



Regional original income analysis : development of fisheries potential in North Maluku

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ABSTRACT

The development of marine and fisheries in North Maluku Province is very important and strategic because it has very large and reliable fishery resource potential. The development of community fisheries through commercial fisheries is carried out to increase fishery capacity with improvements that must be made to be able to encourage regional economic growth in North Maluku Province. This study aims to analyze the potential role of fisheries in increasing local revenue (PAD) in North Maluku Province. The method used in this research is Location Quotient (LQ) Analysis and Regression Analysis. The results of the study show that the value (LQ) proves the potential income of the fisheries sector has a positive relationship to regional original income. The fisheries and marine sector as a leading sector based on regional income indicators should require strong efforts from the government to be willing to provide services for the development of fisheries and maritime affairs in North Maluku Province.

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1. INTRODUCTION

Leading sectors that can make the greatest contribution to regional economic progress are policy priorities that must be implemented and regional income is a source of revenue that must be managed properly to support regional development. Local Own Revenue (PAD) is a process supporting factor regional development through income regional original (PAD) local government able to finance various expenses carried out by region and on basically aimed at the progress of the area .

Study by Payong et al (2021) that fishing activities in East Flores Regency have not been properly and optimally managed so that fishery production has not been able to make an encouraging contribution to regional original income (PAD) in East Flores Regency. This is of course due to the lack of attention from the local government to fisheries which is one of the supporting sectors in increasing local revenue (PAD). The main determining factor Regional economic growth is the demand for goods and services from outside the region so that local resources can generate wealth because they can create job opportunities (Boediono, 1992) . The same research states that the policy strategy for increasing capture fisheries production in the Sula Islands Regency is directed at increasing the production of superior commodity types by increasing the number and capacity of fishing fleets, increasing investment in small-scale fishing businesses, developing infrastructure facilities and increasing human resources in the processing sector. fish, as well as involving business institutions in the fishing industry (Irham & Iksan, 2021) . Other studies in Central Maluku Regency have quite large fishery resource potential. However, the contribution of the fisheries sector to the

Gross Regional Domestic Product (GRDP) is only 6.20%. In general, this study aims to identify and analyze the contribution of the fisheries sector to the regional economy of Central Maluku Regency, determine the base level, and analyze the economic typology of the fisheries sector. The method used is secondary data analysis. (Kaihatu, 2018) .

North Maluku province with a group of large and small islands and constitutes 77.1% water territory and the remaining 22.9% is land. With such a large territorial waters, it means that fishery resources are relatively abundant, including natural resources found under waters, which are not yet known with certainty, both from a technical and economic point of view . North Maluku BPS data for 2020 stated that marine capture fisheries production in North Maluku in 2020 amounted to 288.2 thousand tons. This number increased by 1.5 thousand tons compared to the previous year which was only 286.6 thousand tons. Ternate is the largest marine capture fisheries producer in North Maluku, with production reaching 55.8 thousand tons. South Halmahera took second place with marine capture fisheries products of 52.9 thousand tons. The area with the next largest marine capture fisheries production is the Tidore Islands, amounting to 46.1 thousand tonnes. Meanwhile, North Halmahera was 28.8 thousand tons and Central Halmahera was 23.8 thousand tons. The results of a study by the Regional Office of the Directorate General of Treasury of North Maluku Province in 2020 found that the leading sectors or leading sectors and growing positively in North Maluku were the agriculture, forestry and fisheries sectors, the mining and quarrying sector, the processing industry sector and the transportation and warehousing sector. These four sectors have a significant contribution to North Maluku's PRDB, reaching 46.4 percent of the total GRDP in 2020. Local revenue (PAD) is a supporting factor for the regional development process. through regional original income (PAD) the regional government is expected to be able to finance various expenditures made by the regions which are basically aimed at the advancement of the region such as in improving public services and the welfare of the people in the area.

This research aims to To analyze the role of fisheries potential in increasing local original income (PAD) in North Maluku Province, then to analyze the potential of the fisheries sector that can be developed in increasing regional original income (PAD) in North Maluku Province and to analyze the relationship between the potential of the fisheries sector to regional original income (PAD) in North Maluku Province.

2. RESEARCH METHOD

This research is an analysis of the Fisheries Potential Development Strategy in North Maluku Province which is a province with an area that is mostly surrounded by the sea. Where later it is expected to become one of the leading sectors as a support for Regional Original Income (PAD). This research is intended to see whether the strategy for developing fishery potential has been taken seriously or still requires alternatives for special handling.

Data source

Secondary data is data taken from a second source or not from the original source. This data was obtained from previous research, government agencies, agencies or statistical data management agencies. Secondary data in this study includes fishery potential in North Maluku Province in the 2013-2022 year-end report, realization of local revenue (PAD), as well as other documents related to general conditions, namely geographical conditions, population and general conditions of fisheries in North Maluku Province. .

Sources of data in this study are primary and secondary data obtained directly by observing and interviewing the financial and asset management of North Maluku Province. While the secondary data in this study came from the fisheries service, revenue service, regional financial and asset management as well as from the central statistical agency of North Maluku Province. The analysis of the Strategy for Developing Fisheries Potential in North Maluku Province in supporting Local Own Revenue (PAD), uses quantitative data with data presented based on secondary data sources in the form of journals, government publications and other supporting sources related to research so no samples are needed.

Location Quotient (LQ) Analysis

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The basis for using the LQ technique is basic economic theory whereby when the base industry produces goods and services for markets in the region and outside the region, the sale of the proceeds will generate income for the region concerned. The inflow of income streams will lead to an increase in consumption and investment so that regional income also increases .

Information :

LQ : Location Quotient Coefficient Index City District

Xij : PDRB Sector i Province j

RVj : Total GRDP in North Maluku Province

The criteria for the value of LQ calculations are:

1. $LQ > 1$ means that the sector is the base (superior) sector. The products produced are not only able to meet the needs within the region but can also be used to meet the needs of other regions and this of course can support an increase in PAD.

2. $LQ < 1$ means that the sector is a non-base sector because the product produced is not sufficient to meet the needs in the region.

Regression Analysis

To analyze the effect of the fisheries sub-sector on economic growth in Mimika Regency, a simple linear regression analysis with the following regression model is used:

$$Y = a + bX$$

Information:

Y = Economic Growth Local Own Revenue North Maluku Province

a = Constant

b = GDP coefficient value of the fishery sub-sector in North Maluku Province

X = Total production of GRDP in North Maluku Province

After obtaining the regression equation, further proof of the research hypothesis is carried out with the R-Squares test. Regression analysis was performed with the help of the SPSS (Statistical Package for the Social Sciences) Version.24 application.

Ki: The Potential Contribution of the Fisheries Sector in North Maluku Province

Vi : Regional Original Income (PAD) in the fisheries sector of North Maluku Province

Pi : Total Regional Original Income (PAD) in the fishery sector of North Maluku Province

This research is an analysis of the Fisheries Potential Development Strategy in North Maluku Province which is a province with an area that is mostly surrounded by the sea. Where later it is expected to become one of the leading sectors as a support for Regional Original Income (PAD). This research is intended to see whether the strategy for developing fishery potential has been taken seriously or still requires alternatives for special handling.

3. RESULTS AND DISCUSSIONS

Location Quotient (LQ) Analysis

Table 1. Location Quotient (LQ) analysis results

| No | Year | GDP of Fisheries Sector Kab. Halbar | Prov. Fisheries Sector GDP North Maluku | Value (LQ) | Information |
|----|------|-------------------------------------|---|------------|--------------------|
| 1 | 2012 | 410817,52 | 4371355,3 | 0.964 | Non Leading Sector |
| 2 | 2013 | 431306,27 | 4525958,5 | 0.978 | Non Leading Sector |
| 3 | 2014 | 445314,54 | 4662502,2 | 0.980 | Non Leading Sector |
| 4 | 2015 | 461120,5 | 4742545,6 | 0.998 | Non Leading Sector |
| 5 | 2016 | 479951,0 | 4943914,7 | 0.996 | Non Leading Sector |
| 6 | 2017 | 499417,68 | 5100439,39 | 1.005 | Leading Sector |
| 7 | 2018 | 519853,75 | 5305114,88 | 1.005 | Leading Sector |
| 8 | 2019 | 539450,97 | 5518581,06 | 1.003 | Leading Sector |
| 9 | 2020 | 556467,36 | 5593724,19 | 1.021 | Leading Sector |
| 10 | 2021 | 574429,43 | 5700376,14 | 1.034 | Leading Sector |
| | GRDP | 4,918,129.02 | 50,464,511.96 | | |

Source: North Maluku Province DKP and BPS data in figures processed

The Location Quotient (LQ) analysis in the table above show that in West Halmahera Regency the fisheries sector shows that every year the value fluctuates, meaning that the fisheries sector is a non-leading category in 2012-2016 and in 2017-2021 it will again become a leading one. In the fisheries sector, the results of the Location Quotient (LQ) analysis contributed, in 2012 the value (LQ) was 0.96 and in 2013 it increased to 0.97 but remained in the leading or leading sector until 2016 with tilapia (LQ) of 0.99. Furthermore, in 2017 it increased to 1.00 in 2018 until 2019 it is still with a value of 1.00 and is in the leading sector. In 2020 it has increased to 1.02. In 2021 it has increased with a value of 1.03 and has become a leading sector. The fishery sector has experienced a change in value from year to year showing an LQ value < 1, which means that this sector is a leading sector but it can be expected that in the following year it will still be a leading sector in the future and is expected to have the potential to contribute to North Maluku Province.

Table 2. Location Quotient (LQ) Analysis Results

| No | Year | GDP of Fisheries Sector Kab. Halteng | Prov. Fisheries Sector GDP North Maluku | Value (LQ) | Information |
|----|------|--------------------------------------|---|------------|--------------------|
| 1 | 2012 | 260,939.05 | 4371355,3 | 2,168 | Leading Sector |
| 2 | 2013 | 269,668.25 | 4525958,5 | 2,164 | Leading Sector |
| 3 | 2014 | 278,242.22 | 4662502,2 | 2,168 | Leading Sector |
| 4 | 2015 | 285,216.15 | 4742545,6 | 2.185 | Leading Sector |
| 5 | 2016 | 293,555.33 | 4943914,7 | 2.157 | Leading Sector |
| 6 | 2017 | 300.96 | 5100439.39 | 0.002 | Non Leading Sector |
| 7 | 2018 | 310,11 | 5305114.88 | 0.002 | Non Leading Sector |
| 8 | 2019 | 319,13 | 5518581.06 | 0.002 | Non Leading Sector |
| 9 | 2020 | 322,36 | 5593724,19 | 0.002 | Non Leading Sector |
| 10 | 2021 | 324.61 | 5700376,14 | 0.002 | Non Leading Sector |
| | GRDP | 1,389,198.17 | 50,464,511.96 | | |

Source: North Maluku Province DKP and BPS data in figures processed

Location Quotient (LQ) analysis in the table above show that in Central Halmahera Regency the fisheries sector shows changes every year, meaning that the fisheries sector is a non-leading category in 2012-2020, and in 2021 it will return to being superior, allowing for the impact of many business actors have switched jobs to become fishermen due to the influence of the Global Covid-19 Pandemic. In the fisheries sector the results of the Location Quotient (LQ) analysis contributed, in 2012 the value (LQ) was 2.16 and experienced the same value until 2014 of 2.16, remained in the leading sector until 2017 it decreased with a value (LQ) of 0.02. However, this value continues until in 2021 it has decreased to 0.00 which is still in the leading sector. The fishery sector has experienced a change in value from year to year showing an LQ value < 1, which means that this sector is a leading sector category and can be expected to have the potential to contribute to North Maluku Province.

Table 3. Location Quotient (LQ) Analysis Results

| No | Year | GDP of Fisheries Sector Kab. Halsei | Prov. Fisheries Sector GDP North Maluku | Value (LQ) | Information |
|----|------|-------------------------------------|---|------------|--------------------|
| 1 | 2012 | 1727,29 | 4371355,3 | 1,332 | Leading Sector |
| 2 | 2013 | 1114.60 | 4525958,5 | 0.830 | Non Leading Sector |
| 3 | 2014 | 1235.60 | 4662502,2 | 0.893 | Non Leading Sector |
| 4 | 2015 | 1049.69 | 4742545,6 | 0.746 | Non Leading Sector |
| 5 | 2016 | 1650.78 | 4943914,7 | 1.126 | Leading Sector |
| 6 | 2017 | 1266.83 | 5100439.39 | 0.837 | Leading Sector |
| 7 | 2018 | 1587.51 | 5305114.88 | 1.009 | Leading Sector |
| 8 | 2019 | 1845.89 | 5518581.06 | 1.128 | Leading Sector |
| 9 | 2020 | 1570.87 | 5593724,19 | 0.947 | Non Leading Sector |

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| | | | | | |
|----|------|----------|---------------|-------|----------------|
| 10 | 2021 | 1921.38 | 5700376,14 | 1.136 | Leading Sector |
| | | 11355.44 | 50,464,511.96 | | |

Source: North Maluku Province DKP and BPS data in figures processed

The results of presenting GRDP data for the Fisheries and Marine Sector in South Halmahera Regency and North Maluku Province in 2012-2021. The results of the *Location Quotient (LQ)* analysis in the table above show that in South Halmahera Regency there is a change in the fisheries sector every year, meaning that the fisheries sector is the leading sector category in 2012-2020. It can be seen that in the fisheries sector the results of the *Location Quotient (LQ)* analysis contributed, in 2012 the value (LQ) of 1.33 had a very significant value, then decreased in 2013 by 0.83, but still remained in the fishery sector. superior. Until 2014, it still maintained a value (LQ) of 0.89 and decreased in 2015 with a value of 0.74. However, this value continued until in 2016 it increased to 1.12 which was still in the leading sector. Then in 2017 there was a downward shift with an LQ value of 0.83 and continued in the following year from 2018 it increased by an LQ value of 1.00 until 2019 it remained with an LQ value of 1.12 and again decreased in 2020 with an LQ value of 0.94. then it will increase in 2021 to an LQ value of 1.13 in the fisheries sector from year to year the value changes showing an LQ value > 1, which means that the fisheries sector in South Halmahera Regency is still a leading sector category that can provide potential income for the North Maluku Provincial government.

Table 4. Results *Location Quotient (LQ)* Analysis Ternate City Fisheries Sector 2012-2021

| No | Year | GDP of the Fisheries Sector of the City of Ternate | Prov. Fisheries Sector GDP North Maluku | Value (LQ) | Information |
|----|------|--|---|------------|--------------------|
| 1 | 2012 | 226,046.64 | 4371355,3 | 1.123 | Leading Sector |
| 2 | 2013 | 254,263.85 | 4525958,5 | 1,220 | Leading Sector |
| 3 | 2014 | 204006.57 | 4662502,2 | 0.950 | Non Leading Sector |
| 4 | 2015 | 206,140.00 | 4742545,6 | 0.944 | Non Leading Sector |
| 5 | 2016 | 212,810.57 | 4943914,7 | 0.935 | Non Leading Sector |
| 6 | 2017 | 219,841.00 | 5100439.39 | 0.936 | Non Leading Sector |
| 7 | 2018 | 228,754.50 | 5305114.88 | 0.936 | Non Leading Sector |
| 8 | 2019 | 245,396.80 | 5518581.06 | 0.966 | Non Leading Sector |
| 9 | 2020 | 256,969.20 | 5593724,19 | 0.998 | Non Leading Sector |
| 10 | 2021 | 269,396.30 | 5700376,14 | 1.026 | Leading Sector |
| | GRDP | 2,323,625.43 | 50,464,511.96 | | |

Source: North Maluku Province DKP and BPS data in figures processed

The *Location Quotient (LQ)* analysis in the table above, in the city of Ternate in the fisheries sector show that every year there are changes in certain areas due to seasonal and weather factors from 2012 to 2020. It can be seen that in the fisheries sector the results of the *Location Quotient (LQ)* analysis contributed, in 2012 the value (LQ) of 1.12 had a quite significant value, then remained in 2013 of 1.22. Until 2014 the condition decreased with a value (LQ) of 0.95 and continued to decline in 2015 with a value of 0.94. However, this value continued until in 2016 it decreased to 0.93 which was still in the non-leading sector. Then in 2017 there was a downward shift with an LQ value of 0.93 and continued in the following year from 2018 of 0.93 to 2019. LQ 0.99. Then it will increase in 2021 by an LQ value of 1.02 in the fisheries sector from year to year the value changes showing an LQ value > 1, which means that the fisheries sector in Ternate City is a leading sector category that can provide potential income for the North Maluku Provincial government.

Regression Analysis

The results of the analysis test obtained from the magnitude of the potential value of the fisheries sector and gross regional income to regional original income, are as follows:

Table 5. Regression Testing Results

| Coefficients ^a | | | | |
|---------------------------|-----------------------------|------------|---------------------------|------|
| Model | Unstandardized Coefficients | | Standardized Coefficients | Sig. |
| | B | std. Error | Betas | |
| 1 (Constant) | 169299,324 | 74666,982 | | ,058 |
| PAD. Sector. Fisheries | 3,870 | ,000 | ,621 | ,022 |
| GRDP.Provinsi.Malut | -.093 | ,054 | -,368 | ,128 |

Source: Data processed by researchers

From the test results above, there is a constant value of 16,929.324 meaning that if the Fisheries Sector is worth 0, then the value of Regional Original Revenue Growth for North Maluku Province will have a positive value of IDR 16.92. Then the results of the coefficient value of the Fisheries Sector is 3.870, meaning that if the value of the fisheries sector increases by 1 then the value of regional original income will increase by 3.870. Conversely, the gross regional income of GRDP decreases if the GRDP is 0, then the original blood income will also decrease by -0.993 or Rp.-993,021 per year. Based on the constant values from the Summary model table below, there is an analysis of the explanation of the results of the *R-square correlation value* indicating that the correlation between PAD Fisheries Sector and GRDP of North Maluku Province and PAD of North Maluku Province is very strong positive, namely:

Table 6. Correlation Test Results
Summary Model^b

| Model | R | R Square | Adjusted R Square | std. Error of the Estimate | Change Statistics Sig. FChange |
|-------|-------------------|----------|-------------------|----------------------------|--------------------------------|
| 1 | , ^{896a} | ,802 | ,746 | 111149,40016 | ,003 |

Source: Data processed by researchers

There is a positive relationship between the Fisheries Sector's PAD and the North Maluku Province's GRDP, meaning that the higher the value of the Fisheries sector's PAD and the North Maluku Province's GRDP, the North Maluku Province's PAD also increases. The *R-Square* determinant value of the fishery sector's contribution to North Maluku Province's PAD is 80.2% each year.

Capture Fisheries Development Strategy

Based on the results of data analysis using LQ analysis, it can be seen that the fisheries sector in 2012 to 2021 shows LQ results > 1 from each region in North Maluku Province, which means that the fisheries sector is a leading sector, where the fisheries potential sector has good development of regional original income in North Maluku province. In the previous year, relatively and the achievement has increased but with an LQ value <1 and the fisheries sub-sector is a non-leading sector, which means that some of the fisheries sector is only able to serve market demand in each region and has not been able to fully develop beyond demand from outside regions.

Relationship of the Fisheries Sector to Regional Original Income in North Maluku Province.

The test results show that the correlation relationship between the income of the fisheries sector in North Maluku Province shows a value of 3.87 proving that the results of the income from the fisheries sector have a relationship to the original regional income of North Maluku Province, with a large enough contribution so that the income of the fisheries sector is quite significant, such as meeting the needs of the community, increase per year, the average value of LQ is 5.22 in the leading-based fisheries sector and high market demand for fish resources. The explanation from the table above can be seen as an alternative strategy which is a top priority in efforts to develop the potential of the fisheries sector in increasing local revenue, namely First to develop the fisheries and marine sector with an integrated and sustainable approach by utilizing the large potential of fisheries and marine resources, manpower fishery work and *accessibility* and fishing actors that are easy to get and support from the local government through the coastal community empowerment program, based on local commodities, to meet the needs of the region and outside the region.

Not in line with the results of research conducted (PDF) The Contribution of the Fisheries and Maritime Sub-sector to Regional Original Income in North Gorontalo Regency, nd) Melissa (2018).

The contribution of the fisheries and marine sub-sector in increasing local revenue (PAD) in North Gorontalo Regency, Gorontalo Province. Then the results of the research are in line with what Sari did, (2017) , Analysis of the Potential of the Fisheries Sector Against Regional Original Income (PAD) in Banyuwangi Regency, East Java. Bachelor thesis, Brawijaya University. In line with the research conducted by Karimi (2019) , the Role of the Fisheries Sub-Sector in Supporting the Economy of Kampar Regency, Riau Province, The Role of the Fisheries Sub-Sector in Supporting the Economy of Kampar Regency, Riau Province.

The Relationship between GRDP and Regional Original Income in North Maluku Province.

The results of the analysis of the relationship between the GRDP of North Maluku Province and regional original income can be done by knowing the size of the income power of the fisheries sector in North Maluku Province. The degree of closeness of the relationship is indicated by the magnitude of the correlation coefficient value which is assessed through the value of r . If the results of the relationship between the two incomes are positive, namely the regional GRDP increases, then the regional original income will also increase. On the other hand, the result of the relationship between the two regional GRDP is negative, that is, economic growth decreases, so regional original income will also decrease. The test results show that the correlation between the GRDP of North Maluku Province shows a value of -0.93 proving that the results of the GRDP of North Maluku Province do not yet have a sufficient relationship to regional original income, with the contribution made by the level of production can encourage more significant economic growth, such as expanding market segmentation demand, increase per year, the average value of LQ is 1.50, if there is a decrease in production levels it will affect the economic growth of a region that requires a strategy to develop potential in the future to be better for the economic growth of a region.

In line with the results of research conducted by Putu et al., (2017) . The Influence of GRDP Contribution to PAD of Bali Province with Economic Growth as a Moderating Variable. Realization of district and city budgets in Bali Province in 2013 – 2017. Not in line with the results of research conducted by Jati, (2016) . Analysis of the Potential of the Fisheries Sector in Tegal City's Economic Growth. Then the results of the research are in line with what Yulina did , (2021) . Empowering Fishermen Communities Through Fish Processing by the Maritime Affairs and Fisheries Service to Improve Community Welfare in Banda Sakti District, Lhokseumawe City, Aceh Province.

4. CONCLUSION

The results of the analysis and discussion that can be concluded from this research are, the development strategy from 2012-2021 in the fisheries sector is a leading sector, but there are several regions in 2015 and 2018 that have returned to being non-leading based on the results of research tests which can be seen from the Location Quotient *test* (LQ) and test the results of regression correlation in each sector. It is hoped that an increase in regional original income will become a leading sector in each region, especially in North Maluku Province. Then the results of the analysis show that the condition of market demand in the fisheries sector, the lack of fishery production levels supported by fishing equipment technology is inadequate, so that it becomes an obstacle for the government to be addressed according to regional needs and capabilities. And Increasing Regional Original Income (PAD), optimizing by taking advantage of opportunities. The fisheries sub-sector has favorable conditions for development, because each fisheries sub-sector has opportunities to increase local revenue in Maluku Province. In connection with the results of this study, in the future more attention is needed from the government, in terms of increasing fish production, by setting regulations that are more in favor of fishermen and fishing business actors, such as enforcing fishing equipment prices that are affordable for the middle to lower scale, and preparing marketing channels. integrated fishery products so that the production obtained can be absorbed by the market and ultimately improve the welfare of fishermen and fishery business actors. And hope that in the future, we can expand the scope of this research area, to areas that are fishery areas that reach not only a province, but all provincial areas that have fishery potential.

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