

# Feasibility of Haruan Snakehead Fish Breeding Units for Recipients of Non-Cash Government Assistance Revitalization of People's Seedling Units (UPR) in Hulu Sungai Tengah District, South Kalimantan Province

Idiannor Mahyudin<sup>1</sup>, Emmy Sri Mahreda<sup>2</sup>, Herry Kurniawan<sup>3</sup>

<sup>1,2</sup>Faculty of Fisheries and Marine Science, Lambung Mangkurat University, Banjarbaru, South Kalimantan 70714, Indonesia

<sup>3</sup>Master of Fisheries Science Faculty of Fisheries and Marine Science, Lambung Mangkurat University, Banjarbaru, South Kalimantan 70714, Indonesia

Corresponding Author: Idiannor Mahyudin

DOI: <https://doi.org/10.52403/ijrr.20240551>

## ABSTRACT

Haruan snakehead fish, as one of Indonesia's fisheries germplasm wealth, has an important role as a source of animal protein and buffers the stability of inflation rates in the Kalimantan region. The feasibility factor is expected to make a significant contribution to the development of the local fisheries sector and related government policies at the regional level. The research aims to analyze the feasibility of the local haruan fish hatchery business for recipients of government assistance in the form of revitalizing the People's Hatchery Unit (UPR) in Hulu Sungai Tengah Regency, South Kalimantan Province. Research activities take place in the Mufakat Group, Mahang Baru Village, South Labuan Amas District, Hulu Sungai Tengah Regency - Province South Kalimantan. Sampling was carried out using the proportional sampling method, namely samples were taken deliberately from Haruan snakehead fish cultivators who received grant assistance. The total number of respondents was 1 Cultivator Group. Feasibility of the Haruan snakehead fish hatchery unit for recipients of

non-cash government assistance for revitalizing people's hatchery units (UPR) in Hulu Sungai Tengah Regency, South Kalimantan Province Hulu Sungai Tengah, South Kalimantan Province, with different discount rates, the present value (NPV) snakehead fish cultivation business obtained a value of Rp. 189,533,025, which shows that this project can provide financial benefits. The Internal Rate of Return (IRR) value of 56% indicates a fairly high rate of return, exceeding the interest rate generally available on the market. The payback period (PP) is 1.76 years

**Keywords:** *Haruan Snakehead Fish, Feasibility, Revitalization, HST*

## INTRODUCTION

Haruan snakehead fish (*Channa striata*) is a local fish from South Kalimantan, and is also a type of fish that has high economic value, both in fresh form and in preserved or dried form. Supandi et al, (2015) Haruan snakehead fish cultivation is currently increasingly developing, because raising this fish is relatively easy and very profitable (Froese and Pauly, 2010). Based on data

from the Ministry of Maritime Affairs and Fisheries (KKP), Indonesia's Haruan snakehead fish production reached 117,624 tons with a value of IDR 4.63 trillion in 2021, where total production increased by 5.63% compared to the previous year which was 111,359 tons with a value of IDR 4.05 trillion. Sourced from inland water catches amounting to 60,583.42 tons in 2021 and from cultivation results amounting to 53,743.46 tons.

Haruan snakehead fish cultivation has not been fully carried out optimally, even though market demand for Haruan snakehead fish is quite high. Apart from that, the haruan snakehead fish produced so far has been obtained from catches found in nature. The high fishing yield causes a decline in the population of the Haruan snakehead fish in nature, therefore it is necessary to carry out hatchery business activities for the Haruan snakehead fish so that it can continue continuously and sustainably and can prevent the extinction of the Haruan snakehead fish in nature (Hanifa, et al. 2014).

The Mandiangin Freshwater Cultivation Fisheries Center as a technical implementation unit of the Ministry of Maritime Affairs and Fisheries has produced an academic manuscript on domesticated haruan snakehead fish in 2014 and in 2015 through the Decree of the Minister of Maritime Affairs and Fisheries of the Republic of Indonesia Number: 18/KEPMEN-KP/2015 concerning Release The Haruan Snakehead Fish has officially released (realist) the Haruan Snakehead Fish variety.

The government's seriousness in developing haruan snakehead fish cultivation is outlined in the Regulation of the Director of Aquaculture Number. 160/PER-DJPB/2021 concerning Amendments to the Regulations of the Director General of Aquaculture Number 37/PER-DJPB/2021 concerning Technical Instructions for Assistance for the Revitalization of Community Hatchery Units and Household Scale Hatcheries for the 2021

Fiscal Year, which specifically includes a menu of assistance for Local Fish Hatcheries. In 2023, Hulu Sungai Tengah Regency, through the Decree of the Minister of Maritime Affairs and Fisheries of the Republic of Indonesia Number: 111 of 2023 concerning Cultivated Fisheries Villages, has been designated as the Haruan snakehead fish Cultivated Fisheries Village (KPB). Cultivated Fisheries Village is an area based on superior commodities and/or local commodities by synergizing various potentials to encourage the development of competitive and sustainable fish cultivation businesses, preserving fish resources, and driven by the community so as to guarantee continuous and scheduled production.

Study of the financial condition of the Haruan snakehead fish cultivation business to provide an overview of the feasibility of the Haruan Snakehead fish hatchery business using the facilities and infrastructure of a local fish hatchery model for further development. This research focuses on analyzing the feasibility of businesses receiving government assistance in the form of revitalizing the People's Seeding Unit (UPR) in Hulu Sungai Tengah Regency, South Kalimantan Province.

Evaluation of the business feasibility of the Haruan snakehead fish hatchery unit which received non-cash assistance from the government in revitalizing the UPR in the area. This analysis covers economic aspects, thus providing a comprehensive picture of the impact and feasibility of the haruan snakehead fish hatchery business in the context of UPR revitalization in Hulu Sungai Tengah Regency. Profitability and feasibility factors are expected to make a significant contribution to the development of the local fisheries sector and related government policies at the regional level. The research aims to analyze the feasibility of the local fish hatchery unit Haruan snakehead fish for recipients of government assistance in the form of revitalizing the People's Hatchery

Unit (UPR) in Hulu Sungai Tengah Regency, South Kalimantan Province.

## MATERIALS & METHODS

Research activities took place in the Mufakat Group of Mahang Baru Village, South Labuan Amas District, Hulu Sungai Tengah Regency - South Kalimantan Province. Sampling was carried out using the proportional sampling method, namely samples were taken deliberately from Haruan

snakehead fish cultivators who received grant assistance. The total number of respondents was 1 Cultivator Group.

Data analysis was carried out quantitatively on financial (financial) aspects consisting of various investment criteria values such as: Net Benefit Cost Ratio (Net B/C), Net Present Value (NPV), Internal Rate of Return (IRR), and Payback Period (PP). Where each investment eligibility criterion has eligibility value requirements as in table 1 below:

**Table 1 Criteria for Investment Eligibility Requirements in Financial Analysis**

No.	Eligibility Criteria	Eligibility Requirements
1	Net Benefit Cost Ratio (Net B/C)	B/C > 1
2	Net Present Value (NPV)	NPV > 0
3	Internal Rate of Return (IRR)	IRR > Bank interest
4	Payback Period (PP)	PP < Economic Life Period

### 1. Net Benefit-Cost ratio (Net BCR)

Net BCR is a comparison between total benefits and total costs, formulated as follows:

Net BCR =	Total Profit
	Total Cost

Where: Net BCR = Comparison between total benefit and total cost

Benefit = The amount of profit obtained

Cost = The amount of costs incurred

If:

B/C < 1, it indicates that the Haruan snakehead fish hatchery business is not worth pursuing; And

B/C > 1, meaning that the Haruan snakehead fish hatchery business is worth pursuing.

B/C = 1, meaning that the Haruan snakehead fish hatchery business is not profitable and breaks even;

### 2. Net Present Value (NPV)

NPV is the net benefit received over the life of a cultivation business at a certain discount rate. NPV is an analysis carried out to see how much an investment is worth by considering changes in currency values. NPV shows the difference between the

present value of profits and costs. The calculation of Net Present Value (NPV) (Adi, 2011) is as follows:

$$NPV = \frac{\sum_{t=1}^n Bt - Ct}{(1+i)^t}$$

Information:

Bt = 1st Year Benefit (Rp)

Ct = Costs for the tth year (Rp)

n = Economic life of the business (years)

i = applicable interest rate

t = year

Kriteria nilai NPV  
a. NPV > 0, meaning that the business of cultivating snakehead snakehead fish is feasible

b. NPV < 0, meaning that the business of cultivating haruan snakehead fish is not feasible. In other words, the project is detrimental and not worth running.

c. NPV = 0, meaning that the business of cultivating snakehead fish must be able to return as much capital as the social opportunity cost factor of normal production. So, it is better to keep the capital or funds in the bank because it is more profitable.

In 2024, the interest rates applicable to savings and deposits will vary from each bank, namely around 2.0% - 8.0% and based on tracking the highest interest rates for deposits applied by PT. Bank Neo Commerce Tbk. namely 8% per year.

### 3. Internal Rate Return (IRR)

IRR analysis is an analysis that makes the interest rate the sum of the present value of the proceeds expected to be received equal to the sum of the present value of capital expenditures. The calculation of Internal Rate Return (IRR) (Dahlan, 2011) is as follows:

$$IRR = \frac{NVP1}{NPV1 - NPV2} (i2 + i1)$$

Information:

NPV1 = NPV at the interest rate  $i1$

NPV2 = NPV at the interest rate  $i2$

$i1$  = 1st Interest Rate

$i2$  = 2nd Interest Rate

Criteria:

- a. If  $IRR > i$  = Haruan snakehead fish farming is worth pursuing
- b. If  $IRR < i$  = Haruan snakehead fish cultivation business is not worth pursuing

A business project is worth pursuing if the  $IRR >$  applicable bank interest (Choliq et al., 1999: 38). The IRR value must be higher than MARR (Minimum attractive rate of return) or minimum rate of return. If the IRR value is smaller than the MARR value, it can be concluded that the investment is not feasible for the company. If this is done, the company will suffer a loss because the amount of money spent on investment is greater than the amount of money it will receive.

Data from the Financial Services Authority, the Basic Credit Interest Rate (SBDK) as of December 31 2023 ranges from 5.89% - 18.31% for micro business credit. The description states that a business is attractive to pursue if the Minimum Attractive Rate Of Return value is above the basic credit interest rate, namely 18.31%.

### 3. Payback Period (PP)

Payback Period (PP) is a simple method for measuring how long it takes to recoup the initial investment in a project or venture. Haruan snakehead fish business calculation formula, to calculate the Payback Period using the following formula:

$$Payback\ Period\ (PP) = \frac{Initial\ investment}{cash\ inflow\ per\ period}$$

Information:

- Initial Investment is the amount of money invested initially in the haruan snakehead fish business.
- Cash Inflow per Period is the positive cash flow generated by the business each period. This could be in the form of net profits obtained from selling haruan snakehead fish.

Criteria:

$PP <$  Economical Life Period, Haruan Snakehead Fish Hatchery Business, Feasible

$PP >$  Economic Life Period, Haruan Snakehead Fish Hatchery Business, Not Feasible

$PP =$  Economic Life Period, Haruan Snakehead Fish Hatchery Business, Break Even

## RESULT

Hulu Sungai Tengah Regency also uses land for fish cultivation businesses such as cage cultivation, minapadi, fishpen, ponds, tarpaulin/plastic ponds and swamp ponds will be developed, with goldfish, tilapia, catfish, catfish and toman as commodities. Aquaculture production is also supported by existing fish cultivator groups. Fisheries production is divided into 2 (two), namely aquaculture production and capture fisheries production, for fishing carried out in public waters (rivers and swamps). To increase capture fisheries production, the government develops aquatic resources in a sustainable and sustainable manner and optimizes the potential of environmentally friendly, biodiversity-oriented waters. Efforts to increase cultivation production and especially abundant fishing production to increase selling prices are carried out by processing such as salting and fermentation, processing groups. This condition makes the fisheries potential in Hulu Sungai Tengah Regency more advanced and developed so that it can compete with other districts.

The government assistance program for the Revitalization of People's Seeding Units and Household Scale Hatcheries is one of the policy programs of the Ministry of Maritime Affairs and Fisheries of the Republic of Indonesia. Based on the Regulation of the Director General of Aquaculture Number 37/PER-DJPB/2021 and the Regulation of the Director General of Aquaculture Number 160/PER-DJPB/2021 concerning Technical Guidelines for the Revitalization of Community Hatchery Units and Household Scale Hatcheries, assistance is given in the form of comprehensive goods (building new) or in part as needed,

Supporting the increase in aquaculture production requires quality fish seeds. The availability of fish seeds requires community participation so that seed needs in various regions can be met. The current condition of UPR and HSRT needs to be further improved in quantity and quality. UPR and HSRT still have very broad opportunities for development, in order to encourage the strengthening of UPR and HSRT institutions and encourage the development of freshwater, brackish and marine fish hatchery businesses. So that on TA. In 2021, in order to encourage increased production of fish seeds in the community, the Directorate General of Aquaculture will provide assistance for the revitalization of UPR and HSRT infrastructure.

The objectives of implementing Assistance for the Revitalization of People's Hatchery Units and Household Scale Hatcheries for the 2021 Fiscal Year are: to increase the production of freshwater fish seeds and brackish/marine water fish seeds to meet seed needs in various regions; encouraging institutional strengthening of recipients of assistance for the revitalization of People's Seeding Units and Household Scale Hatcheries; and the development of freshwater, brackish/marine fish hatchery businesses.

Facilities and Infrastructure for the Community Hatchery Unit (UPR) for Local

Gabus Haruan Fish in Mahang Baru Village, South Labuan Amas District, Hulu Sungai Tengah Regency-South Kalimantan Province is an implementation of Minister of Maritime Affairs and Fisheries Regulation Number 2/PERMEN-KP/2021 and Regulation of the Director General of Fisheries Aquaculture Number 37/PER-DJPB/2021 as well as Regulation of the Director General of Aquaculture Number 160/PER-DJPB/2021, where UPR/HSRT Revitalization Assistance is provided in the form of goods, either completely (new building) or in part according to need, with a menu of assistance on the facilities and local fish hatchery unit infrastructure as follows:

1. Fish tank  
1 piece
2. Spawning tank  
16 piece
3. Nursery tank  
6 piece
4. Larvae rearing tub/tank  
16 piece
5. Local Fish Broodstock  
25 pairs
6. Fish feed (Broodstock and fry)  
1 Packet
7. Pump and water installation (installed) 1 Packet
8. Electrical Installation (installed)  
1 Packet
9. Fisheries Equipment  
1 Packet
10. Water Quality Equipment  
1 Packet

Facilities and infrastructure for the revitalization of the UPR/HSRT Pokdakan Mufakat-HST, based on data from BPBAT Mandiangin, were completed and handed over to the group on December 15 2021 based on the Minutes of Handover of Authorization of Property Users Number: KPB.1020/BPBAT.MDG/PL.433/ XII/2021. According to Kasmir and Jakfar (2012) a business feasibility study is an activity that studies in depth about an activity or business that will be carried out, to determine whether

or not a business is worth running. A business feasibility study is research into a business plan that not only analyzes whether the business is feasible or not, but also when it is routinely operated in order to achieve maximum profits for an undetermined period of time, for example a plan to launch a new product. Suliyanto (2010) states several differences between a business feasibility study and a business plan based on the research data source, research compiler, objectives of the feasibility study and

business plan, research time, and the costs required for each.

To determine the level of business feasibility, Net Present Value (NPV) and Internal Rate of Return (IRR) are used. These three criteria are more commonly used and account for specific uses (Kadariah, 1998). Darda et al., (2019). The net value of investment (Net Benefit of Cost, NBC) is the difference between net profit and initial investment costs of a project or business. The analysis results are presented in the following table:

**Table 2. Results of Feasibility Analysis of Haruan Snakehead Fish Cultivation Business**

Year To	Investment	Inflow	Outflow	Cash Flow	Present Value	DF
0	138,374,463		138,374,463	(138,374,463)	(138,374,463)	20%
1		120,000,000	41,786,602	78,213,398	65,177,832	20%
2		120,000,000	41,786,602	78,213,398	54,314,860	20%
3		120,000,000	41,786,602	78,213,398	45,262,383	20%
4		120,000,000	41,786,602	78,213,398	37,718,653	20%
5		120,000,000	41,786,602	78,213,398	31,432,210	20%
6		120,000,000	41,786,602	78,213,398	26,193,509	20%
7		120,000,000	41,786,602	78,213,398	21,827,924	20%
8		120,000,000	41,786,602	78,213,398	18,189,937	20%
9		120,000,000	41,786,602	78,213,398	15,158,281	20%
10		120,000,000	41,786,602	78,213,398	12,631,900	20%
		1,200,000,000	556,240,483	643,759,517	189,533,025	

**NPV = Rp. 189.533.025**

**IRR = 56%**

**PP = 1.76 Years/ 1 Year 9 Months 7 Days**

From the results of the feasibility analysis of the Haruan snakehead fish cultivation business, it can be seen that the initial investment was IDR. 138,374,463 produces varying inflows and outflows every year over a 10year period. From the present value (NPV) analysis, a value of Rp. 189,533,025, which shows that this project can provide financial benefits. The Internal Rate of Return (IRR) value of 56% indicates a fairly high rate of return, exceeding the interest rate generally available on the market. The payback period (PP) is 1.76 years or the equivalent of 1 year 9 months 7 days, indicating that this investment can be returned in a relatively short time.

However, it is important to consider risk factors that may influence the results of this analysis. Variables such as market price fluctuations, changes in regulations, and environmental factors need to be considered to ensure the sustainability of the haruan

snakehead fish farming business. Careful planning regarding business management and operations is also the key to success in optimizing investment results in the haruan snakehead fish cultivation business.

The initial investment is significant, reflecting the characteristics of the haruan snakehead fish farming business which requires large capital investment and generates sustainable income from fish sales. The profitable NPV confirms that the cultivation of haruan snakehead fish is a business that can provide significant financial benefits in the long term.

The high IRR value in the research shows that the cultivation of haruan snakehead fish has the potential for higher returns compared to the market interest rates that are generally available. This is attractive to investors looking for investment opportunities with attractive rates of return. The relatively short payback period (PP), as observed in this

study, provides additional confirmation to previous literature that investment in haruan snakehead fish cultivation can be returned in a relatively short time, strengthening that the business has a good level of liquidity.

The success of revitalizing the UPR and HSRT of the local Haruan snakehead fish hatchery can be assessed through several indicators and factors covering economic, social, environmental and sustainability aspects. The following are several factors that can be used to assess the success of the Haruan snakehead fish hatchery grant program:

1. Fish Production:

- Increased production of Haruan snakehead fish after grant recipients started carrying out hatching activities.
- Increasing the number of fish successfully produced, both in individual numbers and total weight.

2. Increase in Cultivator Income:

- Assessment of whether farmers who received grants experienced an increase in income after developing the Haruan Snakehead fish cultivation business.
- A comparison of income before and after the grant program can provide an idea of the impact on farmer welfare.

3. Absorption of Labor:

- Evaluate whether this program has succeeded in having a positive impact on employment in the local community.
- Increased employment opportunities in fish hatchery, maintenance, harvesting and distribution activities.

4. Business Sustainability:

- Analysis of the extent to which the Haruan snakehead fish hatchery unit that received the grant is able to operate sustainably after the grant period ends.
- Consideration of farmers' ability to finance business operations without depending on government grants.

5. Environmental Impact:

- Evaluate the impact of the program on the aquatic environment, including whether it helps in the sustainable management of fish resources and reduces pressure on wild fish stocks.
- Efforts to maintain water quality, waste management and balance of aquatic ecosystems.

6. Community Empowerment:

- Review of whether this program has succeeded in empowering local communities in developing knowledge, skills and independence in managing fish farming businesses.
- Active community participation in all stages of cultivation and decision making.

7. Economic Benefits:

- Calculation of the net profit generated from the Haruan snakehead fish hatchery business after considering all production costs.
- Increased economic added value in local communities.
- Evaluation of the extent to which the Haruan snakehead fish products from this program are accepted in the market, both local markets and other potential markets.
- Increased market access and effective utilization of distribution channels

## CONCLUSION

Feasibility of the Haruan snakehead fish hatchery unit business for recipients of non-cash government assistance for the revitalization of people's hatchery units (UPR) in Hulu Sungai Tengah Regency, South Kalimantan Province. Different discount rates, present value (NPV) snakehead fish cultivation business, obtained a value of IDR. 189,533,025, which shows that this project can provide financial benefits. The Internal Rate of Return (IRR) value of 56% indicates a fairly high rate of return, exceeding the interest rate generally

available on the market. The payback period (PP) is 1.76 years.

**Declaration by Authors**

**Acknowledgement:** None

**Source of Funding:** None

**Conflict of Interest:** The authors declare no conflict of interest.

**REFERENCES**

1. "Amount of UMP and UMK 2024 in South Kalimantan Province", Click to read: <https://regional.kompas.com/read/2023/12/05/231523678/besar-ump-dan-umk-2024-di-provinsi-south-kalimantan?page=all>.
2. Augustin, DY. 2017. Business Feasibility Analysis and Strategy for Purse Seine One Boat System Fishery Business Development in the Muncar Water Area. Utilization of Fisheries resources. Brawijaya University. Poor
3. Courtenay, Jr., Walter R. and James D. Williams. 2004. *Channa striata* USGS Circular 1251: Snakeheads (Pisces, Chinnidae) - A Biological Synopsis and Risk Assessment. U.S. Department of the Interior, U.S. Geological Survey. 143 pages.
4. Dahlan. (2011). "Decision Making Methods: System Analysis and Design." Andi Publisher, Yogyakarta.
5. Darda, et al. (2019). "Analysis of the Net Value of Investment in Cultivating Haruan Snakehead Fish." *Journal of Economics and Business*, 10(2), 120-135.
6. Director General of Aquaculture Number 160/PER-DJPB/2021. Amendment to the Director General of PB Regulation Number 37/PER-DJPB/2021 Revitalization of People's Seeding Units and Household Scale Hatcheries. Indonesian Ministry of Maritime Affairs and Fisheries. 18 pages
7. Director General of Aquaculture Number 37/PER-DJPB/2021. Revitalization of People's Seeding Units and Household Scale Hatcheries. Indonesian Ministry of Maritime Affairs and Fisheries. 37 pages
8. Release document "Domestication of haruan snakehead fish" 2015, Mandiangin Freshwater Cultivation Fisheries Center, 88 pages
9. Hanifa, M., Kader, A., Sheela, P.A.J., Kavitha, K., and Jais, A.M.M., 2014, Salutory value of haruan, the triped snakehead *Channa striatus*-a review, *Asian Pacific Journal of Tropical Biomedicine*, 4, S8 -S15
10. Humaerah, et al. (2014). "The Effect of Income on Company Financial Performance: Case Study of the Manufacturing Industry in Indonesia." *Journal of Financial Management*, 10(2), 120-135.
11. Kadariah. (1998). "Fundamentals of Financial Management." PT. Raja Grafindo Persada, Jakarta.
12. Cashmere & Jakfar. (2012). "Business management." PT. Raja Grafindo Persada, Jakarta.
13. Mustapha, Moshood, Benedict, U., and Okafar. 2012. Effects of three different photoperiods on the growth and body coloration of juveniles. *Archive of Polish Fisheries* 20: 55-59.
14. Rismawati, et al. (2017). "Investment Analysis in the Tilapia Floating Net Caramba Business." *Journal of Marine and Fisheries Economics*, 5(1), 45-58.
15. Soekartawi. (2001). "Farm Management: Theory and Application." Publisher PT Rajagrafindo Persada, Jakarta.
16. Subanar, Harimurti. 1994. *Small Business Management*. BPEFE. Yogyakarta
17. Suliyanto. (2010). "Financial management." Andi Publisher, Yogyakarta.
18. Supandi I.T., Usman M.T., and Putra.S. 2015. Feeding Made with Different Protein Content On Growth And Survival Rate (*Chana striata*) Fingerlings. Student of the Fisheries and Marine Sciences, Faculty, Riau University
19. Yusuf & Kurniawan. (2019). "Feasibility Study of Tilapia Floating Net Caramba Business." *Journal of Fisheries Management*, 12(2), 78-91.

How to cite this article: Idiannor Mahyudin, Emmy Sri Mahreda, Herry Kurniawan. Feasibility of haruan snakehead fish breeding units for recipients of non-cash government assistance revitalization of people's seedling units (UPR) in Hulu Sungai Tengah District, South Kalimantan Province. *International Journal of Research and Review*. 2024; 11(5): 432-439. DOI: <https://doi.org/10.52403/ijrr.20240551>

\*\*\*\*\*