



# Strategy for Reducing Regional Economic Disparities in Gerbangkertosusila: A Regional Cluster Approach Based on Leading Sectors

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**Abstract:** The existence of regional clusters has a favourable influence on the prosperity and development of a region. Regional clusters have the potential to create a conducive environment that encourages businesses to develop. In addition, they promote regional growth and development; therefore, those regions provide trickle-down effects to the surrounding. Gerbangkertosusila (GKS), as a metropolitan area, has an important role in the economic development of East Java Province because had several economic activities. However, in fact, the economic development in the GKS area is uneven and results in inequality. Furthermore, the changes in the aspect of regional economic development had also not balanced with the formulation of appropriate policies. Therefore, this paper aims to propose strategies to reduce the regional economic disparities in the GKS area. The analysis will use Williamson Index to determine regional inequality and LQ (Location Quotient) to determine the performance of each sector. From the analysis results, we offer some strategies based on the leading sectors and regional competitiveness there that was: 1. Strategies based on natural resource management and local economic development in cluster A (Lamongan and Bangkalan Districts) that have advantages in resource endowment; 2. Strategies to strengthen the productive business environment and environmentally friendly industries that are interrelated in cluster B (Sidoarjo, Gresik, and Mojokerto districts); 3. Strategy based on optimization of urban roles and functions supported by the development of human resources and the development of the creative economy in cluster C (Mojokerto City and Surabaya City).

**Keywords:** locational quotient; reducing disparities; regional cluster; Williamson Index

## Introduction

Extensive studies have been conducted on regional clusters by mainly regional economists and economic geographers (Garanti & Berzina, 2013). The emphasis of those studies is on the regional clusters from the standpoint of regional development. According

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to Garanti & Berzina (2013), regional growth is inextricably linked to regional development. In addition, regional development enhances improvement both in technological structures and the people's living standards, whereas regional growth facilitates improvement in levels of economic conditions such as business and employment opportunities (Rocha, 2004). Meanwhile, studies show that the terms growth and development are interchangeable because development depends on the resources provided by growth which improves the living standard of regions from low income to high income (Poveda, 2011).

According to Santoso (2010), regional growth dynamics result from the influence of the development of internal and external factors, each of which will be interrelated. The city is very important as a growth centre in encouraging the surrounding area's growth. According to Santoso (2010), there has frequently been a split between urban and rural areas. The presumption is that metropolitan areas have higher economic productivity than rural ones. This is because the accumulation of development investment is more focused on prioritizing urban areas than rural areas, often termed urban bias. However, this puts the rural areas politically, socially, and economically in the position of service to the urban areas (Santoso, 2010). The Gerbangkertosusila (GKS) area, as is well known, is a cornerstone area in East Java Province, which is witnessing tremendous economic expansion and has become a national strategic area (Santoso, 2010).

Gerbangkertosusilo (GKS) is one of some metropolitan areas in Indonesia that provide the potential and challenges. The increasing role of the GKS area as a driver and, at the same time, a contributor to economic development in East Java cannot be separated from the economic development performance of each district/city (Santoso, 2010). The region consists of 7 districts/cities (Surabaya City, Mojokerto City, Sidoarjo District, Gresik District, Lamongan District, and Bangkalan District). According to Santoso (2010), the GRDP contribution of the GKS Area to East Java Province in 2000 was 43.67%, increased in 2005 to 45.25%, and in 2007 was 44.57%. This condition indicates that this region is growing more productive and very competitive when compared to other regions in East Java Province. The study conducted by Santoso shows that the condition of per capita income in the Gerbangkertosusila area puts Surabaya in a superior position, followed by Sidoarjo District and Gresik District. However, Surabaya is not only having the highest per capita income but generates income per capita that is five times higher than districts like Bangkalan or Lamongan (Santoso, 2010). This is because, among the seven districts of the GKS area, Surabaya, Sidoarjo, and Gresik district has more economic activities than the other districts causing the regional economic disparity. Moreover, Pamungkas et al. (2016) mention that the development acceleration and coordination among regions are still inadequate, resulting in a slow development process (e.g. development around the Suramadu Bridge has not yet developed the surrounding areas as high-level commercial and industrial areas like other regions in GKS).

According to Santoso (2010), the GKS area grows and plays an important role as a driver and contributor to economic growth in East Java in relation to the economic development performance of the seven regencies that comprise it. In addition, this area's economic growth indicates that the region is growing more productive and competitive compared to other regions in East Java Province. Despite the significant economic growth in the GKS area, income disparity between its regions still exists, resulting in population mobility between regions due to the strength of regional attractiveness, which has high level of regional attractiveness (Santoso, 2010). According to the mandate in the Preamble to the 1945 Constitution of Indonesia, economic development should aim to produce an even and affluent society (Sukmaadi & Marhaeni, 2021). To accomplish this goal, Indonesia formulated economic development policies that aim at minimizing the level of poverty,

unemployment, and income inequality gap. The development activities of the regions are directed at establishing long-term employment prospects for the residents.

Every region has potentials that are different from the others, and these differences are characterized by the types of resources available, both physical and nonphysical (Cahyono et al., 2017). However, variation in resources influences disparity in development between regions and sectors. According to Cahyono et al. (2017), disparity causes inequality among regions which makes some regions develop rapidly while others develop slowly. Furthermore, scarcity of resources in some regions influences their growth level compared to regions endowed with resources. Furthermore, Sukmaadi & Marhaeni (2021) revealed that urban areas that benefit from the shifting of potential resources would continue to experience rapid economic development. This phenomenon makes these areas become potential growth centres. Meanwhile, economic disparity prevails in a region if it cannot compete with other regions that have rapid economic development. Therefore, it is very important to reduce both development and economic disparity among regions for there to be any meaningful, sustainable development. Numerous studies reveal that a region's economic growth can be positively and negatively impacted by development and economic disparity (Cingano, 2014; Wahiba & El Weriemmi, 2013). The main attribute to the regional economic disparity is when more economic activities are concentrated in one region instead of being evenly distributed (Berg & Ostry, 2017). Furthermore, Sukmaadi & Marhaeni (2021) showed that regional disparity is a result of available resources, infrastructure, services, economic condition, funding allocation, and population of the regions.

Citing a study conducted by Cahyono et al. (2017) in the 2011 Final Report on the Performance Evaluation of the Regional Government of East Java Province, the concentration of economic activity in Surabaya makes neighboring cities dependent on it, thus causing economic development inequality. This condition can trigger a wide and deep disparity if the issue is not addressed. From the existing background, the purpose of this article is to formulate a regional economic reduction strategy based on the regional cluster concept by mapping the leading sectors that make up the cluster. In previous journals, much research related to regional inequality has been carried out, but it only discussed the level of inequality and has not discussed the strategy for solving it. This research is important for identifying regional economic inequality and mapping the potential of regional economic clusters to reduce regional inequality.

## **Research Method**

This paper aims to determine the strategy for reducing regional disparities by using the concept of a regional cluster based on leading sectors. In achieving this goal, we divide some targets that will be reached in this paper, i.e. (1) identify the Williamson index to determine regional inequality in the GKS area, (2) identify leading sectors in each district/city included in the GKS area, (3) formulating a strategy for reducing inequality. The method of analysis in this study was carried out by analysis of regional inequality (Williamson's analysis), Location Quotient (LQ), and descriptive analysis. We collected the data using secondary data methods through some literature such as research reports, data reports from some institutions, news, and other related documents.

**Williamson Index**

The identification of regional inequality in this study uses the Williamson Index, which is an index based on the size of the deviation of the income per capita of the population and the total population in each region. Based on Syafrizal (2012), the Williamson index has a value between 0 to 1. If the index value is close to 1, it is assumed that the inequality in a region is getting higher, while the index value is close to 0, indicating the level of disparity is getting smaller. Williamson index is classified into three classes, namely low-level inequality (i.e.  $IW < 0,35$ ), middle-level inequality (i.e.  $0,35 < IW < 0,50$ ), high-level inequality ( $IW > 0,50$ ) (Cahyono & Wijaya, 2014). The formula for calculating the Williamson Index can be seen in Equation 1.

$$IW = \frac{\sqrt{\sum (Y_i - Y)^2 \cdot f_i / n}}{Y} \quad (1)$$

Description:

WI= Williamson Index;  $Y_i$ = GRDP per capita in  $x$  region (in this context is a district);  $Y$ = Average GRDP per capita for  $X$  region (in this context is GKS);  $F_i$ = Population of  $x$  area (in this context is a district);  $n$ = Population of  $X$  area (in this context is GKS)

**Location Quotient (LQ) Analysis**

Leading sectors are sectors that can encourage growth or development for other sectors. The most common approach to determining the leading sector is to examine the components of the Gross Regional Domestic Product (GRDP). One of the analytical tools that can be used to determine the leading sector of an area is Location Quotient (LQ) analysis. According to (Anisah, 2018), Location Quotient (LQ) analysis is an analysis used to assess economic conditions and identify the specializations possessed by a region compared to the reference area. Meanwhile, according to Rustiadi et al. (2011), LQ analysis can be used to determine the economic potential of a region as well as the base and non-base sectors. The LQ method is a method that can show the existence of a comparative advantage only for sectors that have developed. The interpretation of the LQ value is as follows:

- If  $LQ > 1$ , the sector is the base sector. This sector does not only meet needs within the region but also needs outside the region because this sector has the potential to be developed.
- If  $LQ < 1$ , the sector is a non-basic sector and needs to import products from outside the region because this sector is less prospective for development.
- If  $LQ=1$ , the sector is only sufficient to meet the needs of its region.

The formula for calculating the LQ can be seen in Equation 2.

$$LQ = \frac{p_i / p_t}{P_i / P_t} \quad (2)$$

Description:  $p_i$ = value of GRDP Sector  $i$  in district  $j$ ;  $p_t$ = total GRDP in district  $j$ ;  $P_i$ = GRDP value of sector  $i$  in district  $j$ ;  $P_t$ = total GRDP in the province

**Descriptive Analysis**

In this study, descriptive analysis is used to help describe, show or summarize the results of the analysis on regional inequality, leading sectors, and strategy formulation. This

analysis is done by constructing and connecting the results of the analysis so that the patterns that may appear meet each data condition. Furthermore, descriptive analysis was used to identify the strategies that might be applied to reduce regional economic disparities in the GKS area and respond to the other strategies in several studies.

## Results and Discussions

### *Regional Economic Disparities*

Regional economic disparities in the GKS area were analyzed using the Williamson index. In this analysis, data on the population and GRDP per capita of each district/city in the GKS area are used. The GRDP per capita of districts/cities in the GKS area has a significant difference, and every year, it increases, except in 2020, due to the influence of the Covid-19 pandemic outbreak. The city of Surabaya has the highest per capita GRDP compared to other districts/cities. Meanwhile, Bangkalan District has the lowest per capita GRDP. The regencies/cities that have a per capita GRDP value above the GKS area GRDP are Gresik District, Sidoarjo District, and Surabaya City. Meanwhile, the regencies/cities with per capita GRDP under the GKS area are Bangkalan District, Mojokerto City, Mojokerto District, and Lamongan District (see Table 1 and Figure 1). This indicates that there are disparities between districts/cities in the GKS Area. The high per capita GRDP gap between regions in the GKS results in the emergence of population mobility between regions due to the attractiveness of regions with high-income levels (Santoso, 2010).

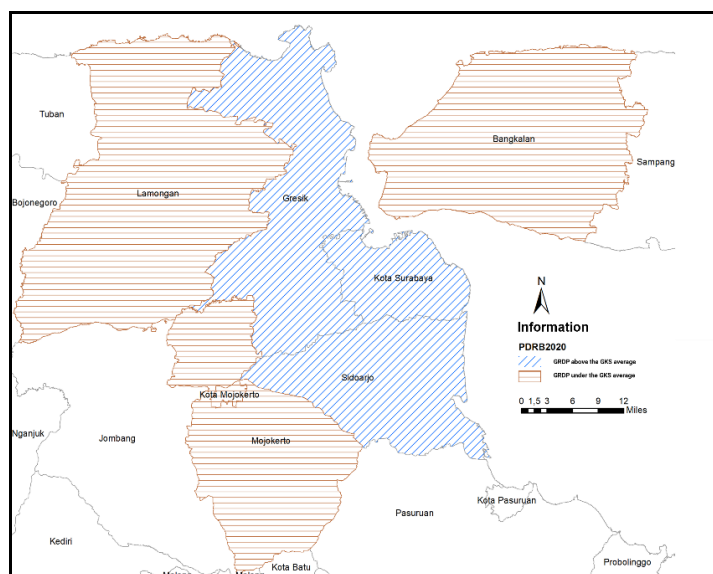
**Table 1. GRDP Per Capita District/ City of GKS**

District/ City	GRDP Percapita (Rp)		
	2018	2019	2020
Gresik	74,003,000	77,194,000	<b>73,594,000</b>
Bangkalan	18,755,000	18,795,000	17,620,000
Mojokerto	49,838,289	52,310,795	51,330,640
Kota Mojokerto	36,711,864	38,503,293	36,832,906
Kota Surabaya	134,220,000	141,870,000	<b>134,590,000</b>
Sidoarjo	59,795,000	62,456,000	<b>59,287,000</b>
Lamongan	22,104,030	23,299,990	22,677,910
Average	56,489,598	59,204,154	56,561,779
Total	395,427,183	414,429,078	395,932,456

Source: Central Bureau of Statistics, 2019-2021

To analyze the regional economic disparities, we used the calculation from the Williamson index. The analysis shows that the Williamson index value in the GKS area during the 2018-2020 period has fluctuated, increased, and decreased, with an average index value of 0.817 (see Table 2). The average value of the Williamson index is quite different when compared to previous studies by Cahyono et al. (2017), which resulted in an average WI of 0.22 (WI in 2009-2011). If viewed from the classification of index values, the level of disparity between regions in the GKS area is high because  $IW > 0.5$ . Furthermore, when viewed from each district/city,  $IW > 0.5$  are found in Bangkalan and Mojokerto District. Meanwhile, Gresik District, Mojokerto District, Mojokerto City, Surabaya City and Sidoarjo District have low IW values. The high economic disparity between regions in the GKS area can have an impact on the level of community welfare in the region. The high

disparities in the GKS area can be influenced by the concentration of growth in growth centres only. So, the trickledown effect is difficult to achieve and causes uneven growth.



**Figure 1. GRDP Group Map of GKS**

**Table 2. Williamson Indeks**

District/ City	Williamson Index		
	2018	2019	2020
Gresik	0.086	0.085	0.084
Bangkalan	0.636	0.679	0.698
Mojokerto	0.045	0.044	0.034
Mojokerto City	0.062	0.062	0.061
Surabaya City	0.314	0.315	0.313
Sidoarjo	0.026	0.025	0.022
Lamongan	0.542	0.535	0.517
Gerbangkertosusila	0.814	0.824	0.813
Average		<b>0.817</b>	

Basically, the centres of inter-regional economic growth tend to be concentrated in certain areas that have a location advantage. Economic growth tends to be concentrated in certain areas due to the influence of agglomeration (Sjafrizah, 2008). This illustrates the economic condition of the GKS area, which only focuses on the City of Surabaya, Gresik District, Mojokerto City, Mojokerto District and Sidoarjo. The district/city is a growth centre (growth pole) which has the characteristics of many facilities and conveniences so that it becomes a centre of attraction (pole of attraction), causing various kinds of activities such as processing, trade, hospitality, and infrastructure industries to be attracted to be located in the area. This is one of the causes of high regional disparities, especially in the City of Surabaya, which has the highest GRDP per capita and is quite far from Lamongan and Bangkalan District. Disparities in the GKS Region occur because there are several

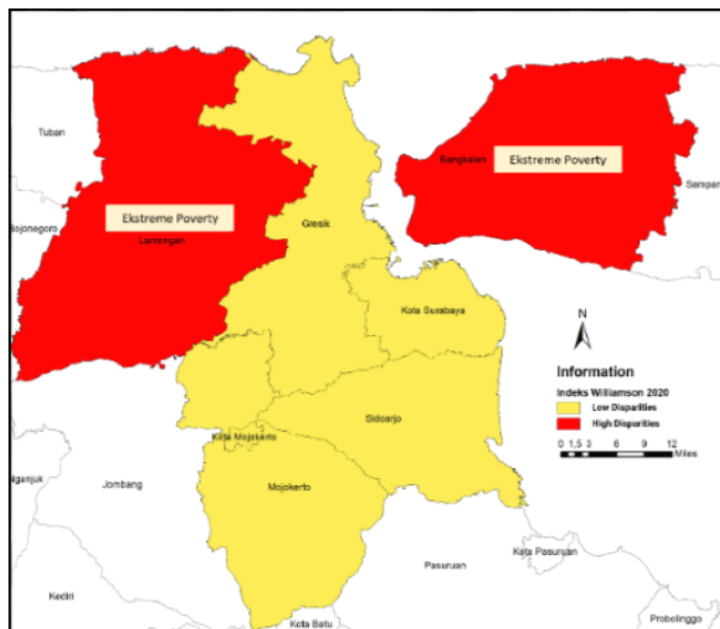
districts/cities with very high GRDP per capita due to industry, natural resource processing, and the high quality of human resources in the region. As previously mentioned, the District of Gresik, Sidoarjo, and Surabaya City have a per capita GRDP value above the GKS Region, also triggering high disparities in the GKS.

**Table 3. Areas of Extreme Poverty in 2021 East Java Province**

No	District/ City	Household Social Welfare Integrated Data			Poverty Level			
		Extremely Poor	Bottom 25%	Total	Poor		Extremely Poor	
		(000)	(000)	(000)	Person	(%)	Person	(%)
1	Probolinggo	131.3	224.95	255.89	218,350	18.61	114.250	9.74
2	Bojonegoro	6.01	53.33	178.54	129,190	15.44	50.200	6.05
3	Lamongan	9.74	55.36	148.92	164,680	13.85	87.620	7.37
4	Bangkalan	68.22	107.12	141.84	204,000	20.56	123,490	12.44
5	Sumenep	49.91	116.99	199.3	220,230	20.18	130.750	11.98
	<b>Total</b>	<b>265.18</b>	<b>557.75</b>	<b>924.49</b>	<b>936,450</b>	<b>89</b>	<b>382.943</b>	<b>48</b>

Source: Ministry of Social Affairs Republic Indonesia, 2019

Regional economic disparities cause a decrease in community welfare, which is usually marked by a high level of poverty; based on Decree Number 8 of 2019 by the Ministry of Social Affairs about Integrated Social Welfare Data (Data Terpadu Kesejahteraan Sosial/DTKS), Lamongan and Bangkalan districts are included in extreme poverty areas in 2021. From Table 3, it is known that Bangkalan District has the highest extreme poverty rate in East Java. If seen from Table 2 regarding the Williamson index and Table 3 regarding the poverty level, it is known that the Williamson index and the poverty rate are directly proportional. In this case, Bangkalan District and Lamongan District have a high Williamson index and are categorized as extreme poverty (see Figure 2).



**Figure 2. GKS Disparity and Poverty Map**

### **Leading Sectors**

To accelerate regional economic growth, it is necessary to develop leading economic sectors that can increase economic growth and attract the growth of other economic sectors (Adisasmita, 2013). The leading economic sector must have positive growth, which is usually indicated by an LQ value of more than one. Sectors that have an LQ value of more than one are potential base sectors to be developed within the region, and they can be the major potential factors to accelerate the development there. Basically, LQ analysis is used to determine the extent to which the level of specialization of economic sectors in a region utilizes the leading sector (Jumiyanti, 2018). The ability to increase the growth of a region is highly dependent on the advantages or competitiveness of the economic sectors in the region (Rustiadi et al., 2011). The following table (Table 4) are the results of the LQ analysis for each district/city in the Gerbangkertosusila Region.

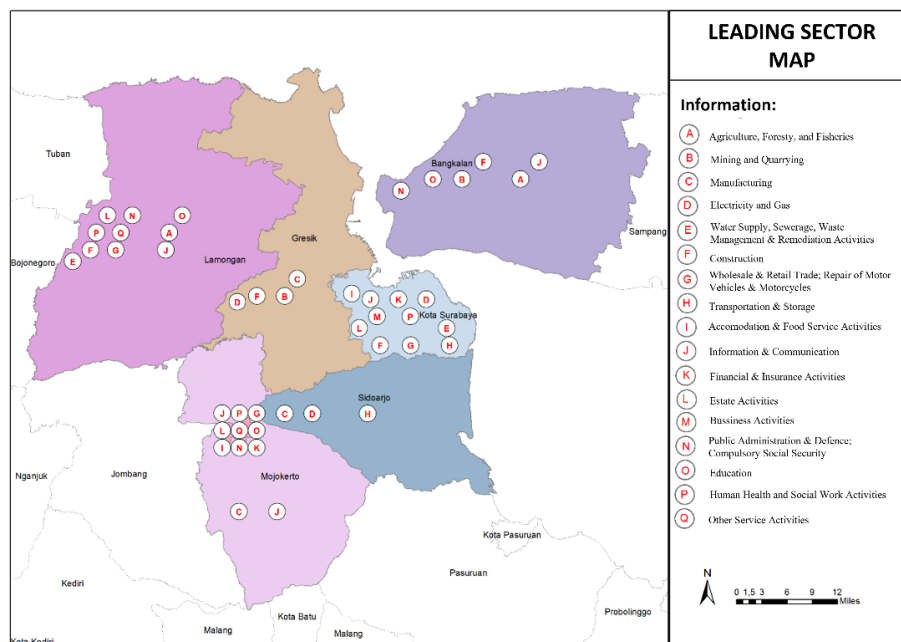
From the results of the LQ analysis in each district/city in the GKS area, several sectors fall into the basic category. The base sector in Gresik District is the mining and quarrying sector; processing industry; procurement of electricity and gas; and construction. This is the same as the calculation of the LQ analysis by Santoso (2010), where Gresik District has the leading sectors of the mining and quarrying sector; processing industry; electricity and clean water; and construction. In Bangkalan District, the basic sector consists of agriculture, forestry, and fishery sectors; mining and excavation; construction, information, and communication; mandatory government administration, defence, and social security; and educational services. While the results of the LQ analysis in Bangkalan by Santoso (2010) are the agriculture; construction; transportation and communication; and services sectors. In Mojokerto District, the basic sector consists of the processing industry and information and communication sectors. In Mojokerto City, it consists of the water supply sector, waste treatment, waste, and recycling; construction; wholesale and retail trade, repair of cars and motorcycles; provision of accommodation and food and drink; information and communication; financial and insurance services; real estate; mandatory government administration, defence, and social security; education services; health services and activities; and other services. The results of the LQ analysis in Mojokerto District are different from the LQ analysis by Santoso (2010), with the agricultural and manufacturing sectors as the leading sectors. In the city of Surabaya, the basic sector consists of the electricity and gas procurement sector; water supply, waste, waste, and recycling treatment; construction; wholesale and retail trade, repair of cars and motorcycles; transportation and warehousing; provision of accommodation and food and drink; information and communication; financial and insurance services; real estate; company services; and health services and activities. The results of the LQ analysis in Surabaya are different from the LQ analysis by Santoso (2010), with manufacturing; infrastructure; trade; finance, and corporate services as the leading sectors. In Sidoarjo District, the basic sector consists of the processing industry, procurement of electricity and gas, and transportation and warehousing in the district. The results of the LQ analysis in Sidoarjo District are different from the LQ analysis by Santoso (2010), with the manufacturing sector; electricity and clean water; and transportation and communication as the leading sector Lamongan base sector consisting of agriculture, forestry, and fisheries; Water Supply, Waste, Waste, and Recycling Treatment; construction; Wholesale and Retail Trade, Car and Motorcycle Repair; information and communication; real estate; Government Administration, Defence, and Mandatory Social Security; education services; health services and activities; as well as other services. These results are different from the LQ analysis in Lamongan District by Santoso (2010) in the agricultural sector, services, trade, hotels and restaurants. The leading sector map of GKS can be seen in Figure 3.



**Table 4. Locational Quotient Analysis Result**

Category	District/City LQ						
	1	2	3	4	5	6	7
Agriculture, Forestry, and Fisheries	0,59	<b>2,06</b>	0,65	0,05	0,01	0,19	<b>3,04</b>
Mining and Quarrying	<b>1,76</b>	<b>5,22</b>	0,17	0,00	0,00	0,02	0,25
Manufacturing	<b>1,61</b>	0,07	1,83	0,35	0,64	<b>1,77</b>	0,35
Electricity and Gas	<b>2,01</b>	0,17	0,25	0,33	<b>1,34</b>	<b>2,72</b>	0,28
Water Supply, Sewerage, Waste Management & Remediation Activities	0,63	0,81	0,68	<b>1,34</b>	<b>1,56</b>	0,79	<b>1,17</b>
Construction	<b>1,02</b>	<b>1,31</b>	0,92	<b>1,15</b>	<b>1,06</b>	0,98	<b>1,18</b>
Wholesale & Retail Trade; Repair of Motor Vehicles & Motorcycles	0,66	0,85	0,56	<b>1,57</b>	<b>1,51</b>	0,85	<b>1,07</b>
Transportation & Storage	0,85	0,51	0,45	0,96	<b>1,86</b>	<b>1,79</b>	0,31
Accommodation & Food Service Activities	0,23	0,22	0,34	<b>1,21</b>	<b>2,76</b>	0,66	0,30
Information & Communication	0,79	<b>1,00</b>	<b>1,11</b>	<b>2,49</b>	<b>1,14</b>	0,75	<b>1,44</b>
Financial & Insurance Activities	0,43	0,70	0,56	<b>2,88</b>	<b>1,91</b>	0,46	0,80
Estate Activities	0,77	0,70	0,86	<b>1,57</b>	<b>1,53</b>	0,56	<b>1,,</b>
Business Activities	0,39	0,31	0,19	0,94	<b>2,98</b>	0,20	0,37
Public Administration & Defence; Compulsory Social Security	0,54	<b>2,38</b>	0,99	<b>2,04</b>	0,56	0,77	<b>1,84</b>
Education	0,33	<b>1,43</b>	0,47	<b>1,61</b>	0,89	0,44	<b>1,06</b>
Human Health and Social Work Activities	0,59	0,60	0,58	<b>1,74</b>	<b>1,19</b>	0,48	<b>1,41</b>
Other Service Activities	0,20	0,52	0,64	<b>2,60</b>	0,98	0,26	<b>1,34</b>

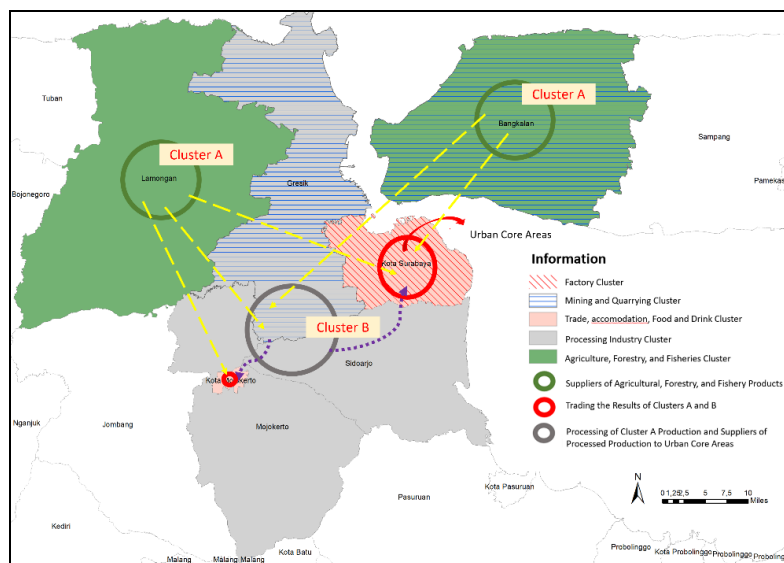
Details: (1) Gresik; (2) Bangkalan; (3) Mojokerto; (4) Mojokerto City; (5) Surabaya City; (6) Sidoarjo; (7) Lamongan



**Figure 3. Leading Sector Map of GKS**

**Regional Cluster in Gerbangkertosusila**

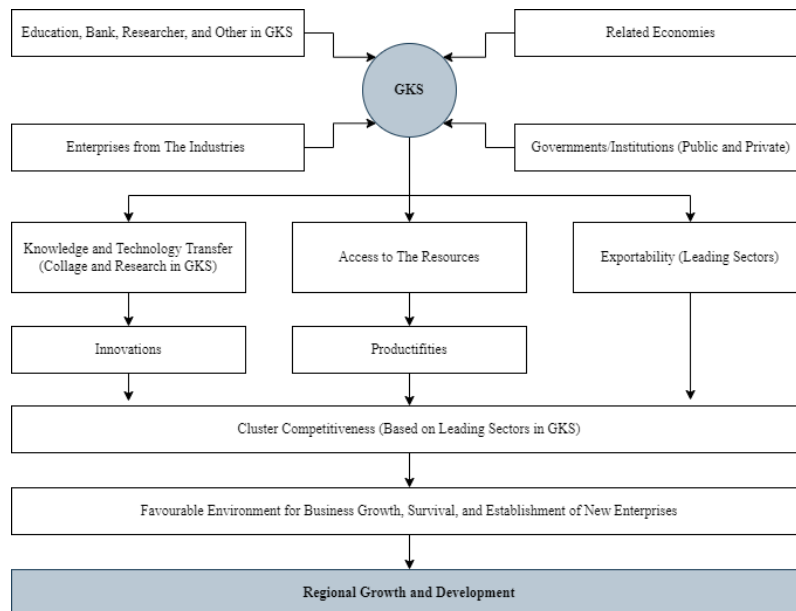
Regional development is related to regional growth and development. A cluster is a relationship or network of a company that is geographically close so that it can form agglomerations (Gordon & Kourtit, 2020). According to Garanti & Berzina (2013), the existence of this agglomeration could increase efficiency and productivity. When viewed from the condition of the GKS Region, there are several regencies/cities that have the same characteristics of leading activities and sectors. Basically, regional clusters have four main components, namely cooperation or informal interaction between companies and similar industries; interrelated businesses; academics; and the government or related institutions (Garanti & Zvirbule-Berzina, 2013). In this case, several regencies/cities in the Gerbangkertosusila Region have the same superior sector, with their respective specializations and potential for development. Clusters can encourage company interactions with academia and increase innovation. Innovation is needed to improve the external and internal and external factors. Internal factors are a form of competitive advantage and are based on decision-making. Meanwhile, competitiveness is an external factor mainly related to exports. In terms of increasing the competitiveness of the economy, both from the competitive and comparative capabilities of each sector in the District/City, the development of the leading sector can be carried out according to the specialization of each District/City.



**Figure 4. GKS Regional Cluster Linkage Map**

Basically, Gerbangkertosusila has the characteristics that exist in the regional cluster concept. The Gerbangkertosusila area contains aspects of higher education institutions, similar economic activities, government institutions, and the private sector. Surabaya, as the core urban area of Gerbangkertosusila, has a cluster of activities in the form of trading, accommodation, and eating and drinking, as well as a cluster of companies. In addition, Mojokerto City also acts as a trade, accommodation, and eating and drinking cluster. Furthermore, Sidoarjo District, Gresik District, and Mojokerto District act as processing industry clusters. Gresik and Bangkalan regencies act as mining and quarrying clusters that support industrial activities in Gresik, Sidoarjo, and Mojokerto regencies. And finally, the agriculture, forestry, and fisheries clusters are located in Lamongan and Bangkalan Regencies, which support and supply the needs of the District/City in Gerbangkertosusila.

From the results of the analysis, it was found that there are 3 clusters in the Gerbangkertosusila Region, namely Cluster A (Lamongan and Bangkalan), which are agriculture, forestry, and fishery clusters as well as mining and quarrying (producing raw materials); cluster B (Gresik, Sidoarjo, and Mojokerto) is a processing industry; and cluster C (the City of Surabaya and City of Mojokerto) is a cluster of trading and corporate activities (see Figure 4).



**Figure 5. Regional Cluster Concept in GKS**

***Regional Cluster Development Strategy***

The regional cluster development strategy is carried out with the aim of increasing competitiveness productivity, and increasing equitable distribution of economic development in the GKS area (Enright, 2003). The regional development strategy of Gerbangkertosusila needs to consider regional specialization formed by the existence of a resource endowment, as well as the advantages and disadvantages of regional competitiveness (Adams & Harris, 2005). Several regional cluster development strategies (Figure 5) that can be applied to the GKS area are:

- 1) Strategies to increase regional productivity through diversification and development of leading sectors, improvement of the business environment, and development of infrastructure and human resources. This strategy is directed at leading sectors in each district/city in the GKS Area by optimizing economic agglomeration and encouraging more investment-friendly regulations;
- 2) Strategies based on optimizing urban roles and functions supported by human resource development and creative economic development. This strategy is directed at Cluster C (Mojokerto City and Surabaya City) as a cluster with characteristics of urban activities and supporting infrastructure conditions;
- 3) Strategy based on natural resource management and local economic development in Cluster A (Lamongan and Bangkalan Districts) which has advantages in resource endowment. Physical infrastructure development and human resource development to overcome lagging economic development in the regions;

- 4) Strategies based on strengthening the productive business environment interrelated with environmentally friendly industries. This strategy is directed at Cluster B (Sidoarjo, Gresik, and Mojokerto); and
- 5) Strategies to increase the linkage of economic activities between Clusters A, B, and C by maximizing the integration with educational institutions, banks, government, and private sectors to create innovation and productivity. Thus, creating a competitive cluster development.

## Conclusion

Regional disparities are the result of unequal availability of resources, infrastructure, services, economic conditions, allocation of funds, and the number of regional residents. This means that a region with greater economic resources and activities can become dependent on another region as an economic centre. The Williamson Index shows that the level of inequality in the GKS area is high (0,817), especially in Bangkalan and Mojokerto District. The strategy for reducing inequality between regions is answered by mapping the relationship of regional clusters in the GKS Area. From the results of the analysis, there are 3 clusters with strategies according to the main tasks of the problem and its potential. Cluster A (Lamongan and Bangkalan Districts) as suppliers of agricultural, forestry, and fishery products, with natural resources management strategies and local economic development. Cluster B (Mojokerto District, Mojokerto City, Sidoarjo District, and Gresik District) is the processing of cluster A production and suppliers of processed products to the urban core area, with the strategy of strengthening the productive business environment and environmentally friendly industries. And cluster C which is located in Surabaya City is a trading location for the result of clusters A and B, with a strategy optimizing the roles and functions of urban areas supported by the development of the creative economy.

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