



# **Comparison of Exchange Rates of Tourism Small Enterprises and Traditional Fishermen in Pangandaran District, Indonesia**

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## **Authors' contributions**

*This work was carried out in collaboration with all authors. Author ASRN designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors AR and IMA managed the analyses of the study. Author AAHS managed the literature searches. All authors read and approved the final manuscript.*

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## **ABSTRACT**

The fishery is an agricultural sector with abundant natural resources and a high production value, but this does not make traditional fishers and tourism business actors prosperous. This study aims to calculate the exchange rate of tourism businesses and traditional fishers in the Pangandaran District and the factors that influence it. This study uses a comparative descriptive method located in Pangandaran District by using the accidental sampling method. The data used are primary and secondary data, with a total number of 60 respondents for two professions with interview techniques. For analysis using the Exchange Rate formula and Multiple Linear Regression Analysis. This study indicates that the average exchange rate for traditional fishers is 0.99, while the average exchange rate for tourism businesses is 1.05. The exchange rate belonging to traditional fishers is below 1, which means they are not sufficiently able to meet their household needs and can be said to be less prosperous. Meanwhile, the exchange rate owned by tourism business actors is at number 1, which means they are pretty profitable and quite able to meet their

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household needs. The factors that influence it are income from fisheries or business products (X1), total of family member (X2), workload as fishermen or business actors (X3), and work experience (X4).

*Keywords: Exchange rates; traditional fishermen; tourism business actors; factors affecting exchange rates; Pangandaran district.*

## 1. INTRODUCTION

Pangandaran Regency is one of the regencies in Province of West Java that strongly prioritizes its tourism sector, where tourism is currently a very strategic source of regional income in Pangandaran Regency [1]. Therefore, the Pangandaran Regency Government (Pemkab) is trying to make Pangandaran a world-class tourist area. More local and foreign tourists visit to see and enjoy natural and cultural tourism objects [2].

Its position directly adjacent to the Indian Ocean makes Pangandaran Regency an attractive tourist destination. Therefore, the community has business opportunities in the Pangandaran coastal area. The business opportunities formed include culinary kiosks, souvenir sellers, and tour guides for foreign tourists [3]. No research explains the welfare of business actors in the Pangandaran coastal area, so this research is considered suitable to overcome these problems.

However, Pangandaran's tourism business opportunities are not the only source of the search for coastal communities. There are capture fisheries activities that are used to optimize coastal wealth. Another livelihood in Pangandaran Regency is as a fisherman [4]. Generally, they are traditional fishermen as the main livelihood of the coastal communities of the Pangandaran Regency. The income of conventional fishers in the Pangandaran Regency is still classified as low. However, there is no adequate data to find alternatives to increase fishers' income [1], so research that examines analysis of exchange rate of fishers in the Pangandaran District is beneficial needed.

The Fisherman's Exchange Rate Index (NTN) is one of the programs made by the government to improve the welfare of the marine and fishery community, namely as an indicator used to see the level of welfare of fishers' households and business actors in the field of fisheries. In addition, the NTN index is one of the Key Performance Indicators (KPI) of the Ministry of

Maritime Affairs and Fisheries (KKP) because it is a benchmark for welfare related to revenues and expenditures. NTN is also associated with the purchasing power of fishers in financing their household life. The increase in income received due to the rise in production prices is greater than the increase in the price of goods purchased. This situation indicates increase on the power and ability of fishers or fishers' welfare [5].

The measurement of the exchange rate in the fishery sector is still far behind the agricultural sector, where the object of NTN measurement is still only the fishing community in general [6]. However, fishing communities have different characteristics. Based on the scale of their business, fishers can be divided into large fishermen (including industrial scale) and small fishermen (traditionally with boat sizes less than 5 GT).

This research focuses on Pangandaran District because the research location target and the respondent target consist of traditional small fishers and small fishery tourism business actors in that location, which will then be compared with the exchange rate figures of each profession to determine their level of welfare. It is necessary to know the factors that influence the NTN figure. The NTN figure for small fishers and small tourism business actors is essential to determine each profession's welfare level [7]. In addition, it is necessary to know what profession is the most optimal to be developed in Pangandaran District.

## 2. METHODS

Research on the comparative exchange rate of tourism, small business actors, and traditional fishers in Pangandaran will be conducted for ten months, from October 2020 to August 2021. The research location is in Pangandaran Regency, particularly in the Pangandaran District, East Coast, and West Coast of Pangandaran Beach. This research used questionnaire method by compiling a list of questions to be asked to

research respondents to obtain as much data as possible in the hope that the final data obtained can represent the entire population [8]. The sampling technique used is accidental sampling, namely accidental sampling by taking cases or respondents who exist or are available in a place according to the research context [9]. So that in the sampling technique, the researchers took respondents (fishers and tourism business actors) at that time in the Coastal District of Pangandaran.

## 2.1 Data Analysis

Analysis of the data used in this study, including:

### 2.1.1 Exchange rates for fishermen and small tourism businesses formulas

Analysis of the welfare of fishers and small business actors in the tourism sector can be measured using the Fisher Exchange Rate formula [10], which is formulated as follows:

$$NTN = \frac{\sum P_{xi} Q_{xi}}{\sum P_{yi} Q_{yi} + \sum P_{yj} Q_{yj}}$$

#### Information:

NTN : Exchange Rates for Fishermen and Tourism Business Actors  
 P<sub>xi</sub> : Prices of Fishery Commodities or Business Products (IDR)  
 Q<sub>xi</sub> : Quantity of Fishery Commodities or Business Products (type)  
 P<sub>yi</sub> : Production Input Price (IDR)  
 Q<sub>yi</sub> : Production Input Quantity (indicator)  
 P<sub>yj</sub> : Price of Household Consumption Goods (IDR)  
 Q<sub>yj</sub> : Quantity of Household Consumption Goods (indicator)

#### Conclusions based on NTN are as follows:

NTN > 1 means prosperous  
 NTN = 1 means relatively prosperous, as well as;  
 NTN < 1 means less prosperous

### 2.1.2 Factors affecting welfare

Four variables are used to consider these results to determine the level of welfare of fishers and tourism business actors. These variables include, among others, fishery income or business products, total of family members, working time as a fisherman or tourism business actor, and

work experience. According to [11], the income variable is a variable that is very influential on the level of welfare and is closely related to total of family members and the amount of working time. Meanwhile, the work experience variable will affect the income received by traditional fishermen and small tourism business actors.

The analytical method in this study is the multiple linear regression analysis. The factors that affect the exchange rate of fishers and tourism business actors in District of Pangandaran at Pangandaran Regency, can be analyzed using the following model:

$$Y = a + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + e$$

Where :

Y : NTN number  
 a : Constant  
 X<sub>1</sub> : Fishery Income or Business Products (IDR)  
 X<sub>2</sub> : Total of Family Members (person)  
 X<sub>3</sub> : Workload as a Fisherman or Business Actor (trips or days)  
 X<sub>4</sub> : Work Experience (years) and;  
 B<sub>1</sub>-B<sub>4</sub> : Coefficient Value of each variable  
 e : Error

Estimation of the coefficient of the regression variable is using the Ordinary Least Square (OLS) method so that the value of e (error) is minimized.

### 2.1.3 Statistical performance test approach results

The following are several types of test methods used to support and strengthen the results of the calculation of the NTN formula and analysis of factors that affect welfare above:

#### 2.1.3.1 Data normality test

This data normality test tests whether the confounding or residual variables have a normal distribution path in a regression model. The t and F tests assume that the residual value follows a normal distribution. The statistical test is invalid for small sample [12]. To detect whether the data is normally distributed, this study uses statistical analysis and a statistical tool often used to test residual normality, namely the Kolmogorov - Smirnov non-parametric statistical test. In making a decision seen from the results of the K-S test, if the probability value is significantly greater than 0.05, then the data is usually distributed. Others,

if the significant probability value is less than 0.05, the data is not normally distributed.

#### 2.1.3.2 Multicollinearity test

This multicollinearity test is whether the regression model correlates with the independent (independent) variables because a good regression model is a model that should not correlate with the independent variables [12].

The similarity between independent variables in a model can cause a robust correlation between one independent variable and other independent variables. In addition, the detection of multicollinearity also aims to avoid conclusions regarding the effect of the partial test of each independent variable. Data is free from multicollinearity if it has a VIF value around one and does not exceed 10, and has a tolerance value close to 1.

#### 2.1.3.3 Heteroscedasticity test

The heteroscedasticity test is an inequality of variance from the residuals of one observation to another observation. If the residual variance from one observation to another remains, it is called homoscedasticity, and if it is different, it is called heteroscedasticity. A good regression model is a model that does not occur heteroscedasticity [13].

To determine heteroscedasticity, the Glejser test can be used. The basis for decision making in this test is if the significance value is 0.05, it can be concluded that there is no heteroscedasticity problem. Still, on the contrary, if the significance value is  $<0.05$ , it can be supposed that there is a heteroscedasticity problem.

#### 2.1.3.4 Coefficient of determination

The coefficient of determination ( $R^2$ ) is used to determine the ability of the independent variable to explain the variation of the dependent variable. The value of the coefficient of determination is between 0 and 1. A small ( $R^2$ ) value indicates the ability of the independent variable to explain the dependent variable is minimal. Meanwhile, if the value is close to 1 (one), this suggests that the independent variable provides almost all the information needed to predict the variation of the dependent variable.

#### 2.1.3.5 T-test

The T-test is used to determine each independent variable's ability to explain the

behavior of the dependent variable. Tests were carried out using a significance level of 0.05 ( $\alpha = 5\%$ ).

- a. If the significance value is less than or equal to 0.05, the hypothesis is accepted, which means that the independent variable partially affects the dependent variable.
- b. However, if the significance value is more than 0.05, the hypothesis is rejected, which means that the independent variable partially affects the dependent variable.

#### 2.1.3.6 F-test

This F test was conducted to test the independent variables on the dependent variable together. This test was carried out using a significance level of 0.05 ( $\alpha = 5\%$ ).

- a. If the significance value is less than or equal to 0.05, the hypothesis is accepted, which means that the independent variable partially affects the dependent variable.
- b. If the significance value is more than 0.05, the hypothesis is rejected, meaning that the independent variable partially affects the dependent variable.

Based on the results of the calculation of research parameters, the data is then processed using comparative descriptive data analysis. A descriptive method examines the status of a group of people, an object, a set of conditions, a system of thought, or a class of events in the present. Descriptive research aims to make a systematic, factual, and accurate description, picture, or painting of the facts, characteristics, and relationships between the investigated phenomena. In the descriptive method, researchers can compare certain phenomena so that it is a comparative study [14]. The descriptive way will explain the factors that affect the exchange rate of fishers and tourism business actors.

Meanwhile, a comparative study compares the existence of one or more variables in two or more different samples or at other times [14]. Therefore, using the descriptive-comparative method in this research compares the exchange rate data of traditional fishers and tourism business actors in the Pangandaran District.

### 3. RESULTS AND DISCUSSION

#### 3.1 Pangandaran Regency Profile

Pangandaran Regency is one of the regencies located in West Java Province. The capital city of Pangandaran Regency is located in Parigi District. Pangandaran Regency has a total area of 1,010 km<sup>2</sup> [15]. Based on its astronomical location, Pangandaran Regency located at 108°8'0" - 108°50'0" east longitude and 7°24'0" - 7°54'20" south latitude. It has 10 sub-districts, there are Pangandaran, Parigi, Cijulang, Cimerak, Cigugur, Langkaplancar, Mangunjaya, Padaherang, Kalipucang and Sidamulih.

The beach length of the Pangandaran Regency reaches 91 km, with the longest coastline in Cimerak District, which gets 23.5 km [16]. Based on the data processing results of the 2010-2035 Indonesian Population Projection, the population of Pangandaran Regency in 2019 reached 399,284 people consisting of 198,927 male residents and 200,357 female residents. Overall, the sex ratio of the people of Pangandaran Regency in 2019 was 99.29 percent, which means that in 100 female residents, there are 99 male residents. The productive age group (15 - 64 years) was 269,010 people (67.3%), while the non-productive age group (0 - 14 years plus 65 years and over) was 130,274 people (32.63%).

#### 3.2 Characteristics of Traditional Fishermen and Small Tourism Entrepreneurs in the Pangandaran District

Characteristics of Fishermen and Small Tourism Business Actors aim to determine the background and condition of the respondents. Respondent data is the respondent's identity, following the problem under study. The indicators include age, education, total of family members, work experience, working time, fishery sector revenues, household expenses, and income, presented in the data below.

##### 3.2.1 Age

Age is considered essential to determine one's productivity because the older one gets, the more productive one is and is considered to have more work experience [17]. According to [18], the age group thought effective is the age 15-55 years. The data collection results on the age of traditional fishers show that the average

traditional fishers in Pangandaran District are in the productive period. Data on the age distribution of traditional fishers in the Pangandaran District showed in Table 1.

Data collection from small tourism business actors in the Pangandaran district shows that the respondents' age is at a productive period. Someone of a fertile age has a much better physical condition so that he can do a job more optimally [17]. The age distribution of traditional tourism business actors showed in Table 1.

##### 3.2.2 Education

Education is one of the steps of national development to increase people's intelligence to realize an intelligent, advanced, and prosperous society [19]. The results of the questionnaire data show that traditional fishers in Pangandaran District have a low level of education because the average calculation results show that fishers only reach elementary school level. The education table for traditional fishers in Pangandaran District showed in Table 2.

The results of the questionnaire data show that tourism small business actors in pangandaran district still have a low level of education because, from the average calculation results, it is found that the education level of tourism business actors in Pangandaran District only reaches elementary school level. This situation certainly affects the income earned because someone with a higher education level will get a better job and actors in Pangandaran District only reaches elementary school level. This situation certainly affects the income earned because someone with a higher education level will get a better job and income [20]. The education table for tourism small business actors in Pangandaran District can be seen in Table 2.

##### 3.2.3 Total of family members

The total of family members also their composition affect the time spent on household work to earn higher incomes to meet the increasing needs of family life [21]. The results of the questionnaire data show that traditional fishers in Pangandaran District have an average total of family members consisting of 1 wife and two children, the table of the total of family members of conventional fishers in Pangandaran District showed in Table 3.

**Table 1. Distribution of age**

<b>Traditional Fishermen in Pangandaran District 2021</b>		
<b>No</b>	<b>Parameter</b>	<b>Value (Year)</b>
1	Maximum Age	53
2	Minimum Age	36
3	Average Age	43
4	Median Age	43
5	Mode Age	42
<b>Tourism Bussiness Actors in Pangandaran District 2021</b>		
<b>No</b>	<b>Parameter</b>	<b>Value (Year)</b>
1	Maximum Age	54
2	Minimum Age	32
3	Average Age	43
4	Median Age	42
5	Mode Age	45

**Table 2. Distribution of education**

<b>Traditional Fishermen in Pangandaran District 2021</b>		
<b>No</b>	<b>Parameter</b>	<b>Value</b>
1	Maximum Education	3
2	Minimum Education	1
3	Average Education	1
4	Median Education	2
5	Mode Education	2
<b>Tourism Bussiness Actors in Pangandaran District 2021</b>		
<b>No</b>	<b>Parameter</b>	<b>Value</b>
1	Maximum Education	3
2	Minimum Education	1
3	Average Education	1
4	Median Education	2
5	Mode Education	1

Note: 1 (Primary School); 2 (Junior High School); 3 (Senior High School) Also 4 (Bachelor)

**Table 3. Distribution of total family members**

<b>Family Members of Traditional Fishermen in Pangandaran District 2021</b>		
<b>No</b>	<b>Parameter</b>	<b>Value</b>
1	Maximum Family Member	4
2	Minimum Family Member	2
3	Average Family Member	3
4	Median Family Member	3
5	Mode Family Member	4
<b>Family Members of Tourism Bussiness Actors in Pangandaran District 2021</b>		
<b>No</b>	<b>Parameter</b>	<b>Value</b>
1	Maximum Family Member	4
2	Minimum Family Member	2
3	Average Family Member	3
4	Median Family Member	3
5	Mode Family Member	4

The results of the questionnaire data show that tourism small business actors in Pangandaran District have an average total of family members

consisting of 1 wife and two children. According to [22], the large number of dependents in the family will affect income because the greater the

number of dependents who eat; it will indirectly force the workforce to seek additional income. So it concluded the amount of income needed for people who have many family dependents will also be even more significant; if the required payment is not enough, poverty will occur. The table of the total of family members of small tourism business actors in the Pangandaran District showed in Table 3.

**3.2.4 Work experience**

Work experience is one of the factors for fishers that can be used as a benchmark to develop their business in catching fish. The longer the work experience that fishers have at sea, the greater the ability for these fishermen to learn more about techniques in the fishing process and the use of good fishing gear [23]. The results of the questionnaire data show that traditional fishers in Pangandaran District have an average work experience of more than ten years, as the table of work experience for traditional fishers in Pangandaran District showed in Table 4.

The results of the questionnaire data show that small tourism entrepreneurs in Pangandaran District have an average work experience of more than ten years. According to [24], there is a

positive or straight relationship between tenure and income productivity on the job. The longer a person's work experience, the more his abilities will be honed and affect the income received. The table of work experiences of tourism small business actors in the Pangandaran District showed in Table 4.

**3.2.5 Working time**

The work time is calculated in trips per month. The income of fishers in the Pangandaran District influenced by the outpouring of work used for fishing. The more often fishers go to sea, the more income will increase, which is will affect payment of fishers. Most of the traditional fishers in the Pangandaran District have the most work time in 1 month, namely 25 trips. The lowest working time is 12 trips/month. The average catch fisherman in Pangandaran District Trips/month, as listed in Table 5.

Small tourism business actors in pangandaran district have the most outpouring of working time in 1 month, 30 trips. The lowest working time is 22 trips/month and the average tourism minor business actor in Pangandaran District in one month has 27 trips/month, as listed in Table 5.

**Table 4. Distribution of Work Experience**

<b>Traditional Fishermen in Pangandaran District 2021</b>		
<b>No</b>	<b>Parameter</b>	<b>Value (Year)</b>
1	Maximum Work Experience	38
2	Minimum Work Experience	11
3	Average Work Experience	22
4	Median Work Experience	23
5	Mode Work Experience	15
<b>Tourism Bussiness Actors in Pangandaran District 2021</b>		
<b>No</b>	<b>Parameter</b>	<b>Value (Year)</b>
1	Maximum Work Experience	35
2	Minimum Work Experience	10
3	Average Work Experience	20
4	Median Work Experience	20
5	Mode Work Experience	25

**Table 5. Distribution of working time**

<b>Traditional Fishermen in Pangandaran District 2021</b>		
<b>No</b>	<b>Parameter</b>	<b>Value (Year)</b>
1	Maximum Working Time	25
2	Minimum Working Time	12
3	Average Working Time	19
4	Median Working Time	20
5	Mode Working Time	20

<b>Tourism Bussiness Actors in Pangandaran District 2021</b>		
<b>No</b>	<b>Parameter</b>	<b>Value (Year)</b>
1	Maximum Working Time	30
2	Minimum Working Time	22
3	Average Working Time	27
4	Median Working Time	30
5	Mode Working Time	30

### 3.2.6 Revenue fishery sector

Fishery revenue is the income obtained from multiplying the income per trip by the number of trips made in a month. Fishery revenues also do not include cost reductions for fishing activities, significantly reducing the money earned to meet their needs, as attached in Table 11. The highest fishery revenue is IDR1 2,530,000, the lowest is IDR 3,800,000, and the average income of traditional fishers in the Pangandaran District is IDR9.004.567.

Fisheries revenue for small tourism business actors in Pangandaran District is the highest at IDR13,500,000. The lowest payment at IDR2,500,000, and the average fishery revenue for small tourism businesses in Pangandaran District around IDR7.180.000. Natural resources

in the marine and fisheries sector are very likely to be conserved for the benefit of improving the welfare of the local community. The wealth of natural resources in an area can drive economic development [25]. The results are listed in Table 6.

### 3.2.7 Household expenditure

The pattern of household expenditure of fishers is an indicator that can provide an overview of the population's welfare. Table 13 shows the household expenditure of traditional fishers in the Pangandaran District. The highest household expenditure incurred by fishers was IDR2.700.000, while the lowest was IDR1.100.000 and the average household expenditure of conventional fisher in Pangandaran District was IDR1.678.166.

**Table 6. Distribution of revenue fishery sector**

<b>Traditional Fishermen in Pangandaran District 2021</b>		
<b>No</b>	<b>Parameter</b>	<b>Value (IDR)</b>
1	Maximum Revenue	12,530,000
2	Minimum Revenue	3,800,000
3	Average Revenue	9,004,567
4	Median Revenue	8,811,000
5	Mode Revenue	8,000,000

<b>Tourism Bussiness Actors in Pangandaran District 2021</b>		
<b>No</b>	<b>Parameter</b>	<b>Value (IDR)</b>
1	Maximum Revenue	13,500,000
2	Minimum Revenue	2,500,000
3	Average Revenue	7,180,000
4	Median Revenue	7,500,000
5	Mode Revenue	7,500,000

**Table 7. Distribution of expenditure household**

<b>Traditional Fishermen in Pangandaran District 2021</b>		
<b>No</b>	<b>Parameter</b>	<b>Value (IDR)</b>
1	Maximum Expenditure	2,700,000
2	Minimum Expenditure	1,100,000
3	Average Expenditure	1,678,166
4	Median Expenditure	1,500,000
5	Mode Expenditure	1,610,000



<b>Tourism Bussiness Actors in Pangandaran District 2021</b>		
<b>No</b>	<b>Parameter</b>	<b>Value (IDR)</b>
1	Maximum Expenditure	2,300,000
2	Minimum Expenditure	660,000
3	Average Expenditure	1,479,166
4	Median Expenditure	2,000,000
5	Mode Expenditure	1,485,000

The household expenditure of small tourism entrepreneurs in the Pangandaran District was the highest at IDR2,300,000. The lowest income was IDR660,000, and the average household expenditure of small tourism entrepreneurs in the Pangandaran District was IDR1,479,166, as listed in Table 7.

One indicator that used in measure household welfare is household expenditure. According to [26], per capita expenditure per month for non-food is considered to describe the welfare state of the people of an area, where the higher the percentage of spending on non-food, the higher the level of welfare of the community in an area.

### 3.2.8 Income

Fishers' income is the difference between total revenue and all production costs (total cost). Fishers' income is the multiplication between the production/catch obtained by the selling price of the yield. Fishers' costs are usually classified into fixed costs and variable costs. Fixed costs include; investment in boats and fishing gear, while variable costs include; accommodation costs and logistics costs [19].

Table 8 shows the income of traditional fishers in the Pangandaran District. The highest pay for traditional fishers is IDR6,210,000, while the

lowest payment is IDR1,520,000 and the average income for traditional fishers is IDR3,945,566.

The income of small tourism businesses in Pangandaran District is the highest at IDR8,350,000. The lowest income is at IDR340,000 and the average income for small tourism business actors is IDR4,286,500 as listed in Table 8.

### 3.3 Exchange Rate Analysis

Fisherman's Exchange Rate (NTN) is one of the programs made by the government to improve the welfare of marine and fishery communities [26]. The NTN standard for measuring fishers' welfare is  $> 1$ , it means the increase in production prices is the same as the increase in consumer prices so that fishers break even or only return on investment and are said to be prosperous. On the contrary, if  $NTN < 1$ , fishers are less profitable [27].

Based on traditional NTN calculations in Pangandaran District, the highest NTN was 1.68, the lowest NTN was 0.29, and the average NTN was 0.99. The NTN value obtained shows that traditional fishers in Pangandaran District

**Table 8. Distribution of income**

<b>Traditional Fishermen in Pangandaran District 2021</b>		
<b>No</b>	<b>Parameter</b>	<b>Value (IDR)</b>
1	Maximum Income	6,210,000
2	Minimum Income	1,520,000
3	Average Income	3,945,566
4	Median Income	4,185,000
5	Mode Income	3,900,000
<b>Tourism Bussiness Actors in Pangandaran District 2021</b>		
<b>No</b>	<b>Parameter</b>	<b>Value (IDR)</b>
1	Maximum Income	8,350,000
2	Minimum Income	340,000
3	Average Income	4,286,500
4	Median Income	4,575,000
5	Mode Income	7,650,000

**Table 9. Distribution of exchange rate**

<b>Traditional Fishermen in Pangandaran District 2021</b>		
<b>No</b>	<b>Parameter</b>	<b>Value</b>
1	Maximum Exchange Rate	1,68
2	Minimum Exchange Rate	0,29
3	Average Exchange Rate	0,99
4	Median Exchange Rate	1,07
5	Mode Exchange Rate	0,66
<b>Tourism Bussiness Actors in Pangandaran District 2021</b>		
<b>No</b>	<b>Parameter</b>	<b>Value</b>
1	Maximum Exchange Rate	1,89
2	Minimum Exchange Rate	0,36
3	Average Exchange Rate	1,05
4	Median Exchange Rate	1,21
5	Mode Exchange Rate	1,26

are at a less prosperous level. Table 9 shows the conventional NTN in Pangandaran District.

The exchange rate for small tourism entrepreneurs is the highest at 1.89, the lowest exchange rate is 0.36, and the average exchange rate for small tourism entrepreneurs is 1.05, as listed in Table 9. Based on the average value, The exchange rate of tourism business actors in the Pangandaran District can be at a reasonably prosperous level.

### 3.4 Analysis of Factors Affecting Exchange Rates

Analysis of factors that influence the exchange rate of tourism businesses and traditional fishers in the Pangandaran District using multiple linear regression analysis. This analysis is controlled by the dependent variable, namely the exchange rate, and the independent variable, which includes the total of family dependents, the amount of working time, income, and work experience. The results of the analysis showed in Table 10 as follows:

Based on Table 10, the following is the regression model :

- **Traditional Fisherman:**  $Y = 0.028 - 0.100 X_1 + 0.002 X_2 + 0.022 X_3 + 0.010 X_4 + e$
- **Tourism Business Actors:**  $Y = 0.028 - 0.100 X_1 + 0.002 X_2 + 0.022 X_3 + 0.010 X_4 + e$

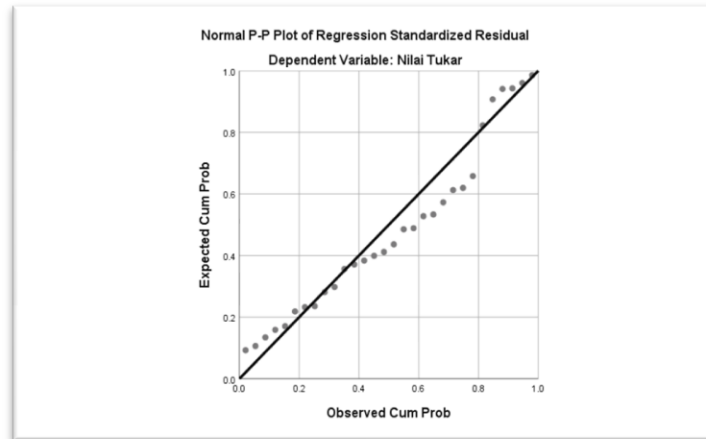
The linear regression model was then tested statistically using SPSS 24 software with a 95% confidence level. The statistical model tests include the Data Normality Test, Multicollinearity Test, Heteroscedasticity Test, Model Goodness Test (R<sup>2</sup>), T-Test, and F Test.

#### 3.4.1 Data normality test

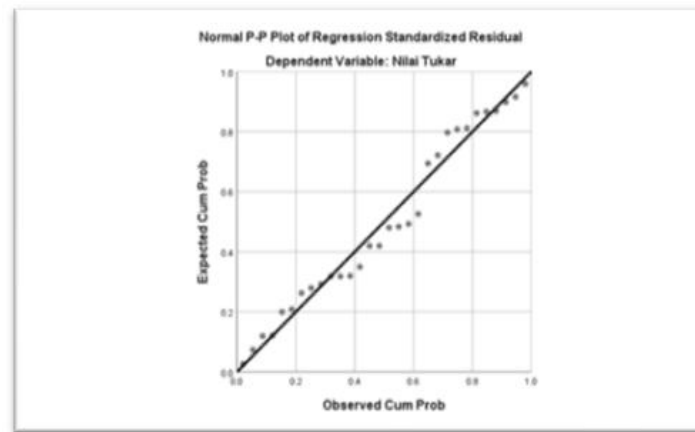
The data normally distributed if it does not have a significant or standard difference compared to the standard normal. If the data is normally distributed, it can be assumed that the data is taken randomly from the normal population [28]. However, the normality test should be used to provide certainty that the data held are normally

**Table 10. Analysis of regression results of the effect of variable inputs on exchange rates**

<b>Variable</b>	<b>Coefficient</b>		<b>Description</b>
	<b>Traditional Fisherman</b>	<b>Tourism Bussiness Actors</b>	
X1	-0,100	-0,143	Total of Family Member
X2	0,002	0,006	Time Out
X3	0,022	0,021	Revenue
X4	0,010	0,011	Work Experience



**Fig. 1. Traditional fisherman p-plot chart**



**Fig. 2. Tourism bussiness actors p-plot chart**

distributed or not. The results of the Normality Test can be seen from the Normal P-P Plot images in Figs. 1 and 2.

The two figures show that the value of Y (NTN) spreads around the diagonal line and follows the direction of the line. So that the model meets the standard of normality. The criteria for residual data to be normally distributed or not using the Normal P-Plot approach can be done by looking at the distribution of the points in the image. If the point distribution is close to or close to a straight line, it can be said that the data is normally distributed [29].

### 3.4.2 Multicolinierity test

According to [30], the multicollinearity test determines whether the regression model found a correlation between independent or independent variables. Multicollinearity test in a

study can be seen from the Variance Inflation Factor (VIF) value. The VIF value itself must be  $< 10$  so that it can be said to be good because there is no correlation between the independent variables in the model used, and the data is classified as normal [29]. This multicollinearity is to cause a strong influence of the variables on the sample. Tables 11 and 12 show the results of calculating the VIF value for traditional fishers and tourism business actors.

Based on the two tables, it can be concluded that the four independent variables do not occur multicollinearity because the value of each variable is below the number 10. The test results have the lowest VIF value for Traditional Fishermen at 1.017, while for Tourism Business Actors, it is at 1,173. The highest score for Traditional Fishermen is 1,295, while for Tourism Business Actors, it is 1,330.

**Table 11. Traditional fisherman VIF value**

Tolerance	Variance Inflation Factor (VIF)
X1	1,260
X2	1,295
X3	1,047
X4	1,017

**Table 12. Tourism bussiness actors VIF value**

Tolerance	Variance Inflation Factor (VIF)
X1	1,330
X2	1,173
X3	1,281
X4	1,175

**3.4.3 Heteroskedasticity test**

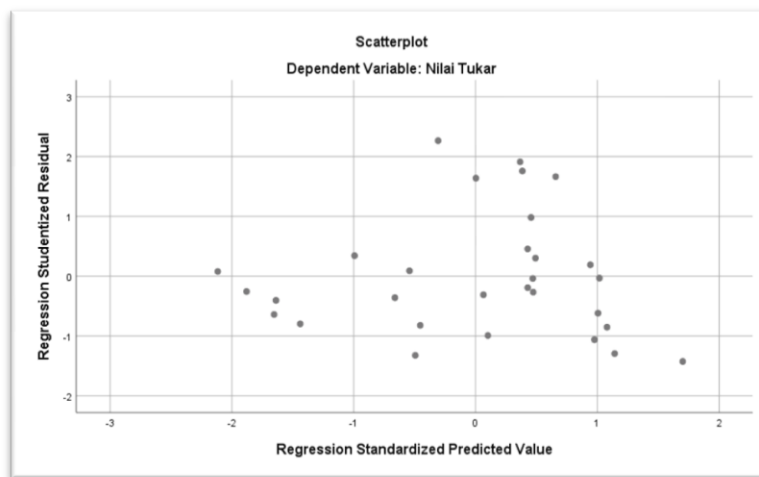
The heteroscedasticity test is used to determine whether or not there is a deviation from the classical assumption of heteroscedasticity. The test is done by making a scatterplot (distribution plot) between the residuals and the predictive value of the standardized dependent variable. If there is no particular pattern and it does not spread above or below zero on the y-axis, it can be concluded that there is no heteroscedasticity [30].

The condition that must be met in this regression model is the absence of heteroscedasticity symptoms which can be seen from the lack of a particular pattern in the distribution of points in the scatterplot graph [28]. The following are the results of the Scatterplot for Traditional Fishermen and Tourism Business Actors presented in Figs. 3 and 4.

Based on the graph in the picture above, the dots spread out without forming a particular pattern. This indicates that the classical assumption of heteroscedasticity in this study is fulfilled. Means that this research is free from heteroscedasticity.

**3.4.4 Goodness level test (R<sup>2</sup>)**

The coefficient of determination in linear regression is often interpreted as how big the ability of all independent variables is in explaining the variance of the dependent variable. The coefficient of determination (R<sup>2</sup>) can be seen from the results of the regression test in the summary model in Table 13 below, where for Traditional Fisher, the results are 0.559. This shows that the variables X1, X2, X3, and X4 can explain 55.9% of the value aspect. Exchange, while the remaining 44.1% is explained by other variables not mentioned in the model.



**Fig. 3. Traditional fisherman heteroscedasticity assumption test**

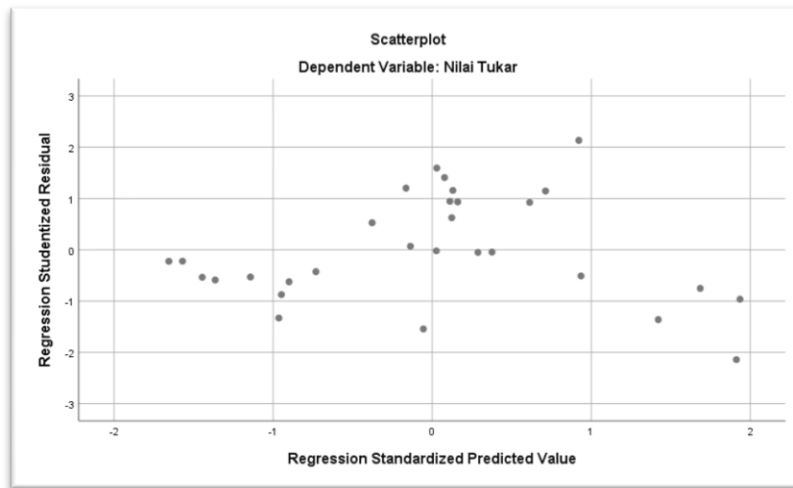


Fig. 4. Tourism bussiness actors heteroscedasticity assumption test

Table 13. Traditional fisherman summary table

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Durbin-Watson
1	,748 <sup>a</sup>	0,559	0,488	0,30429	0,559	2,314

Table 14. Tourism bussiness actors summary table

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Durbin-Watson
1	,826 <sup>a</sup>	0,682	0,631	0,27819	0,682	2,200

Meanwhile, for Tourism Business Actors, the result is 0.682; this shows that the variables X1, X2, X3, and X4 used can explain 68.2% of the Exchange Rate aspect, while the remaining 31.8% is explained by other variables not mentioned in the model as shown in Table 14.

**3.4.5 T-test**

The T-test is used to determine each independent variable's ability to explain the behavior of the dependent variable. Tests were carried out using a significance level of 0.05 ( $\alpha =$

5%). Based on the discussion in Table 15, the Outpouring of Working Time and Work Experience of Traditional Fishermen has no significant individual effect on the exchange rate because the value of t count > 0.05.

The same thing also applies to the profession of Tourism Business Actors. Based on the results listed in Table 16, the Working Time and Work Experience of Tourism Business Actors does not significantly affect the exchange rate because the value of t counts > 0.05.

Table 15. Traditional fisherman coefficient table

Model	Unstandardized Coefficients	Std. Error	t	Sig.	Collinearity Statistics	
					Tolerance	VIF
(Constant)	0,208	0,380	0,546	0,590		
Number of Family Dependents	-0,100	0,080	-1,258	0,020	0,793	1,260
Working Time	0,002	0,019	0,099	0,922	0,772	1,295
Income	0,022	0,004	5,239	0,040	0,955	1,047
Working Experience	0,010	0,008	1,265	0,217	0,983	1,017

**Table 16. Tourism bussiness actors coefficient table**

Model	Unstandardized Coefficients	Std. Error	t	Sig.	Collinearity Statistics	
					Tolerance	VIF
(Constant)	0,464	0,688	0,674	0,506		
Number of Family Dependents	-0,143	0,074	-1,936	0,044	0,752	1,330
Working Time	0,006	0,019	0,293	0,772	0,853	1,173
Income	0,021	0,003	6,830	0,047	0,780	1,281
Working Experience	-0,001	0,008	-0,135	0,894	0,851	1,175

**3.4.6 F-test**

The F test is used to determine the independent variable's ability to explain the behavior of the dependent variable together. Tests were carried out using a significance level of 0.05 ( $\alpha = 5\%$ ). The test was carried out at a 95% confidence level. The test results for Traditional Fishermen show a p-value of 0.160; this means that the independent variables consist of income from fisheries or business products (X1), some family members (X2), and workload as fishermen or business actors (X3) and work experience (X3). X4) together has no significant effect on the dependent variable, the Exchange Rate, because the p-value is  $0.160 > 0.05$ . While the test results for Tourism Business Actors also have no significant effect because the p-value is 0.170.

**3.5 Comparison of Exchange Rates for Traditional Fishermen and Tourism Business Actors**

Comparison is a type of science to compare the similarities and differences of two or more objects understudy to find a new frame of mind. In line with the opinion of [31] that comparative studies are a concept to measure quality and equality that can be used to study the relationship between the results that have been obtained. Based on the research results carried

out, Table 17 presents the average comparison or comparison for the indicator aspects studied in this study between the two professions, namely Traditional Fishermen and Tourism Business Actors.

Based on Table 17, the indicators for age and education have the same value and the total of family members for both professions. Fishers have a more extended average work experience when compared to tourism business actors. However, the outpouring of working time belonging to tourism businesses is more compared to traditional fishers. The outpouring of Working Time itself means the length of time a person uses to earn a living [32]. This matter is in line with the income received by tourism business actors, which is greater when compared to traditional fishers, making the exchange value of tourism business actors greater in value.

Furthermore, in Table 18, a Comparative Analysis of Data held by each profession is presented. According to [33], a regression result will be BLUE (Best, Linear, Unbiased, Estimator) if it meets the assumptions of data normality, multicollinearity, and heteroscedasticity assumptions. Based on the research that has been done, it is concluded that the model used has met the assumption of multiple linear regression, and the data obtained is BLUE.

**Table 17. Comparison table of average indicators of each profession**

Indicator	Traditional Fisherman	Tourism Bussiness Actors
Age (year)	43	43
Pendidikan	Primary School	Primary School
Number of Family Dependents	3	3
Working Experience (year)	22	20
Working Time (/month)	19 trip	27 hari
Fishery Revenue (IDR)	9.004.567	7.180.000
Household Expenditure (IDR)	1.678.166	1.479.166
Income (IDR)	3.945.566	4.285.500
Exchange Rate	0,99 (less prosperous)	1,05 (prosperous enough)

**Table 18. Comparative table of data analysis for each profession**

<b>Data Analysis</b>	<b>Traditional Fishery</b>	<b>Tourism Bussiness Actors</b>
	<b>Qualify/Not</b>	
Data Normality Test	✓	✓
Multicollinearity Test	✓	✓
Heteroscedasticity Test	✓	✓
<b>Data Analysis</b>	<b>Traditional Fishery</b>	<b>Tourism Bussiness Actors</b>
Coefficient of Determination	0,559	0,682
T-Test	<b>Uninfluential</b> - Working Time - Working Experience	<b>Uninfluential</b> - Working Time - Working Experience
	<b>Influential</b> - Number of Family Dependents - Revenue	<b>Influential</b> - Jumlah Tanggungan Keluarga - Pendapatan
F Test	Not Real Effects	Not Real Effects

The T-test conducted for both professions shows that the number of family dependents and income affects the exchange rate results for traditional fishers and tourism business actors. This is in line with [10], which states that fishery income is closely related to the ability of a professional to fulfill their daily needs. If the payment is higher, the level of prosperity will also increase. This also applies to the number of dependents in the family. The number of family dependents will affect the level of expenditure of a family concerning income, considering the need for daily consumption will increase with the number of dependents [34].

#### 4. CONCLUSION

The study results concluded that the average exchange rate for traditional fishers was 0.99, while the average exchange rate for tourism businesses was 1.05. The exchange rate belonging to traditional fishers is below 1, which means they are not sufficiently able to meet their household needs and can be said to be less prosperous. Meanwhile, the exchange rate of tourism business actors is at number 1, which means they are pretty prosperous and able to meet their household needs.

So, it can be concluded that based on the calculation of the Exchange Rate in the Pangandaran District, Tourism Business Actors have a better level of welfare when compared to Traditional Fishermen. In addition, the factors that influence it are income from fisheries or business products (X1), the total of family

members (X2), workload as fishermen or business actors (X3), and work experience (X4).

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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