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# The Role of the Fisheries Subsector in the Regional Economy of Tolitoli Regency

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A B S T R A C T

The purpose of this study was to determine the role of the fisheries subsector in the regional economy of Tolitoli Regency in 2018-2022. The type of research used is quantitative research with technical analysis of Location Quotient (LQ) analysis data with secondary data obtained from the Tolitoli Regency Central Statistics Agency (BPS). The results of this study indicate that the production of the Tolitoli Regency fisheries subsector according to the calculation of Location Quotient (LQ) analysis shows an average value for 2018-2022 of 0.69 which means less than 1 (LQ <1) and is included in the criteria for non-base or non-leading sectors, it can be said that the fisheries subsector has a role as a local economic sector in the regional economy of Tolitoli Regency in 2018-2022

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## INTRODUCTION

As a maritime country, Indonesia has abundant natural resources, being the owner of the most islands in the world which has a water area of 70% while the land area reaches 30% (Resa et al., 2016). Indonesia's vast territorial waters make Indonesia a country that has great potential in the marine and fisheries sector, which is estimated to be more than 2,500 species of fish and has around 500 types of living corals (Putri, 2022).

The fisheries subsector is one of the natural resources in the marine and fisheries sector that is the primary mover of the community's economy. The fisheries subsector is a local economy that can be directly felt by the community. The goal of the fisheries subsector is not only to improve community welfare, but also to help increase the contribution to regional development (Mardyani & Yulianti, 2020)

Judging from the distribution of fisheries production, Sulawesi Island has the largest marine fisheries production with a coastal length of 6,600 km, has a tropical climate, and a large area of land available for the development of fisheries and marine subsectors (Palilah, 2021). Central Sulawesi is known to have many comparative advantages, especially for the development of the marine fisheries subsector. It is included in four Fisheries Management Areas (WPP) namely WPP 713 Makassar Strait, WPP 714 Tolo Bay, WPP 715 Tomini Bay and WPP 716 Sulawesi Sea (Umar et al., 2023)

Tolitoli Regency is one of the districts in Central Sulawesi Province, has a sea area of 300,859 Ha (241.92 miles) and a coastline of 453.98 Km (Fauzan et al., 2019). According to the Department of Marine Affairs and Fisheries (DKP Tolitoli Regency, 2022) all sub-districts have potential in the fisheries subsector, namely the type of marine fisheries and the type of aquaculture that is extraordinary, has prospects for marine fisheries and aquaculture businesses, starting from the sub-districts of South Dampal, North Dampal, Dondo, Basidondo, Lampasio, Ogodeide, Baolan, Galang, Dakopamean, and North Tolitoli.

The problems faced in aquaculture are the utilisation of pond and freshwater aquaculture areas of 7,110 Ha and the remaining 1,129 Ha that have not been utilised properly (Dinas Perikanan, 2021). Many aquaculture areas in ten sub-districts in Tolitoli Regency have not been maximally processed, namely leaving the ponds empty or unused. This is due to the high cost of repairing damage and bringing in seeds from outside the area which also requires high costs. As a result, existing ponds are not maximally processed. In addition, high rainfall often hit Tolitoli Regency throughout 2021, January was the month with the highest rainfall, averaging 153 millimetres and August was the month with the lowest rainfall with an average of 84 millimetres, causing flooding and landslides on pond bunds, which made the cost of making pond bunds very expensive so that people no longer cultivate their ponds.

Furthermore, the problem faced by capture fisheries in Tolitoli Regency is the limitation of fuel oil. To obtain subsidised fuel, fishermen need requirements that are considered burdensome for them. These requirements are a community statement letter showing that they are really fishermen, do not

have a side business selling fuel at retail, and are adjusted to the capacity of the engine used by fishermen when fishing.

Other problems arise due to natural phenomena. The full moon is a natural phenomenon that is always present in the middle of the month, this makes it a holiday to go to sea because the full moon cycle causes tides to recede until the sea currents are very strong so that more fish stay away from the waters and look for food at the bottom of the ocean. This results in an increase in fish prices because at that time Tolitoli Regency fishermen find it difficult to get fish. On the other hand, according to the Climatology and Geophysics Agency, the phenomenon of fish rising to the surface is because the temperature of the sea water is cooling so that the fish get drunk and pull over. The temperature change is due to the wind blowing from Australia to the Indonesian region, passing through the Indian Ocean waters which have relatively cold sea surface temperatures. As a result of this phenomenon, the catch of Tolitoli Regency fishermen is abundant, this has caused the price of fish to decline. The price of fish usually reaches 500 thousand rupiah to 600 thousand rupiah per basket, but when the catch is abundant the price of fish drops to 100 thousand rupiah per basket.

These problems indicate price fluctuations due to an imbalance between the quantity supplied and the quantity demanded by consumers. When there is an oversupply of fish, the price of the commodity decreases, and when there is a shortage of supply, the price of the commodity increases. In addition to this, the characteristics of fresh sea fish commodities are quickly damaged/rotten and the lack of price information causes fishermen to be weak in determining prices so that fishermen can only act as price takers and suppliers as price makers. This can be seen from the data obtained, that the type of marine fisheries in Tolitoli Regency was 13,585.90 tonnes (2017), then increased by 20,781 tonnes (2018) and 27,488 tonnes (2019). While there was a decrease of 17,029 tonnes (2020), and 17,232 tonnes (2021) but again experienced an increase of 21,455.28 tonnes (2022).

According to the Central Sulawesi Statistics Agency (BPS Central Sulawesi, 2019), the catch of marine fish in Tolitoli Regency in 2019 was 27,488 tonnes, ranking first out of twelve districts in Central Sulawesi Province which shows that Tolitoli Regency has abundant marine fish catches so it is in second place. From this, it is important to conduct research in 2018-2022 to find out how the role of the Tolitoli Regency fisheries subsector in the regional economy based on the phenomena found such as the increase and decrease in the value of fisheries production each year caused by price fluctuations in fisheries production and various other problems that have an impact on fishermen to produce maximum fish catch production. In addition to the role of the fisheries subsector, this study will also be able to see how the local government policy of Tolitoli Regency in terms of managing marine resources and public waters such as aquaculture to the maximum and continue to encourage the local economy through the fisheries subsector that is available in the region, which will contribute to the regional economy, especially the fishermen for their welfare.

## LITERATURE REVIEW

### Theoretical Basis of Economics

According to (Tarigan, 2014) economic base theory is a good or commodity that encourages an increase in the rate of economic growth. It is said that, the magnitude of the increase in exports from the superior potential of a region determines the rate of economic growth. Base theory is classified into two sectors, namely the base sector and non-base sector. The base sector is the sector or economic activity that serves both the market in the area and outside the area. Indirectly, the region has the ability to export goods and services produced by the sector to other regions. While non-base theory is a sector that provides goods and services to the community within the boundaries of the Economic Area.

### Roles

According to the Great Indonesian dictionary role is a number of actions possessed by a person who has a position in society and should be implemented. If interpreted role is a dynamic process of a position or status when someone carries out their rights and obligations. For example, if a person has fulfilled his rights and obligations, then it is included in the role. However, in this study the role in question is the role of fisheries subsector in the regional economy. if the role is status or position then the fisheries subsector is a position in the form of natural resource potential owned by a region and value added, such as fisheries subsector can be used as a fisheries business that can be developed by individuals, companies, or government agencies to encourage the regional economy through the local economy.

### Economic Development

The economic development of a region is the result of a process of increasing the capacity of the workforce to generate updates on products than ever before, the identification of new markets, the construction of alternative industries as well as the transformation of knowledge, quality and capacity of human resources to produce better products and services. To achieve the goals of local economic development, communities and governments work together to optimize natural resources and human resources in the best way.

### Economic Growth

Economic growth is an indicator used to measure and analyze economic development. Economic growth continues in line and develops simultaneously with economic development. If an area can generate income from goods and services that increase from the previous year, then the region is considered an economic growth (Regina, 2022). To increase and encourage economic growth in a region, local governments and their communities jointly manage available resources and establish patterns of cooperation between local governments and the private sector (Pide, 2023).

### Contextual Framework

The potential of the fishery subsector in Tolitoli regency as a very abundant fish production. This is based on data from the Central Statistics Agency (BPS) of Central Sulawesi province, Tolitoli regency's sea fish catch income in 2019, ranked first of all districts in Central Sulawesi province,

amounting to 27,488 tons. This potential can meet the daily needs and welfare of the community and can be used as the main driver of the regional economy.

In this study, the fisheries subsector of Tolitoli regency has three types of Fisheries, namely Marine Fisheries, General Fisheries and aquaculture. Marine Fisheries in Tolitoli regency face various problems, ranging from operational costs, natural phenomena and fish price stability. In addition to marine fisheries, there are also general fisheries that do not have the value of production to the fishery subsector. Aquaculture problems were also found, namely the use of cultivated land is not optimal because of high rainfall and the high cost of feed and seeds imported from outside the region, so that the maturation of ponds is not used properly. These problems have an impact on increasing the income/income of general fisheries, aquaculture, and capture fisheries.

The production of fishery subsector in this study is used to see the overall number of fishery subsector results in the regional economy by using Location Quotient (LQ) analysis. This analysis aims to look at the basis and non-basis of the fisheries subsector so that researchers can determine the role of fisheries subsector in the regional economy as measured by the Gross Regional Domestic Product (GRDP) on the basis of constant prices according to the field of business. As for the framework scheme, it can be drawn as follows:

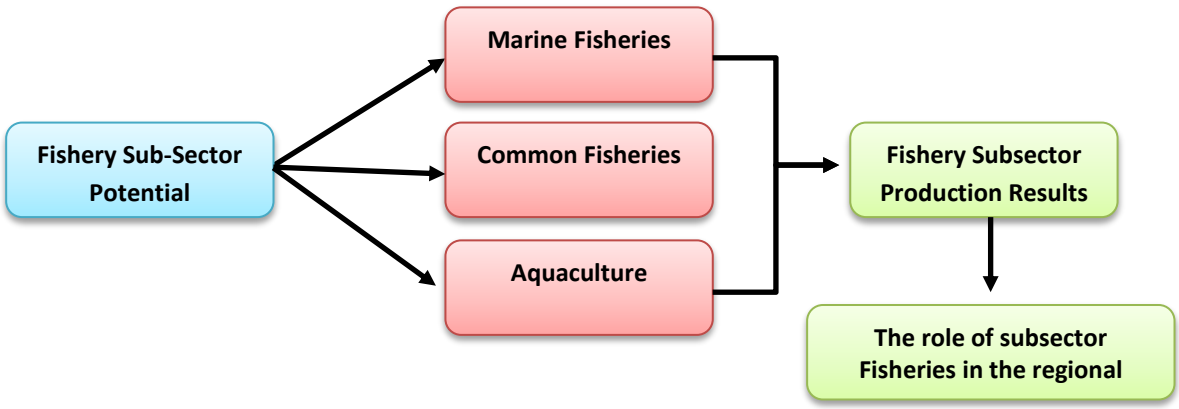


Figure 1. Conceptual Framework

## RESEARCH METHODS

The research methodology used is quantitative research. The type of data used for data and information collection in this study is secondary data. The secondary data used in this study are time series data for 2018-2022 obtained from the Central Statistics Agency of Tolitoli Regency and Central Sulawesi Province in the form of fisheries subsector production and Gross Regional Domestic Product (GRDP).

The data analysis technique used in this study uses the method of (Tarigan, 2016), namely Location Quotient (LQ) analysis, which states that to see the role of an economic subsector, a comparison can be made between the results of the subsector and the GRDP of a smaller area against a larger area. If the result of the comparison is more than the number one, it includes the base sector, while if it is less than the number one, it includes the non-base sector. To

find out how the role of the fisheries subsector, by looking at the comparison between the results of the fisheries subsector and the GRDP of Tolitoli Regency and the results of the fisheries subsector and GRDP of Central Sulawesi Province can be done as follows:

$$LQ = \left(\frac{vi/Vi}{vt/Vt}\right) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Di mana:

LQ : *Location Quotient*
*vi* : Tolitoli Regency fisheries sub-sector revenue
*Vi* : Total GRDP of all sub-sectors of Tolitoli Regency
*vt* : Central Sulawesi Province fisheries sub-sector revenue
*Vt* : Total GRDP of all sub-sectors of Central Sulawesi Province

**RESEARCH RESULTS**

Based on the calculation of the Tolitoli Regency fisheries subsector in 2018-2022, the LQ analysis value in 2018 was 0.48, 2019 showed a figure of 0.91. Furthermore, in 2020 it was 0.66, in 2021 it was 0.46 and in 2022 it touched a figure of 0.90. The average value of the results of the LQ analysis of the Tolitoli Regency Fisheries Subsector in 2018-2022 is 0.69 which indicates that in that year, the fisheries subsector is a non-base sector or a non-leading sector because it is less than 1 or LQ < 1. The calculation results can be seen in the table below as follows:

Table 1. Calculation Results of Location Quotient (LQ) Analysis of Tolitoli Regency Fisheries Sub-Sector 2018-2022

| 2018 | 2019 | 2020 | 2021 | 2022 | Average Value |
|---|---|---|---|---|---|
| 0,48 | 0,91 | 0,67 | 0,47 | 0,90 | 0,69 |

Source: Data processed (2024)

LQ analysis, the fisheries subsector of Tolitoli Regency in 2018-2022 is included in the non-base sector, where the value of production results shows a number less than 1, meaning that the Tolitoli Regency fisheries subsector is included in the non-superior sector while the subsector is said to be a base sector or superior sector if the results of the LQ analysis calculation are more than 1.

**DISCUSSION**

Based on research using Location Quotient (LQ) analysis, the Tolitoli regency fisheries subsector in 2018-2022 is included in the non-base sector, where the value of production shows a number less than 1, which means that the Tolitoli regency fisheries subsector is included in the non-leading sector while the subsector is said to be the base sector or the leading sector if the results of the LQ analysis calculation are more than 1.

In 2018, there was an increase in production results from the previous year which was classified as high with a total of Rp. 11,296,466 million (2017)

and Rp416.347.740 million (2018). Based on the data obtained, the increase was caused by an increase in the number of fishing vessels, namely 2,395 vessels (2017) and 2,747 vessels (2018). Where the number of vessels used as one of the factors in increasing fisheries production by fishermen. Although in 2018 there was an increase in fisheries production, it appears that the calculation of LQ analysis is 0.48, which means less than 1 and is included in the non-base sector criteria. This is caused by catches that are not yet optimal. Judging from the data obtained, the type of public water fisheries does not produce production (fish catch), such as deep sea fisheries. Where deep sea fisheries are carried out in the ocean or on the high seas. Of course, using modern equipment for abundant catches, but fishermen in Tolitoli Regency have not been able to utilise this type of fishery marine resources due to the limitations of fish catching equipment which generally still uses traditional equipment such as the use of fishing boats without motors (rowing boats), outboard motor boats and motor boats. While fishing gear still uses trawls, boat nets, bubu, so that the fisheries subsector has not yet provided optimal results. The local government in this case, should further improve the knowledge of fishermen in managing marine resources and provide assistance with modern fishing gear by applying technological developments, such as purse seine and gill net fishing gear so that the fisheries subsector can contribute optimally to the welfare of the community and the regional economy.

Furthermore, in 2019 there was still an increase in fisheries production in Tolitoli Regency with the results of the LQ calculation of 0.91, which means that the fisheries subsector is included in the non-base criteria because it shows a number less than 1 (LQ <1) caused by a decrease in production value/price. From the data obtained in 2019, Tolitoli Regency as the highest number of marine fisheries catches of all districts in Central Sulawesi Province was 27,488 tonnes with a production value of Rp572.548.281 million. The production value is relatively small when compared to Buol District which is a neighbouring region, where the catch is 11,854 tonnes but the production value is around Rp600.030.321 million. This shows the difference in the value of marine fisheries production in Tolitoli Regency caused by the imbalance between the quantity of fish supply and the quantity of fish demanded by consumers, resulting in a decrease in the value of fisheries production. This should be a concern for the government to issue policies related to the stability of fish prices that are needed by fishermen.

In 2020, there was another decrease in fish catches of Rp406.304.129 million. The results of the LQ calculation show a number less than 1, namely 0.67, meaning that it is included in the non-base sector category. The decline in catches was caused by the small number of vessels producing 2,832 vessels (2019) and decreased by 2,509 vessels (2020) due to the COVID19 outbreak. The increase in the COVID19 outbreak caused the government to issue a policy of limiting community activities to prevent the spread of the outbreak, which resulted in social and economic problems for the community. So that people lose income, cannot work, and cannot meet the minimum living needs, especially poor households, causing people's purchasing power and

consumption to decline. Particularly in the fisheries subsector, the fishermen limited their fishing due to the lack of purchasing power in the market, so the fish collectors limited the purchase of fish from the fishermen. Therefore, the government issued policies in handling the COVID19 outbreak such as policies for informal workers and owners of Micro, Small and Medium Enterprises (MSMEs) and policies regarding the addition of Direct Cash Assistance recipients which are expected to increase people's purchasing power.

Furthermore, the fisheries subsector of Tolitoli Regency in 2021, according to the calculation of the LQ analysis of 0.47, which means that it is included in the non-base criteria due to a decrease in the production of aquaculture. Based on the data obtained, the decline is relatively high, namely Rp34.328.497 million (2020), while it is Rp17.961.706 million (2021). The decline is caused by many ponds that are not cultivated optimally because the cost of making ponds and maintaining them is quite expensive, such as milkfish pond cultivation at a cost of around Rp15.000.000 million. From this, so that people manage their pond cultivation optimally, the government issued a sustainable fish farming policy, which provides assistance in the form of facilities and infrastructure such as fish seeds, feed, lime, probiotics and nets. After a decline, in 2022 the Tolitoli Regency fisheries subsector experienced an increase in production value of Rp568,275,666 million caused by a drastic increase in the type of marine fisheries of Rp507,945,882 million and aquaculture of Rp60,309,784 million. This increase does not make the fisheries subsector a basic sector, as the LQ calculation is 0.90 which means less than 1, due to the increase in fishermen's catches making the supply of fish abundant. This condition makes the price of fish decrease because fishermen can only act as price takers and buyers as price makers so that the selling value of fish decreases. Therefore, the local government as a policy maker should strive to stabilise fish prices to increase the income of fishermen.

This can be a concern for the local government to prioritise natural resources that have the potential for regional development, especially the fisheries subsector to prioritise marine and fisheries resources that have the potential for regional development by utilising sustainable marine resources to support economic growth and improve community welfare. So that Tolitoli Regency will add a new leading sector in addition to the agricultural sector. because when viewed geographically, the length of the coastline of Tolitoli Regency is around 453.98 km2. Of the ten sub-districts, nine sub-districts are located in coastal areas. With the existence of marine and fisheries resources, researchers hope that the local government can maximise this potential.

The results of this study are in line with research conducted by (Jati, 2018) which concluded in the results of his research that the fisheries subsector of Tegal City is not a basic sector because the average is less than 1. The criteria for the basic sector is the average result of the LQ calculation of more than 1. These results can encourage local governments to concentrate on developing regional potential.

## CONCLUSIONS

The results of data analysis and discussion conducted by researchers, then it can be concluded that the fisheries subsector of Tolitoli Regency in 2018-2022 is a non-base sector, which when viewed from the results of fisheries subsector production in the LQ calculation shows a number less than 1, namely the LQ calculation of 0.48 (2018), 0.91 (2019), 0.67 (2020), 0.47 (2021) and 0.90 (2022). Where the LQ analysis criteria if the results of the LQ analysis calculation are more than one can be said to be a base sector and vice versa if the results of the LQ analysis calculation are less than 1 then it is said to be a non-base sector.

## RECOMMENDATIONS

1. The fisheries subsector as a non-base or non-leading sector in Tolitoli regency, may be able to optimize the utilization of marine and fisheries resources owned and continue to maintain, maintain, given that Tolitoli regency is rich in potential marine resources and is in a strategic position to continue to grow with a focus on the fisheries subsector so as to provide maximum results in the regional economy.
2. It is expected that the government and Related Agencies as policy makers in order to continue to increase public welfare income, especially in the fisheries subsector. Not only that, the government continues to provide education such as training and Human Resource Development related to managing marine resources both production and production. Local governments can also apply technology that can help increase the production of fisheries subsector which will improve the welfare of the community and the regional economy.

## ADVANCED RESEARCH

For further researchers can use other indicators, in addition to GDP and other analysis techniques other than Location Quotient (LQ) analysis, as well as the span of years of research in order to obtain better results and find out the same indicators with different variables.

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