

An Investigation of The Sectoral Competitiveness in Mojokerto Regency Through Location Quotient and Shift Share Techniques

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Abstract

Known as the region which has highest added value in East Java, Indonesia, Mojokerto Regency has a potential leading economic sector for regional development. During the Covid-19 pandemic, Mojokerto experienced a contraction of 1.11 per cent in 2020 then recovered rapidly by 5.15 percent in 2021. This growth was driven by the development of the particular economic sectors of the Mojokerto Regency. This study aims to analyse the leading and potential sectors in Mojokerto Regency using Location Quotient, Overlay, and Shift Share analysis methods. In comparing the trend before and during the pandemic, this study calculates the data of Gross Domestic Regional Product (GDRP) published by Indonesian Statistic Agency from 2018 to 2021. According to the empirical calculation, the manufacturing sector is a potential leading sector and has the most significant contribution to the GRDP of Mojokerto Regency followed by information and communication and government administration. Tourism sectors measured by accomodation, food and beverage industry were the sector which experienced the drawbacks from Covid-19 pandemic. In boosting the sectoral competitiveness, stakeholders should colloborate in enhancing the rapid recovery especially for tourism which exhibited lower growth during the crisis.

Keywords

Sectoral Competitiveness, Location Quotient, Shift Share, Mojokerto Regency

1. Introduction

Gross Regional Domestic Product (GRDP) is an economic indicator that can be used to see the economic growth rate at the regional level, such as provinces, districts/cities, and even sub-districts. (Habiburrahman 2012). According to BPS, Gross Regional Domestic Product or GRDP is the amount of added value generated by all business units in a particular area. Therefore, GRDP is a vital indicator with many benefits because it can describe the level of progress and economic development and the advantages and disadvantages of various sectors in the economic structure (Mutiya 2019). In addition, exploring the leading sector in an area can be used as one of the considerations for local governments to maximize development goals (Irmansyah 2019). According to Kuncoro (2010), development based on utilizing potential resources can create job opportunities and stimulate local-based economic activity.

Mojokerto Regency is one of the regions that provide the seventh-highest added value for the economy in East Java Province, which is 3.65 percent of the total GRDP of East Java (BPS, 2021). Mojokerto Regency is an East Java Province district consisting of 18 sub-districts and 299 villages or sub-districts. The economic growth rate of the Mojokerto Regency experienced a contraction of up to 1.11 percent in 2020 due to the Covid-19 pandemic. This Covid-19 pandemic also causes the 2020 RMTDP target cannot be achieved because of the shocks that are

enough to bring down the economy of Mojokerto Regency (Wulandari 2022). However, economic actors in Mojokerto Regency are finally getting used to the lifestyle during the Covid-19 pandemic. Various adjustment efforts were made to restore different economic sectors so that in 2021 the economic rate of Mojokerto Regency increased by 5.15 percent. In general, every financial sector in Mojokerto Regency has increased yearly. Based on BPS data (2021), the manufacturing industry has an immense enough contribution compared to other sectors. The economy in Mojokerto Regency is dominated by the manufacturing industry, followed by the wholesale and retail trade sector, which provides the second-largest contribution, and construction in the third position.

Knowing the leading sector in the economy in Mojokerto Regency is one of the main factors a consideration for the local government to formulate development policies to accelerate economic growth and improve people's welfare. (Budiarti 2020). A similar study was conducted by Maulana Irmayah (2019) with the title "Analysis of the Leading Sector in Mojokerto Regency, East Java." The study used analysis of LQ, DLQ, and Shift Share. It was found that based on the Klassen Typology analysis, two sectors have a significant contribution to the GRDP of Mojokerto Regency and have the fastest growth rate among other sectors, namely the manufacturing sector and the real estate sector.

According to the previous background, this research aims to identify the base and non-base sectors of Mojokerto Regency through calculating Location Quotient and Shift Share. In addition this study also analyse the leading industry of Mojokerto Regency through the calculation of overlay analysis.

2. Literature Review

2.1 Shift Share

Shift share analysis is a beneficial technique in analyzing changes in the regional economic structure compared to the national economy (Negara and Putri 2020). This analysis aims to determine the performance or work productivity of the regional economy by comparing it with a larger region (regional/national) (Otsuka 2016). This analysis provides data on the performance of the economy. Three areas are related to each other, namely as follows (Basuki and Mujiraharjo 2017).

1. Regional economic growth is measured by analyzing changes in aggregate employment by sector compared to changes in the same industry in the economy that is used as a reference.
2. A proportional shift or industrial mix effect measures the relative change, growth, or decline in a region compared to the larger economy being used as a reference.
3. The differential shift determines how far the competitiveness of the regional (local) industry with the economy is used as a reference.

Then, one way to determine a sector as a base or non-base industry is the location quotient (LQ) analysis.

1. Economic sector activities serve the market at this area and outside the area concerned. This economic sector is called the potential financial sector (base).
2. Economic sector activities that serve the market in the area are called non-potential (non-basic) sectors.

2.2 Statistic Location Quotient (SLQ)

Statistical Location Quotient (SLQ) is an index used to measure a sector that is a leading sector (base sector) or not for an area (Chiang 2009). This approach requires data from the Gross Regional Domestic Product (GRDP) either from the district or the provincial level (Wati and Arifin 2019). Dynamic Location Quotient (DLQ) is a modification of SLQ by accommodating the economic sector output growth rate factor from time to time (Anisah 2018). From the theory described above, it can be concluded that regional economic development can be carried out by first increasing the superior regional sectors to encourage other sectors.

2.3 Basic Economic Theory

According to Arsyad, the basic economic theory states that the main determining factor for the economic growth of a region can be seen how much demand for goods and services from outside the area. Glasson said the regional economy could be divided into basic and non-basic activities (Hajeri, Yurisintae, and Dolorosa 2015). Basic activities are exporting goods and services to people outside the economic boundaries of the community concerned. Non-basic activities provide goods and services to people within the economic boundaries of the community concerned. Non-base activities are also called local activities (Basorudin et al., 2021).

2.4 Gross Regional Domestic Product (GRDP)

Gross Regional Domestic Product is all goods and services produced from economic activities in a region within a certain period and generally within one year (Orem et al. 2012). The GRDP of a district or city provides

information about economic developments that occur (Novichkov 2007). Other information is the potential of a community or municipality to measure economic growth in the region. GRDP, in its calculation, uses constant prices and current prices. GRDP at stable prices means the prices used are based on costs in a particular year where the increase in income is only caused by the rise in the physical amount of production; the latest constant prices are 2010 and before 2000.

2.5 Leading Sub-Sector

The leading sub-sector is a sector or sub-sector that is the mainstay of a region's economic development (Luhur, Suryawati, and Kurniawan, 2019). The top sub-sector must produce a large enough product, use technology to be effective and efficient, and the sub-sector must grow and develop (Pomarici et al., 2021).

3. Research Method

This research is descriptive research with a quantitative approach and uses secondary data. This study uses data: GRDP (percentage share between the roles of sub-sectors multiplied by 2010 ADHK GRDP) Mojokerto Regency and East Java Province in 2019-2021. The steps taken in this study are to analyze secondary data, namely the Gross Regional Domestic Product (GRDP) of Mojokerto Regency for the 2010 base year for the 2019-2021 period and East Java's Gross Regional Domestic Product (GRDP) for the 2010 base year for the 2010 period. 2019-2021 to determine the leading sectors, sub-sectors, and commodities.

4. Data Collection

The analytical tools used are shift-share (SS) and location quotient (LQ) analysis. These results are then used to determine the superior regional potential in Mojokerto Regency. Secondary data is a source that does not directly provide data to data collectors, for example, through other people or documents (Irmansyah 2019). The data used in this study is secondary data obtained from the Central Statistics Agency (BPS) of Mojokerto Regency, namely:

- GRDP Data on 2010 Constant Prices of East Java Province by Business Field in 2018-2021 and
- GRDP Data on 2010 Constant Prices of Mojokerto Regency by Field of Business in 2018-2021.

4.1 Location Quotient Analysis Techniques

Location Quotient or commonly abbreviated as LQ is a data analysis tool that compares the magnitude of the role of a sector/industry in an area to the importance of the part of the sector/industry nationally, in general, are the added value (income level) and the number of jobs. (Opissen 2020). (Table 1)

The LQ formula is as follows:

$$LQ = \frac{Si/S}{Ni/N}$$

Information:

LQ: Location Quotient (LQ) index of business sector sub-sector GRDP

Si: GRDP of the business sector sub-sector in Mojokerto Regency

S: GRDP of the business sector in Mojokerto Regency

Ni: GRDP of the business sector sub-sector in East Java Province

N: GRDP of the business sector in East Java Province

4.2 Dynamic Location Quotient (DLQ) Analysis Techniques

DLQ Formulas:

$$DLQ_{ij} = \frac{(1 - g_{ij})/(1 + g_j)}{(1 + G_i)/(1 + G)}$$

G_{ij}: Average growth rate of sector i Mojokerto Regency

g_i: Average growth rate in Mojokerto Regency

G_i: Average growth rate of sector i in East Java Province

G: Average growth rate of East Java Province

Table 1. Criteria for LQ and DLQ. Values

	DLQ>1	DLQ<1
LQ>1	Type 1 (Base Sector, Prospective)	Type 3 (Base Sector, Not Prospective)
LQ<1	Type 2 (Non-Based Sector, Prospective)	Type 4 (Non-Based Sector, Not Prospective)

4.3 Shift-Share Analysis Techniques

Shift-Share is used to analyze the components in determining the economic growth of a region in a certain period (Ronzon, Iost, and Philippidis 2022). These components include the share component (N) and the shift component, which are further divided into two, namely Proportional Shift (M) and Differential Shift (C) (Basuki and Mujiraharjo 2017). The following is an algebraic model of the Shift Share calculation. (Table 2).

$$D_{ij} = N_{ij} + M_{ij} + C_{ij}.$$

Where:

$\Delta (E19 - 21)_i$: The growth rate of the GRDP of the sub-sector of the business sector in Mojokerto Regency in 2019-2021

Ref 21: GRDP of the business sector in East Java Province in 2021

Ref 19: GRDP of the business sector in East Java Province in 2019

E21: GRDP of the business sector sub-sector in East Java Province in 2021

E19: GRDP of the business sector sub-sector in East Java Province in 2019

Lok 21: GRDP of the business sector sub-sector in Mojokerto Regency in 2021

Lok 19: GRDP of the business sector sub-sector in Mojokerto Regency in 2019

Table 2. Shift-Share Analysis Criteria

No	Criteria	Proportional Shift	Differential Shift
1	Quadrant Winners	Positive	Positive
2	Quadrant Losers	Negative	Negative
3	Quadrant Mixed Winners	Negative	Positive
4	Quadrant Mixed Losers	Positive	Negative

4.4 Overlay Analysis Techniques

Overlay analysis is used to analyze the leading sub-sectors based on the combination of the analytical techniques. For example, the overlay analysis used in this study combines Location Quotient and Shift-Share data analysis techniques. So, suppose the sub-sector is the leading business sector in Mojokerto Regency. If it meets the criteria, including the results from the LQ analysis, the value is more than 1 (LQ > 1), and the results from the Shift-Share analysis show the Winners quadrant.

5. Results and Discussion

Geographically, Mojokerto Regency is located between 111°20'13" to 111°40'47" East Longitude and between 7°18'35" to 7°47" South Latitude (Bengle 2020). Administratively, Mojokerto Regency is included in the Working Area of the Bojonegoro Government and Development Regional Coordination Agency. In contrast, the "Gerbang Kertosusila" development area includes spatially East Java Spatial Planning. Mojokerto Regency consists of 18 sub-districts, 299 villages, and five sub-districts (BPS Jawa Timur 2017). (Table 3)

Table 3. GRDP 2018-2021 Mojokerto Regency and East Java Province by Business Field

GRDP Sector	GRDP Kab. Mojokerto Constant Price 2010				GRDP East Java Constant Price 2010			
	2018	2019	2020	2021	2018	2019	2020	2021
Agriculture, Forestry and Fisheries	3829 547.9	3861 929.5	3884 603.7	3924 568	1637 99.94	1659 51.23	1676 30.2	1705 58.53
Mining and excavation	4858 74.06	4958 65.63	4793 53.3	4980 42.3	8257 3.56	8384 7.02	8089 5.86	7726 7.91
Processing industry	3015 5135	3210 2324	3215 3799	3387 5264	4669 08.04	4987 40.3	4884 44.6	5048 64.57
Electricity and Gas Supply	3860 6.69	4095 9.04	4020 4.74	4145 0.31	4499	4561. 03	4451. 89	4711. 1
Water Supply, Waste Management, Waste and Recycling	3757 6.19	3888 1.17	4061 9.16	4321 1.49	1515. 43	1586. 73	1666. 5	1761
Construction	4935 325.5	5220 890.9	4897 717.7	4795 845	1451 40.2	1536 89.59	1486 52.4	1524 17.9

Wholesale and Retail Trade; Car and Motorcycle Repair	5895 394.5	6241 491.5	5806 832.5	6212 455	2901 36.3	3074 40.92	2897 06.7	3123 82.42
Transportation and Warehousing	6759 37.11	7352 64.26	6991 09.07	7438 27.7	4671 2.45	4847 1.4	4346 6.26	4454 7.4
Provision of Accommodation and Food and Drink	1091 883	1162 883.8	1011 488.8	1045 239	8523 7.5	9165 9.39	8354 8.62	8610 8.36
Information and Communication	3679 413.3	3933 969.5	4230 197.4	4419 203	9041 6.22	9707 0.64	1066 12.55	1139 56.93
Financial Services and Insurance	8036 71.46	8375 44.69	8397 73.3	8443 26.1	3985 9.92	4137 4.53	4144 9.26	4213 5.04
Real Estate	8521 26.83	8924 93.27	9145 37.85	9168 57.6	2682 3.05	2844 1.5	2956 5.7	3024 1.3
Company Services	8545 3.95	9116 4.53	8525 7.07	8690 7.33	1230 8.51	1312 8.02	1218 0.02	1246 6.4
Government Administration, Defense and Mandatory Social Security	1233 151.8	1273 310.3	1238 871.3	1240 754	3373 0.19	3498 4.34	3484 8.51	3494 8.54
Education Services	7249 62.25	7607 55.52	7719 38.62	7701 01.8	4103 6.23	4401 8.96	4576 0	4633 5.09
Health Services and Social Activities	2177 82.7	2355 86.82	2571 66.58	2594 09.4	1048 5.66	1127 7.8	1223 9.46	1284 7.31
Other services	5147 65.66	5418 33.89	4669 52.45	4812 36.1	2225 9.62	2365 2.24	2038 9.19	2156 7.09
GDP	5525 6608	5846 7148	5781 8423	60,19 8,699	1563 441.8	1649 895.6	1611 507.7	1669 116.9

5.1 Results of Static Location Quotient (SLQ) Analysis

According to LQ analysis in Table 4, Mojokerto Regency has three base sectors (leading). These sectors include (1) the Manufacturing Industry, (2) Information and Communication, and (3) Government Administration, Defense, and Mandatory Social Security, where the result of the Location Quotient (LQ) calculation is more than one ($LQ > 1$). Thus, it can be concluded that the basic sector or the leading sector can export their production results to other regions. Meanwhile, for the non-base sectors of Mojokerto Regency in 2020-2021, there are 14 non-base sectors, namely (1) Agriculture, Forestry, and Fisheries, (2) Mining and Excavation, (3) Electricity and Gas Procurement, (4) Water Supply, Waste Management, Waste, and Recycling, (5) Construction, (7) Wholesale and Retail Trade; Repair of Cars and Motorcycles (8) Transportation and Warehousing, (9) Provision of Accommodation and Food and Drink, (10) Financial and Insurance Services, (11) Real Estate, (12) Corporate Services, (13) Educational Services, (14) Health Services and Social Activities, (15) Other services. It can be said that being a non-basic sector is where the result of the Location Quotient calculation is less than one ($LQ < 1$). This output means that the sector has not been able to meet domestic needs and is more likely to import from outside the region to cover the shortage of conditions.

5.2 Results of Dynamic Location Quotient (DLQ) Analysis

Dynamic Location Quotient (DLQ) is a modification of SLQ by accommodating the economic sector output growth rate factor from time to time; in this calculation, the economic growth factor in the observation area is considered, in this case, Mojokerto Regency. Based on the analysis results in Table 4 with the DLQ formula, the prospective sectors are (1) the manufacturing industry and (2) electricity and gas procurement. Therefore, if analyzed based on LQ and DLQ, there is only one sector called the leading sector, namely the manufacturing sector, with an LQ of 1,837 and a DLQ of 1,384.

Table 4 Calculation Results of LQ and DLQ of the GRDP Sector of the Mojokerto Regency Business Field in 2019-2021

GRDP Sector	LQ	DLQ	Description		Final Description
			LQ	DLQ	
Agriculture, Forestry and Fisheries	0.646864	0.260896	Not Base	Not Prospective	Not Base Not Prospective
Mining and excavation	0.170253	-2.4295	Not Base	Not Prospective	Not Base Not Prospective
Processing industry	1.837187	1.384262	Base	prospective	Prospective Base

Electricity and Gas Supply	0.249692	1.319019	Not Base	prospective	Not a Prospective Base
Water Supply, Waste Management, Waste and Recycling	0.68373	0.472628	Not Base	Not Prospective	Not Base Not Prospective
Construction	0.91645	0.000144	Not Base	Not Prospective	Not Base Not Prospective
Wholesale and Retail Trade; Car and Motorcycle Repair	0.560987	0.297322	Not Base	Not Prospective	Not Base Not Prospective
Transportation and Warehousing	0.446438	-1067.6	Not Base	Not Prospective	Not Base Not Prospective
Provision of Accommodation and Food and Drink	0.344005	-3.1E-05	Not Base	Not Prospective	Not Base Not Prospective
Information and Communication	1.108259	0.300327	Base	Not Prospective	Unprospective Base
Financial Services and Insurance	0.563846	0.454355	Not Base	Not Prospective	Not Base Not Prospective
Real Estate	0.862761	0.182055	Not Base	Not Prospective	Not Base Not Prospective
Company Services	0.194783	0.700031	Not Base	Not Prospective	Not Base Not Prospective
Government Administration, Defense and Mandatory Social Security	1.000766	0.099346	Base	Not Prospective	Unprospective Base
Education Services	0.472901	0.11771	Not Base	Not Prospective	Not Base Not Prospective
Health Services and Social Activities	0.578319	0.388497	Not Base	Not Prospective	Not Base Not Prospective
Other services	0.634485	-4.68679	Not Base	Not Prospective	Not Base Not Prospective

5.3 Shift-Share Analysis Results

Table 5 analysis will be seen the sectoral growth in Mojokerto district with the same sector at the provincial level of East Java. The shift-share analysis consists of 3 analysis components, namely national development (national growth effect), the influence of the industry mix (industry mix share), and differential shift (differential shift). The Proportional Shift and Differential Shift values have positive and negative values for each sub-sector. Meanwhile, the growth value of the local sub-sector has a positive average. Based on the results of the National Share calculations that have been carried out, the results show that the sector with the most prominent National Share is the Manufacturing Industry sector, which is 55 percent.

Meanwhile, the minor sector is the electricity and gas procurement sector, with 0.06 percent. It can be seen from the Proportional Shift calculation that the economic sector that has the highest rate of economic growth is the Information and Communications Sector. In contrast, the economic sector that has the lowest economic growth is the Construction Sector. It is known from the results of the Differential Shift (DS) in Mojokerto Regency in 2020-2021 that the economic sectors that have a positive Differential Shift (DS) value are five sectors, namely (1) Mining and Quarrying Sector, (2) Industrial Sector Processing, (3) Water Supply Sector, Waste, Waste Management, (4) Transportation and Warehousing Sector, (5) Company Services. Meanwhile, the economic sectors that have a negative Differential Shift (DS) value are twelve sectors. These twelve negative sectors mean that these sectors are less profitable for Mojokerto Regency in terms of internal GRDP development. Furthermore, based on the results of the Shift-Share quadrant analysis, which is included in quadrant type 1 (winners' quadrant), there are two sectors: the Processing Industry and Clean Water Supply, Waste Management, and Waste. (Table 6)

Table 5. Calculation Results of National Share, Proportional Shift, and Differential Shift of GRDP in the Mojokerto Regency Business Field in 2019-2021

GRDP Sector	Shift Share Analysis Mojokerto Regency's 2019-2021				Criteria
	Nij (National Share)	Mij (Proportional Shift)	Cij (Different Shift)	Dij (Cross Check)	
Agriculture, Forestry and Fisheries	6,605298191	62227,25673	-44579,7351	17654,12692	Type 3
Mining and excavation	0,8481098285	-44685,23781	41085,0635	-3599,326199	Type 2
Processing industry	54,90660137	20208,33738	1378740,564	1399003,808	Type 1
Electricity and Gas Supply	0,07005479366	870,4892265	-856,3911934	14,16808797	Type 3
Water Supply, Waste Management, Waste and Recycling	0,06650088336	3817,340455	60,01472065	3877,421676	Type 1
Construction	8,929614398	-104023,0391	-381845,9014	-485860,0109	Type 4
Wholesale and Retail Trade; Car, and Motorcycle Repair	10,67521107	27606,28866	-129355,8549	-101738,891	Type 3
Transportation and Warehousing	1,257568195	-68089,09838	68086,68499	-1,155817144	Type 2
Provision of Accommodation and Food and Drink	1,988952406	-83973,55393	-47218,92765	-131190,4926	Type 4
Information and Communication	6,728512735	638517,8689	-199114,7521	439409,8453	Type 3
Financial Services and Insurance	1,432504776	5637,627112	-8613,605386	-2974,54577	Type 3
Real Estate	1,52648675	46080,13263	-32113,35072	13968,30839	Type 3
Company Services	0,1559243659	-5656,533535	337,2686509	-5319,10896	Type 2
Government Administration, Defense, and Mandatory Social Security	2,177821768	-16137,03588	-31253,06249	-47387,92054	Type 4
Education Services	1,301167483	31165,61724	-30682,17327	484,7451316	Type 3
Health Services and Social Activities	0,4029387911	30041,58859	-8963,560162	21078,43137	Type 3
Other services	0,9267322027	-54079,70821	-12830,45538	-66909,23685	Type 4

Table 6. Results of Shift Share Analysis of the GRDP Sub-Sector of the Mojokerto Regency Business Field in 2019-2021

Analysis of Shift Share Grouping for Mojokerto Regency in 2019-2021		
National Growth Share (NGS) Component	681.141,063910	39,34%
Proportional Share/Industry Mix Share (IMS) Component	489.528,3400708	28,27%
Differential Shift (DS) Component	560.881,826019	32,39%
PDRB ($\sum \Delta PDRB$) Change	1.731.551,23000	

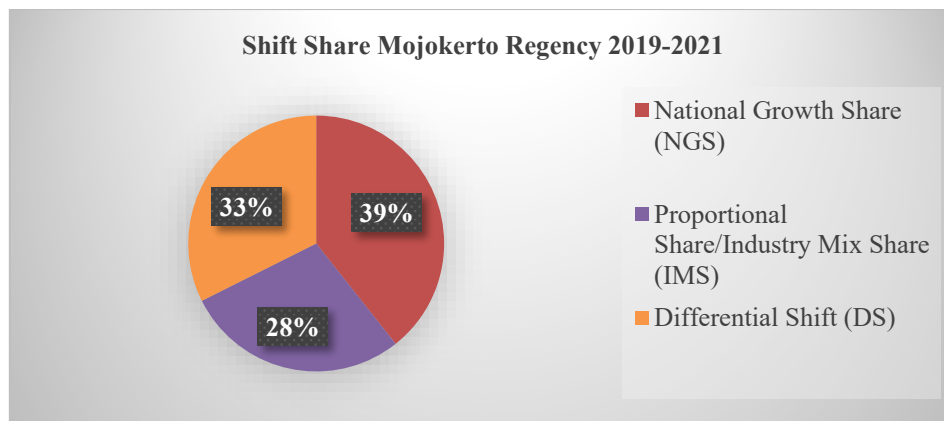


Figure 1. Pie Chart of Shift Share Percentage of Mojokerto Regency in 2019-2021

From the calculation of Table 5 and Figure 1 of the shift-share analysis above, it can be concluded that the economic growth of East Java Province has an effect of 39 percent on the economy in the Mojokerto Regency. Therefore, as for the differential shift, there is 33 percent identical growth in Mojokerto Regency as the local economy.

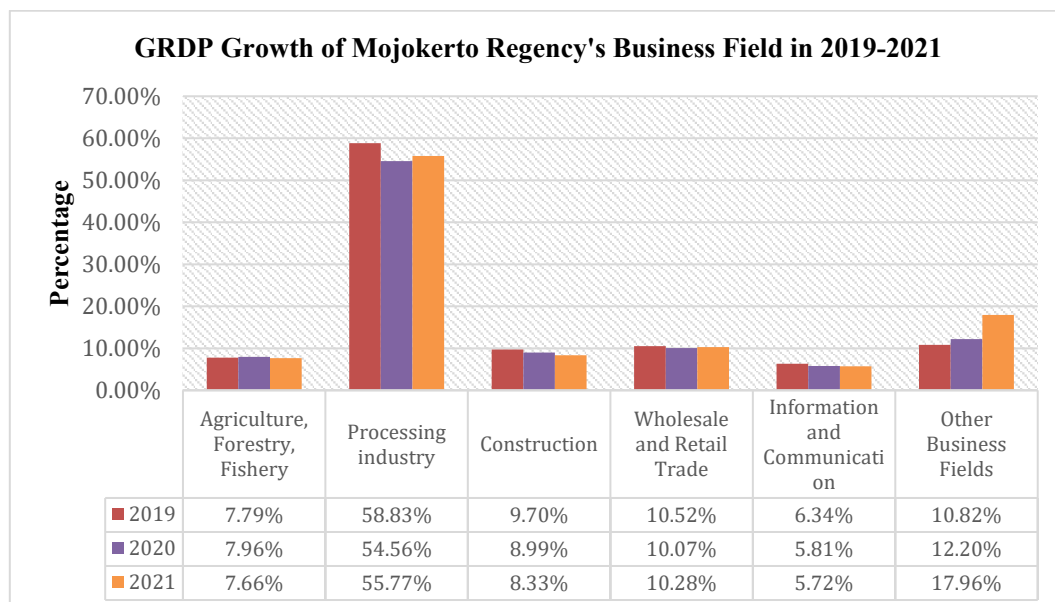


Figure 2. GRDP Growth Chart for Mojokerto Regency Business Fields in 2019-2021

The diagram Figure 2 above shows the growth of 6 GRDP sectors in the Mojokerto Regency Business Field from 2019-2021. In 2019, the manufacturing industry became the sector with the highest increase of 58.83 percent (Mojokerto 2020). The sector with the lowest growth was the information and communication sector, which was 5.34 percent. In 2020, the manufacturing industry will remain the sector with the highest growth, 54.56 percent. While the sector with the lowest growth is the information and communication sector at 5.81 percent, this sector is considered to have increased by 0.53 percent compared to 2019. In 2021 the manufacturing industry will become the sector with the highest growth of 55.77 percent. When compared to 2019, the manufacturing industry sector experienced slower growth. This is due to the Covid-19 pandemic that Indonesia experienced from 2020 to 2021. The sector with the lowest growth or contracting in 2021 was the construction sector at -2.08 percent.

5.4 Analysis of the Klasen Typology

Based on the Klasen Typology analysis in Table 7, one sector is included in quadrant one, namely the manufacturing sector. Sectors in quadrant one is developed and proliferating. Quadrant one sector contributes significantly to the GRDP of Mojokerto Regency. So based on the typology analysis, the manufacturing industry sector is a sector that can be used as a priority sector to be developed in the economic development of Mojokerto Regency. Referring to the economic structure in 2021, the BPS analysis of Mojokerto Regency, the manufacturing

sector is the dominant sector with a contribution of 55.77 percent. Another potential sector supporting the economic growth of Mojokerto Regency is the wholesale and retail business sector. Other sectors that can be used as supporting sectors are those in quadrant 2, including mining, transportation and warehousing, company services, and other services in the process of economic development in Mojokerto Regency.

Table 7. Results of Typology Analysis of the GRDP Class of the Mojokerto Regency Business Field in 2019-2021

GRDP Sector	East Java Province		Mojokerto Regency			Quadrant
	Average Growth	Distribution Average	Average Growth	Distribution Average	Description	
Agriculture, Forestry, and Fisheries	0.013573294	10.2889323	0.008204969	6.693440354	Relatively Lagging Sector	4
Mining and excavation	-0.021540665	5.003159718	0.00875067	0.84595302	Potential Sector	2
Processing industry	0.027050055	30.1624766	0.039904777	55.34090199	Advanced Sector	1
Electricity and Gas Supply	0.016027804	0.280678336	0.024498622	0.069578708	Potential Sector	2
Water Supply, Waste Management, Waste and Recycling	0.051342742	0.1005045	0.047749775	0.06913459	Relatively Lagging Sector	4
Construction	0.017153391	9.238641508	-0.0082795	8.574703666	Relatively Lagging Sector	4
Wholesale and Retail Trade; Car and Motorcycle Repair	0.026743676	18.47107491	0.019639579	10.42686753	Relatively Lagging Sector	4
Transportation and Warehousing	-0.013577242	2.822951105	0.034187426	1.231401041	Potential Sector	2
Provision of Accommodation and Food and Drink	0.005830238	5.337699285	-0.010598842	1.862678127	Relatively Lagging Sector	4
Information and Communication	0.08026159	6.277418536	0.063054685	7.011166138	Stressed Sector	3
Financial Services and Insurance	0.018783184	2.538418685	0.016743481	1.435484297	Relatively Lagging Sector	4
Real Estate	0.040905194	1.771488135	0.0248693	1.543351681	Relatively Lagging Sector	4
Company Services	0.005960362	0.771414791	0.007127567	0.150599422	Potential Sector	2
Government Administration, Defense, and Mandatory Social Security	0.012056551	2.133535422	0.002346252	2.153323746	Stressed Sector	3
Education Services	0.041601619	2.727080559	0.020564345	1.306883567	Relatively Lagging Sector	4
Health Services and Social Activities	0.070159464	0.720858731	0.060691062	0.418193396	Relatively Lagging Sector	4

Other services	-0.005875342	1.35366688	-0.01834245	0.866338722	Potential Sector	2
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5.5 Overlay Analysis

Based on Table 8, the Overlay analysis shows the sectors that meet the Overlay analysis criteria, namely having a Positive coefficient (+ + +) from the three analysis tools, the Manufacturing Industry Sector. Another sector that can become a leading sector is the Water Supply, Waste Management, Waste, and Recycling sector, which, based on the overlay analysis, only has a Combined LQ and DLQ (+) coefficient. In other sectors, based on the calculation of Shift Share analysis (Basis and Prospective), there is only one sector, namely the manufacturing industry. The study of the leading sectors in Maulana Irmansyah's research (2019) shows that the leading sectors in Mojokerto Regency are the manufacturing and real estate sectors. Based on the value of this relationship, it can be proven that the level of competition in the manufacturing sub-sector is proliferating compared to other economic sectors based on the impact of the spread (Irmansyah 2019). Another study by Hamzah (2020) showed results where the manufacturing sector was also the sector with the highest growth in the Bangka Belitung Islands from 2015-2019). This is because there is specialization in a region. After all, the processing industry commodities produced are superior to other economic sectors (Hamzah 2020). The study results are as follows: the calculation of the information and communication processing industry sector shows that the LQ (Location Quotient) index > 1. This result means that the existence of the information and communication processing industry business includes activities based on increasing income (Gross Regional Domestic Product) in Mojokerto Regency area. Thus, the processing industry in Mojokerto Regency is a mainstay in regional development. On the other hand, potential sectors based on the calculation of the classification typology, namely mining, transportation and warehousing, government administration, and other services, can be potential sectors to be developed.

Table 8. Overlay Results of Leading GRDP Sector Business Fields of Mojokerto Regency in 2019-2021

	GRDP Sector	Typology Klasen	LQ dan DLQ Combined	Shift Share	Description
1.	Agriculture, Forestry, and Fisheries	-	-	-	Non-Featured
2.	Mining and excavation	-	-	-	Non-Featured
3.	Processing industry	+	+	+	Superior
4.	Electricity and Gas Supply	-	-	-	Non-Featured
5.	Water Supply, Waste Management, Waste and Recycling	-	-	+	Non-Featured
6.	Construction	-	-	-	Non-Featured
7.	Wholesale and Retail Trade; Car and Motorcycle Repair	-	-	-	Non-Featured
8.	Transportation and Warehousing	-	-	-	Non-Featured
9.	Provision of Accommodation and Food and Drink	-	-	-	Non-Featured
10.	Information and Communication	-	-	-	Non-Featured
11.	Financial Services and Insurance	-	-	-	Non-Featured
12.	Real Estate	-	-	-	Non-Featured
13.	Company Services	-	-	-	Non-Featured
14.	Government Administration, Defense, and Mandatory Social Security	-	-	-	Non-Featured
15.	Education Services	-	-	-	Non-Featured
16.	Health Services and Social Activities	-	-	-	Non-Featured
17.	Other services	-	-	-	Non-Featured

6. Conclusion

According to the research finding, the manufacturing sector has become a leading sector that contributes significantly to GRDP in Mojokerto Regency. Meanwhile, the base sector in the GRDP of Mojokerto Regency includes information and communication and government administration, defense, and mandatory social security. Furthermore, the sector prospective for the GRDP of Mojokerto Regency, apart from the manufacturing sector, is the electricity and gas procurement sector. Based on the results of the Shift-Share analysis, the sectors that have experienced rapid growth are the water supply and processing industry, waste management, waste, and recycling which have type 1. In addition, the Klassen Typology analysis shows that only one sector is included in quadrant

one, namely the manufacturing sector. Therefore, referring to the Klassen Typology analysis, this sector can be prioritized for development in the economic development of Mojokerto Regency.

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