***Original Research Article***

# The Exchange Rate Analysis of Catfish Cultivators: A Case Study in Sindangwangi Majalengka Indonesia


**ABSTRACT**

*Majalengka Regency has great potential in the fisheries sector, because the availability of water in some areas is quite abundant even though it is in the dry season. This welfare of fish farmers can be seen using the Fish Farmer Exchange Rate Analysis (NTPI). I analyzed NTPI for catfish farmers in Majalengka Regency using a case study method, with sampling techniques, namely purposive sampling. Primary data was obtained from catfish farmers in Sindangwangi District, Majalengka Regency and secondary data were obtained from related agencies analyzed using NTPI. The results obtained in this study indicated that NTPI hatcheries catfish in Sindangwangi District have NTPI of 94%, which is NTPI<100 meaning that catfish hatchery cultivators are not yet at the prosperous level, while for NTPI catfish enlargement in Sindangwangi District had NTPI of 105% or NTPI>100 indicating that catfish enlargement cultivators have reached a prosperous level.*



*Keywords : Majalengka, NTPI, Fish Cultivator, Catfish*



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## 1. INTRODUCTION

West Java is one of the provinces in Indonesia with the availability of abundant marine and land fisheries resources (Center for KKP Data, Statistics, and Information 2018). The fisheries sector has the potential to drive the economy both at the macro, national and micro levels whereby Majalengka Regency in the country has great potential in the fisheries sector. Based on data from the Food Security, Agriculture and Fisheries Service of Majalengka Regency (2020), the fishing area of Majalengka Regency consists of 554.62 Ha of calm water ponds, 121.20 Ha of rice fields, 178.95 Ha of lake, 231.65 Ha of swamp, checkdam 10.40 Ha, and river 513 Ha.

Freshwater fish production data in Majalengka Regency recorded total fishery production of 1,481.44 tons in 2015, 1,948.03 tons in 2016, and ,1,662.23 tons (2017), 1,427.38 tons (2018) and 1,458.38 tons, in 2019 making it included in the four residences that produce the highest fish production in West Java.

The welfare of fish cultivators in the Majalengka Regency was calculate through the Fish Cultivator Exchange Rate (NTPI). NTPI is the ratio between the price index received by fish farmers (It) and the price index paid by fish farmers (Ib), which is expressed in percentage terms.

The fisheries sector is considered vulnerable to poverty when most cultivators have small land or only work on land owned by others. This paper is intending to report some findings on the research conducted to analyze the NTPI of catfish cultivators in the Majalengka Regency, especially in the Sindangwangi District.

## 2. METHODS

This research was carried out in Sindangwangi District, Majalengka Regency, West Java. We conducted the research using a case study methods with a questionnaire approach.

### 2.1 Types and Sources of Data

The study we conducted used both primary data and secondary data. Primary data obtained direct from the field through direct interviews with respondents using questionnaires. Secondary data were gathered from the available libraries and related sources such as libraries, the internet, and other general information.

### 2.2 Sampling technique

The samplingWe used purposive sampling technique, which involves certain considerations such as respondent involvement and respondents' willingness to be interviewed.
The respondents we considered met several criteria such as being:
1) Catfish cultivators.
2) Fish farmers who live in Sindangwangi District, Majalengka Regency.
3) Fish farmers with at least 5 years of work experience.
4) Fish farmers who are willing to be interviewed.

### 2.3 Data analysis

A quantitative descriptive analysis was used to describe a phenomenon in a population. The NTPI formula is as follows.

$$\mathbf{NTPI} = \frac{\mathbf{It}}{\mathbf{Ib}} \mathbf{x\ 100\%}$$

Whereas:
NTPI : Exchange Rate of Fish Farmers (%)
It : Price Index Received by Fish Farmers
Ib : Price Index Paid by Fish Farmers

NTPI of more than 100 means that fish farmers have higher incomes than their expenses, or have a surplus. NTPI of less than 100 means that fish farmers'

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expenses for household consumption and production costs are higher than their means that the income of business results is equal to expenses for household consumption costs and production needs.

## 3. RESULT AND DISCUSSION

### 3.1 Characteristics of Research Locations

#### 3.1.1 Physical Overview of the Region

A map of Sindangwangi District is presented in Figure 1. Sindangwangi District has a population of 32,576 people of which 16,250 are men and 16,326 women. The are has an average population density of 1,026 inhabitants / $km^2$, with the highest density residing in Jerukleueut Village with a density of 1,919 people / $km^2$ and the lowest density located in Bantaragung Village with a density of 374 people / $km^2$ (BPS Majalengka 2020).

Sindangwangi subdistrict is located in hilly area just below the foot of Mount Ciremai. It has land and rice fields that elevating a height of 169 meters above sea level with a slope of land between 15-40%. Sindangwangi District has regosol, grumosol, and latosol type of soil with soil properties of a pH of 6-7 or neutral (Sindangwangi District, 2020).

business income. While NTPI equals 100

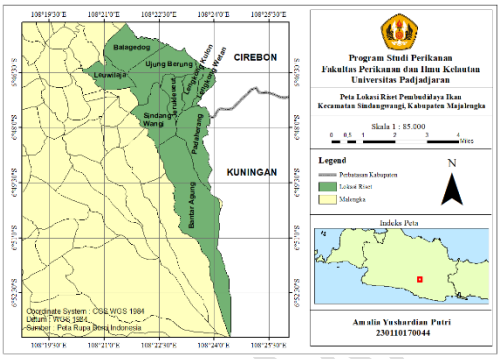


**Figure 1**. A map showing Research Location in Sindangwangi District (Source: Rupa Bumi Indonesia Map)

#### 3.1.2 Overview of the Fishery

**a) Aquaculture Business Activities**

Freshwater fish farmers in Sindangwangi District are also involved in other business activities such as Calm Water Ponds, Heavy Water Ponds, rice *mina,* and lakes (Table 1).

**b) Aquaculture Production**

The superior commodities in Sindangwangi District are catfish, tilapia, and baung because of high production and have been developed quite well. (Majalengka Regency Food Security, Agriculture, and Fisheries Office, 2020). There are 137 fish farmers who belong to nine groups of fish farmers in Sindangwangi District.

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### 3.2 General Characteristics of Respondents

#### 3.2.1 Age

The age structure according to BPS (2013), is divided into three groups, namely (a) the young age group, under 15 years old; (b) productive age group, ages 15 - 64 years; and (c) the age group, age 65 years and above. A total of 44 respondents were in the age range of 15 - 64 years and 1 respondent was in the age range of >65 years (Table 1).

#### 3.2.2 Education

The characteristics of respondents based on education level consist of elementary, junior high, high school and college levels (Table 2).

#### 3.2.3 Work Experience

Characteristics of fish farmers in Sindangwangi District indicated to have work experience for 6-10 years as many as 35 people (78%), followed by work experience for 1-5 years as many as 6 people (13%), and work experience for >10 years with a percentage of 9% (table 3). Work experience has a positive relationship with work productivity.

#### 3.2.4 Number of Family Members

The characteristics of respondents based on the number of family members consisted of three groups, namely small family members (1-3 people), medium family members (4-6 people), and large family members (more than 6 people) (Purwanto & Taftazani 2018). The characteristics of respondents based on the number of family members can be seen in Table 4.

**Table 1.** Respondent Age Range Data

| Respondent Age (Year) | Number (Person) | Percentage (%) |
|---|---|---|
| < 15 | 0 | 0 |
| 15-64 | 19 | 97 |
| >65 | 1 | 3 |
| **Total** | 20 | 100 |

Source: Primary Data Processed (2021)

**Table 2**. Respondent Education Level

| Education Level | Number (Person) | Percentage (%) |
|---|---|---|
| Elementary school | 3 | 15 |
| Junior high school | 5 | 25 |
| Senior high school | 11 | 55 |
| University | 1 | 5 |
| **Total** | 20 | 100 |

Source: Primary Data Processed (2021)

**Table 3.** Respondents' Work Experience

| Work Experience | Number (Person) | Percentage (%) |
|---|---|---|
| 1-5 year | 3 | 15 |
| 6-10 year | 14 | 70 |
| >10 year | 3 | 15 |
| **Total** | 20 | 100 |

Source: Primary Data Processed (2021)

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**Table 4.** Respondent Family Member

| Number of Members | Number (Person) | Percentage (%) |
|---|---|---|
| Few (1-3 person) | 9 | 45 |
| Average (4-6 person) | 11 | 55 |
| Many (>6 person) | 0 | 0 |
| **Total** | 20 | 100 |

Source: Primary Data Processed (2021)

### 3.3 Overview of Aquaculture Business in Sindangwangi District

There are two aquaculture business identified in this research namely catfish hatchery efforts and catfish enlargement efforts.

#### 3.3.1 Catfish Hatchery Business

Catfish hatchery business in Sindangwangi District is divided into two aspects, namely technical activity and economic activity.

**A. Technical activity**

Catfish hatchery efforts in Majalengka Regency, especially Sindangwangi District are mostly do with natural techniques, but there are also those who use semi-natural techniques with the help of hormones. Natural spawning (natural spawning) catfish is carried out in the ratio of 1:1 (female:male) that have mature gonads with relatively the same size of brood, then the fish spawn within one night. The colonized brood are picked up and separated into different containers to perform recovery. Eggs that have hatched are given feed in the form of a decoction of egg yolk for 1-2 days, then given silkworms as the main feed of seeds. Larval maintenance lasts for approximately 14 to 18 days until the majority of catfish fry reaches a size of 2-3 cm ready for sale.

**B. Economical activity**

The economic benefits of catfish seeding hatchery include investment costs, operational costs, and revenue.

a. Investment cost

Investment costs are the costs that its uses can last for a relatively long time (more than a year). Investment costs are usually related to the construction or development of physical infrastructure and production capacity (Karimah *et a*l., 2012). The investment cost of catfish hatchery business is presented in Table 5.

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| No. | Land area (m2) | Description | Unit | Amount | Unit price (Rp/unit) | Total | Economic Life (yr) | Depreciation (Rp/yr) | Depreciation (Rp/cycle) | Proportion of Cost (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | <1000 | Ponds Construction | Unit | 3 | 4.500.000 | 13.500.000 | 8 | 1.687.500 | 153.409 | 92 |
| | | Main Production Equipment | Unit | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Manufacture of feed and goods warehouses | Unit | 1 | 800.000 | 800.000 | 5 | 160.000 | 14.545 | 5 |
| | | Production Support Equipment | Unit | 1 | 300.000 | 300.000 | 1 | 300.000 | 27.273 | 2 |
| | | | | | **Total** | 14.600.000 | | 2.147.500 | 195.227 | 100 |
| 2 | 1000 - 2000 | Fish | pack | 1 | 4.000.000 | 4.000.000 | 1 | 4.000.000 | 363.636 | 13 |
| | | Ponds Construction | unit | 6 | 5.000.000 | 30.000.000 | 9 | 3.333.333 | 303.030 | 95 |
| | | Main Production Equipment | unit | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Manufacture of feed and goods warehouses | unit | 1 | 1.000.000 | 1.000.000 | 5 | 200.000 | 18.182 | 3 |
| | | Production Support Equipment | unit | 1 | 500.000 | 500.000 | 1 | 500.000 | 45.455 | 2 |
| | | | | | **Total** | 31.500.000 | | 4.033.333 | 366.667 | 100 |
| 2 | >2000 | Fish | pack | 1 | 4.000.000 | 4.000.000 | 1 | 4.000.000 | 363.636 | 10 |
| | | Ponds Construction | unit | 7 | 5.000.000 | 35.000.000 | 9 | 3.888.889 | 353.535 | 85 |
| | | Main Production Equipment | unit | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Manufacture of feed and goods warehouses | unit | 1 | 2.000.000 | 2.000.000 | 5 | 400.000 | 36.364 | 5 |
| | | Production Support Equipment | unit | 1 | 800.000 | 800.000 | 1 | 800.000 | 72.727 | 2 |
| | | | | | **Total** | 41.000.000 | | 8.288.889 | 753.535 | 100 |

**Table 5.** Investment Cost of Catfish Hatchery Cultivation Business

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b. Operational cost

Operational costs are costs incurred or carried out while in the production process (Karimah *et al.*, 2012). Operational costs in the hatchery business of catfish cultivation in Sindangwangi Subdistrict consist of two parts, namely fixed costs and non-fixed costs.

Fixed cost is the cost that is not consumable in use in one production period and costs that are not affected by the size of production (Padangarang, 2010). The fixed costs of catfish farming business are employee and electricity costs.

Non-fixed costs (variable costs) are a number of costs used to produce fish and the amount depends largely on the amount of capacity and the period of production in question. These non-fixed costs change in number and the change is proportional to the unit of activity (Padangarang, 2010). The non-fixed cost of the catfish farming business consists of feed, fertilizer / vitamin / medicine, and disinfectant.

The cost of producing catfish hatchery in Sindangwangi District can be seen in Table 6.

| No. | Land Area ($m^2$) | Description | Total Cost (Rp) | Proportion of Cost (%) |
|---|---|---|---|---|
| 1 | <1000 | Official | 400.000 | 14 |
| | | Electricity | 200.000 | 7 |
| | | Feed | 2.000.000 | 69 |
| | | Fertilizer/vitamin/drug | 300.000 | 10 |
| | | Disinfectant | - | - |
| | **Total** | | 2.900.000 | 100 |
| 2 | 1000-2000 | Official | 1.300.000 | 16 |
| | | Electricity | 450.000 | 5 |
| | | Feed | 6.000.000 | 73 |
| | | Fertilizer/vitamin/drug | 500.000 | 6 |
| | | Disinfectant | - | - |
| | **Total** | | 8.250.000 | 100 |
| 3 | >2000 | Official | 1.800.000 | 11 |
| | | Electricity | 600.000 | 4 |
| | | Feed | 14.000.000 | 82 |
| | | Fertilizer/vitamin/drug | 600.000 | 4 |
| | | Disinfectant | 200.000 | 1 |
| | **Total** | | 17.000.000 | 100 |

**Table 6.** Catfish Hatchery Production Cost
Source: Primary Data Processed (2021).

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c. Revenue
It is the amount of money earned from the sale of a number of outputs or in other words any income earned by the proceeds from the sale of its production (Musa and Amiludin 2005). The cost of receiving catfish hatchery business is presented in Table 7.

**Table 7.** Catfish Hatchery Business Revenue

| No. | Land Area ($m^2$) | Description | Total |
|---|---|---|---|
| 1 | <1000 | Glass Selling Price (Rp) | 13.000 |
| | | Annual Sales Results (Rp) | 28.250.000 |
| | | Annual Net Earner (Rp) | 26.830.000 |
| | | Monthly Clean Discharge (Rp) | 2.235.833 |
| | | Annual production (glass) | 2.173 |
| 2 | 1000-2000 | Glass Selling Price (Rp) | 13.000 |
| | | Annual Sales Results (Rp) | 69.750.000 |
| | | Annual Net Earner (Rp) | 65.250.000 |
| | | Monthly Clean Discharge (Rp) | 5.437.500 |
| | | Annual production (glass) | 5.365 |
| 3 | >2000 | Glass Selling Price (Rp) | 13.000 |
| | | Annual Sales Results (Rp) | 123.000.000 |
| | | Annual Net Earner (Rp) | 113.250.000 |
| | | Monthly Clean Discharge (Rp) | 9.437.500 |
| | | Annual production (glass) | 9.462 |

Source: Primary Data Processed (2021)

### 3.3.2 Catfish Cultivation Enlargement Efforts

The effort to enlarge catfish cultivation in Sindangwangi District is divided into two aspects, namely technical activity, and economic activity.

**A. Technical activity**

Things that need to be considered in the technical aspect are the determination of location, production capacity, layout, selection of cultivation containers, production processes, use of fish feed, fish medicine, fertilizers, probiotics, disinfectants, other chemicals, and completeness of technical studies (Kep. Men KKP 2007).

**B. Economical activity**

The economic sustainability of catfish farming includes investment costs, operational costs, and revenue.

a. Investment costs are the costs that it uses that can last for a relatively long time (more than a year). Investment costs are usually related to the construction or development of physical infrastructure and production capacity (Karimah *et al*., 2012). The cost of investing in catfish enlargement business is presented in Table 8.

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**Table 8.** Catfish Enlargement Business Investment Costs

| No. | Land Area ($m^2$) | Description | Unit | Total | Unit Price (Rp/unit) | Total | Economic Age (yr) | Depreciation (Rp/th) | Depreciation (Rp/yr) | Proportion of Cost (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | <1000 | Pool Construction | Unit | 4 | 4.500.000 | 18.000.000 | 8 | 2.250.000 | 204.545 | 92 |
| | | Main Production Equipment | Unit | 1 | 350.000 | 350.000 | 1 | 350.000 | 31.818 | 2 |
| | | Manufacture of feed and goods warehouses | Unit | 1 | 900.000 | 900.000 | 5 | 180.000 | 16.364 | 5 |
| | | Production Support Equipment | unit | 1 | 300.000 | 300.000 | 1 | 300.000 | 27.273 | 2 |
| | | | | | **Total** | 19.550.000 | | 3.080.000 | 280.000 | 100 |
| 2 | 1000 - 2000 | Fish | pack | 1 | 4.000.000 | 4.000.000 | 1 | 4.000.000 | 363.636 | 13 |
| | | Pool Construction | unit | 6 | 5.000.000 | 30.000.000 | 9 | 3.333.333 | 303.030 | 94 |
| | | Main Production Equipment | unit | 1 | 400000 | 400.000 | 1 | 400.000 | 36.364 | 1 |
| | | Manufacture of feed and goods warehouses | unit | 1 | 1.000.000 | 1.000.000 | 5 | 200.000 | 18.182 | 3 |
| | | Production Support Equipment | unit | 1 | 500.000 | 500.000 | 1 | 500.000 | 45.455 | 2 |
| | | | | | **Total** | 31.900.000 | | 4.433.333 | 403.030 | 100 |
| 3 | >2000 | Fish | pack | 1 | 4.000.000 | 4.000.000 | 1 | 4.000.000 | 363.636 | 9 |
| | | Pool Construction | unit | 8 | 5.000.000 | 40.000.000 | 9 | 4.444.444 | 404.040 | 86 |
| | | Main Production Equipment | unit | 1 | 450.000 | 450.000 | 1 | 450.000 | 40.909 | 1 |
| | | Manufacture of feed and goods warehouses | unit | 1 | 2.000.000 | 2.000.000 | 5 | 400.000 | 36.364 | 4 |
| | | Production Support Equipment | unit | 1 | 500.000 | 500.000 | 1 | 500.000 | 45.455 | 1 |
| | | | | | **Total** | 46.450.000 | | 9.294.444 | 844.949 | 100 |

Source: Primary Data Processed (2021)

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b. Production / Operational Costs

Production costs are costs incurred or carried out while in the production process (Karimah *et al.*, 2012). Production costs in the hatchery business of catfish cultivation in Sindangwangi Subdistrict consist of two parts, namely fixed costs and non-fixed costs. The cost of producing catfish enlargement in Sindangwangi Subdistrict can be seen in Table 9.

**Table 9**. Catfish Enlargement Production Cost

| No. | Land Area ($m^2$) | Description | Total Cost (Rp) | Proportion of Cost (%) |
|---|---|---|---|---|
| 1 | <1000 | Official | 450.000 | 16 |
| | | Electricity | 200.000 | 7 |
| | | Feed | 1.800.000 | 65 |
| | | Fertilizer/vitamin/drug | 300.000 | 11 |
| | | Disinfectant | - | - |
| | **Total** | | 2.750.000 | 100 |
| 2 | 1000-2000 | Official | 1.000.000 | 13 |
| | | Electricity | 450.000 | 6 |
| | | Feed | 6.000.000 | 75 |
| | | Fertilizer/vitamin/drug | 500.000 | 6 |
| | | Disinfectant | 100.000 | 1 |
| | **Total** | | 7.950.000 | 100 |
| 3 | >2000 | Official | 1.700.000 | 10 |
| | | Electricity | 600.000 | 4 |
| | | Feed | 13.700.000 | 83 |
| | | Fertilizer/vitamin/drug | 600.000 | 4 |
| | | Disinfectant | 200.000 | 1 |
| | **Total** | | 16.600.000 | 100 |

Source: Primary Data Processed (2021)

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c. Revenue
Revenue is the amount of money earned from the sale of a certain amount of output or in other words any income earned by the proceeds from the sale of its production (Musa and Amiludin 2005). The cost of receiving catfish enlargement efforts is presented in Table 12.

**Table 10**. Catfish Enlargement Revenue

| No. | Land area ($m^2$) | Description | Total |
|---|---|---|---|
| 1 | <1000 | Selling Price (Rp) | 18.000 |
| | | Annual Sales Results (Rp) | 27.550.000 |
| | | Annual Net Earner (Rp) | 26.350.000 |
| | | Monthly Clean Discharge (Rp) | 2.195.833 |
| | | Annual production (kg) | 1.531 |
| 2 | 1000-2000 | Selling Price (Rp) | 18.000 |
| | | Annual Sales Results (Rp) | 95.850.000 |
| | | Annual Net Earner (Rp) | 88.530.000 |
| | | Monthly Clean Discharge (Rp) | 7.377.500 |
| | | Annual production (kg) | 5.325 |
| 3 | >2000 | Selling Price (Rp) | 18.000 |
| | | Annual Sales Results (Rp) | 102.520.000 |
| | | Annual Net Earner (Rp) | 95.640.000 |
| | | Monthly Clean Discharge (Rp) | 7.970.000 |
| | | Annual production (kg) | 5.696 |

Source: Primary Data Processed (2021)

### 3.4 Analysis of Fish Farmers Exchange Rate (NTPI) in Sindangwangi District

The Fish Farmer Exchange Rate (NTPI) is one of the proxies for measuring the level of welfare of fish farmers. While definitively, NTPI is the ratio between the price received by fish farmers (It) and the price paid by fish farmers (Ib) expressed in percentage form (Directorate General of Aquaculture, 2015).

#### 3.4.1 NTPI Analysis of Catfish Hatchery

NTPI hatcheries catfish in Sindangwangi District can be seen in Table 11.

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**Table 11.** NTPI Catfish Hatchery

| No. | Group Name | Respondent's Name | Total Revenue (Rp/mo) | Production Expenditure / mo | Household Expenses / mo | Total Expenses / mo | NTPI (%) |
|---|---|---|---|---|---|---|---|
| 1 | Mina Lozi Makmur | Ade Sumarna | 15.017.500 | 9.750.000 | 5.000.000 | 14.750.000 | 102 |
| 2 | | Aman Rohman | 6.437.500 | 4.500.000 | 2.300.000 | 6.800.000 | 95 |
| 3 | | Enah Roenah | 5.273.333 | 4.720.000 | 1.800.000 | 6.520.000 | 81 |
| 4 | | Kosim | 3.595.833 | 1.900.000 | 2.700.000 | 4.600.000 | 78 |
| 5 | | M. Sugiyana | 3.594.167 | 1.050.000 | 1.600.000 | 2.650.000 | 136 |
| 6 | | Arta | 3.735.833 | 1.420.000 | 2.000.000 | 3.420.000 | 109 |
| 7 | Mina Cikole | Dede Taufiq | 7.470.000 | 6.810.000 | 2.500.000 | 9.310.000 | 80 |
| 8 | | Amsi | 6.045.833 | 3.700.000 | 2.100.000 | 5.800.000 | 104 |
| 9 | | Sutisna | 3.037.500 | 1.050.000 | 2.800.000 | 3.850.000 | 79 |
| 10 | | Udin | 3.079.167 | 1.800.000 | 2.000.000 | 3.800.000 | 81 |
| | | | | | | **Average** | 94 |

Source: Primary Data Processed (2021)

Based on the table above, NTPI from 7 catfish hatchery respondents in the Mina Lozi Makmur fish farming group in Sindangwangi District there were 3 respondents (43%) who had NTPI >100, and 4 other respondents (57%) had NTPI <100. While in the Mina Cikole fish farmer group, out of 3 catfish hatchery respondents there were only 1 respondent (33%) who had NTPI >100 which can be said to be prosperous (NTPI of 104%).

Of the 10 catfish hatchery respondents in Sindangwangi District, there were 4 respondents (40%) who had NTPI >100 or could be said to be prosperous, while the other 6 respondents (60%) had NTPI <100 or could be attached to not be prosperous. The average NTPI hatchery of catfish in Sindangwangi District has NTPI of 94% or shows NTPI <100 which shows that respondents are less prosperous.

Research results Gumilar et al. (2021) regarding Exchange Rate Analysis of Fish Cultivators in Bandung Regency has an NTPI > 100, this indicates that catfish hatcheries in Bandung Regency are more prosperous than fish hatcheries cultivators in Majalengka Regency. Meanwhile, according to BPS (2021), the national NTPI is 102.83% or NTPI > 100 which indicates that fish cultivators in Indonesia can be said to be prosperous.

### 3.4.2 NTPI Analysis of Catfish Enlargement

NTPI catfish enlargement in Sindangwangi District can be seen in Table 12.

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**Table 12.** NTPI Catfish Enlargement

| No. | Group Name | Respondent's Name | Total Revenue (Rp/mo) | Production Expenditure / mo | Household Expenses / mo | Total Expenses / mo | NTPI (%) |
|---|---|---|---|---|---|---|---|
| 1 | Mekar Wangi | Agung | 3.431.250 | 975.000 | 1.950.000 | 2.925.000 | 117 |
| 2 | | Bayu Sapto Pupu | 4.041.667 | 1.800.000 | 2.050.000 | 3.850.000 | 105 |
| 3 | | Saepudin | 4.060.417 | 2.225.000 | 2.750.000 | 4.975.000 | 82 |
| 4 | | Suherman | 7.310.000 | 4.480.000 | 2.800.000 | 7.280.000 | 100 |
| 5 | Mina Lozi Makmur | Sobari | 5.995.833 | 1.200.000 | 4.800.000 | 6.000.000 | 100 |
| 6 | | Nana Suparman | 5.900.000 | 2.650.000 | 2.000.000 | 4.650.000 | 127 |
| 7 | | Supriadi | 10.377.500 | 7.320.000 | 3.100.000 | 10.420.000 | 100 |
| 8 | Mina Cikole | Adok Karnadi | 11.970.000 | 6.880.000 | 2.000.000 | 8.880.000 | 135 |
| 9 | | Ipung | 6.229.167 | 2.100.000 | 5.000.000 | 7.100.000 | 88 |
| 10 | | Wira | 4.101.667 | 1.080.000 | 3.000.000 | 4.080.000 | 101 |
| | | | | | | **Average** | 105 |

Source: Primary Data Processed (2021)

Based on the table above, NTPI catfish enlargement in Sindangwangi District from 5 respondents of mekar Wangi fish farming group there are 4 respondents (80%) who show NTPI >100 and 1 other respondent (20%) have NTPI <100, Mina Lozi Makmur fish farming group shows 3 respondents (100%) have NTPI >100, and Mina Cikole fish farming group there is 1 respondent (50%) who have NTPI <100, and 1 other respondent (50%) has NTPI >100.

Of the 10 catfish enlargement respondents in Sindangwangi District, there are 8 respondents (80%) who have NTPI >100 or can be said to be prosperous, while 2 other respondents (20%) have NTPI <100 or can be attached to have not prospered.

Research results Gumilar et al. (2021) regarding the NTPI of catfish rearing in Bandung Regency has an NTPI>100, this result is the same as the results of research by Gumilar et al. (2021) regarding the NTPI of catfish rearing in Garut Regency (Case Study in Bayongbong District) which showed an NTPI of 111% or NTPI > 100. This shows that catfish farmers in Bandung and Garut can be said to be as prosperous as catfish farmers in Majalengka Regency.

## 4. CONCLUSION

Based on the findings of this research study on the Exchange Rate Analysis of Catfish Farmers in Sindangwangi District, Majalengka Regency, it is concluded that the Fish Farmer Exchange Rate (NTPI) for catfish hatcheries in Sindangwangi District had NTPI of 94 or NTPI<100, which means that catfish hatchery cultivators have not been at the prosperous level, as for the Exchange Rate of Fish Farmers (NTPI) catfish enlargement in Sindangwangi District have NTPI 105 or NTPI>100 meaning that catfish enlargement cultivators have reached the level of prosperity.

## REFERENCES

1. Central Bureau of Statistics. 2021. NTPI (Fish Cultivator Exchange Rate) by

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Sector 2021. Central Jakarta: Central Bureau of Statistics.
2. Department of Marine Affairs and Fisheries. 2008. Regulation of the Minister of Marine Affairs and Fisheries Number PER.02/MEN/2008 concerning Guidelines for the Implementation of Food Security Credit in the Marine and Fisheries Sector.
3. The Department of Food Security, Agriculture and Fisheries of Majalengka Regency. 2019. Number of Fisheries Cultivators in Majalengka Regency. Department of Food Security, Agriculture, and Fisheries Majalengka Regency. Majalengka.
4. Department of Food Security, Agriculture and Fisheries of Majalengka Regency. 2020. Number of Fisheries Cultivators in Majalengka Regency. Department of Food Security, Agriculture, and Fisheries Majalengka Regency. Majalengka.
5. Department of Agriculture and Fisheries of Majalengka Regency. 2015. Production of Fishery Products Majalengka Regency. Department of Agriculture and Fisheries Majalengka Regency. Majalengka.
6. Directorate General of Aquaculture. 2015. Statistics on Export of Fishery Products. Ministry of Fisheries and Marine Affairs. Jakarta. 1278 pp.
7. Gumilar, I., Nurhayati, E., Iskandar, & Nurhayati, A. 2021. Exchange Rate Analysis of Fish Cultivators in Bandung Regency, West Java Province. AJFAR, 14(1): 17-24.
8. Gumilar, I., Syifa, R. N., Rosidah, & Handaka, A. A. 2021. Exchange Rate Analysis of Fish Cultivators in Garut Regency (Case Study of Bayongbong District). AJFAR, 14(3): 36-48.
9. Karimah, Annisa., I. Gumilar., and Z. Hasan. 2012. Prospective Analysis of Freshwater Ornamental Fish Cultivation Business in Freshwater Aquarium Park (TAAT) and Beautiful Indonesia Miniature Park (TMII) Jakarta. Journal of Fisheries and Marine Affairs, 3(3): 145-156.
10. Decree of the Minister of Fisheries and Marine Affairs. 2007. Good Fish Cultivation Method. Decree of the Minister of Fisheries and Marine Affairs No. 2 of 2007, Jakarta. 14 pp.
11. Musa, P. A & D. Y. Amiludin. 2005. Fisheries Project Planning and Evaluation. Lephas Hasanuddin University Press. Makassar.
12. Padangarang, A.M. 2010. Agribusiness Financing. Halu Oleo University. Kendari. 66 pp.
13. Purwanto, A., and B. M. Taftazani. 2018. The Effect of Number of Dependents on the Level of Economic Welfare of the Family of K3L Workers at Padjadjaran University. Journal of Social Work, 1(2):33-43.

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