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Analysis of the Potential of Agricultural, Plantation, Livestock, and Fisheries Subsectors in the Sumenep Archipelago

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ABSTRACT

Designing regional development requires government consideration of the agricultural, plantation, and fisheries sub-sectors which has potential to support the economic growth of the region. The purpose of this research is to identify which sub-sectors serve as the economic base and have the potential to be used as a reference for improving the economy in the archipelagic areas of Sumenep Regency. There are three sub-sectors that are the economic base in the archipelagic areas of Sampang Regency, which have the potential to support economic growth and regional income. This research is a descriptive quantitative study that uses numerical data from the year 2022. The analytical method used is Location Quotient (LQ) analysis. The agricultural, plantation, and fisheries sub-sectors that serve as the economic base in the region include the agricultural sub-sector, plantation sub-sector, aquaculture fisheries sub-sector, and processed fisheries sub-sector.

Introduction

To achieve autonomous economic development goals, the main factor that is essential is aligning the regional development priorities with the development potential of each region. It is related with the various development potential of each region. Thus, the determination of the dominant economic sector activities in each region is essential (Siswandharma, 2021). The regional economic development policies of a region must be adjusted according to the conditions of the respective region (problems, needs, and potency). Therefore, in-depth research on the condition of each region must be conducted to obtain data and information that are useful for determining the regional development plan of the respective region (Arsyad, 2010).

The regional autonomy policy implemented under Law No. 32 of 2004 with the amendment of Law No. 22 of 1999 on Regional Autonomy has led to changes in economic development, from a centralized to a decentralized approach. This policy allows each region to maintain its own region by having freedom and responsibility for their own development (Abidin et al., 2019). The realization of regional economic development is carried out through the acceleration of economic development. Successful economic development drives economic growth, which can be recognized from the growth of the regional gross domestic product (RGDP). RGDP is an indicator used to identify and measure the economic growth of a region.

The amount of income generated by each sector in the RGDP indicates the potential of that region (Lestari, 2019).

The development of a region based on leading sectors/sub sectors is a strategy for promoting the capacity and economic activities of the community in a region. It allows great impacts on the economic progress of the local community. Essentially, this is expected to significantly contribute in increasing regional income. Therefore, an appropriate development strategy is needed to identify and explore the economic potential of a region. This strategy is to develop competitive and locally-based economic activities. Choosing the leading sectors/sub sectors as the basis for regional development and cooperation between central governments is an essential strategy plan. The first strategy is determining the sectors/sub sectors that have advantages and potency. This research aims to identify the leading sectors in the Sumenep region.

Research Methods

The research was analyzed with descriptive analysis methods. The research locations, namely seven sub-districts in the archipelagic area of Sumenep Regency, were determined purposively by considering the potential physical structure of the area, the mainstay sectors were the agriculture, plantation and fisheries sectors. The sectors were chosen due the the largest contribution provided to the GRDP of Sumenep Regency.

The type of data used in this research is secondary data. The secondary data used in this research is sub-district data in 2023. This data was obtained from the Central Statistics Agency (BPS) of Sumenep Regency.

The agricultural, plantation and fisheries sectors of Sumenep Regency were analyzed by Location Quotient (LQ). The analysis was carried out by comparing the relative share of sector income in Sumenep islands to the total income of Sumenep islands with the relative share of sector income in Sumenep Regency to the total income of Sumenep Regency. Data analysis was performed in several stages, a) Data were inserted according to type of fish, processed fish, fish products in 2022 into a spreadsheet in column and row format. The column is filled with the name of the region (Sumenep Islands and Sumenep Regency), while the row is filled with the name of the type of fish, processed fish and fish products. b) The total production of fish types, processed fish, j-th fish products and total production of caught fish in the Sumenep Archipelago region were calculated. After the data was entered into the spreadsheet, the data was calculated for the total production of types of fish, processed fish, jth fish products and the total production of caught fish, processed fish production and fish products in the Sumenep Islands. c) The total production of types of fish, processed fish, j-th fish products and total production of caught fish in the Sumenep Regency area were calculated. After the data was loaded into the spreadsheet, the data was calculated for the number of types of fish production, processed fish, jth fish products and total production of caught fish, processed fish production and fish products in Sumenep Regency. d) The LQ Location Quotient (LQ) value was calculated to compare the share of fish, processed fish, and fish products of Sumenep Islands in capture fisheries activities with the total share of these activities in total activities of Sumenep Regency. Moreover, LQ is defined as the percentage ratio of total capture fisheries activity in the i-th sub-region to the percentage of total activity in the observed area. The formula of LQ as follows,

$$LQ_i = \frac{\left(\frac{X_i^r}{X_r}\right)}{\left(\frac{X_i^n}{X_n}\right)}$$

X_i^r = Added value of *I* sector in the Sumenep archipelago
X_r = Total added value in Sumenep archipelago
X_i^n = Added value of *I* sector in Sumenep Regency
X_n = Total added value in Kabupaten Sumenep

e) Interpretation of LQ values were defined as: (1) If the LQ value is > 1, indicates that there was a relative concentration of fisheries production in the Sumenep archipelago compared to the total of Sumenep Regency or there was a concentration of activity in the Sumenep archipelago or there was a production surplus in Sumenep archipelago and this commodity is the base sector in Sumenep archipelago. (2) If the LQ value = 1, then Sumenep islands have a share of fisheries activities equal to the total share of Sumenep Regency. (3) If the LQ value is < 1, then Sumenep Islands has a relatively smaller share compared to fisheries activities in Sumenep Regency, or there has been a production deficit in Sumenep Islands.

Results and Discussion

Analysis of the Economic Potential of the Sumenep Archipelago Region

Analysis of economic potential in the Kangean Islands region was carried out by analyzing superior commodities in each sub-district using Location Quotient (LQ). Leading commodities are commodities that have a large role in a sub-district when compared with the same commodities in other sub-districts within the same regency.

According to the result of the LQ analysis, it showed the criteria of superior commodity. It was determined by the following criteria; commodities that have an LQ number > 1 are included in the leading sector, whereas those with an LQ number < 1 are not included in the leading sector.

Based on the results of the Location Quotient (LQ) analysis of the Sumenep Islands agricultural sector, the results obtained are as shown in the following table.

Table 1. Location Quotient (LQ) Score of Agricultural Sector in Sumenep Archipelago

Commdity	Subdistrict						
	Nonggunong	Gayam	Raas	Sapeken	Arjasa	Kangayan	Masalembu
Rice	0.06	0.18	0.07	0.32	1.81	0.43	0.00
Corn	0.06	0.18	0.07	0.32	1.81	0.43	0.00
Crop	1.37	0.49	0.00	0.00	0.94	0.40	0.18

Based on the LQ calculation, each sub-district in the Sumenep archipelago has a different distribution of commodities belonging to the basic or superior sectors in each region (Table 1). The food production commodities from 7 sub-districts, while only 1 sub-district is classified as the base sector, namely Arjasa Sub-district. The same as for food production commodities, of all regions in the corn commodity there is only 1 region that is classified as

basic. As for other food crop commodities, the existing pattern is still the same, where there is only 1 area that classified as the base sector, namely Nonggunong sub-district.

Based on the results of the Location Quotient (LQ) analysis of the Sumenep Island plantation sector, the results obtained are as shown in the following table.

Table 2. Location Quotient (LQ) Score of Plantation Sector in Sumenep Achipelago

Commodity	Subdistrict						
	Nonggunong	Gayam	Raas	Sapeken	Arjasa	Kangayan	Masalembu
Mango	1.77	103.37	29.64	3.28	9.49	12.01	1.95
Onion	0.00	0.00	0.00	0.00	267.51	213.40	0.00
Big Chili	364.78	1198.55	1580.69	2023.64	460.31	981.42	0.00
Cayenne Pepper	482.71	8.61	24,49	24.85	15.08	15.08	24.49

The result in table 2 showed that mango commodity has an even distribution where all regions are classified as the basic sector. Regarding the red onion commodity, there were only 2 areas that are classified as the basic sector with the highest value being in the Arjasa sub-district. All regions of the large chili commodity were classified as the basic sector except for the Masalembu sub-district. In the cayenne pepper commodity, all existing regions were classified as the basic sector with the most superior area being in Nonggunong sub-district.

Based on the results of the Location Quotient (LQ) analysis of the Sumenep Islands livestock sector, the results obtained are as shown in the following table.

Table 3. Location Quotient (LQ) Score of Livestock Sector in Sumenep Archipelago

Commodity	Subsector						
	Nonggunong	Gayam	Raas	Sapeken	Arjasa	Kangayan	Masalembu
Big livestock	0.57	0.71	0.14	0.14	1.07	0.14	0.14
Small livestock	0.84	1.69	0.50	0.33	0.33	0.33	0.33
Poultry	0.58	0.58	0.00	0.29	0.88	0.00	0.00

The LQ analysis result presented in table 3 showed that every sub-district in the Sumenep archipelago has an even distribution of livestock commodities belonging to the non-basic sector. Only Gayam and Arjasa Districts have superior potential in large animal and small animal farming commodities.

Based on the results of the Location Quotient (LQ) analysis of the Sumenep Islands fisheries cultivation subsector, the results obtained are as shown in the following table.

Table 4. Location Quotient (LQ) Sector of Aquaculture Subsector in Sumenep Archipelago

Commodity	Subdistrict						
	Nonggunong	Gayam	Raas	Sapeken	Arjasa	Kangayan	Masalembu
Fresh catch	0.00	0.00	0.00	0.00	68.14	0.00	0.00
Public water	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vannamei shrimp	0.00	0.00	0.00	0.00	0.00	1.23	0.00
Windu shrimp	0.00	0.00	0.00	0.00	0.00	65.48	0.00
Grouper cultivation	0.00	0.00	1.64	5.70	1.08	0.00	0.23
Milkfish cultivation	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Catfish cultivation	0.00	0.00	0.00	0.00	88.17	0.00	0.00

The LQ analysis showed that each sub-district in the archipelagic part of Sumenep Regency has a different distribution of commodities belonging to the basic or superior sectors in each region (Table 4). In the fresh catch commodities, there was only 1 area that classified as a basic sector, namely Arjasa District. As for public water fishery commodities, all sub-districts are classified as non-basic sectors. In the vannamei shrimp cultivation, there is only 1 area that is classified as the base sector, namely Kangayan District. The same as the vannamei shrimp cultivation aquatic commodity, the windu shrimp fishery commodity also only had 1 area that classified as a base sector, namely Kangayan District. The grouper cultivation fishery commodity is in 3 areas which are classified as the base sector, namely Raas District, Sapeken District, and Arjasa District. In the fisheries commodity of milkfish cultivation, all existing regions are classified as non-basic sectors. As for the catfish cultivation fishery commodity, there was only 1 area that classified as the base sector, namely Masalembu District. Based on the data, Arjasa District showed the most superior potency as base sector.

Based on the results of the Location Quotient (LQ) analysis of the fishery processing subsector of Sumenep Islands, the results obtained are as shown in the following table.

Table 5. Location Quotient (LQ) Score of Fishery Processing in Sumenep Archipelago

Commodity	Subdistrict						
	Nonggunong	Gayam	Raas	Sapeken	Arjasa	Kangayan	Masalembu
Dried fish	9.02	8.63	6.52	13.15	5.86	6.46	22.54
Smoked fish	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Processed shrimp paste	0.00	0.00	0.00	271.16	0.00	101.00	0.00
Salt	0.00	0.00	3.01	1.94	2.31	0.97	0.00
Seaweed	0.00	0.00	0.50	0.67	0.00	0.00	0.00

Each sub-district in the archipelagic part of Sumenep Regency showed various distribution of commodities associated with the basic or superior sectors in each region (Table 5). All sub-districts were classified as the basic sector in the dried fish commodities. Interestingly, the most superior area for dried fish commodities was Masalembu District. The smoked fish commodity in all areas of this archipelago was classified as a non-basic sector. As for processed shrimp paste commodities, there were only two sub-districts included as the base sector, consisting of Sapeken Sub-district and Kangayan Sub-district. There were three areas that were classified as the basic sector. These areas include Raas District, Sapeken District, and Arjasa District. In contrast, there was none of the area shown as basic sectors for seaweed commodities. Generally, there were five commodities, of which two were classified as non-basic sectors. The highest level of fishery processing in Sumenep regency was located in Sapeken District.

Conclusion

Based on this study, the calculation using Location Quetient (LQ) showed the four basic sub sectors which are agriculture, plantation, livestock, aquaculture, and fishery processing. The basic sub-sector is for growth and development recommendation of the regional economy. The sub sectors are possibly exported to promote economic growth and prosperous society accordingly.

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