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Economic Growth Analysis in Surabaya City: An LQ, Dynamic LQ, Klassen Typology and Shift-Share Approach

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Abstract: This study aims to identify economic sectors that serve as base, potential, competitive, and leading sectors in Surabaya City, East Java. As a primary trade gateway for Eastern Indonesia and a regional economic hub, Surabaya's development is reflected in its Gross Regional Domestic Product (GRDP) data. This research employs a descriptive quantitative method using secondary data from the Central Bureau of Statistics (BPS). The analysis utilizes Location Quotient (LQ), Dynamic Location Quotient (DLQ), Shift-Share, and Overlay analysis to draw conclusions. The results identify four leading sectors in Surabaya: Manufacturing Industry; Electricity and Gas Supply; Wholesale and Retail Trade (including Car and Motorcycle Repair); and Accommodation and Food Services. These findings provide strategic insights for policymakers to formulate economic development strategies aimed at enhancing regional economic growth.

Keywords: Economic Growth, Location Quotient (LQ), Dynamic Location Quotient (DLQ), Shift-Share Analysis, Overlay Analysis

Introduction

Economic growth often serves as an indicator of a region's economic success, reflected in controlled inflation, reduced unemployment, and improved welfare. According to Adam Smith's classical theory, massive economic growth can suppress unemployment rates. There is a positive correlation between economic growth and labor absorption, as an increase in production automatically raises the demand for human resources (Yogo Subekti & Muhammad Yasin, 2023).

One of the priorities in regional development planning is strengthening economic competitiveness to trigger growth in other supporting sectors. In this process, identifying leading sectors becomes crucial (Latuheru, 2024)Amidst the currents of globalization, every region in Indonesia is required to develop its specific potential to remain competitive. The government strives to advance the economy to increase public income for the sake of creating social stability and welfare. Consequently, economic development serves as a vital instrument in enhancing the quality of life and the intellectual life of the nation (Adrian Saputra et al., 2023).

Economic Base Theory states that a region's economic growth is highly dependent on its export expansion. Economic activities are categorized into base (leading) sectors and

non-base or local sectors (Tarigan, 2005). This concept is utilized to predict the impact of new economic activities at both urban and regional levels. Consequently, the base sector is considered a primary determinant of regional economic progress (Arsyad, 2010).

In Indonesia, GRDP consists of 17 sectors, including: (1) agriculture, forestry, and fishing; (2) mining and quarrying; (3) manufacturing; (4) electricity and gas supply; (5) water supply, sewerage, waste management, and remediation activities; (6) construction; (7) wholesale and retail trade, repair of motor vehicles and motorcycles; (8) transportation and storage; (9) accommodation and food service activities; (10) information and communication; (11) financial and insurance activities; (12) real estate activities; (13) business services; (14) public administration and defense, compulsory social security; (15) education services; (16) human health and social work activities; and (17) other services.

Each region possesses specific economic capacities and advantages that serve as the foundation for regional economic development (Basuki et al., 2017).These capacities direct economic growth based on the competitive advantages and energy of the sectors within the region. To ensure that regional advantages grow in line with development goals, local governments continue to provide adequate attention and facilities tailored to each region's capabilities (Prayitno, 2023). The integrated and sustainable development of these regional advantages, aligned with regional development plans, is expected to enhance regional economic productivity. Ultimately, the ability to drive growth in an area or region depends heavily on its competitive advantages .

The economy of Surabaya City has demonstrated improving performance over the last four years (2021–2024). In 2023, Surabaya recorded its highest economic growth in the past decade. Furthermore, the economic growth in 2024 remained relatively high compared to the levels achieved in previous years. This robust economic performance in 2023 is inseparable from the Surabaya City Government's policies, which were specifically designed to stimulate and accelerate economic growth.

Based on its economic structure, Surabaya City is dominated by the secondary and tertiary sectors, while the primary sector remains weak, contributing less than 1% to Surabaya's GRDP. In 2023, the primary sector's contribution to Surabaya's GRDP experienced a slight decline compared to its share in 2022. Specifically, the agriculture sector contributed 0.11% in 2023, down from 0.13% in 2022.

The developing sectors in Surabaya City include wholesale and retail trade (including car and motorcycle repair), the manufacturing industry, and the accommodation and food services sector. The wholesale and retail trade sector contributes 28%, followed by the manufacturing industry at 19.5%, and accommodation and food services at 14%. Notably, the wholesale and retail trade sector, including motor vehicle repairs, acts as a primary driver of economic activity in Surabaya. This sector stimulates economic growth through trade and repair businesses, which offer significant investment potential and substantial labor absorption. Consequently, these businesses generate a multiplier effect that supports Surabaya's economy, ranging from investment realization to job creation for the local community. The prevalence of wholesale, retail, and repair enterprises further proves that Surabaya possesses a robust market share. This is supported by the high demand from the

people of Surabaya and surrounding areas for automotive repairs and variations.

Sectors with a substantial contribution to GRDP play a vital role in the overall economic growth of a region. In Surabaya City, the secondary and tertiary sectors hold a dominant role in shaping the GRDP. Conversely, the primary sector plays a minimal role; therefore, both the secondary and tertiary sectors warrant further development to bolster economic growth in Surabaya. The sectors with the largest contributions to Surabaya's GRDP are illustrated in Figure I.1 below (BPS Surabaya City, 2025).

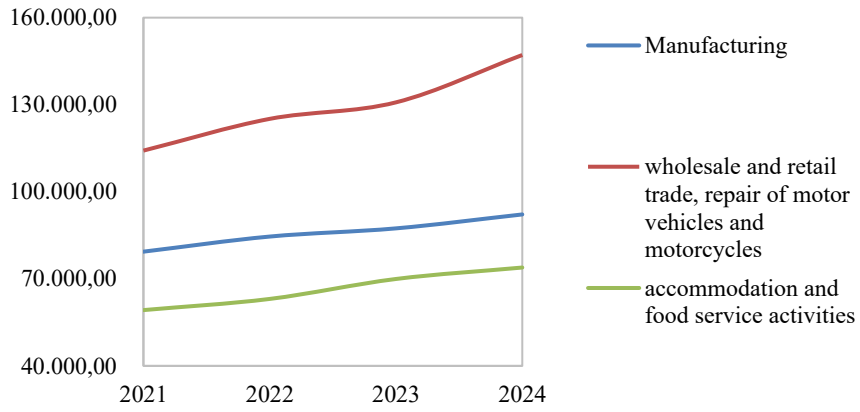

Figure 1. Top Three Sectoral Contributions to Surabaya City's Gross Regional Domestic Product (GRDP) in 2021 – 2024 (BPS Surabaya, 2025)

Based on the data presented in Figure I, the largest contribution to Surabaya's GRDP originates from the wholesale and retail trade and vehicle repair sector, followed by the manufacturing industry and the accommodation and food services sector. The consistently increasing trend in Surabaya's GRDP year after year serves as concrete evidence of significant economic growth and progress within the region.

The wholesale and retail trade, along with the motor vehicle repair sector, is recorded as the primary contributor compared to other sectors. This sector exhibited significant fluctuations in growth, starting with 7% in 2022, surging sharply to 33% in 2023, and growing by 5% in 2024. The manufacturing industry holds the second position, with growth rates of 7% in 2022, 5% in 2023, and 4% in 2024. Meanwhile, the accommodation and food services sector, as the third-largest contributor, demonstrated stable growth with an 8% increase in both 2022 and 2023, followed by 7% in 2024. The sustained growth within these three sectors reinforces the positive economic trajectory of Surabaya City. This description underscores that economic growth plays a crucial role in achieving broad-scale economic development.

Therefore, an in-depth analysis of the leading sectors in Surabaya is essential to optimize this growth. Economic development planning is expected to be realized systematically, grounded in existing sectoral potentials. In this context, the analysis is conducted using the Location Quotient (LQ), Dynamic Location Quotient (DLQ), Klassen Typology, and Shift-Share methods. These instruments are employed to classify base and non-base sectors, determine sectoral development potential, assess relative growth rates,

and measure the economic competitiveness of Surabaya City.

Research Method

This study employs a descriptive quantitative method using secondary data, specifically Gross Regional Domestic Product (GRDP) figures obtained from the publications of the Central Bureau of Statistics (BPS) for both East Java Province and Surabaya City for the period of 2021–2024. Quantitative research is defined as a method that utilizes numerical data and statistical information (Sugiyono, 2011). The secondary data analysis was performed on Surabaya City's GRDP and East Java Province's GRDP, both based on the 2010 Constant Market Prices (CMP) for the 2021–2024 period.

GRDP at Constant Market Prices is utilized as it accurately reflects aggregate growth over time by using fixed prices. This ensures that the observed development is solely influenced by changes in real production, rather than inflation or price fluctuations. Furthermore, the growth of GRDP at Constant Prices indicates the overall economic growth rate, as well as the performance of individual sectors on a year-to-year basis. The analysis technique used were Location Quotient (LQ), Dynamic Location Quotient (DLQ), Shift Share Analysis, Klassen Typology Analysis, and Overlay Analysis. Further details regarding the data used can be seen in Table 1.

Table 1. Data Description

Data	Unit	Year
GRDP of East Java at Basic Year 2010 Constant Price by Business Field in Bilion Rupiah	Billion Rupiah	2021 – 2024
GRDP of Surabaya at Basic Year 2010 Constant Price by Business Field in Bilion Rupiah	Billion Rupiah	2021 – 2024

Location Quotient (LQ) analysis is a method applied to identify the level of specialization of an industry in a specific region by determining base or leading sectors. The LQ method calculates the ratio between the output share of a specific sector at the district or city level relative to the share of the same sector at the provincial level. In this context, leading sectors refer to potential corporate sectors that remain competitive despite similar activities in other local government jurisdictions (Gheareta Nugraheni, 2023). The LQ technique is a fundamental approach in the economic base model, serving as a preliminary step to identify industries that trigger economic growth. Through a comparative approach, LQ measures the concentration or relative degree of specialization of economic activities to provide a general overview in establishing leading sectors for economic and industrial activities in a region.

The mathematical formula used to compare the capabilities of regional sectors is as follows:

$$LQ = \frac{Vi/Vt}{Yi/Yt} \quad (1)$$

where LQ is the Location Quotient value of each sector in Surabaya, Vi is the GRDP value of i sector in Surabaya, Vt is the total value of GRDP from all sectors in Surabaya, Yi is the GRDP value of sector i in East Java, and Yt is the total GRDP value of all sectors in East Java (Nurmila et al, 2021). If LQ > 1, it indicates that the sector is a base sector, serving as a primary source of economic growth. Sector with a comparative advantage are not only capable of fulfilling local demand within the respective region but can also be exported to other region. If LQ = 1, the sector is categorized as non base, meaning it possesses no comparative advantage. However, if LQ < 1, the sector is also classified as non base, indicating a lack of specialization in that particular area. The production of these sector within a region is insufficient to meet local demand, necessitating supplies or imports from other regions (Pratiwi et al., 2024).

Dynamic Location Quotient (DLQ) analysis is a development of the standard LQ calculation, designed to address the static nature of the LQ method, which only captures a specific point in time (Jafar, 2021). The DLQ calculation refines the LQ method, enabling the identification of sectoral shifts over a given period. The mathematical formula for calculation DLQ is as follows :

$$DLQ = \frac{(1+gij)/(1+gj)}{(1+gip)/(1+gp)} \quad (2)$$

where gij is the average GRDP growth rate of sector i in Surabaya, gj is the average growth rate of total GRDP in Surabaya, gip is the average GRDP growth rate sector i in East Java, and gp is the average growth rate of total GRDP in East Java. If DLQ value greater than 1 (DLQ > 1) indicates that the observed sector in the region possesses the potential for development or is considered prospective. Conversely, if the DLQ value is less than 1 (DLQ < 1), the observed sector in that specific location or region(Fickri et al., 2024.)

Shift-Share analysis is applied to evaluate and identify the dynamics of economic shifts and contributions within a region. This method operates by comparing the growth rate of a specific sector at the local level against the same sector at a higher level, such as the provincial or national scale, which serves as a reference or benchmark (Pribadi, 2021).There are three components that influence the results of this analysis: Proportional Regional (PR), Proportional Shift (PS), and Differential Shift (DS), with the formulas as follows:

$$\Delta Q_{ij}^{t} = Q_{ij}^{0}\left\{\frac{Y_t}{Y_0} - 1\right\} + Q_{ij}^{0}\left\{\frac{Q_i^t}{Q_i^0} - \frac{Y_t}{Y_0}\right\} + Q_{ij}^{0}\left\{\frac{Q_{ij}^t}{Q_{ij}^0} - \frac{Q_i^t}{Q_i^0}\right\} \quad (3)$$

The formulas for each individual component are broken down as follows:

$$PR_{ij} = Q_{ij}^{0}\left\{\frac{Y_t}{Y_0} - 1\right\} \quad (4)$$

$$PS_{ij} = Q_{ij}^{0}\left\{\frac{Q_i^t}{Q_i^0} - \frac{Y_t}{Y_0}\right\} \quad (5)$$

$$DS_{ij} = Q_{ij}^{0}\left\{\frac{Q_{ij}^{t}}{Q_{ij}^{0}} - \frac{Q_{i}^{t}}{Q_{i}^{0}}\right\} \quad (6)$$

Where Y_t is total GDRP value of all sector in East Java in 2024, Y_0 is total GDRP value of all sector in East Java in 2021, Q_i^0 is the GDRP value of sector i in East Java in 2024, Q_i^t is the GDRP value of sector i in East Java in 2021, Q_{ij}^t is the GDRP of sector i in Surabaya in 2024, and Q_{ij}^0 is the GDRP of sector i in Surabaya in 2021. If the value of $PR_{ij} < \Delta Q_{ij}^t$, it indicates that the sector supports regional economic development. If the value PS_{ij} is greater than zero ($PS_{ij} > 0$) , the sector is growing relatively fast; conversely, a PS_{ij} value less than zero ($PS_{ij} < 0$), indicates slow growth. Meanwhile, if the value DS_{ij} is greater than zero ($DS_{ij} > 0$), the sector possesses strong competitiveness or is considered a competitive sector; otherwise, it is regarded as lacking a competitive advantage (Rahman et al.,2024.).

Klassen Typology is an analytical instrument used to identify the classification of base sectors within a regional economy (Rahayu & Dorris Yadewani, 2023). This method categorizes regional economic sectors by comparing their growth rates to the growth of a reference or benchmark region (Sofi, 2020). In the context of district or city-level analysis, provincial-level economic data is generally utilized as the basis for comparison. Through the results of the Klassen Typology analysis, the strategic position of growth and the market share of various sectors, subsectors, business units, and commodities that constitute regional economic variables can be accurately depicted (Kurniati, 2020).

Table 2. Classification Klassen Typpologu Analysis

Criteria	LQ > 1	LQ < 1
DLQ > 1	Leading Sector	Star Sector
DLQ < 1	Mature Sector	Lagging Sector

Source : Kurniati, 2020.

Based on Table 2, it can be explained that a sector is categorized as a leading sector if it possesses both LQ > 1 and DLQ > 1, indicating it will remain dominant in the coming years. Sectors with LQ < 1 and DLQ > 1 are referred to as mainstay sectors; while they are not currently dominant, they hold the potential to become leading sectors in the future. Furthermore, if a sector has LQ > 1 and DLQ < 1, it is classified as a mature sector, meaning it is currently a leading sector but lacks the potential to remain dominant in the future. Meanwhile, sectors with LQ < 1 and DLQ < 1 are categorized as lagging sectors, as they are not dominant both at present and in the foreseeable future.

Overlay analysis is an integrative technique applied to formulate final conclusions by synergizing various calculation results (Adiyatin et al., 2019). In this method, the results of Location Quotient (LQ) and Shift-share analyses are combined to provide a comprehensive overview of the contribution of base sectors and the dynamics of regional economic growth. Consequently, the final results regarding the leading sectors of Surabaya

City will be determined through the combination of these three analyses based on the following criteria : (1) If the LQ analysis result indicates a base sector (LQ > 1), it is assigned a positive value (+). (2) For sectors where both the PS and DS components have positive values, the Shift-share analysis is assigned a positive value (+). (3) For sectors classified as 'Developed and Fast-Growing' in the Klassen Typology, a positive coefficient (+) is assigned. The leading sectors of Surabaya City are identified as those that achieve positive values across all three criteria (+++) based on the provisions above.

Result and Discussion

From an economic perspective, Surabaya City plays a strategic role as a trade, industrial, and logistics hub. The existence of Tanjung Perak Port and access to Juanda Airport reinforce Surabaya's position as a vital economic node, particularly for Eastern Indonesia. The manufacturing, trade, and service sectors dominate the city's economic structure with significant contributions to the Gross Regional Domestic Product (GRDP) (Yogo Subekti & Muhammad Yasin, 2023). While Surabaya's economic growth remains generally stable, it experienced a temporary slowdown due to the pandemic. The Surabaya City Government has actively fostered the growth of Micro, Small, and Medium Enterprises (MSMEs) and strengthened urban competitiveness through digitalization and Smart City initiatives. Nevertheless, Surabaya continues to face challenges such as congestion, pollution, rapid urbanization, as well as digital inequality and uneven access to public services. Therefore, optimizing economic potential by identifying leading sectors is crucial for achieving sustainable development in Surabaya.

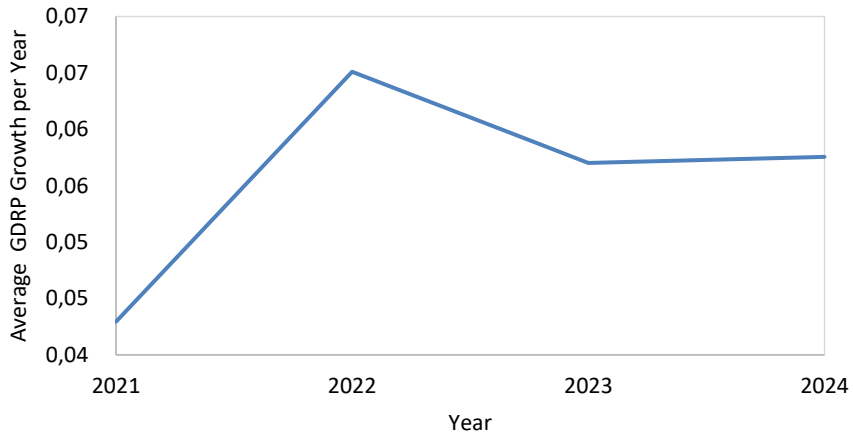

Figure 2. Average GRDP Growth per Year (Processed by Author)

Based on the graph above, there were fluctuations in Surabaya's economic growth during the 2021–2024 period. In 2021, the economic growth rate was recorded at 4.29%, reflecting the initial recovery process following the COVID-19 pandemic. This growth increased significantly in 2022, reaching a peak of 6.51%, which indicates a robust economic recovery driven by the revival of the industrial, trade, and service sectors. However, in 2023, the growth rate declined to 5.7%, likely influenced by various external and domestic factors.

Despite this, the economic growth rate showed a positive trend again in 2024 with a slight increase to 5.76%. Overall, it can be concluded that Surabaya's economy remains relatively stable, with a trend toward sustained recovery after the downturn caused by the pandemic.

The economic structure of Surabaya City during the 2021–2024 period was still dominated by the secondary and tertiary sectors. The highest GRDP was generated by the manufacturing industry; wholesale and retail trade; repair of motor vehicles and motorcycles; and accommodation and food service activities. It is observed that in 2024, the highest economic contribution was generated by the wholesale and retail trade; repair of motor vehicles and motorcycles sector, amounting to IDR 134.133,56 billion. Conversely, the lowest contribution was recorded in the mining and quarrying sector at IDR 18,12 billion. When examined by business field, the growth rate of Surabaya's GRDP remains dominated by activities related to urban development.

Table 3. LQ and Dynamic LQ of Surabaya for the Period 2021 to 2024

Bussiness Field / Sectors	LQ	DLQ
A. Agriculture, Forestry, and Fisheries	0,01	0,97
B. Mining and Quarrying	0,00	0,93
C. Processing Industry	1,52	1,06
D. Electricity and GasProcurement	1,35	1,00
E. Water Supply, Waste Management, Waste and Recycling	1,52	0,99
F. Construction	1,06	0,99
G. Wholesale and Retail Trade; Repair of Cars and Motorcycles	1,52	1,01
H. Transportation and Warehousing	1,72	0,97
I. Accommodation, Drinking, and Food Provision	2,75	1,01
J. Information and Communication	1,10	0,98
K. Financial and Insurance Services	1,84	0,99
L. Real Estate	1,48	0,98
M, N. Corporate Services	2,92	0,99
O. Government Administration, Defense, and Compulsory Social Security	0,55	1,0
P. Educational Services	0,87	0,99
Q. Health and Social Services	1,16	0,99
R, S, T, U. Other Services	0,94	0,98

Source : Processed by Author

The relative contribution of specific economic sectors within a region compared to a

reference region can be calculated using Location Quotient (LQ) analysis. To determine the base sectors of Surabaya's economy, this analysis refers to output characteristics, value-added, or employment opportunities. The data utilized in this study is secondary data, consisting of the Gross Regional Domestic Product (GRDP) at Constant 2010 Prices for Surabaya City and East Java Province from 2021 to 2024. Based on table 3 the Location Quotient (LQ) Analysis results for Surabaya City, it is evident that not all sectors are classified as base sectors. There are 12 identified base sectors in Surabaya City during the 2021–2024 period, including: Manufacturing sector ; Electricity and Gas Supply ; Water Supply, Sewage, Waste Management, and Remediation Activities ; Construction ; Wholesale and Retail Trade, Repair of Motor Vehicles and Motorcycles ; Transportation and Storage ; Accommodation and Food Service ; Information and Communication ; Financial and Insurance ; Real Estate ; Business Service ; and Human Health and Social Work Activities. Meanwhile, the other five sectors are categorized as non base sectors because their average LQ values were less than 1 (LQ < 1) during the 2021 – 2024 period.

The Dynamic Location Quotient (DLQ) method is an extension of the LQ analysis that accommodates the growth rate of economic sectoral output over time. DLQ accounts for the growth rate of a specific observed sector as well as the overall economy over a given period. The results of the DLQ analysis indicate the potential of a sector to become an economic base in the future. Based on Table 3 regarding the result of the Dynamic Location Quotient (DLQ) analysis for Surabaya, it can be identified that there are 4 potential sectors in Surabaya, as follows : Manufacturing ; Electricity and Gas Supply ; Wholesale and Retail Trade, Repair of Motor Vehicle and Motorcycles ; and Accommodation and Food Service. Meanwhile, the remaining sectors are categorized as non potential sectors, as they have DLQ values below 1.

The combined LQ and DLQ analysis is often integrated with or interpreted through the framework of the Klassen Typology. While the traditional Klassen Typology classifies sectors based on growth and contribution, the synergy between LQ and DLQ provides a similar four-quadrant mapping that identifies sectors as leading, mainstay, mature, or lagging. The combined analysis of LQ and DLQ provides a more comprehensive mapping of the strategic positions of economic sectors in Surabaya. By integrating these two approaches, it is possible to identify not only which sectors currently possess a comparative advantage but also the trajectory of that advantage, whether it is growing or declining over time.

Table 4. Sectors Classification by Klassen Typology Analysis

Criteria	LQ > 1	LQ < 1
DLQ > 1	**Leading Sector**	**Star Sector**
	1. Manufacturing Industry 2. Electricity and GasProcurement 3. Wholesale and Retail Trade; Repair of Cars and Motorcycles 4. Accommodation, Drinking, and Food Provision	1. Government Administration, Defense, and Compulsory Social Security

DLQ < 1	Mature Sector	Lagging Sector
	1. Construction	1. Agriculture, Forestry, and Fisheries
	2. Water Supply, Waste Management, Waste and Recycling	2. Mining and Quarrying
	3. Transportation and Warehousing	3. Educational Services
	4. Information and Communication	4. Other Services
	5. Financial and Insurance Services	
	6. Real Estate	
	7. Corporate Services	
	8. Health and Social Services	

Source : Processed by Author

Based on Table 4 regarding the sector classification according to the LQ and DLQ analysis results, it can be observed that the economic sectors in Surabaya are divided into four strategic groups: leading, prospective, mainstay, and lagging sectors. A leading sector is defined as having both LQ and DLQ values greater than 1, reflecting a relative advantage over the reference region while showing positive specialization growth over time. In this regard, the Manufacturing; Electricity and Gas Supply; Construction; Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles; and Accommodation and Food Service sectors are classified as leading categories. These sectors serve as the primary priorities for regional economic development, as they are considered stable and growing competitively.

The performance and economic growth of a region possess several dimensions of measurement. One tool used to measure regional productivity is the Shift-Share analysis method. Shift-Share analysis is employed to decompose a region's economic growth into three components and measure the contribution of each. Fundamentally, Shift-Share analysis serves to compare the economic growth of a specific location or region against a broader regional or national scope.

Table 5. Shift Share Analysis of Surabaya for the Period 2021 to 2024 (%)

Bussiness Field / Sectors	PR	PS	DS	Shift Share
1. Wholesale and Retail Trade; Repair of Cars and Motorcycles	18,273.10	2,477.84	12,199.28	32,950.23
2. Accommodation, Drinking, and Food Provision	9,477.41	6,151.92	961.81	14,667.53
3. Processing Industry	12,701.27	51,2491.5	-512,377.1	12,815.68
4. Construction	6,412.53	1,355.97	71.64	7,840.15
5. Transportation and Warehousing	3,180.64	6,404.04	-1,965.17	7,619.52
6. Information and Communication	5,006.11	809.77	-399.44	5,416.45
7. Corporate Services	1,436.17	615.34	56.22	2,107.75
8. Financial and Insurance Services	3,092.59	-1,088.44	-121.03	1,883.11
9. Other Services	801.31	869.78	30.72	1,701.82

10. Real Estate	1,789.11	-61.08	-152.55	1,020.48
11. Educational Services	1,599.21	-517.54	-90.83	990.83
12. Electricity and Gas Procurement	246.15	412.26	105.15	763.58
13. Government Administration, Defense, and Compulsory Social Security	759.98	-375.10	95.97	480.86
14. Health and Social Services	595.66	-146.09	-16.03	433.53
15. Water Supply, Waste Management, Waste and Recycling	106.55	-54.54	-6.32	45.69
16. Mining and Quarrying	3.11	-19.79	15.31	-1.36
17. Agriculture, Forestry, and Fisheries	88,6663	-65.16	-36.30	-12.81

Source : Processed by Author

Based on Table 5 the Shift-Share analysis indicates several sectors with the highest shift-share values, representing those with strong competitiveness. These sectors include Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles; Manufacturing; Accommodation and Food Service Activities; Construction; Transportation and Storage; Information and Communication.

Table 6. Overlay Analysis of Surabaya for the Period 2021 -2024

Business Field / Sectors	Overlay Analysis			
	LQ	PS	DS	Klassen
A. Agriculture, Forestry, and Fisheries	+	-	-	K4
B. Mining and Quarrying	+	-	+	K4
C. Processing Industry	+	+	+	K1
D. Electricity and Gas Procurement	+	+	+	K1
E. Water Supply, Waste Management, Waste and Recycling	+	-	-	K3
F. Construction	+	+	+	K3
G. Wholesale and Retail Trade; Repair of Cars and Motorcycles	+	+	+	K1
H. Transportation and Warehousing	+	+	-	K3
I. Accommodation, Drinking, and Food Provision	+	+	+	K1
J. Information and Communication	+	+	-	K3
K. Financial and Insurance Services	+	-	-	K3
L. Real Estate	+	-	-	K3
M, N. Corporate Services	+	+	+	K3
O. Government Administration, Defense, and Compulsory Social Security	-	-	+	K2
P. Educational Services	-	-	-	K4
Q. Health and Social Services	+	-	-	K3
R, S, T, U. Other Services	-	+	+	K4

Source : Processed by Author

In addition, an overlay analysis was conducted to formulate the final conclusions based on the previous calculations. The results of the overlay analysis are derived from the alignment of coefficients across the LQ, Shift-Share, and Klassen Typology analyses. The results of this overlay analysis are presented in Table 6.

Based on the overlay analysis of the economic sectors in Surabaya, which integrates three approaches—Location Quotient (LQ), shift-share components (Proportional Shift and Differential Shift), and Klassen Typology—a comprehensive overview of the strategic position of each sector can be obtained. The Electricity and Gas Supply ; Wholesale and Retail Trade; Repair of Cars and Motorcycles ; the Construction ; and Accommodation,

Drinking, and Food Provision are situated in Quadrant I (developed and fast-growing), with positive values across LQ, PS, and DS. This indicates that these sectors possess a relative advantage, exhibit economic growth higher than the national average, and demonstrate strong regional competitiveness. Consequently, these sectors can be categorized as leading sectors in the economic development of Surabaya City, as they serve as sustainable drivers of regional economic growth.

The convergence of Surabaya's strategic geographical position, robust energy infrastructure, and a dynamic urban economy creates a resilient ecosystem that sustains its four leading sectors. While statistical results from the LQ, DLQ, and Shift Share analyses confirm the current dominance of these sectors, their future growth will rely on the city's capacity to transition toward high-tech manufacturing. Consequently, policies aimed at enhancing human capital and promoting green industrial practices are not merely supplementary but are critical prerequisites for maintaining Surabaya's status as a top-tier regional economic driver.

The significant specialization in Business Services and Accommodation sectors marks Surabaya's transition into a sophisticated, knowledge-based Economy. By leveraging its high concentration of professional services and its advanced urban infrastructure, Surabaya is positioned to evolve from a traditional trade hub into a regional center for digital innovation and sustainable urban practices. Moving forward, the integration of green energy and digital transformation within these base sectors will be the primary catalyst for maintaining Surabaya's resilience and its status as a competitive global city in the 21st century.

Conclusion

The combined results of the Location Quotient (LQ), Dynamic Location Quotient (DLQ), Shift-Share, and overlay analyses indicate that key sectors such as Manufacturing; Electricity and Gas Supply; Construction; Wholesale and Retail Trade (including Repair of Motor Vehicles and Motorcycles); and Accommodation and Food Service Activities play a strategic role as leading sectors in Surabaya's economy, given their strong comparative advantage, above-average growth, and high regional competitiveness. These findings imply that strengthening these sectors can significantly enhance sustainable regional economic growth, particularly through investment support, innovation development, and improved infrastructure. At the same time, sectors with high LQ values such as Business Services and Accommodation and Food Service Activities highlight the importance of service-based economic expansion in urban areas. For practical recommendations, stakeholders—including private sector actors and academics—should focus on increasing productivity, fostering inter-sectoral linkages, and encouraging workforce skill development to maximize sectoral potential. For further research, it is suggested to incorporate more recent data, explore spatial analysis at a finer scale, or integrate additional methods such as input-output analysis or panel data regression to better capture sectoral interdependencies and long-term economic dynamics.

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