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THE FEASIBILITY OF DEVELOPING CATFISH HATCHERIES AS A BUSINESS IN MINAPOLITAN AREA OF MAGELANG DISTRICT

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ABSTRAK

Artikel ini bertujuan untuk mengidentifikasi kelayakan usaha pembenihan ikan lele dan mengetahui alternatif dan prioritas strategi yang dapat diterapkan dalam pengembangan usaha pembenihan ikan lele di Kawasan Minapolitan Kabupaten Magelang. Penelitian dilakukan di Kecamatan Muntilan, Mungkid, dan Sawangan, yang dipilih secara *purposive sampling*. Pengambilan data dilakukan menggunakan metode *snowball* dengan mewawancarai 42 responden sebagai sampel dari petani dan *stakeholder* usaha pembenihan ikan lele. Analisis data yang dilakukan pada kelayakan usaha menggunakan kriteria BEP dan R/C rasio. Faktor-faktor internal maupun eksternal dan alternatif strategi pengembangan usaha dianalisis melalui metode SWOT. Alat analisis kelayakan usaha yang digunakan adalah analisis biaya, penerimaan, dan pendapatan. Hasil analisis kelayakan diperoleh BEP penerimaan Rp 53.587.484,00, BEP produksi 255.087,71 ekor, BEP harga Rp 56,00 per ekor, dan R/C ratio 1,67. Strategi pengembangan usaha yang dapat diterapkan adalah menjaga hubungan baik dengan *stakeholder* dan memaksimalkan pengelolaan sumberdaya alam untuk pengembangan usaha karena masih rendahnya animo masyarakat dalam usaha pembenihan ikan lele, serta memanfaatkan sumber daya ahli (praktisi dan akademisi) bidang pembenihan dengan bantuan pemerintah untuk meningkatkan kualitas produk benih dan untuk perluasan pangsa pasar guna memenuhi permintaan yang semakin meningkat.

Kata Kunci: ***Kawasan Minapolitan; Kelayakan Usaha; Pembenihan Ikan Lele; Strategi.***

ABSTRACT

This article aims to identify the feasibility of catfish hatchery business and to know the alternative and strategic priorities that can be applied in the development of catfish hatchery business in the Minapolitan Area of Magelang District. Research location in sub-District of Muntilan, Mungkid, and Sawangan were chosen by purposive sampling. Data was obtained using snowball method by interviewing 42 farmers and stakeholders related to catfish hatchery business as respondents. Data analysis used on the business feasibility is BEP and R/C ratio criteria. The analysis of business development strategy used SWOT analysis. The business feasibility analysis tool used are cost analysis, revenue, and nett revenue. Feasibility analysis result obtained BEP revenue of Rp53.587.484,00, BEP production of 255.087,71 unit fish, BEP price of Rp 56.00 per-unit fish, and R/C ratio of 1,67. The development of catfish hatchery business strategies are by maintaining a good relationship with stakeholders and maximizing

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natural resources management for business development due to low interest of community on catfish hatchery business, along with utilizing expert resources (practitioners and academics) in the field of hatchery by government assistance to improve the quality of seed products and for expanding market size to meet the increased demand.

Keywords: ***Business Feasibility; Catfish Hatchery; Minapolitan; Strategy Development.***

INTRODUCTION

Hatchery is the initial activity of the implementation of catfish farming activities which needs a good handling (Lutfiyah, Karyadi, and Suratiningsih, 2012). One of the supporting factors of successful fish farming is determined by the availability of qualified seeds, in term of quality, quantity, and continuity. Seeds which are available in large quantities but has low quality will only burden the effort of fish enlargement cultivation, because the results are unbalanced with the quantity of feed that are given. Meanwhile, the limited number of good quality seeds will not increase the production of the fish enlargement cultivation since it will lead to a serious lack of seeds.

Because the seeds are important for farmers in the cultivation business, seed farmers are expected to produce good quality and sustainable seeds. Multiple stages has to be done to develop the seeds properly. Those stages should be implemented with the best strategy to develop the hatchery business (Yulinda, 2012). This business development strategy is carried out in order to provide an alternative solution of catfish seeds farmer problem which is to improve the welfare of the farmers. In addition, it is also expected to contribute to the productivity of catfish hatchery (Handayani, Zulkarnaini, and Syafriadiman, 2015). SWOT analysis can be used as a strategy tool to find out what steps need to be done in the development of hatchery business (Rahmawati and Hartono, 2012).

Magelang District is one of ten districts in Central Java Province designated as Minapolitan Area. The policy has been established through the Decree of the Minister of Marine Affairs and Fisheries No.35 KEP.72/KEPMEN-KP/2013 concerning the determination of Minapolitan Area in Central Java for aquaculture commodities (Fachriyan, Bambang, and Muslim, 2015). Minapolitan is a development model that uses excellence-based regional and a region developmental approach through optimal utilization of existing natural resources. The cultivation area approach is built through the implementation of the principle of economic togetherness between the aquaculture activities. Therefore, it acquires in additional value through the utilization of technological efficiency of production facilities, the process of cultivation, processing and marketing of the results by considering the aspects of the sustainability of natural resources and the environment.

Based on this background, the researchers are interested in conducting a research on the financial aspects and business development strategies of catfish hatcheries in Minapolitan Area of Magelang District. This study aims to (1) identify the feasibility of the business of catfish hatchery financially, and (2) to know the alternative and strategic priorities that can be applied in the development of catfish hatchery business in the Minapolitan Area of Magelang District.

Method

Researchers use descriptive qualitative analysis method as basic method. The researchers use descriptive analysis develop a strategic development of cultivation fishery area based on previous analysis results and existing problem in research location collected through questionnaire (Ambasari, Gandasasmita, and Sudadi, 2013). Regarding site selection, the locations of the research are located in three sub-districts which are considered to be the center of the fishery business or minapolitan area in Magelang District. Those districts are the Muntilan sub-district, Mungkid sub-district, and Sawangan sub-district.

The research time period for primary and secondary data collection was conducted during February-April 2018. The respondents are farmers and stakeholders related to the catfish

hatchery in Minapolitan area of Magelang District, Central Java Province. The with drawal and selection of samples was done using non-probability sampling since the number of the population were unknown (Nurdiani, 2014). The researcher used snowball sampling method in a population which consists of the Department of Animal Husbandry and Fisheries, hatchery farmers, enlargement cultivation farmers, suppliers of agricultural production, collector merchants, and retailers. According to (Alwi, 2012), to use a normal distribution to get close to a binomial distribution, the number of respondents needed has to be between 30 and 500. To that end, the researcher used the limited data given by the Department of Animal Husbandry and Fisheries to select 42, all of whom has relevant information or influence with the Analysis unit.

For data collection, this study uses primary data collected by the researchers as the results of interviews, while the secondary data obtained indirectly from the official documents or annual reports of various related parties taken from the data of related agency/office, such as: DISPETERIKAN, BAPPEDA, and BPS. Then, the collected data was tabulated and analyzed using the following methods:

1. The Analysis of Cost and Revenue

The researchers conducted farming analysis to assess the feasibility of a business investment including the calculation of investment cost, operational cost, and revenue (Rosalina, 2014) Calculating farming analysis in fisheries business is generally done within a one year period, and is performed by calculating the actual cost components incurred by farmers from fixed cost, variable cost, and income calculation which is the difference between all revenue with the total cost of expenditure during the process (Sari, Tua, and Tabanan, 2012).

2. The Analysis of Business Feasibility

After calculating the cost and revenue, business feasibility is analyzed to see and assess the current catfish hatchery farming system as well as to find feedback for further business development (Mahyuddin, Mahreda, Mustika, and Febrianty, 2014). Business feasibility can be measured from a variety of criteria, in which in this case may use: break event point (BEP) analysis, revenue/cost ratio, benefit/cost ratio, payback periods, net present value, profitability index, internal rate of return, not fixed or variable costs (Nasarudin, 2013). Costs on catfish hatchery business can be classified into investment cost (fixed cost) which is the cost used before the business, and operational costs (variable costs) which is the cost incurred when the business runs and already produce a product. Then, the researchers calculated the revenue of the hatchery business. The calculation involves the result of investment cost component, operational cost, and revenue is used to calculate BEP and R/C ratio (Ken Suratiyah, 2008).

a. Business Profits

$\pi = TR-TC$

π = Profit
TR = total revenue/revenue
TC = total cost/cost

b. BEP Revenue

FC / (1- VC / S)
FC = Fixed costs
VC = variable cost
S = Revenue

c. BEP Production

FC / (P-AVC)
FC = Fixed costs
P = Production price
AVC = variable cost per unit

d. BEP Price

TC/Y
TC = Total cost
Y = Total production

e. R/C Ratio

R/C = TR/TC
R/C = Comparison of total revenue with total costs incurred during one period
TR = Total revenue
TC = Total cost

3. Development Strategy

The researcher performed strategy formulation by identifying the internal and external factors from the farmers of catfish

hatchery and stakeholders. Questionnaire instruments of the internal and external factors that have been identified are then tested for their validity and reliability. If the result of the validity test with 5% error rate is according to a criteria above 95% significance level and the reliability test result is above criterion 0,600, then the internal and external factor can be analyzed by SWOT(Yuwani, Irham, and Jamhari, 2014).

To analyze the research data, the researcher uses the SWOT analysis or SWOT matrix, an analytical instrument used to analyze the internal environment of strengths, weaknesses, and external environment of opportunities and threats (Imawan, 2014). In the SWOT analysis, the collected internal and external factor data are given weight and rating. The weight is determined by considering the importance of each statement item in a factor, that is the total value of each factor of strength, weakness, opportunity and threat. Meanwhile, the rating is determined by farmer sample and the related parties as many as 42 respondents. The multiplication of the weight of each statement item with its rating will yield a weighted value for each factor of strengths, weaknesses, opportunities, and threats, so that the researcher can obtain and identify the difference between the factors and the coordinate point.

RESULTS AND DISCUSSION

The Analysis of Cost, Revenues, and Nett Revenue

Farming analysis was done to know how big the investment, cost elements, production level to be achieved, the profitable selling price, and the amount of profit that will be achieved by the farmers in the hatchery business in Minapolitan area of Magelang District.

1. Business Financing Analysis

Costs are the amount of money spent by the farmers for their hatchery business. The costs calculated in this study are the costs actually incurred by the farmers in their hatchery business during a year hatchery season. Fixed and variable costs are a crucial part of a financial analysis. The total expenses incurred by any business, including catfish hatchery, consist of fixed costs and variable costs. The amount of investment cost incurred in the business of catfish hatchery in the Minapolitan Region of Magelang District can be seen in Table 1.

Table 1
Average Business Investment Cost of Catfish Hatching in Minapolitan Region of Magelang District for One Year Hatchery Season

No	Component Cost	Physical Amount	Total Cost (Rp)
1	Catfish (unit)	69	5.999.160
2	Pool		
	a. Pond of Catfish (m2)	22,08	3.907.590
	b. Pond Maintenance of Larvae/Seed (m2)	4235,71	16.142.680
3	Pumps (piece)	1	1.391.667
4	Others (rupiah)		1.281.350
Total Investment Cost			28.722.447

Table 1 shows that the average total of investment cost incurred by the farmers in t.heir hatchery business in Minapolitan Area of Magelang District for one year hatchery season is Rp28,722,447.00 with the details of Rp5,999,160.00 (21%) for the cost of providing the production facilities which covers the cost of the catfish, Rp3,907,590.00 (14%) for the cost of constructing permanent catfish pond, Rp16,142,680.00 (56%) for the construction cost of larviculture ponds, Rp1,391,667/00 (5%) for the cost of water pumps, as well as Rp1,281,350.00 (4%) for miscellaneous expenses (including the purchase cost of kakaban, net, seser, bucket, and other equipment purchase costs).

Meanwhile, the amount of operational costs incurred by the farmers in the effort of catfish hatchery in the Minapolitan Area of Magelang District can be seen in Table 2.

Table.2.
Average Operational Cost of Catfish Hatchery Business in Minapolitan Area of Magelang District for One Year Hatchery Season

No	Structure of Operational Cost	Physical Amount	Total Cost (Rp)
1	Cost of Catfish Feed:		
	Pellet (kg)	314,20	3.219.601
2	Cost of Catfish Seeds Feed:		
	Silkworm (gallon)	80,37	6.541.667
	Seed Pellets (kg)	112,85	14.338.533
3	Production Workers (people)	29	42.600.000
4	Land Lease (m2)	6788,62	11.831.343
5	Treatment Pumps (year)	1	382.556
6	Pond Treatment (persons)	25	8.013.333
7	Others		11.942.000
Total Operating Costs			98.869.033

The average total of operational cost incurred by the farmers of catfish hatchery in one year hatchery season as shown in Table 2 is Rp98,869,033.00 with the details of Rp3,219,601.00 as the cost of pellets for feed, Rp6,541,667.00 as the cost of silk worm for catfish seed feed, Rp14,338,533.00 as pellet cost for seed feed, Rp42,600,000,00 for labor cost, Rp11,831,343.00 for land rent, Rp382,556.00 for pumping treatment cost, Rp8,013,333.00 for pool treatment cost and Rp11,942,000.00 for Miscellaneous expense.

2. Business Profit Analysis

After knowing the total cost of catfish hatchery business, the amount of nett revenue by reducing the revenue with the total costs can be known. Farmers' revenue from their catfish hatchery business in the form of catfish seeds which are ready to be sold with various sizes on demand, which can be seen in the table of factors of production, therefore, it can give the result of sales revenue. Factors of production are all components that support a production process, both production of goods and services. Production factors of catfish seeding business can be seen in Table 3.

Table 3
Average Use of Production Factors on Catfish Hatchery Business in Minapolitan Area of Magelang District for One Year Hatchery Season

No	Description	Value/Amount
1	Month Work Year (month)	9
2	Larva Production:	
	a. Number of larvae per cycles (unit)	3.360.050
	b. Larva Death Rate (%)	47,5
3	Number per Business Scale (unit)	3
4	Output, Production, and Price:	
	a. The production of catfish seeds per month (unit)	189.833,3
	b. The production of catfish seeds per year (unit)	2.278.000
	c. Sale Price of Catfish (Rp./unit)	156

No	Description	Value/Amount
	d. Harvest Time (days)	42
	e. Sales Results (days)	1
	f. Damage to Raw Materials and Products (%)	12,2
5	Labor: Production of Catfish seeds per Month (person)	2
6	Interest Rate per Year (%)	7
7	Proportion of Capital:	
	a. Credit (%)	0
	b. Own Capital (%)	100

Fish farmers can sell their products directly to buyers or through traders. The buyer is generally a merchant/wholesaler and a direct consumer, who will take it directly from the pond, thereby it reduces the harvesting costs including transportation and labor. The selling price of catfish seeds from farmers in the research area is relatively stable, which is on the average of Rp156,00 per unit for the size of 4-6 cm catfish seeds. The cost, revenue, and nett revenue of catfish hatchery business in Minapolitan Area of Magelang District can be seen in Table 4.

Table 4
Average Production, Revenue, Cost and Nett Revenue of Catfish Hatchery in Minapolitan Area of Magelang District for One Year Hatchery Season

No	Average	Description
1	Production (unit)	2.278.000
2	Revenue (Rp)	213.076.000
3	Total Cost (Rp)	127.591.479
4	Income (Rp)	85.484.521

Table 4 shows the average production of catfish seeds in Minapolitan Area Magelang District for one year as many as 2,278,000 fishes. The amount of farmer's revenue during one stocking season is Rp213,076,000.00 with a total cost incurred is Rp127,591,479.00 so that nett revenue received by the farmer is equal to Rp85,484,521.00 or equal to Rp7,123,710.00 every month. The nett revenue per m^2 of ponds during a stocking season is Rp12,592.00.00 so that the greater the pool, the greater the income obtained.

Business Feasibility Analysis

Break Event Point (BEP) is a point where the position of the amount of nett revenue and cost is equal, so there is no profit or loss in a farm business. BEP analysis can also be used by the farmers for decision-making, for example the minimum amount of products that must be sold or the amount of sales to be maintained and the amount of sales should be saved, in the form of decreased volume sold so that the company will not face losses, to know the effect of selling price changes, and the cost or volume of sales to the profit earned. The calculation of Break Event Point for the farming of catfish hatchery in Minapolitan area of Magelang District is as follows:

1. BEP Revenue (Rp)

BEP revenue is the amount of revenue obtained where the farmer is in a position either the farmers face loss or profit. In other words, BEP revenue explains the minimum amount of revenue that must be obtained by farmers in their business.

BEP revenue = FC/(1-VC/S)
= Rp 28,722,447.00 / (1 - Rp 98,869,033.00 / Rp213,076,000.00)
= Rp 53,587,484.00

The result of BEP Revenue is Rp53,587,484.00, which means that catfish hatchery farmers need to get a total revenue greater than BEP Revenue in order to get greater benefits in their business. From the result of the research, it was found that the revenue of catfish hatchery farmer during the planting season (Rp213.076.000,00) is much bigger than BEP Revenue (Rp53.587.484,00),

so it can be concluded that the hatchery business is feasible to be cultivated because it is profitable or revenue > BEP Revenue.

2. BEP Production (unit fish)

BEP production is the amount of production produced where the farmer earns a profit of zero. In other words, BEP production describes the minimum amount of production that must be produced by the farmers in their business in order not to lose.

BEP production (unit) =FC/(P-AVC)
= Rp 28,722,447,00 / (Rp 156.00 - Rp 43.00)
= 255,087.71 unit fishes

It is obtained that the results of BEP Production is 255,087.71 fishes of catfish seeds, meaning that farmers need to produce more from BEP Production in order to obtain more revenues and profits, so it is obtained that the average production of catfish hatchery farmers (2.278.000 unit fishes) is more than BEP Production (255.087,71 unit fishes). Therefore, it can be concluded that the hatchery business is feasible to be cultivated because it is profitable or production > BEP production.

3. BEP Price (Rp/unit fish)

BEP price is the level or magnitude of the price per fish as the product produced where the farmers are in a position of does not have any loss and any profit. In other words, BEP price explains the minimum price for per fish set by the farmer.

BEP price (Rp/unit fish) = TC/Y
= Rp 127,591,479,00 / 2,278,000 unit
= Rp 56.00 per unit

It is obtained for the results of BEP price of Rp56.00 per unit fish which means that the farmers of catfish hatchery must sell their products above the BEP price in order to gain profit in their business, so it can be seen that the price (Rp156.00 per-unit fish) is greater than BEP price (Rp56.00 per-unit fish). Therefore, it can be concluded that this catfish hatchery business is feasible to be cultivated because it is profitable, or the selling price > BEP price.

4. Analysis of Revenue Cost Ratio (R/C)

Analysis of Revenue Cost Ratio (R/C) is a business efficiency analysis, which is an analysis of a size comparison between business revenue with total cost. Therefore, when the value of R/C is obtained, it can be known whether a business is profitable or unfavorable. This R/C ratio is the number of ratios used to see the relative profits to be gained in a business project. The calculation of Revenue Cost Ratio for the farming of catfish in Minapolitan area of Magelang District is as follows:

R/C = TR/TC
= Rp213,076,000.00 / Rp127,591,479.00
= 1.67

Therefore, it is found that the efficiency of the farming system of catfish hatchery in Minapolitan Area of Magelang District is 1.67, which means that the farming is efficient, so it can be said that this business is feasible because R/C ratio > 1. R/C of 1.67 means that every Rp1.00 of the cost incurred at the start of this farming activity will provide a revenue of 1.67 times the cost incurred. It also indicates that the higher R/C value of a business project, the higher the level of profit that will be obtained by the company.

Table 5.
Summary of Business Feasibility of Catfish Hatchery in the Minapolitan Area of Magelang District for One Year Hatchery Season

Description	Business Conditions	BEP	Conditions	Appropriateness Description
Revenue (Rp)	213,076,000	53,587,484	Revenue > BEP revenue	Feasible
Production (unit)	2,278,000	255,087.71	Production > BEP production	Feasible
Price (Rp/unit)	156	56	selling price > BEP price	Feasible
Revenue (Rp/Year)	Total Cost (Rp/Year)	R/C Ratio	Standard	Description Appropriateness
213.076.000	127.591.479	1.67	1	Feasible

Seen from the summary in Table 5, that from the results of BEP Revenue, BEP Production, BEP Price, and R/C ratio obtained, it can be concluded that the catfish hatchery business in the Minapolitan Area of Magelang District is feasible.

Test Validity and Reliability

Prior to conduct a SWOT analysis in the development strategy of catfish hatchery business in Minapolitan area of Magelang district, it is necessary to test the validity and reliability on the statement/question variables on each internal factor (strength and weakness) and external factor (opportunity and threat). This validity test aims to find out how far the accuracy of a measuring instrument in performing the measuring function. It says valid if R-Count > R-Table, and it is invalid if R-Count < R-Table. Valid result of validity test for swot factor in this research can be seen in Table 6.

Table 6.
Validity Test of Business Development Strategy of Catfish Hatchery in Minapolitan Area of Magelang District

Indicators	Internal Factor		External Factor	
	Strength	Weakness	Opportunity	Threat
Statement 1	0.162	0.599*	~~0.064~~	0.355*
Statement 2	0.453*	0.577*	-0.074[a]	0.128
Statement 3	0.478*	0.576*	0.135	0.072
Statement 4	0.074	0.614*	0.328*	~~0.131~~
Statement 5	0.340*	0.613*	0.417*	0.364*
Statement 6	0.403*	0.636*	0.240	0.231
Statement 7		0.715*		
Statement 8		0.631*		

Description: 0.000* Valid
~~0.000~~ Invalid

From Table 6, it can be seen that any statements used on significant strengths, weaknesses, opportunities, and threats at a 95% confidence level (n=42, r-table of 0,304) or with a 5% error rate indicate that the validity test results of the internal factors for the conclusions of the strength variable indicator included are the second, third, fifth, and sixth statement/question (S2, S3, S5, and S6). The validity test results of internal factors for all statement/question indicators of the weakness variable (W1, W2, W3, W4, W5, W6, W7, and W8) are concluded valid. The validity test results from external factors for the fourth and fifth statement/question indicators (O4 and O5) are considered valid. The validity test results of the external factor for the indicator of the threat variable that are the first and fifth statements/questions (T1 and T5) are considered valid.

Meanwhile, the reliability test is conducted with the aim to know the consistency or extent to which measurements can be trusted. Questionnaire statement/question is said to be reliable if Alpha > R-Table or Cronbach Alpha is greater than alpha comparator 0.600, and not reliable if Alpha < R-Table or less than alpha comparator 0.600. Reliability test results can be seen in Table 7.

Table 7.
Reliability Test of Business Development Strategy of Catfish Hatchery in Minapolitan Area of Magelang District

Variable	Cronbach Alpha	Alpha Comparator	Description
Strength	0.975	0.600	Reliable
Weakness	0.998	0.600	Reliable
Opportunities	0.999	0.600	Reliable
Threat	0.924	0.600	Reliable

From the reliability test result in Table 7, we get the cronbach alpha value of all statement variables used in determining factors of strength, weakness, opportunity, and threat greater than comparative alpha value, so it can be concluded that the statement is reliable. This suggests that the statements used in determining internal factors (strengths

and weaknesses) and external factors (opportunities and threats) are reliable.

SWOT analysis

A business unit must be able to recognize its environment in the face of a business competition to survive and develop, whether it is internal environment and external environment. Internal environments are the advantages and disadvantages that have to describe the business unit itself, while the external environments are the opportunities and threats which can affect the business unit. Therefore, SWOT analysis should consist of strength, weakness, opportunity, and threat to obtain strategic formulation.

Internal factors consist of strength and weakness factor obtained by observation of catfish hatchery farming directly and thoroughly. These factors can be a guideline formulating formulate a strategy of developing a catfish hatchery farm in the Minapolitan area of Magelang district in the future. Here are the results of weighted scores for each of the internal factors.

Table 8
Summary Matrix of Internal Factor Analysis Strategy (IFAS) Catfish Hatchery Business in Minapolitan Area of Magelang District

Internal Key Factor		Weighted	Rating	Weighted Score
Strength				
S2	Good relationship with stakeholders	0,10	3,38	0,34
S3	The existence of support and assistance from the Regional Government of Magelang Regency for facilities and infrastructure	0,15	1,6	0,25
S5	Availability of expert human resources (practitioners and academics) cultivation of catfish hatchery	0,10	2,69	0,26
S6	Adequacy of natural resources that support catfish hatcheries	0,15	3,67	0,55
Total Strength				1,40
Weakness				
W1	Limited capital and owned land	0,10	2,05	0,20
W2	Still low quality of catfish owned fish	0,05	2,52	0,12
W3	The quality of seeds is still low	0,05	2,55	0,13
W4	The production is still less	0,05	2,36	0,12
W5	The ability of access to information, technology, and market owned as a guarantee of the survival of business is still low	0,05	2,43	0,12
W6	Method production process is still less optimal	0,05	2,31	0,11
W7	Financial management business is still simple	0,10	2	0,20
W8	Quality of employees cultivation is still low	0,05	2,71	0,13
Total Weakness				1,15
Total Difference Factor Internal = S-W = 1,40-1,15 = 0,25				

Based on Table 8, the results obtained that the weighted score of the strength factor (1.40) is greater than the weakness factor (1.15), and yields a positive value on the X axis (0.25).

External factors consist of opportunity and threat obtained by collecting information related to the external environment of catfish hatchery cultivation. These factors can be a consideration to formulate a strategy of developing a catfish hatchery farm in the Minapolitan area of Magelang district. Here are the weighted scores for each external factor items.

Table 9.
Summary Matrix of External Factor Analysis Strategy (EFAS) of Catfish Hatchery Business in Minapolitan Area of Magelang Regency

External Key Factor		Weighted	Rating	Weighted Score
Opportunity				
O4	There are still a few competitors in the local area	0,30	2,71	0,81
O5	Increased demand for processed catfish products	0,20	2,69	0,54
Total Opportunities				1,35
Treath				
T1	Fluctuations in fish feed price increases	0,30	2	0,60
T6	The weather and extreme climate resulted in the threat of diseases that attack catfish seeds resulting in fluctuations in fish production and productivity	0,20	1,14	0,23
Total Threats				0,83
Total External Factor Difference = O-T = 1,35-0,83 = 0,52				

Based on Table 9, it was found that the result of weighted score of opportunity factor (1.35) was greater than the threat factor (0.83), and yielded positive value on Y axis (0.52).

From the calculation of the weighted value of internal and external factors, then it is obtained the results of coordinates (X, Y) to be plotted on the SWOT diagram. The weighted value is derived from the multiplication of weights and ratings. The scores of internal and external factors are presented in Table 10.

Table 10.
Score of Internal and External Factors

Criteria	Total Weighted Value	Sum
Internal factors		
Strength (+)	1.40	0.25
Weakness (-)	1.15	
External Factors		
Opportunities (+)	1.35	0.52
Threat (-)	0.82	

Table 10. shows that a prominent factor is the probability and strength factor, because the difference in each factor is positive. The subtraction results in each internal and external factors are plotted into the SWOT diagram. The total factor external strategy scored 0.52, which is greater than the total internal strategy factor score of 0.25. It shows that the factors of external strategy have effects on the development of catfish hatchery business in Minapolitan area of Magelang district compared with internal strategy factor.

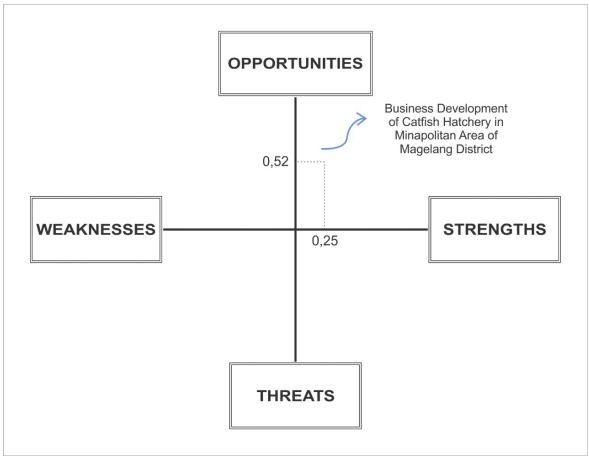

Figure 1.
SWOT Diagram of Business Development Strategy of Catfish Hatchery in the Minapolitan Area of Magelang District

Figure 1 shows that the position of catfish hatchery business in Minapolitan Area of Magelang District is located in Quadrant I. The business development strategy supports the aggressive growth by maximizing strength and exploiting the opportunities. By maximizing the exiting strength, one can de-

velop a strategy that is suitable in the catfish hatchery business.

Business Development Strategy

SWOT Matrix is one of the common tools used to develop strategic factors in the development of a business. This matrix can clearly illustrate how the external factors of the opportunities and threats encountered can be adapted to internal factors of strengths and weaknesses. Similarly, in compiling the strategic factors in the development of catfish hatchery business in the Minapolitan Area of Magelang District, the researchers used SWOT matrix.

Table 11.
SWOT Matrix Strategy of Business Development of Catfish Hatchery in Minapolitan Area of Magelang District

IFAS / EFAS	Strength (S) S2 Maintain a good relationship with stakeholders S3 Support and assistance from the Regional Government of Magelang Regency for facilities and infrastructure are available S5 Expert resources (practitioners and academics) in cultivation of catfish hatchery are available S6 Catfish hatcheries are supported by natural resources	Weakness (W) W1 Limited capital and owned land W2 Still low quality of catfish owned fish W3 The quality of seeds is still low W4 The production is still less W5 The ability of access to information, technology, and market owned as a guarantee of the survival of business is still low W6 Method production process is still less optimal W7 Financial management business is still simple W8 Quality of employees cultivation is still low
Opportunity (O) O4 There are still a few competitors in the local area O5 Increased demand for processed catfish products	SO Strategy SO1 Keeping the good relationships with stakeholders and maximizing natural resources management for business development while there are a few competitors in the local area as an opportunity (S2, S6, O1) SO2 Human resources (practitioners and academics) in the business hatchery are ready to cooperate to maximize the utilization of government assistance to improve the quality of catfish, seed products and expanding market size to meet the increased demand (S3, S5, O5)	WO Strategy
Threats (T) T1 fish feed price fluctuates and can get more expensive T6 The weather and extreme climate resulted in the threat of diseases that attack catfish seeds, resulting in fluctuations in fish production and productivity	ST Strategy	WT Strategy

SWOT matrix analysis results show that the strategy in the development of catfish hatchery business in Minapolitan area of Magelang regency is based on SO strategy because the strength and opportunity factors are more prominent than the weakness and threat factor. Development strategy is done by maximizing the power and exploit the opportunities that exist.

1. Maintaining a good relationship with stakeholder and maximizing natural resources management for business development while there are few competitors in the local area as an opportunity (SO1: S2, S6, O1)

We can keep up a good relationship with stakeholders by strengthening partnerships, maximizing services, maintaining customers, and maintaining communication. Existing natural resources such as a good irrigation system and the available land must be managed with good management and structured development. Keeping up a good relationship with stakeholders and maximizing natural resources management can help the farmers develop their catfish hatchery business while local competitors are not abundant, so it is expected to increase employment opportunities and improve the public economy.

2. Utilizing experts (practitioners and academics) in the business hatchery to maximize the use of government assistance to improve the quality of catfish, seed products and meet the demand of the expanding market size (SO2: S3, S5, O5)

The many academic and practitioners of catfish hatchery cultivation who are supported by the amount of aid facilities and infrastructure from the government should be utilized optimally to maintain and improve the quality of catfish and seed products. This is done to improve product competitiveness, expand market share, increase production volume and meet the growing demand for seed products.

CONCLUSION

Based on the results of research on catfish hatchery business in the Minapolitan Area of Magelang District, we can conclude that the Catfish hatchery farm in Minapolitan area of Magelang District is profitable and is ready to be developed using the BEP analysis (BEP revenue, production, and price) and R/C ratio analysis. The position of catfish hatchery farming system is in the first quadrant of the SWOT diagram, which means that the strategy supports aggressive growth. One of the suitable strategies for the development of catfish hatchery business is the aggressive growth policy (SO strategy) that is done by maximizing the strength to pursue available opportunities.

The strategies in the development of catfish hatchery business can be done through maintaining a good relationship with stakeholder and maximizing natural resources management for business development while there are few competitors in the local area as an opportunity. Utilizing experts (practitioners and academics) in the business hatchery to maximize the use of government assistance to improve the quality of catfish, seed products and meet the demand of the expanding market size.

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