

Original Research Article

AN ANALYSIS OF GOLDFISH HATCHERY BUSINESS IN THE SITUJAYA GROUP OF SITURAJA VILLAGE, SUMEDANG REGENCY, WEST JAVA

ABSTRACT

The purposes of this study were (1) To analyze the prospect of goldfish hatchery business in Situ Jaya Group, judged from the financial aspect. (2) To formulate any goldfish hatchery alternative strategy in Situjaya Group. The eligibility analysis criteria that is applied to analyze the business feasibility are Net Benefit Cost Ratio (Net B / C), and Payback Period (PP). Furthermore, the methods which are applied to identify the factors that influenced the business development using Internal Factor Evaluation (IFE) matrix, the EFE matrix, the Strategic Matrix, and the Matrix Strengths, Weaknesses, Opportunities and Threats (SWOT), on the final phase resulted in creating alternative development strategies. Data collection method was conducted by using census method. The number of respondents were 8 people in all members of the Situ Jaya Group. Based on the non-financial feasibility analysis, the hatchery business is still weak on all non-financial aspects. Based on the results of financial analysis, it yields worth 100%. The entire value of Net B / C that obtained is greater than 1, i.e. 1.67. All PP value that obtained is 6 years 11 months 27 days. Based on the Matrix Strategy analysis that can be applied is market penetration and product development. Based on the SWOT analysis, the strategy that needs to be done is aggressive strategy which means that the business is in steady and excellent condition so it is possible to continue to expand, enlarge the growth and achieve maximum progress. While the Alternative Strategy for business development is the application of Weaknesses-Opportunities Strategy.

Keyword: Gold Fish, Prospective Analysis, Financial Analysis, SWOT

1. INTRODUCTION

The development of the fisheries sector is a process of change and renewal aimed at improving the community, especially the fishing community, to achieve development goals. Efforts are needed to develop fisheries, including through aquaculture activities. [1]

In the 1990s, the cultivation of common carp (*Cyprinus carpio*) evolved into the concept of agribusiness divided into several subsystems: hatchery, nursery, and grow-out systems. Common carp is the most cultivated freshwater fish and the oldest freshwater aquaculture commodity in Indonesia. Common carp, originating from China and Russia, has become a popular choice among the Indonesian population. [2]

In Sumedang Regency, various types of aquaculture production are developed, especially in calm water ponds. The best aquaculture production in Sumedang Regency is common carp, with Situraja Subdistrict being a significant contributor to the production, amounting to 101.65 tons per year. [3] Situ Jaya Group, located in Situraja Village, Sumedang Regency, has been cultivating common carp since 1988. Led by Mr. Yayat Akhadiat with 8 members, the group focuses on developing common carp as its main commodity. Situ Jaya Group has reached an intermediate level in hatchery and nursery stages, giving them more flexibility in expanding production compared to other groups in the area.

The increasing number of freshwater fish cultivators can have a positive impact on the economic development of Indonesia, especially in the fisheries sector. The competitive advantage of Indonesia's fisheries will continue to grow, leading to improved well-being for those working in the fisheries industry. However, this needs to be accompanied by strategic decisions and appropriate business policies by the Situ Jaya Group to ensure resilience in all circumstances. Therefore, to address this, an analysis is needed in terms of marketing aspects, technical capabilities, managerial skills, and financial analysis for the Situ Jaya Group. This will lead to alternative strategies for breeding carp that can be used by carp breeders as a direction for development to assess the business prospects and the local government's efforts in carp development.

2. MATERIAL AND METHODS

This research was conducted at the People's Seed Unit (UPR) Situ Jaya in Situraja Village, Situraja District, Jatigede Reservoir Area, Sumedang Regency, West Java. The location was purposively chosen because this unit is engaged in freshwater aquaculture, particularly carp. The research was carried out from March to August 2017.

The method used in this research is a case study method with the case unit being the Situ Jaya Fish Farmers Group, Situraja Village, Situraja District, Sumedang Regency. The sampling technique employed is a census method, which determines the sample by using all members of the population.

The analysis includes qualitative descriptive analysis and quantitative descriptive analysis. Qualitative descriptive analysis involves data processing through logical considerations with systematic writing discussions, where the data is in numerical form. On the other hand, quantitative descriptive analysis deals with numerical data or data processing using calculations, followed by descriptive analysis using the Strengths, Weaknesses, Opportunities, Threats analysis instrument (SWOT).

2. 1 Financial Analysis

Financial analysis is used to address the first objective. This financial analysis is carried out for the goldfish hatchery at the Situ Jaya Community Hatchery Unit. It is conducted quantitatively and includes business income analysis, Benefit Cost Ratio (BCR) analysis, and Payback Period (PP) analysis. [4]

2. 1. 1 Business Income Analysis

$$(\pi) = TR - TC$$

Explanation:

S = Profit

TR = Total Revenue

TC = Total Cost

2. 1. 2 Benefit Cost Ratio

BCR is a feasibility analysis to measure the level of business returns in implementing a technology, as a benchmark for revenue and costs with a formula. [5]

Essentially, the data emphasized is the magnitude of benefits. The criterion used is that farming is considered beneficial if the BCR is greater than one [6] Mathematically formulated as:

$$B/C = \frac{TR}{TC}$$

2. 1. 3 Payback Period

The Payback Period is the time it takes to recover all the costs incurred in an investment in a project. [7] This method serves as an evaluation technique for the investment recovery period of a business. The calculation is based on the net benefits obtained each year and is mathematically formulated:

$$PP = \frac{\text{Investment value}}{\text{Cash Flow}} \times 1 \text{ Year}$$

2. 2 SWOT Analysis

SWOT analysis is a systematic identification of factors that aim to formulate a regional development strategy which includes internal factors, including strengths and weaknesses, as well as external factors, including opportunities and threats that are being faced.

Table 1. SWOT matrix

	EFAS	Strengths (S)	Weaknesses (W)
IFAS			
Opportunities (O)		Strategi SO	Strategi WO
Treaths (T)		Strategi ST	Strategi WT

2. 2. 1 IFE and EFE

The analyzed data consists of internal factors (strengths and weaknesses) as well as external factors (opportunities and threats). Internal factors include human resources, financial resources, management, and marketing. External factors encompass technology, economy, social aspects, politics, and ecology, to determine the crucial factors for the company. [8]

The determination of weight is based on the influence or contribution of factors to the achievement of the main business objectives. The higher the contribution value given, the greater the weight. The ranking given to each weight is as follows:

- Number 1 = Very Poor
- Number 2 = Poor
- Number 3 = Moderate or Neutral
- Number 4 = Good
- Number 5 = Very Good

As for determining the rating, it is done by comparing the position of each factor with the main competitors. If a factor is better than the main competitors, then the rating is considered very good. In this case, letters A to D are used as symbols for assessing each factor:

- Letter A = Priority for handling is very important
- Letter B = Priority for handling is important
- Letter C = Priority for handling is quite important
- Letter D = Priority for handling is not important

Rating is given using a scale range from 1 to different assumptions for each factor. For positive factors (strengths and opportunities), the factor with the highest urgency level is given a value of 4 and a value of 1 for the lowest urgency. Whereas for negative factors (weaknesses and threats), a value of 1 is given to the factor with the lowest urgency level. [9]

Weight and rating are multiplied to determine the weighting score for each factor. The summation of weighting scores aims to obtain the total weighting score for the company. This total value can indicate the company's response to its internal and external strategic factors and can also be used to compare this company with similar ones or within the same industry group. [10]

The subtraction between the total of Strengths (S) and Weaknesses (W) aims to obtain a value on the x-axis. Similarly, the subtraction between the total of Opportunities (O) and Threats (T) aims to obtain a value on the y-axis. Thus, these two values can indicate the company's position through the point (x, y) on the SWOT diagram. [11]

2. 2. 2 IFAS and EFAS Analysis

IFAS (Internal Strategic Factors Analysis Summary) or internal factors, namely by registering all the strengths and weaknesses

that exist in the Nila village. In its presentation, factors that are positive (strengths) are written before those that are negative (weaknesses). As is the case with the external factor

identification stage or EFAS (External Strategic Factors Analysis Summary) which registers all opportunities and threats

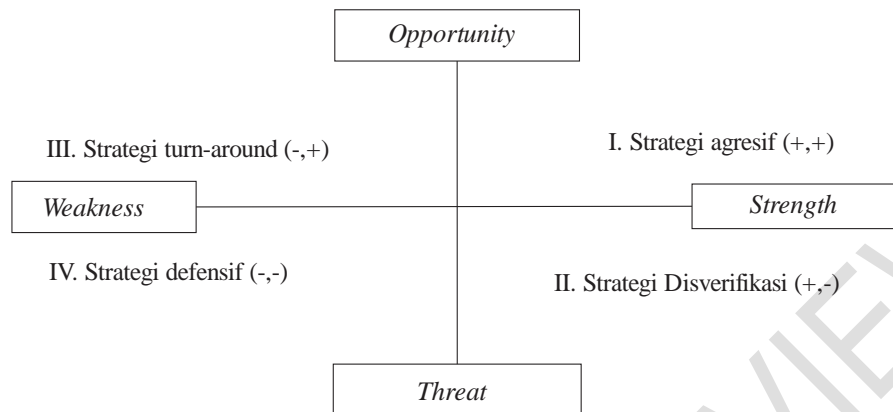


Fig. 1. Strategy matrix analysis

2.2.3 Strategy Meaning

Analysis of the meaning of the strategy is the stage of matching the results of alternative strategies that are in accordance with those that have been carried out involving the strengths, weaknesses, opportunities and threats that have been previously determined [12] This matrix produces four sets of alternative possibilities, namely SO, WO, ST and WT strategies or is called the SWOT matrix. The table contains all factors both internal and external [13] The SWOT matrix is shown in the Figure 1.

3. RESULTS AND DISCUSSION

The Situ Jaya Group is located in Situraja Hamlet RT 03/01, Situraja Village, Situraja District, Sumedang Regency. The Situ Jaya Group is the largest fish farming group in Situraja District, Sumedang Regency. The group also offers opportunities for students and the general public to conduct research and observations related to the development of science and business opportunities in goldfish cultivation. Facilities supporting the goldfish seedling in the Situ Jaya Group include feed storage warehouses, equipment storage warehouses, spawning ponds, hatching ponds, huts, rearing ponds, nursery ponds, kitchen, future breeding ponds, and a water source well.

The goldfish breeding at the Situ Jaya Farmer Group has been running since the 1980s,

conducted self-taughtly using earthen pond containers. The group consists of 10 members equipped with skills and freshwater fish farming training certificates. Administratively, the Situraja Subdistrict consists of 15 villages and is located on the Sumedang-Darmaraja route, facilitating rapid economic traffic and easy agricultural and fisheries trade supported by existing facilities and infrastructure, significantly contributing to the community's economy. Situ Jaya Farmer Group is located in Situraja Village, 17 km from the capital of the district, bordered by Tomo Subdistrict to the north, Garut District to the south, Cisu Subdistrict to the east, and Ganeas Subdistrict to the west. In terms of land characteristics, Situraja Village's irrigated rice fields cover an area of 86 ha, dry land 23 ha, yard area 11 ha, pond area 2.61 ha with an average area of 122.61 ha.

The Situ Jaya Farmer Group In Situraja Village, Situraja Subdistrict, Sumedang Regency, has considerable natural resources potential for developing fish farming businesses. The breeding site has a partly flat and slightly undulating topography with a 4-5% slope, situated at an elevation of 387 m above sea level. The humidity ranges from 56-80%. The average rainfall over the past five years is around 2,233 mm/year, with the highest rainfall in January and the lowest in August. These conditions align with the requirements for developing goldfish farming. The soil types in Situraja Village include alluvial and regosol,

with clay soil texture and clay soil structure, covering an area of 147.05 ha.

3. 1 Financial Aspect

Financial analysis is a financial study to determine the success and profit achieved during the operation of the gold fish business.

Through this analysis, breeders can make calculations and decide on actions to improve and enhance profits in their business. Investment costs are expenses that are typically incurred over a relatively long period (more than one year). These costs are usually associated with the construction or development of physical infrastructure and production capacity. The investment costs can be seen in the table 2 below:

Table 2. Investment cost

Investment Cost							
Number	Cost Component	SI	Physical Quantity	Price/unit (Rp)	Cost Value (Rp)	Economic Age (Year)	Depreciation Value (Rp)
1	Goldfish Parent	Kg	15	65.000	975.000	2	487.500
2	Fish Pond						
	Fish Holding Pond (20 x 15m)	Unit	1	10.000.000	10.000.000	10	1.000.000
	b. Fish Spawning Pond (20 x 5m)	Unit	1	8.000.000	8.000.000	10	800.000
	c. Fish care pond	Unit	1				
	c. Nursery Pond	Unit	8	10.000.000	80.000.000	10	8.000.000
3	Vehicle	Unit	1	60.000.000	60.000.000	10	6.000.000
4	Production and packing equipment						
	a. Diesel Pump	unit	3	5.000.000	15.000.000	5	3.000.000
	b. Disel Pump Hose	meters	18	5.000	90.000	5	18.000
	d. Fish Scoop	unit	15	10.000	150.000	2	75.000
	e. Broodstock Fish	unit	5	50.000	250.000	2	125.000
	f. Scoop out fish seeds	unit	3	25.000	75.000	2	37.500
	g. Worm Rake	unit	4	12.000	48.000	2	24.000
	h. Water Flea Filter	unit	3	25.000	75.000	2	37.500
	i. Hapa Grading (4x2)	unit	20	250.000	5.000.000	2	2.500.000
	j. Big Hapa (6x5)	unit	1	600.000	600.000	2	300.000
	K. Bucket 10 kg	unit	2	10.000	20.000	2	10.000
	l. Bucket 5kg	unit	2	5.000	10.000	2	5.000
	m. Scale	unit	1	350.000	350.000	5	70.000
	n. Kakaban	unit	50	5.000	250.000	2	125.000
	o. Seed Filter	unit	8	70.000	560.000	2	280.000
	p. Fish Barrel	unit	6	40.000	240.000	2	120.000
	q. Blower	unit	1	250.000	250.000	2	125.000
	r. Hoe	unit	3	60.000	180.000	2	90.000
	s. Saung (Shelter)	unit	1	4.500.000	4.500.000	5	900.000
	Total				186.623.000		24.129.500

Source: Primary Data, processed (2017)

The investment cost in the Situ Jaya group, Situraja Village, Situraja District, Sumedang Regency, amounts to Rp.186,623,000.00 with a depreciation value of Rp.24,129,500. (Land and buildings are not taken into account).

Production costs consist of two parts, namely fixed costs and variable costs. Fixed costs are expenses that remain constant regardless of whether the cultivation process is in production or not, such as land tax and depreciation costs. Fixed costs are listed in Table 3.

Number	Fixed Costs/year	Price (Rp)
1	Tax	-
2	Cost Of Depreciation	24.129.500
Total		24.129.500

Source: Primary Data, processed (2017)

Non-fixed costs (variable costs) i.e. the amount of costs used to produce ornamental fish and the amount is very depends on the amount of capacity and production period. Costs Variable costs are listed in Table 4.

Table 4. Variable Costs

Number	Cost Structure	SI	Total	Cost per unit (Rp)	Cost in 1 cycle (Rp)	Cost in 1 year (Rp)
1	Parent Feed Cost					
	a. Organic (Tofu Dregs)	Kg	50	3.000	150.000	450.000
	b. Pellets Sinta	Kg	100	8.700	870.000	2.610.000
2	Gold Fish Seeds					
	Pellets Powder Hiprofit	Kg	10	20.000	200.000	600.000
3	Management of production equipment					
	a. Pump Maintenance	Unit	3	200.000	600.000	1.800.000
	b. Blower Maintenance	Kg	3	150.000	450.000	1.350.000
	c. Fish Pond I	period	1	200.000	200.000	600.000
	d. Vehicle I	Unit		100.000	100.000	300.000
4	Electricity			100.000	100.000	300.000
5	Employee Salary				2.400.000	7.200.000
Total Variable Costs					5.070.000	15.210.000

Source: Primary Data, processed (2017)

$$\begin{aligned} \text{Total Cost} &= \text{Fixed Cost} + \text{Variable Cost} \\ &= \text{Rp. } 24.129.500 + 15.210.000 \\ &= \text{Rp. } 39.339.500 \end{aligned}$$

Soit can be concluded that the total cost incurred by Situ Jaya Farmer Group is Rp39.339.500 So it can be concluded that the total cost incurred by Situ Jaya Farmer Group is Rp39.339.500

Revenue is the amount of money obtained from the sale of a certain amount of output or in other words it is all income earned by company as a result of the sale of its production. Total cost of revenue is listed in table 5.

Number	Product	Volume	SI	Selling price	Sales Per Cycle (Rp)	Sales Per Year (Rp)
1	Gold Fish		Tail			
	a. Size 1-3	300.000	Tail	50	15.000.000	45.000.000
	b. Size 4-8	100.000	Tail	70	7.000.000	21.000.000
TOTAL		400.000			22.000.000	66.000.000

Table 5. Acceptance of Situ Jaya Group Hatchery, Situraja Village

Source: Primary Data, processed (2017)

3. 1. 1 Business Income Analysis

$$\begin{aligned} (\pi) &= TR - TC \\ &= \text{Rp.}66.000.000 - \text{Rp.}39.339.500 \\ &= \text{Rp.}26.660.500 \end{aligned}$$

Based on the results of the above calculations, it can be concluded that the Situ Jaya Group can be said to be profitable, with the amount of profit per year being IDR 26,660,500.

3. 1. 2 Benefit Cost Ratio

$$\begin{aligned} B/C &= \frac{\text{Total Revenue}}{\text{Total Cost}} \\ &= \frac{66.000.000}{39.339.500} \\ &= 1.67 \end{aligned}$$

The results of the above calculations get the result of B / C = 1.67, it can be concluded that the Situ Jaya Group can be said to be profitable in accordance with the criteria B / C > 1. So that the Situ Jaya Group is worthy of obtaining investment in its business development.

3. 1. 3 Payback Period

$$\begin{aligned} PP &= \frac{\text{Investment}}{\text{Advantage}} \times 1 \text{ year} \\ &= \frac{186.623.000}{26.660.500} \times 1 \text{ year} \\ &= 7,00 \end{aligned}$$

Based on the calculation results above, it can be concluded that investment used at the beginning of business development can be returned within 7 years.

3. 2 Business Development Direction

Researchers determine the direction of business development by identifying strengths, weaknesses, opportunities and threats to carp hatcheries in the Situ Jaya Group.

3.2.1 Internal Factor Evaluation (IFE) and external Factor Evaluation (EFE)

After analyzing the conditions external and internal conditions of the company then can be calculated the weight and rating of each factor. Giving weight and rating is based on the subjectivity conducted by researchers through observations, interviews and documentation conducted at company to assess how big or small strengths, weaknesses, opportunities and threats faced by the company. The IFE matrix can be seen in table 6.

Table 6. Matrix IFE

Internal Factors	Weight	Ratings	Score
Strength			
1. Available water from irrigation throughout the year	0.135	4.500	0.609
2. Workers are experienced and have participated in fish farming training	0.127	4.250	0.543
3. Relationship of work atmosphere to employee well-being	0.127	4.250	0.543
4. Availability of infrastructure, facilities and infrastructure to support businesses	0.127	4.250	0.543
5. Selection of quality carp fry products and raw materials	0.131	4.375	0.575
Total	1,00		2,814
Weakness			
1. Business management is not well organized	0.082	2.75	0,227
2. No investors to support business activities	0.075	2.500	0,187
3. Poor cash flow and administration records	0.056	1.875	0,105

4. Business activities are not yet in accordance with CPIB	0.063	2.125	0,135
5. Product promotion activities to support business activities	0.071	2.375	0,169
Total	1.000		0,826
Internal Score	1.000		3,640

Source: Primary Data, processed (2017)

Meanwhile, the EFE matrix used to analyze the external environment so as to obtain factors which are the opportunities and threats

faced by the Situjaya Group can be seen in table 7.

Table 7. Matrix EFE

External Factors	Weight	Rating	Score
Opportunity			
1. Seed demand as a lucrative business opportunity	0.118	3,875	0.460
2. Fisheries extension workers to support business productivity	0.122	4,000	0.490
3. Availability and stability of raw materials to improve seed quality	0.122	4,000	0.490
4. Laws, regulations and government policies as a Minapolitan area	0.130	4,25	0.553
5. The carp aquaculture and hatchery industry continues to grow	0.114	3,75	0.431
Total	1.000		2,425
Threat			
1. Changes in consumer tastes	0,076	2.5	0,191
2. Weather	0,065	2.125	0,138
3. Competitors and behavior patterns of hatcheries from outside the region	0,084	2.75	0,231
4. Management of fish pests and diseases to improve product quality	0,080	2.625	0,212
5. Technological advancement as an effort to improve business efficiency	0,084	2.75	0,212
Total	1.000		0,988
External Score	1.000		3,423

Source: Primary Data, processed (2017)

Based on the analysis that has been carried out, the calculation of coordinates in the SWOT matrix is the opportunity score minus the threat score and the strength score minus the weakness score. The results of the IFE reduction which includes internal factors obtained a result of 1.987 for the

strength factors owned by the Situ Jaya Group. The results of reducing external factors obtained a result of 1.447 in the Situ Jaya Group. Then the results are depicted in a matrix diagram of strategies that are suitable for implementation. The results of the strategy matrix can be seen in Figure 2

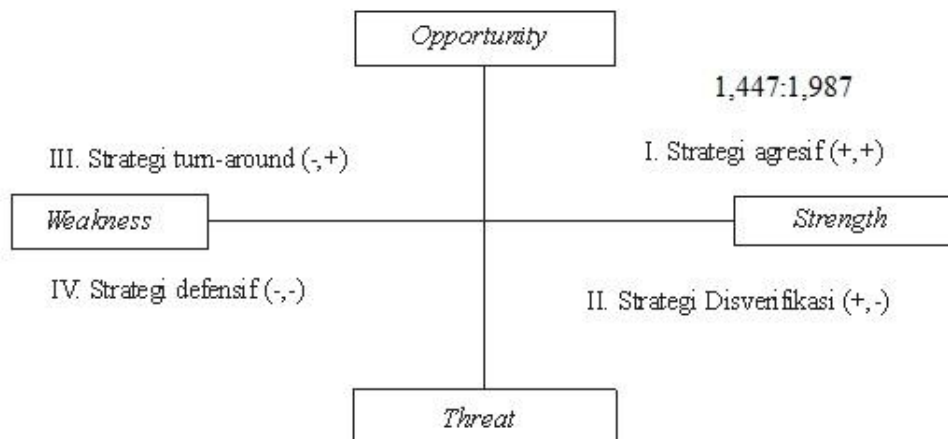


Fig. 2. Cartesian Diagram of Situ Jaya Group
 Source: Primary Data, processed (2017)

It can be seen in the figure that the matrix results (X,Y) where X is the result of reducing the EFE by 1.447 and Y is the result of reducing the IFE value by 1.987, so that the coordinates are in position (1.447: 1.987), namely quadrant I. The most appropriate strategy in Quadrant I is an aggressive strategy, namely the Situ Jaya Group mas hatchery business is a strong and opportunity business, besides that this business is also in prime and stable condition so it is possible to continue to make improvements to increase growth and achieve maximum progress. Therefore, the hatchery is advised to develop its tactical strategy.

3.2.2 Strategy Interpretation

After the input stage of the IFE and EFE analysis, the next step is to conduct a SWOT analysis by knowing the position of the business against the strengths, weaknesses, opportunities and threats owned by the Situ Jaya Group goldfish hatchery business. Based on the SWOT analysis of business development in the Situ Jaya Group, Situraja Village, it is recommended to use an aggressive strategy, namely the goldfish hatchery business is in prime and stable condition so that it can be possible to continue to make improvements, increase growth and achieve massive profits. Alternatives include the WO strategy. Further analysis of the development Strategy Matrix can be seen in table

Table 8. SWOT Matrix Situjaya Group

EFAS	IFAS	<p>STRENGTHS (S)</p> <p>S1. Geographical position and water available throughout the year</p> <p>S2. Quality and Human Resources trained in production</p> <p>S3. Relationship of working atmosphere to employee well-being</p> <p>S4. Availability of infrastructure, facilities, business support infrastructure</p> <p>S5. Selection of quality carp fry products and raw materials</p>	<p>WEAKNESSES (W)</p> <p>W1. Business management is not well organized</p> <p>W.2 No investors to support business activities</p> <p>W.3 Poor cash flow and administration records</p> <p>W.4 Business activities are not yet in accordance with CPIB</p> <p>W.5. Product promotion activities to support business activities</p>
	<p>OPPORTUNITIES (O)</p> <p>O.1 Seed demand as a lucrative business opportunity</p> <p>O.2 Fisheries extension workers to support business productivity</p> <p>O.3 Availability and stability of raw materials to improve seed quality</p> <p>O.4 Laws, regulations and government policies as a Minapolitan area</p> <p>O.5 The carp aquaculture and hatchery industry continues to grow</p>	<p>STRATEGI SO</p> <p>A strategy that uses strengths to take advantage of opportunities in the goldfish hatchery business in the Situ Jaya People's Hatchery Unit group. Such as holding regular quality control and implementing CPIB.</p>	<p>STRATEGI WO</p> <p>Strategies that minimize weaknesses to take advantage of opportunities in the goldfish hatchery business in the Situ Jaya People's Hatchery Unit group. For example, by conducting routine counseling on organizational management science and creative business.</p>
	<p>THREATS (T)</p> <p>T.1 Changes in consumer tastes</p> <p>T.2 Weather</p> <p>T.3 Competitors and behavior patterns of hatcheries from outside the region</p> <p>T.4 Management of fish pests and diseases to improve product quality</p> <p>T.5 Limited in technological</p>	<p>STRATEGI ST</p> <p>A strategy that uses strengths to overcome threats in the carp hatchery business in the Situ Jaya People's Hatchery Unit group. For example, updating hatchery support technology and conducting debriefing on its use.</p>	<p>STRATEGI WT</p> <p>Strategies that minimize weaknesses and avoid threats in the goldfish hatchery business in the Situ Jaya People's Hatchery Unit group. For example, providing material that is immediately followed by field practice regularly and periodically.</p>

Source: Primary Data, processed (2017)

4. CONCLUSIONS

Based on the research, it can be concluded that the Situ Jaya group has good business prospects and is feasible to develop, seen from the marketing aspects, technical aspects, managerial aspects and financial aspects, as well as the direction of business development.

Matrix Analysis The strategies that can be applied are market penetration and product development. Based on SWOT analysis, the strategy that needs to be carried out by the carp hatchery business in the Situ Jaya Group is an aggressive strategy, meaning that this business is in a steady and excellent condition so that it is possible to continue to expand, enlarge growth and achieve maximum progress. Therefore, the hatchery is advised to develop its tactical strategy.

While the alternatives include the WO strategy, namely: (a) Improve organizational management and good bookkeeping (b) innovate in running the hatchery business and (c) conduct partnership program activities with investors or other seeders.

Based on the conclusions in this research, suggestions that can be made by carp fish breeders in the Situ Jaya Group are continuous guidance from extension workers and the government, conducting a better promotion strategy, so that marketing can be expanded and gold fish breeders change business patterns in accordance with CPIB rules (How to Hatch Good Fish).

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