau City, this is proven by the calculated t value being greater than the t table, namely 6.886 > 0.683.That matterThis study shows that hypothesis 2 in this study is proven or accepted. An appropriate tilapia cultivation development strategy can positively impact the income of tilapia farmers. By implementing the right strategy, tilapia farmers can increase productivity, quality, and selling price, thereby increasing their income. Here are some strategies that can increase the income of tilapia farmers: 1. Product Diversification: By developing processed tilapia products, tilapia farmers can increase added value and product diversification, thereby increasing income. 2. Quality Improvement: Improving the quality of tilapia by paying attention to water quality, feed, and fish health can increase the selling price of tilapia and increase the income of farmers.

3. Market Development: Expanding the tilapia market to wider areas and increasing promotion can increase demand and selling prices of tilapia, thereby increasing the income of farmers. 4. Technology Application: Implementing better and more modern cultivation technology can increase the efficiency and productivity of tilapia cultivation, thereby increasing the income of farmers. 5. Cooperation with Related Industries: Developing cooperation with related industries, such as the feed and processing industries, can help increase the efficiency and productivity of tilapia cultivation, thereby increasing the income of farmers.

Based on research(Eteke et al., 2019), that there are six priority strategies identified for the development of tilapia (Oreochromis niloticus) cultivation, namely: (1) increasing human resource capacity, (2) utilizing financial institutions to support business development, (3) optimizing the use of cultivation land in floating net cages (KJA), (4) expanding market access, (5) improving seed quality and production quality, and (6) forming agreements between farmers in maintaining security in the KJA area. Likewise, the results of research (Trieanto et al., 2022). Said that the sustainability strategy of the partnership between plasma farmers and PT BGA Group is divided into four groups. The SO strategy includes cooperation with the

Cooperative Service in plasma financial reporting, while the WO strategy involves farmers in plantation management through training from the Plantation Service. Core companies are also required to have ISPO and GAP certificates to ensure sustainability.

For effective development strategies to increase the income of farmers that can be done is Building good coordination and communication between tilapia farmers and Feed and Seed Suppliers: Coordination with suppliers to ensure the availability of quality feed and seeds. Buyers: Coordination with buyers to understand market needs and determine competitive prices. Government Agencies: Coordination with relevant government agencies to comply with regulations and obtain necessary support.

CONCLUSION AND SUGGESTIONS

Based on research on the influence of the Plasma Core System and Cultivation Development Strategy on the Income of Tilapia Fish Farmers in Eka Marga Village, Lubuklinggau City, the results of this research can be concluded as follows:

1. The plasma core system has a significant effect on the income of tilapia fish farmers in Eka Marga Village, Lubuklinggau City, as evidenced by the calculated t value being greater than the t table, which is 10.181 > 0.683. The plasma core system can have a positive effect on the income of tilapia fish farmers, because it can increase productivity, quality, and the selling price of tilapia fish. In addition, this system can also help reduce cultivation risks and increase access to better technology. Therefore, the plasma core system can be an alternative for tilapia fish farmers to increase their income.
2. The cultivation development strategy has a significant effect on the income of tilapia fish farmers in Eka Marga Village, Lubuklinggau City, this is evidenced by the t-value being greater than t-table, which is 6.886 > 0.683. For an effective development strategy to increase the income of farmers that can be done is Building good coordination and communication between tilapia fish farmers and Feed and Seed Suppliers: Coordination with suppliers to ensure the availability of quality feed and seeds. Buyers: Coordination with buyers to understand market needs and determine competitive prices. Government Agencies: Coordination with relevant government agencies to comply with regulations and obtain the necessary support.

Suggestion

Based on the results of research on the influence of the Plasma Core System and Cultivation Development Strategy on the Income of Tilapia Fish Farmers in Eka Marga Village, Lubuklinggau City, the researcher tries to provide suggestions from the results of his research to help increase the income of Tilapia Fish Farmers in Eka Marga Village, Lubuklinggau City, as follows:

1. It is recommended that tilapia fish farmers with the plasma core and the fisheries service improve coordination and good communication, so that they can work together well to increase the income of tilapia fish farmers in Eka Marga Village, Lubuklinggau City.

There is a need for community empowerment in the Eka Marga Subdistrict, Lubuklinggau City, namely increasing the capabilities of local communities by holding business and service skills training and providing facilities and infrastructure to support community business activities in this case tilapia cultivation.

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