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Path Analysis of Fishermen's Income with the Result of a Variable Intervening In the Pahlawan Village of Tanjung Tiram District

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Abstract: *This research examines the revenue variables of fishermen, media, long-standing and long-time efforts and catches as an intervening variable. The hypothesis of the study states that educational variables, long-time, and long-standing efforts have a significant effect on fishermen's catches, and educational variables, long-time and long-lasting efforts on fishermen's revenues with Fishing catches as an intervening variable. Then the obtained data is analyzed by using path analysis, data normality test, multicollinearity test, and heteroskedasticity test. The area studied was in the Pahlawan village of Tanjung Tiram Sub-district coal regency of North Sumatra province. Samples were taken as many as 70 samples, which was a community of fishermen in the village Heroes district of Tanjung Tiram. The data captured is the primary data taken directly by the interview technique using the questionnaire.*

Keywords: *Income, catches, education, long-time business, long-standing.*

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I. Introduction

The Indonesian Government has established 12 priority sectors in facing the challenges of the ASEAN Economic Community (MEA). Various efforts were made to encourage each sector to set up a standard of competency of each profession and policy strategy to accelerate the implementation of the competency certification of Indonesia's manpower both nationally and internationally. One of the priority sectors is the fisheries sector. The country of Indonesia is awarded a vast sea with the various fish resources contained therein. Indonesia is also the largest archipelago in the world because it has an area of sea and a large number of islands. The length of the coast of Indonesia reached 95,181 km (World Resources Institute, 1998) with an area of 5.4 million km2, dominating the total territorial area of Indonesia amounted to 7.1 million km2. This potential puts Indonesia as a country that has enormous maritime resources including the largest wealth of biodiversity and non-marine biodiversity. North Sumatra Province is one of the provinces in Indonesia that has potential in the fisheries sector both capture and aquaculture. North Sumatra province is the second-largest contributor after Maluku Province in the production of capture fisheries in Indonesia. North Sumatera's contribution amounted to 8.67 percent to the production of capture fisheries in Indonesia while the aquaculture fisheries of North Sumatra only accounted for 1.16 percent (BPS,2017). The abundant potential of the fisheries sector in North Sumatera is expected to be the economy's flagship subsector. The following statistical data show the role of the fisheries sector on PDRB in North Sumatera.

Figure 1. The role of the fisheries sector to PDRB North Sumatera based on price applied for the year 2012-2016

In the province of North Sumatra, Batubara areas in domination on the beach area mirror and its surroundings. Located approximately 3 hours from Medan City, there is also a coal Kabupatan that saves the potential of fisheries in the region. At the early observation of the 27 fishermen families in the village of Heroes, the data on the level of fishermen's income is still very low:

Table 1. The Average Income of Fishermen Family in Heroes Village

No	Income/month	Many Respondens
1	Uncertain	16
2	Rp 500.000 – Rp 1.000.000	10
3	Rp 1.000.000 – Rp 2.000.000	1

Source: Early observation (2018)

This is the opposite of the Government's efforts to advance the fishery industry on the one hand, and still the low level of the fishermen's income on the other side. Because of this basic is still needed a variety of studies especially on the revenue variables of the fishermen community. Another thing is seen in his village state that there are still many houses of residents who are quite a slums. From above we can see the economic state of the fishermen who are still not worthy and prosperous. The factors that influence the catch that is an object in this study are the level of education, duration of effort or duration of a fisherman and the length of the activity of the sea. This is because the longer a fisherman searches for fish in the sea then the chances of getting the catch are also getting bigger. With this, the trend of fishermen's income is also considered to be increased (Dhian, 2012:11). This exposure illustrates that in order to improve the life and income of the fishermen community in the village Heroes district of Tanjung Tiram, research on factors that can affect the income level of the fishermen community in Beach area.

II. Theoretical Review

Income

The concept of national income was first triggered by Sir William Petty of England who sought to assess his country's national income (UK) in 1665. In his calculations, he used the assumption that the national income was a summation of the cost of living (consumption) for a year. However, the opinion is not agreed upon by modern economic experts, because according to the view of modern economics, consumption is not the only element in the calculation of national income. According to them, the main tool as a measure of economic activity is gross National product (GNP), i.e. the total number of goods and services produced annually by the relevant country is measured according to the market price at a Country. The main purpose of a trading business is to earn revenue, where the income can be used to meet the life and survival needs of its trade business. The income received is in the form of money, where money is a means of payment or exchange equipment (Samuelson and Nordhaus, 2003).

Fishermen and Catches

Nelayan Fishermen are the terms for people who work on fish or another biota that live on the base, column, and surface of the water. The waters that are the activities of the fishermen can be freshwater, brackish and seawater. In developing countries such as Southeast Asia or Africa, there are still many fishermen who use simple equipment in fishing. Fishermen in developed countries usually use modern equipment and large vessels equipped with advanced technology. Eidman (1991) divides fishermen into two categories, namely fishermen and fishermen owners.

Long effort and sea

According to the Bahasa Indonesia dictionary, the length of effort is defined as an activity or process that a person has experienced when making a living to fulfill his/her life needs. The duration of this research is the length of business running or the life of the business since it was established. This means that if a business is running longer leads to the development of significant business in a positive or negative direction. Developments from the business world can depend on the trading climate and competition that occurs in the business/market. In terms of experience, if a business has a longer lifespan in the field of business, of course, it is more able to develop well. This is because the business has been familiar with the existing market conditions and understand the tastes of consumers. Industries that have an arguably age-established, should be more competitive with others.

III. Method Research

Research approaches

The research approach conducted in this study is associative/quantitative research as associative/quantitative research is a study aimed at knowing the degree of relationship and pattern/form of influence between two or more variables, wherewith this research it will be built a theory that serves to explain, predict and control a symptom. (Rusiadi, 2013:14). This quantitative study presents the analysis of inferential statistical data with the path analysis model.

Data Collection Techniques

The data collected is the primary data, data that comes directly from the respondent through the interview process. Data sources are fishermen that include small individual boat/boat, informant (community and fish Auction Place/TPI). The Data extracted from the fishermen include the profile of fishermen, the length of business, the Lamaya and the catches. Respondents were asked to fill out a questionnaire or a list of questions that had been prepared. The main purpose of the questionnaire is to obtain information relevant to the purpose of the survey and obtain information with reliability and validity as high as possible (Singarimbun and Effendi, 1989:175). The research also uses the Convenience sampling method, which is a procedure for obtaining sample units according to researchers ' desires. A total of 70 respondents were taken from the location of coastal Flower Village hero Kabupataen Tanjung Oyster coal North Sumatra.

Data analysis methods

In this study the analysis method used is a descriptive and quantitative analysis as follows:

1.) Descriptive analysis

In this case the author uses a descriptive statistical analysis technique. According to Sugiyono (2002:142) that descriptive statistics are statistics used to analyze data by describing or depicting data that has been collected as it is without intent to make any conclusions that apply to Generalization. In this case, the descriptive statistics know the development of education level, the length of effort and time of sea and the catch. Descriptive analysis is statistics used to analyze data by describing or describing data that has been collected as it is without intent to make conclusions that apply to public or generalization (Rusiadi, 2013). The descriptive analysis in this study is to examine and describe local wisdom in the village of Tanjung Tiram Sub-district of coal district so that it can support infrastructure development in improving the community economy Village in Tanjung Tiram subdistrict, Batubara regency.

2.) Quantitative Analysis

According to Rusiadi (2013), Associative/quantitative research is a study aimed at knowing the degree of relationship and pattern/form of influence between two or more variables, wherewith this research it will be built a theory that serves to explain, predict and control a symptom. According to Ghozali 2008, track analysis is the development of a regression model that is used to test the suitability of a matrix correlation of two or more models compared. Path analysis was developed by Sewall Wright (1934). Models are usually depicted with circles and arrows. The arrows show the relationship of causality. Regression analysis is done in every variable contained in the model. The regression value predicted by the model compared to the correlation matrix of variable observation results and the value of its goodness of Fitnya can be calculated. Based on the goodness of Fitnya, the best model can be determined. In constructing the pathway diagram, the relationship between the constructs is aimed at the line through one arrow indicating the relationship of causality or regression from the construct one with the other construct. Analysis district.

IV. Result

1.) Interachievement education on income through factors of capture

In order to prove that the variable of the catch can be an intervening variable between education on the revenue of fishermen, it will be calculated direct and indirect influence between education to income. If the indirect influence of the education of fishermen's income through the catch is greater than the direct influence of the education of fishermen, then the result factor can be an intervening variable between the Education of fishermen's income. To perform the calculations directly and indirectly performed from the regression coefficients standardized each of the variables independent of the dependent variables. To know of the influence of education through the capture factor on the revenue of fishermen used the path analysis. The magnitude of the error value on each effect of the variable independent of the dependent in the can go through as follows:

$Pe_1 = \sqrt{1-0{,}566^2} = \overline{0{,}824}$
$Pe_2 = \sqrt{1-0{,}749^2} = \overline{0{,}663}$

In the trimming theory testing the validity of the research model was observed through the calculation of the total coefficient of determination as follows:

R^2m $= 1-P^2e_1 . P^2e_2$
$= 1-(0,824)^2 (0,663)^2$
$= 1- (0,679) (0,440)$
$= 0,70$
$= 70,\%$

The value of the coefficient of determination is 70%, indicating that 70% of the information contained in the data can be explained by the model, while the remaining 30% is explained by errors and other variables outside the model. The number of coefficients on this model is relatively large so it deserves further inner achievements. From the output of SPSS outputs provide a standardized beta value for the education of 0.466 and significant at 0.70 which means that education does not affect catches. The coefficient value Standardized beta 0466 is the value of the path or path P2. In the following table SPSS output, the standardized beta value for education 0.714 and the catch factor of 0.848 are all significant. The standardized education beta value of 0.714 is the path of the line P1 and the value standardized beta of the catch factor 0.848 is the P3 path value. The magnitude of the value e1 = (1-0,810) 2 = 0.036, and the magnitude of value E2 = (1-0.827) 2 = 0.030.

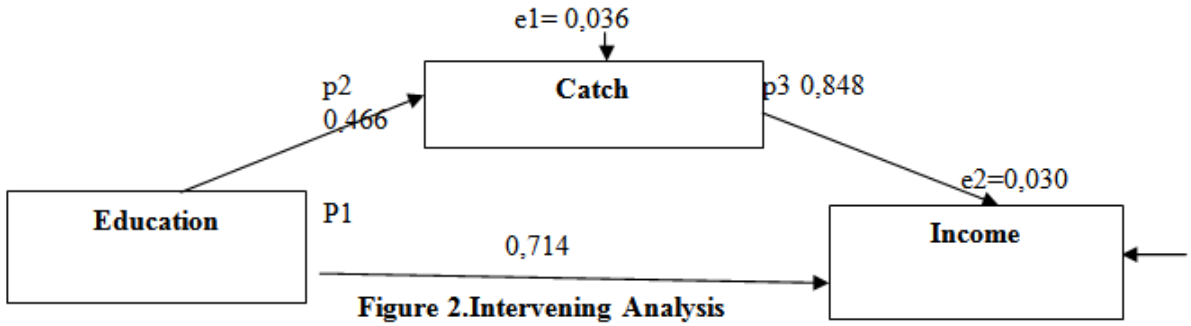

Figure 2.Intervening Analysis

The result of the analysis of the pathway shows that education can influence directly the income of fishermen and can also affect the indirect education to the cultural factors (as intervening) and then to the income of fishermen. The amount of direct influence is 0.714 whereas large indirect influence should be calculated by multiplying the indirect coefficient of (0.466) x (0.848) = 0.395 or total educational influence to the income of fishermen = 0.714 + (0.466 x 0.848) = 1.109, because the value (P2 X P3 < P1) Then the catch factor does not function as a intervening variable. The results of the calculations showed indirect influence through the result of smaller catches than the direct influence on the income of fishermen. This results in showing that education has no effect on the income of fishermen through the capture factor as an intervening variable, or it can be concluded that the catch factor is not an intervening variable between education on fishermen's income. Based on that, the research hypothesis that states that education affects fishermen's revenues through catches does not have empirical support or can be deduced rejected hypotheses.ditolak.

2.) Long inner achievement efforts on income through factors of catch

In order to prove that the variable of the catch can be an intervening variable between the length of effort on the income of fishermen, it will be calculated direct and indirect influence between the length of the business to the income. If the indirect influence of the long-standing efforts on the revenue of fishermen through the catch is greater than the direct influence of long-standing efforts on the revenue of fishermen, then the catch factor can be an intervening variable between the old Business towards the revenue of fishermen. To perform the calculations directly and indirectly performed from the regression coefficients standardized each of the variables independent of the dependent variables. To know the old influence of business through the capture factor on the revenue of fishermen used path analysis. The magnitude of the error value on each effect of the variable independent of the dependent in the can through the following calculations:

$Pe_1 = \sqrt{1 - 0,636^2} = 0,772$
$Pe_2 = \sqrt{1 - 0,232^2} = 0,973$

In the trimming theory testing the validity of the research model was observed through the calculation of total coefficient of determination as follows:

$= 1-(0,772)^2 (0,973)^2$
$= 1- (0,596) (0,947)$
$= 0,436$
$= 43,6\%$

The value of the coefficient of determination is 43.6%, indicating that 43.6% of the information contained in the data can be explained by the model, while the remainder of 56.4% is explained by errors and other variables outside the model. The number of coefficients on this model is relatively large so it deserves further inner achievements. From the output of SPSS outputs provide a standardized beta value for a long venture of 0.636 and significant at 0.005 which means the length of effort affects the catch. The coefficient value Standardized beta 0.636 is the value of the path or path P2. In the following table SPSS output, the standardized beta value for the duration of the 0.528 effort and the catch factor of 0.855 are all significant. The standardized value of the old beta of 0528 is the path of the line P1 and the value standardized beta of the catch factor 0855 is the P3 path value. The magnitude of the value of e1 = (1-0.713) 2 = 0.082, and the magnitude of value E2 = (1-0,626) 2 = 0.140.

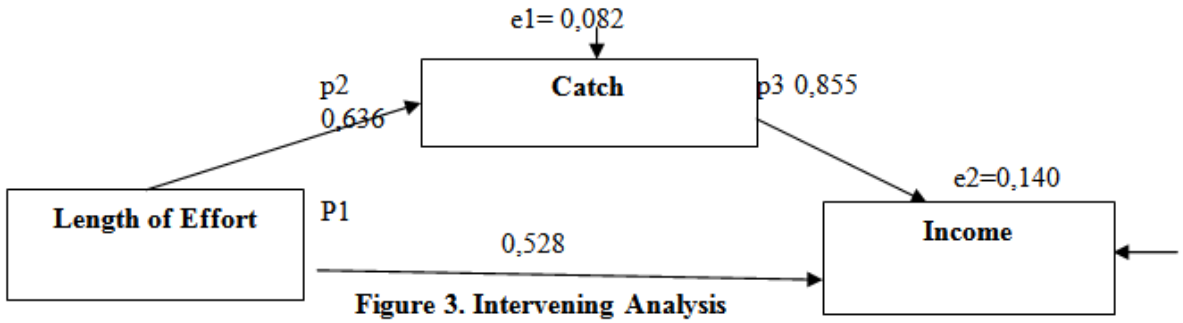

Figure 3. Intervening Analysis

The results of the pathway analysis indicate that the length of business can affect the revenue of fishermen and can also affect the indirect education of cultural factors (as intervening) and then to the income of fishermen. The amount of direct influence is 0.528 whereas the big indirect influence should be calculated by multiplying the indirect coefficient is (0.636) x (0.855) = 0.544, or the total influence of the old venture into the income of fishermen = 0.528 + (0.636 x 0.855) = 1.072. Because the value (P2 X P3 > P1) Then the catch factor serves as an intervening variable. The results of the calculations showed indirect influence through the results of the catch is greater than the direct influence on the income of fishermen. These results indicate that the length of the business affects the income of fishermen through a factor of the capture as an intervening variable, or it can be concluded that the catch factor becomes an intervening variable between the length of business Fishermen's income. Based on that, the research hypothesis that states that the length of business affects the revenue of fishermen through the catch has empirical support or can be deduced accepted hypotheses.

3.) Long-standing inner achievement against income through factors of capture

In order to prove that the variable of the catch can be an intervening variable between the old and the fishermen to the revenue of the fisherman, it will be calculated direct and indirect influence between the old and the revenue. When a long indirect influence is linked to the income of fishermen through a higher catch than the direct effect of the long-standing link to the revenue of fishermen, the catch factor can be an intervening variable between the old Fishermen's income. To perform the calculations directly and indirectly performed from the regression coefficients standardized each of the variables independent of the dependent variables. To find out the old influence of the sea through the capture factor on the revenue of fishermen used path analysis. The magnitude of the error value on each effect of the variable independent of the dependent in the can through the following calculations:

$Pe_1 = \sqrt{1- 0,777^2} = 0,630$
$Pe_2 = \sqrt{1- 0,553^2} = 0,833$

In the trimming theory testing the validity of the research, the model was observed through the calculation of were taken the total coefficient of determination as follows:

$R^2m = 1-P^2e_1 . P^2e_2$
$= 1-(0,630)^2 (0,833)^2$

= 1- (0,397) (0,694)
= 0,724
= 72,4%

The value of the coefficient of determination is 72.4%, indicating that 72.4% of the information contained in the data can be explained by the model, while the remainder of 27.6% is explained by errors and other variables outside the model. The number of coefficients on this model is relatively large so it deserves further inner achievements. From the output of SPSS outputs provide standardized beta value for long oversea of 0.777 and significant at 0.000 which means that long-time linking affects the catch. The coefficient value Standardized beta 0777 is the value of the path or path P2. In the following table SPSS output, the standardized beta value for a long time is 0.549 and the catch factor of 0.925 is all significant. The standardized long beta value of 0549 is the path of the line P1 and the value standardized beta of the catch factor 0925 is the P3 path value. The magnitude of the value e1 = (1-0.970) 2 = 0.0009 and the magnitude of value E2 = (1-0.827) 2 = 0.030.

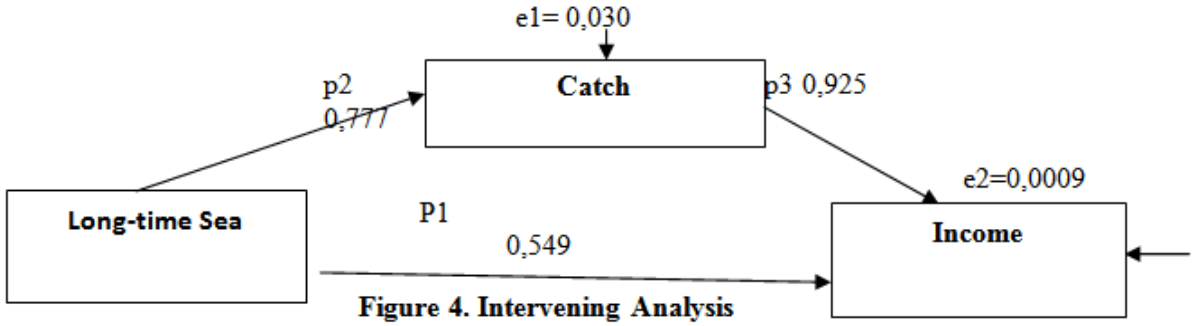

Figure 4. Intervening Analysis

The results of the pathway analysis indicate that the length of the sea can directly affect the fishermen's income and can also affect the indirect education to the result of the catch (intervening) then to the income of fishermen. The amount of direct influence is 0.549 whereas the large indirect influence should be calculated by multiplying the indirect coefficient of (0.813) x (0.777) = 0.632, or the total of the old influence of linking to the income of fishermen = 0.549 + (0.813 x 0.777) = 1.181. Because the value (P2 X P3 > P1) Then the catch factor serves as an intervening variable. The results of the calculations showed indirect influence through the results of the catch is greater than the direct influence on the income of fishermen. These results indicate that long-standing sea influences on fishermen's income through the capture factor as an intervening variable, or it can be concluded that the capture factor becomes an intervening variable between the old and the sea Fishermen's income. Based on that, the research hypothesis stating that the long-standing sea has an effect on the revenue of fishermen through catches of empirical support or can be deduced accepted hypotheses.

V. Conclusión And Recomendación

Conclusion

Based on the research conducted in the village of Pahlawan Tanjung Oyster Sub-district Batubara than can be taken the following conclusions:

1. There are results indicating that education has no significant effect on the income of fishermen through a factor of the capture as an intervening variable, or it can be concluded that the catch factor is not an intervening variable Between education on the income of fishermen in the village of Pahlawan Tanjung Oyster subdistrict Batubara Regency.
2. There are results indicating that the length of the business has significant effect on the income of fishermen through a factor of the capture as an intervening variable, or it can be concluded that the capture factor into an intervening variable between the old Efforts on the income of fishermen in the village of Pahlawan of Tanjung Tiram subdistrict Batubara Regency.
3. There are results indicating that the long linking is significant to the income of fishermen through a factor of the capture as an intervening variable, or it can be concluded that the capture factor into an intervening variable between the old To the income of fishermen in the village of Pahlawan of Tanjung Tiram subdistrict Batubara Regency.

Recommendations

Based on the results of the study above the advice of researchers on local governments is as follows:

1. The fishermen can set aside their income to be saved to meet the needs of the future and for Education Fund.
2. Village community does not always do fishing activities with traditional methods alone, so fishermen become more professional by continuing to do business development, such as innovation in processing the value of the result is to be more productive. So that it can increase its income.
3. The Government provides awareness of the importance of healthy living in a clean environment. People can pay more attention to the environment around the house, to be free from the garbage. The provision of garbage bin around the house is needed to keep the environment clean will have a good impact on health.
4. The government needs to provide counseling on renewable innovations in fishing so that it can be more effective and efficient.
5. The Government provides capital assistance to the village community, the capital in question is to buy more sophisticated fishermen capture equipment to better maximize the catch of fishermen and not only become workers only by borrowing tools because of limited funds.

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