

Sectoral Competitiveness and Regional Development Policy Priorities: Based on Location Quotient and Shift-Share Analysis

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Abstract: This study aims to identify competitive sectors and regional development policy priorities in Lamongan Regency to promote more inclusive and sustainable growth. The success of the development of regional leading sectors depends not only on the availability of natural resources, but also on the right policy interventions to strengthen sectoral competitiveness. Identification of sectors with comparative and competitive advantages is essential to determine development priorities and allocate regional resources effectively. Lamongan experienced an economic recovery during 2020–2024 (growth rising from –2.65% in 2020 to 4.81% in 2024); however, its contribution to East Java's GRDP remained relatively small and slightly declined (from 1.70% to 1.64%), while poverty indicators reveal quality-related challenges: the poverty rate decreased (from 12.42% to 12.16%) but the poverty gap index (P1) and poverty severity index (P2) increased. The study employs a descriptive quantitative approach using Location Quotient and Shift share analysis based on 2020–2024 current-price GRDP (ADHB) data. The Location Quotient results indicate agriculture as Lamongan's main base sector, supported by several service and enabling sectors. In contrast, the Shift share results show that wholesale and retail trade and manufacturing are the primary drivers of growth, with manufacturing exhibiting strong local competitiveness despite not yet being a base sector. Accordingly, policy priorities should focus on strengthening trade and construction in the short term, scaling up manufacturing in the medium term, and transforming agriculture while reinforcing enabling sectors in the sustainable growth.

1. Introduction

Regional development is a strategic process that aims to generate inclusive and sustainable economic growth. Identifying leading sectors is therefore crucial to strengthening the local economic base and accelerating structural transformation. Evidence-based sectoral classification can help local governments sharpen program priorities, particularly under fiscal constraints and diverse development needs (Saragih et al., 2024; Satrianto et al., 2022). In addition, a cluster-based regional economy perspective

emphasizes that regional performance depends not only on sector size but also on inter-industry linkages, productivity, and a region's capacity to build value-added ecosystems (Slaper et al., 2018).

Lamongan Regency, as part of the Gerbangkertosusila area and a hinterland for the provincial capital and industrial centers, exhibits complex economic dynamics. Its GRDP performance over 2020–2024 shows a relatively strong recovery pattern: following a contraction of “2.65% in 2020, growth rebounded in 2021 (3.43%) and strengthened in 2022 (5.56%), moderated in 2023 (4.28%), and rose again in 2024 (4.81%). This pattern aligns with the literature, which highlights that post-shock phases (including the pandemic) often feature rapid aggregate recovery but substantial variation across sectors and regions, requiring more precise sectoral diagnostics (Mukhlis et al., 2025; Liyushiana et al., 2022). However, within East Java's economic structure, Lamongan's contribution to provincial GRDP remains relatively small and slightly declining from 1.70% (2020) to 1.64% (2024) and is lower than neighboring regencies along the North Coast corridor and the industrial hinterland, such as Gresik (5.83 to 6.00%), Bojonegoro (3.05 to 3.68%), and Tuban (2.68 to 2.77%) over the same period.

Structurally, Lamongan's economy appears relatively stable, with notable contributions from manufacturing, trade, and services. Nevertheless, macroeconomic performance has not fully translated into equitable welfare outcomes. Sectoral and socio-economic disparities remain salient challenges for regional policymaking, particularly when growth is not consistently accompanied by job creation, productivity improvements, and value-added upgrading in labor-absorbing sectors. Structural change may also coincide with underemployment and low-productivity work, leaving segments of the population vulnerable despite growth (Gialis et al., 2018). Although Lamongan's poverty rate decreased from 12.42% (2023) to 12.16% (2024), the poverty gap index (P1) rose from 1.73 to 1.88 (+0.15) and the poverty severity index (P2) increased from 0.38 to 0.44 (+0.06). These increases suggest that remaining poverty is deeper and inequality among the poor has widened, indicating persistent socio-economic vulnerability.

In a decentralized governance context, local governments are expected not only to sustain growth but also to ensure that growth expands employment, reduces poverty, and distributes development benefits across places and social groups (Leigh & Blakely, 2017). Given fiscal limitations and multiple competing needs, policy prioritization becomes pivotal: which sectors should be promoted as growth engines, which require competitiveness strengthening, and which should function as enabling sectors to improve overall economic efficiency (Swinburn et al., 2006). The volatility of growth during 2020–2024 further underscores that policy responses cannot be uniform; recovery and acceleration strategies require a more precise sectoral mapping of growth sources and competitiveness drivers. Regional planning studies emphasize that effective prioritization depends on sectoral classification that distinguishes base sectors from those that are genuinely competitive (Suwanan et al., 2023; Neethling et al., 2023).

Yet, priority setting often still relies on intuitive, political considerations or sectoral GRDP shares alone. Sector size does not necessarily reflect sectoral competitiveness. A contribution-based approach can bias policy: large sectors may not be competitive, while smaller sectors may exhibit emerging competitiveness signals worthy of acceleration (Manullang et al., 2019). Large sectors can expand due to broader macro trends rather than local competitive advantage. Conversely, sectors with smaller contributions may grow faster than the benchmark region, warranting targeted intervention. Hence, regional development planning requires analytical tools that can distinguish structural advantage (specialization) from competitive advantage (relative performance) so that priorities are both accurate and impact-oriented (Fischer, Manfred M., 2021).

In this regard, the Location Quotient (LQ) and Shift share Analysis are highly relevant for diagnosing sectoral strengths and dynamics. LQ identifies base sectors with comparative advantage, while Shift

share assesses the extent to which sectoral growth is attributable to overall growth effects, industry structure, and regional competitiveness. Prior studies argue that LQ and Shift share are effective for identifying leading sectors (including in lagging regions), while emphasizing the need to leverage local potential for sustainable development and critiquing development strategies that lack robust sectoral diagnostics (Roberts & Stimson, 1998; Mihnenoka & Senfelde, 2017; Listyaningrum et al., 2019).

This study uses Regional Gross Domestic Product (GDP) data published by the Central Statistics Agency (BPS). The Location Quotient (LQ) analysis uses GDP at current prices because it identifies Lamongan Regency's relative sectoral specialization compared to East Java Province. Current price GDP reflects the actual economic structure during the observation period. Shift–Share analysis is interpreted with caution as changes in sectoral performance can be affected by price fluctuations. This analysis emphasizes comparative competitiveness rather than real growth performance alone. In this study, the Shift–Share interpretation focuses on comparative sectoral competitiveness rather than real productivity growth that reflects relative economic dynamics below actual market prices.

This is particularly relevant in the context of Indonesia's decentralization, where local governments are required to formulate evidence-based development priorities under fiscal constraints while simultaneously pursuing economic growth, job creation, and poverty reduction. Although previous Indonesian studies have successfully identified leading sectors using LQ and Shift–Share, few have developed an integrated analytical framework that links sectoral specializations, competitive performance, and different policy priorities for regional development. This is an important research gap in the regional development literature.

Building on these insights, the state of the art of this study lies in integrating LQ and Shift share results into a framework of sectoral competitiveness and regional policy prioritization for Lamongan. The intended contribution is not merely to identify "leading sectors," but to inform a cross-actor policy design so that prioritized sectors are not only competitive, but also effective in sustainably reducing poverty severity and inequality.

2. Literature Review

Regional Economic Development

Regional economic development is strongly shaped by industrial structure quality, sectoral linkages, and interregional coordination. Adjusting the industrial structure to fit local characteristics has been shown to improve economic efficiency and regional competitiveness while reducing spatial disparities (Yang & Zeng, 2019; Chen et al., 2021). This perspective becomes even more compelling when linked to the quality of regional support systems, such as industrial policy and spatial planning, and to institutional governance approaches, which emphasize that the effectiveness of regional development depends heavily on governmental institutional capacity and cross-sector policy coordination, particularly in developing countries and decentralized settings (Razak, 2016).

In this context, regional economic approaches highlight that strengthening competitiveness is not determined solely by a sector's contribution to GRDP, but by its capacity to function as a growth engine through productivity improvements, intersectoral linkages, and the creation of value-added ecosystems. A cluster-based regional economy perspective emphasizes that regional performance tends to be stronger when areas develop industrial clusters that generate spillovers, strengthen supplier–support networks, and facilitate learning and innovation across firms and institutions. Consequently, development priorities are more effective when designed as cross-actor policy packages linking government, firms,

MSMEs, and supporting institutions rather than as standalone sector lists that ignore value-chain constraints and coordination failures (Djirimu et al., 2024). This view implies that sector prioritization should explicitly consider how selected sectors connect to upstream inputs, downstream markets, logistics, human capital, and business services.

Consistent with these theoretical insights, the empirical literature from 2017–2025 highlights Location Quotient (LQ) and Shift share as two of the most widely used analytical tools for diagnosing regional economic structure and sectoral performance. LQ is commonly employed to identify sectoral specialization and base sectors, while Shift share decomposes sectoral change into overall growth effects, industry-mix effects, and competitive effects, enabling analysts to distinguish between sectors that expand due to broader macro trends and those that grow because of local competitive advantages (H. Chen & Li, 2011). In practical policy terms, combining LQ and Shift share supports more precise prioritization by revealing whether a structurally large sector is also competitively strong, and whether an emerging sector, though smaller in size, exhibits strong competitive momentum that warrants targeted support.

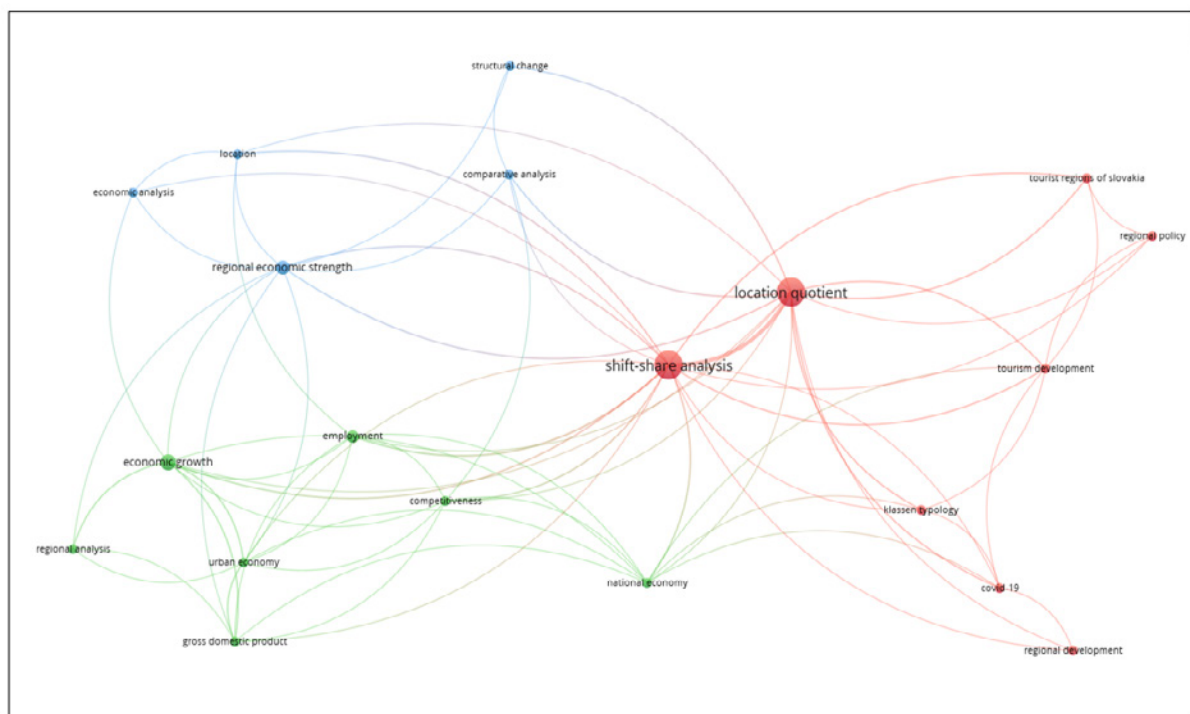


Figure 1. Bibliometric Network Analysis by Vosviewers

The literature mapping indicates that location quotient and Shift share function as analytical tools for linking a region's economic structure with competitiveness performance. The nodes surrounding the core competitiveness, employment, economic growth, and gross domestic product also suggest that sectoral analysis is widely used to explain growth and its implications for labor markets. This pattern is consistent with studies that apply location quotient and shift-share to classify sectors and sharpen development priorities, while emphasizing that "competitiveness" should be interpreted as performance that shapes employment dynamics and the spatial concentration of sectors (Neethling et al., 2023; Niyimbanira, 2018; Herath & Jayanthakumaran, 2020; Izabella et al., 2022; Gialis et al., 2018).

The red cluster, which groups location quotient, Shift share analysis, and policy-related nodes such as regional policy, regional development, COVID-19, and tourism development, indicates that the litera-

ture frequently brings location quotient and shift share into the realm of regional policy formulation and sector-specific evaluation under changing environmental conditions. Research themes linking COVID-19 and regional development reinforce the view that post-crisis recovery periods require mapping sectors that have genuinely recovered or become competitive so they can be translated into program priorities, rather than relying solely on aggregate indicators (Liyushiana et al., 2022). Meanwhile, linkages to tourism development and sectoral concentration point to broader applications in commodity-based agendas (marine and forestry sectors) and industrialization, which are then translated into policy recommendations for leading sectors (Michálková et al., 2020; Syaiful et al., 2025; Kaidah et al., 2025; Fitrianto et al., 2025).

The green cluster (associated with economic growth, employment, urban economy, and GDP) and the blue cluster (associated with regional economic strength, comparative analysis, structural change, and economic analysis) suggest that the LQ and Shift share discourse has evolved along two major pathways: (1) testing the relationship between sectors, growth, and labor, and (2) identifying structural change and a region's economic position through cross-regional comparisons. For this study, these insights strengthen the state of the art by positioning location quotient and Shift Share not only as tools for identifying leading sectors, but also as a basis for formulating policy priorities that distinguish sectors to be sustained and upgraded in productivity, sectors to be scaled up, and enabling sectors that require improvement so that the resulting growth becomes more inclusive and sustainable.

Previous studies have applied Location Quotient (LQ) analysis to identify leading sectors and Shift-Share analysis to evaluate regional competitiveness. State-of-the-art studies have produced fragmented policy recommendations, addressing gaps by integrating LQ and Shift-Share analyses into an integrated framework to determine regional development policy priorities in Lamongan Regency. Current price GDP remains acceptable when the goal is to assess changes in sectoral economic performance under actual market conditions. The competitive component in this study is interpreted as reflecting the relative competitiveness of the economy below the prevailing price, rather than pure productivity growth. Given Indonesia's highly diverse regional economic structure after fiscal decentralization, an integrated assessment of sectoral specialization and competitive performance is essential for designing development policies responsive to local economic potential, rather than relying solely on descriptive sectoral indicators.

Research Gap

Previous studies have widely employed Location Quotient (LQ) to identify sectoral specialization and Shift-Share analysis to assess regional competitiveness; however, these methods are often applied separately or merely used to produce descriptive lists of leading sectors. Consequently, existing research has not sufficiently explained how differences between structural advantage and competitive performance should be translated into differentiated regional development priorities. This limitation is particularly important in Indonesia's decentralized governance context, where local governments must allocate limited fiscal resources while simultaneously promoting economic growth, employment creation, poverty reduction, and more equitable development. Moreover, relatively few studies have examined the potential contradiction between structurally dominant sectors that are experiencing declining competitiveness and sectors that are not yet classified as base sectors but demonstrate strong competitive momentum. Therefore, this study addresses the gap by integrating LQ and Shift-Share results into a policy-oriented framework that classifies sectors according to whether they should be sustained and

upgraded, scaled up as emerging growth engines, strengthened as enabling sectors, or subjected to selective intervention.

3. Research Methods

This study employs a descriptive quantitative approach using Location Quotient (LQ) and Shift share analysis (Creswell, 2013). LQ identifies structurally base/leading sectors (comparative advantage), while shift-share assesses relative growth performance and sectoral competitiveness (competitive advantage) against a reference region. Integrating these two methods enables the analysis to move beyond identifying leading sectors toward formulating policy priorities that can drive Lamongan's economic development in a more inclusive and sustainable manner.

This study uses Regional Gross Domestic Product (GDP) data by industrial sector for Lamongan Regency and East Java Province, published by the Central Statistics Agency (BPS). The analysis uses GDP at current prices (ADHB), chosen because the study aims to identify sectoral specializations and determine regional development policy priorities based on the actual economic structure during the observation period.

The first stage involved collecting Gross Regional Domestic Product (GRDP) by industrial sector for Lamongan Regency and East Java Province from Statistics Indonesia (BPS). The data were organized by industrial sector to ensure comparability between the regional and provincial economies. These data constituted the basis for both Location Quotient and Shift-Share analyses. The second stage aimed to identify sectors with comparative advantage by calculating the Location Quotient (LQ). The third stage used Shift-Share analysis to evaluate each sector's competitive performance. The final stage integrated the Location Quotient and Shift-Share results to classify sectors by both comparative advantage and competitive performance. This integration enabled a more comprehensive assessment than using either method independently.

The LQSS analysis was conducted using Microsoft Excel. Using Microsoft Excel is appropriate because both methods rely on deterministic mathematical calculations and do not require specialized econometric or statistical software. Operationally, the Location Quotient measures the concentration of an economic sector in Lamongan relative to the reference area (East Java) by comparing the sector's share of district GRDP with the same sector's share of provincial GRDP (Nurlina et al., 2023; Kharisma & Hadiyanto, 2019). The general LQ formula is:

$$LQ = \frac{x_i / \Sigma PDRB \text{ kab}}{X_i / \Sigma PDRB \text{ prov}}$$

Sectors with $LQ > 1$ are classified as base sectors and considered leading-sector candidates. When multiple sectors meet this criterion, their degree of comparative advantage can be assessed by the magnitude of the LQ value—the higher the LQ, the stronger the sector's relative potential. Meanwhile, Shift Share analysis identifies the sources of sectoral growth by decomposing changes in output/value added (or other variables) over a given period into three components: the national/regional growth effect, the industry-mix effect, and the competitive effect. Following the general formulation proposed by (Soepono, 1993), the change in sector i in region j can be expressed as follows:

$$D_{ij} = Y_{ij} \cdot r_n + Y_{ij} (r_{in} - r_n) + Y_{ij} (r_{ij} - r_{in})$$

Shift share analysis can help policymakers and economic planners make more informed priority-setting decisions for developing specific sectors (Ahyuni et al., 2023). The analysis decomposes sectoral growth into three components:

- National Share (NS), representing the portion of regional growth attributable to overall economic growth at the provincial level;
- Industrial Mix (IM), indicating whether the sector belongs to an industry that grows faster or slower than the overall economy; and
- Competitive Position (CP), reflecting the region-specific competitive advantage relative to the provincial benchmark.

If the analysis indicates strong regional growth, increased investment and policy support may be warranted. Conversely, negative sectoral growth can signal the need to reassess existing strategies and interventions. Importantly, Shift-Share enables decision-makers to distinguish sectors that expand primarily because of broader macro growth from those that grow because of local competitive advantages, helping regional planners formulate more targeted policy priorities.

The current use of price GDP poses methodological limitations, particularly in Shift-Share analysis. Because the ADHB includes inflation and price fluctuations, the competitive component should be interpreted as reflecting relative sectoral economic performance under prevailing market conditions rather than pure productivity or real output growth. Interpret findings on sectoral competitiveness with caution, especially when comparing sectors with different price dynamics. Another limitation is that the study relies only on secondary macroeconomic data, which does not include institutional quality, technological innovation, labor productivity, investment behavior, infrastructure development, or governance factors that may also affect regional competitiveness.

The 2020–2024 GRDP period was selected to capture Lamongan's structural economic dynamics more robustly, as it includes both the shock and recovery phases that may trigger intersectoral resource reallocation. This time span allows the combined LQ-Shift share results to reflect more stable sectoral trends rather than short-term fluctuations. East Java's 2020–2024 GRDP was used as the reference region because Lamongan is deeply embedded in the provincial economy through industrial networks, supply chains, and labor markets. Using a benchmark within the same province also makes relative advantage measures (LQ) more contextually meaningful and enables shift-share to disentangle the effects of overall growth, industrial structure, and Lamongan's competitiveness relative to East Java's growth patterns.

4. Results and Discussion

Lamongan Regency is located in northern East Java and is traversed by the North Coast corridor. Covering approximately 1,812 km² with a coastline of about 47 km, it borders Bojonegoro, Jombang–Mojokerto, Gresik, and the Java Sea. This strategic position makes Lamongan one of the gateways to the Gerbangkertosusila metropolitan area (Gresik–Bangkalan, Mojokerto, Surabaya, Sidoarjo, and Lamongan), reinforcing its role in regional production and distribution networks. Topographically and in land use, Lamongan is predominantly lowland, supporting flatland agriculture and coastal economic activities. Land use is characterized by the dominance of agricultural land, forests, settlements and infrastructure, and water systems as key production supports. The combination of coastal areas, lowland terrain, and water networks (including the Bengawan Solo River) sustains the structural strength of agriculture and fisheries while also creating opportunities to strengthen trade along the North Coast corridor and integrate productive sectors. Accordingly, sectoral potential analysis that incorporates spatial advantages and territorial characteristics is essential for formulating regional development policy priorities.

Based on 2024 BPS data, Lamongan's population reached 1,378,147, with a dependency ratio of 43.90, indicating a demographic window that can support economic growth. In terms of livelihoods,

71.54% of the working-age population is employed, reflecting relatively high labor participation. Employment is concentrated in the services sector (45.59%), followed by agriculture (32.83%) and manufacturing (21.56%), suggesting Lamongan is transitioning as services expand as a major source of jobs while agriculture remains a key livelihood base. However, job quality remains a significant challenge: only 40.8% of workers are in the formal sector, while 59.92% are in informal employment. This high level of informality is typically associated with lower productivity, income vulnerability, and limited labor protection. Therefore, identifying base sectors and testing sectoral competitive advantages is necessary so policy priorities focus not merely on labor-absorbing sectors, but on sectors that can raise productivity and expand formal employment.

Lamongan Regency GRDP (2020-2024)

Gross Regional Domestic Product (GRDP) is a key indicator for assessing a region's economic performance and development achievements (Ahyuni et al., 2023). In Lamongan Regency, GRDP is generated by the contributions of multiple sectors, including agriculture, manufacturing, trade, construction, transportation, and a range of service activities. This study uses current-price (ADHB) GRDP data for 2020–2024 to capture the nominal magnitude of economic activity and examine changes in sectoral composition over time. This choice is particularly relevant for understanding post-shock recovery dynamics, where aggregate improvements may conceal sector-specific divergences in performance and adjustment (Mukhlis et al., 2025).

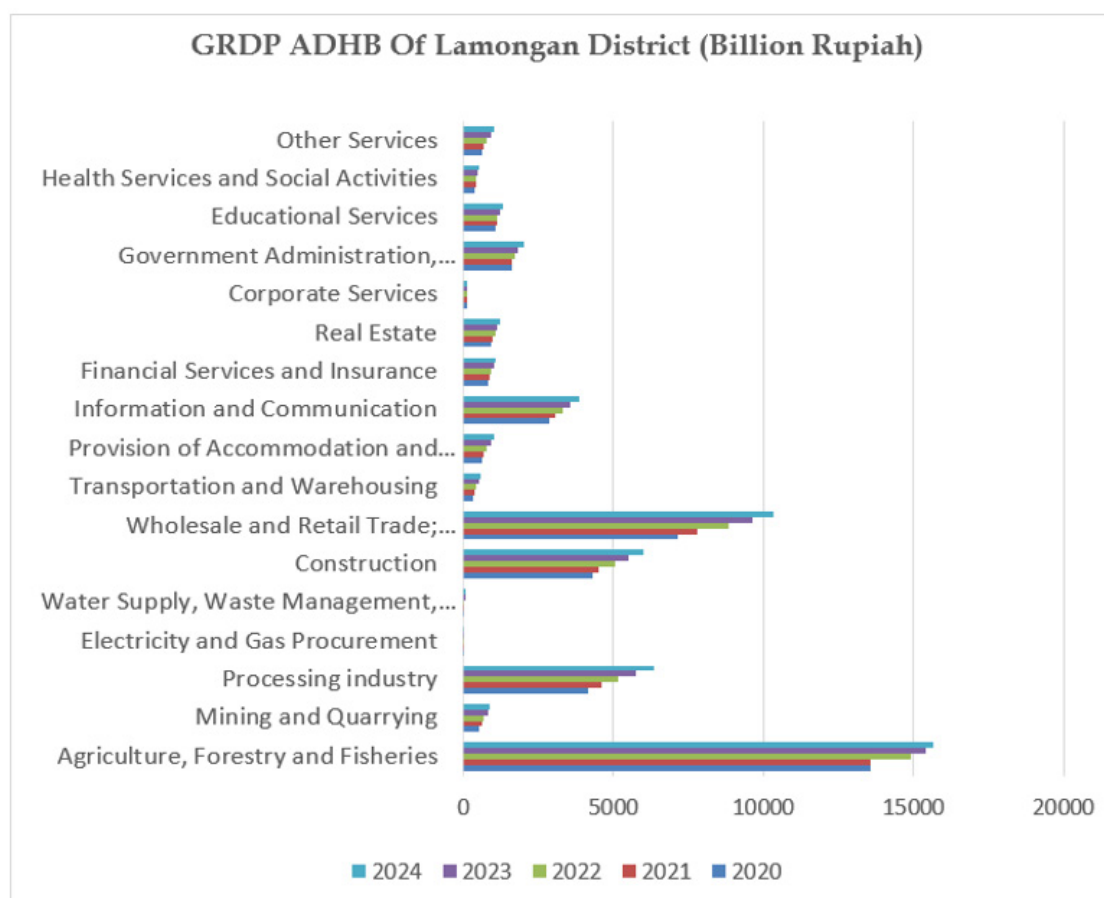


Figure 2. Lamongan Regency GRDP at Current Prices (ADHB), 2020–2024.

Beyond describing growth and structural change, the GRDP dataset also serves as the empirical foundation for calculating Location Quotient (LQ) and Shift share (SS) by benchmarking Lamongan against East Java Province as the reference economy. This combined framework allows the study to distinguish between structural advantage (base sectors identified through specialization patterns) and competitive advantage (relative performance captured through competitive position), thereby reducing the risk of policy bias that emerges when priorities are set solely from GRDP shares (Kharisma & Hadiyanto, 2019). This approach enables the study to identify base/leading sectors while providing a more comprehensive assessment of Lamongan's economic structure and sectoral competitiveness.

Lamongan Regency's current-price GRDP (ADHB) expanded markedly during the post-pandemic recovery: total GRDP increased from IDR 39,169.58 billion (2020) to IDR 52,076.89 billion (2024), representing an increase of approximately 32.95%. However, the literature cautions that aggregate recovery often masks substantial cross-sector variation, underscoring the need for sector-level diagnostics to identify growth drivers and policy intervention points (Mukhlis et al., 2025; Liyushiana et al., 2022). Structurally, Lamongan's economy remains anchored by large sectors such as Agriculture (2024: IDR 15,672.97 billion; 30.10%), although its share declined from 34.64% (2020). In contrast, higher value-added and activity-supporting sectors have strengthened, including Wholesale and Retail Trade (19.80%), Manufacturing (12.23%), and Construction (11.50%).

This declining share of the primary sector alongside the strengthening of secondary and tertiary sectors is consistent with structural change arguments that regional economic transformation typically involves a gradual shift from primary production toward higher value-added activities and supporting service networks. Such a trajectory also aligns with structural transformation and cluster-based perspectives, which emphasize the role of value-added sectors and intersectoral linkages in reinforcing regional competitiveness (Sridhar, 2017). Moreover, Lamongan's GRDP dynamics indicate rapid growth in several sectors over 2020–2024—Transportation and Warehousing (+83.76%), Accommodation and Food Services (+60.73%), Manufacturing (+53.98%), and Trade (+44.76%)—suggesting a rebound in mobility, consumption, and production activity. Nevertheless, output growth does not necessarily translate into improved job quality; therefore, competitiveness should be interpreted as relative performance that enhances productivity and generates better employment opportunities (Wang et al., 2021). This further justifies combining measures of structural advantage (base sectors) with tests of competitive advantage (competitive position) so that policy priorities can be designed as value-added growth levers that support more inclusive and sustainable development in Lamongan.

East Java Province GRDP (2020–2024)

Over the 2020–2024 period, East Java Province's Gross Regional Domestic Product (GRDP) exhibited a fluctuating trajectory. In 2020, the economy contracted sharply due to the COVID-19 pandemic, which disrupted production and distribution. Beginning in 2021, economic conditions improved as recovery policies were implemented and population mobility increased. This recovery trend continued through 2024, supported primarily by several key sectors, notably manufacturing, wholesale and retail trade (including the repair of motor vehicles and motorcycles), and agriculture, forestry, and fisheries. Overall, East Java's GRDP dynamics over the past five years reflect a gradual recovery from crisis toward a more sustainable economic stabilization. The provincial GRDP data are subsequently used as the benchmark in the Location Quotient (LQ) and Shift share (SS) analyses to identify sectoral potential and inform regional development policy priorities.

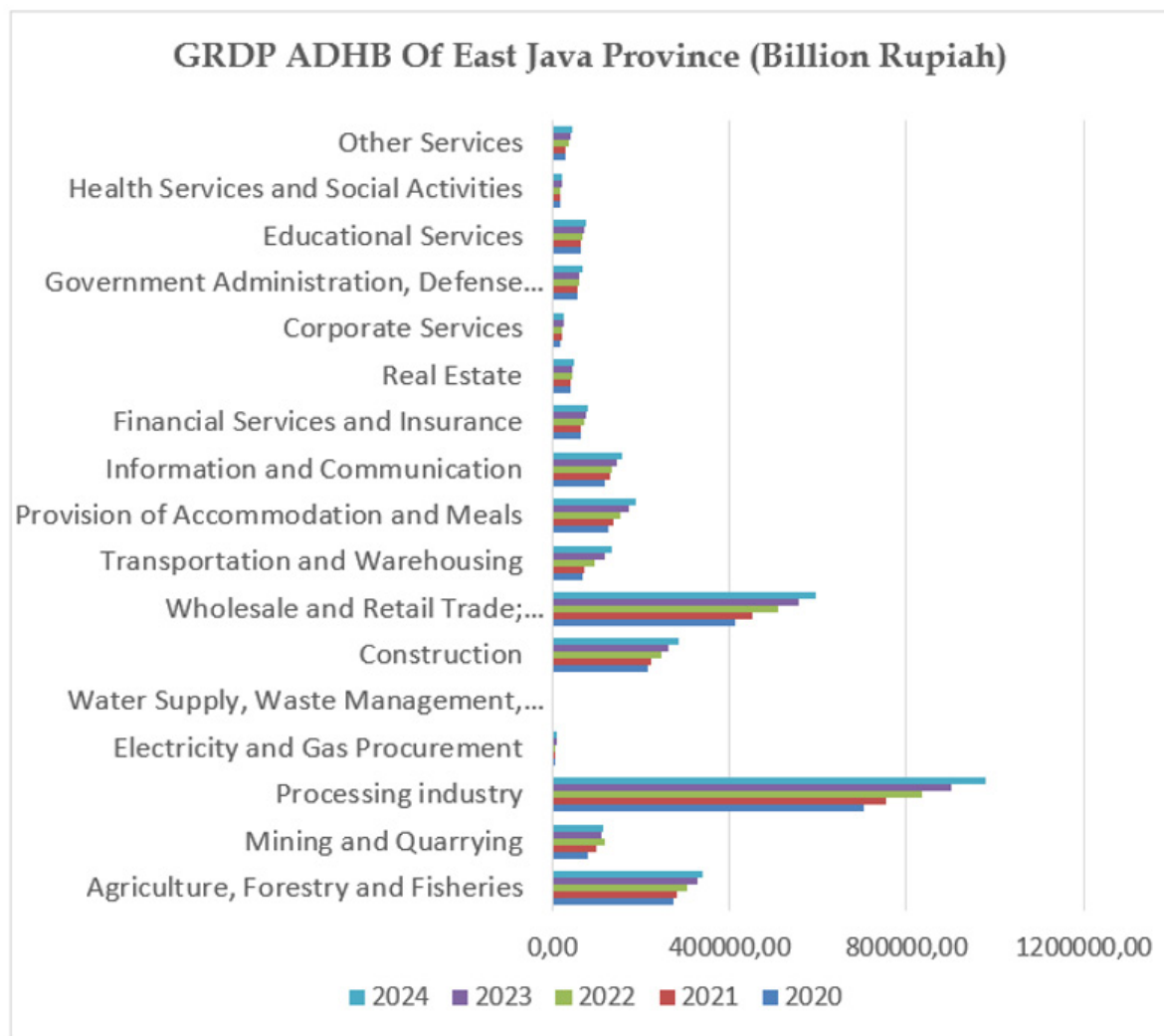


Figure 3. East Java Province GRDP at Current Prices (ADHB), 2020–2024

East Java Province's current-price GRDP (ADHB) expanded strongly over 2020–2024, rising from IDR 2,299,807.64 billion (2020) to IDR 3,168,295.57 billion (2024)—an increase of approximately 37.76% over four years. East Java's economic structure is dominated by high-value-added sectors, most notably manufacturing, which grew from IDR 705,262.98 billion to IDR 977,562.43 billion (about 30.85% in 2024). This is followed by wholesale and retail trade; repair of motor vehicles and motorcycles, which increased from IDR 412,016.34 billion to IDR 596,099.83 billion (about 18.81% in 2024), agriculture, forestry and fisheries, which rose from IDR 273,246.09 billion to IDR 337,660.51 billion (about 10.66% in 2024), and construction, which increased from IDR 213,813.20 billion to IDR 284,110.30 billion (about 8.97% in 2024). This composition underscores East Java's role as a national manufacturing and trade base, while maintaining a significant primary-sector foundation, making it an appropriate reference region for assessing the specialization and relative performance of districts/municipalities within the province.

East Java's sectoral dynamics also reveal an uneven post-shock recovery across industries. Several sectors grew well above the 2020–2024 average, including transportation and warehousing (+91.52%), other services (+60.22%), accommodation and food services (+48.04%), and trade (+44.68%). This pattern is consistent with an aggregate recovery driven by mobility- and consumption-related sectors,

reinforcing the need for sector-level analysis to identify industries requiring targeted interventions (Mahyuddin et al., 2021). By contrast, mining and quarrying showed volatility through 2022 and then weakened in 2023–2024, from IDR 119,698.47 billion (2022) to IDR 113,312.24 billion (2024), highlighting the inherent instability of commodity-based sectors. Such volatility can generate fluctuations in value added that do not necessarily align with stable employment opportunities, thus requiring careful assessment of both quality and competitiveness.

Location Quotient (LQ) Analysis in Lamongan Regency

The Location Quotient (LQ) analysis in this study uses GRDP data for Lamongan Regency and East Java Province over 2020–2024 to measure Lamongan’s sectoral specialization relative to the provincial economic structure. Conceptually, LQ identifies base sectors as those whose share in Lamongan’s GRDP exceeds the same sectors’ share in East Java’s GRDP. Such sectors indicate comparative advantage and may function as potential regional growth drivers because they reflect activities in which the local economy is relatively more concentrated (Maflahah et al., 2025). East Java is selected as the benchmark because Lamongan is deeply embedded in the provincial economic space through production networks, supply chains, markets, and labor mobility, which makes the LQ results more contextually relevant for interpreting Lamongan’s competitive position and its role in the regional division of labor.

Empirically, the LQ results compare Lamongan’s sectoral structure with East Java’s to assess the degree of specialization and map sectors that may be prioritized in development planning. This mapping helps identify which sectors are structurally important for Lamongan and may warrant policy attention to sustain their contribution or strengthen value-added linkages. In practice, LQ based identification can inform an initial portfolio of priority sectors and help governments recognize structural strengths that can be leveraged through targeted investment, productivity improvements, and value-chain upgrading. In other words, the LQ framework provides a systematic basis for moving beyond intuitive prioritization and toward evidence-informed sector selection.

Nevertheless, LQ should not be interpreted as a direct measure of competitiveness. Mustapa et al. (2022), emphasize that LQ mainly captures economic structure (specialization/base status) and does not automatically reflect relative performance. A sector may be structurally large yet grow more slowly than the benchmark region, while a smaller sector may exhibit stronger competitive momentum (Christofakis et al., 2019). Therefore, base-sector interpretation should be complemented with relative performance indicators to avoid policy bias that simply follows “large” sectors without assessing their actual growth dynamics. In this study, LQ functions as an initial diagnostic to identify base sectors that should be maintained and upgraded in productivity, while also providing a foundation for subsequent Shift Share analysis to evaluate competitiveness and refine regional development policy priorities (Manullang et al., 2019).

Rather than using the arithmetic mean of Location Quotient values as a structural indicator, this study evaluates sectoral specialization based on the consistency of LQ values above one and their temporal trends during 2020–2024. This approach better reflects the structural persistence of sectoral specialization and avoids treating LQ as a temporal averaging metric. A high LQ indicates that the construction sector is more concentrated in Lamongan Regency than in East Java Province. This finding suggests structural specialization in construction activities; however, the underlying drivers, such as urbanization or infrastructure expansion, require further investigation using complementary socioeconomic data.

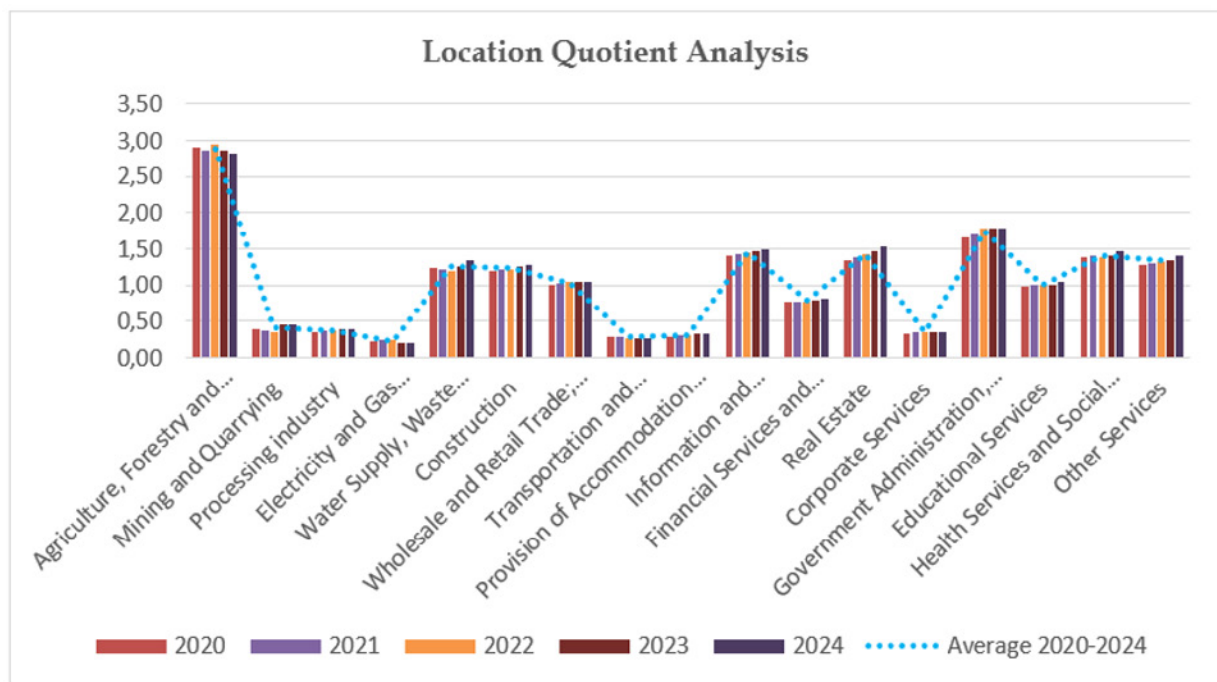


Figure 4. Result of the Location Quotient Analysis

The Location Quotient (LQ) results for 2020–2024 indicate that Lamongan Regency's economic structure contains several consistently base sectors ($LQ > 1$), which can be classified as leading sectors relative to East Java. The strongest specialization is found in Agriculture, Forestry, and Fisheries, with an average LQ of 2.88 (rank 1), implying that the sector's share in Lamongan's GRDP is almost three times the provincial average. Beyond the primary sector, Lamongan also exhibits strong specialization in institutional and service-based activities, including Public Administration, Defence and Compulsory Social Security (average 1.75, rank 2), Information and Communication (1.46, rank 3), Real Estate (1.43, rank 4), Human Health and Social Work Activities (1.41, rank 5), and Other Services (1.33, rank 6). Utility and activity-supporting sectors are also base sectors, namely Water Supply; Waste Management and Recycling (1.25, rank 7), Construction (1.23, rank 8), and Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles (1.04, rank 9). Overall, these findings suggest that Lamongan's structural advantages are not confined to the primary sector, but also extend to public and social services as well as key enabling sectors that support regional development.

From a trend perspective, several base sectors strengthened their specialization over the study period. Information and Communication increased from 1.42 (2020) to 1.50 (2024); Real Estate rose from 1.34 to 1.52; Construction increased from 1.19 to 1.28; and Water Supply and Waste Management grew from 1.23 to 1.35. This pattern reflects stronger functional urbanization, rising infrastructure demand, and expanding basic and digital services—developments consistent with Lamongan's position along the Pantura corridor and as a gateway within the Gerbangkertosusila metropolitan system. Meanwhile, although agriculture remains a base sector, its LQ declined slightly from 2.92 (2020) to 2.82 (2024), which may signal early diversification or a modest reduction in the relative dominance of primary activities. Education also sits near the base threshold (average 1.01) and strengthened slightly from 0.98 to 1.04, indicating continued relevance as a human-capital support sector despite lower specialization than the leading sectors.

Conversely, several sectors that are central to East Java's provincial structure remain non-base sectors in Lamongan (LQ<1), including Manufacturing (average 0.37), Mining and Quarrying (0.40), Transportation and Warehousing (0.28), and Accommodation and Food Service Activities (0.31). A low LQ for manufacturing does not imply that the sector is unimportant; rather, it reflects that, relative to East Java's highly manufacturing-oriented GRDP structure, Lamongan has not yet specialized in manufacturing. Policy-wise, this suggests a dual approach: base sectors such as agriculture should be directed toward productivity upgrading and downstream processing to raise value added; service and enabling sectors (ICT, construction, trade, real estate) should be optimized to strengthen the investment and service ecosystem; and non-base sectors such as manufacturing can be targeted for scale-up if the subsequent Shift share results indicate a positive competitive position.

Shift Share Analysis in Lamongan Regency

This study uses Shift Share analysis to assess the strengths and performance dynamics of economic sectors in Lamongan Regency by benchmarking them against East Java Province's growth pattern. The approach measures relative sectoral growth while identifying sectors with competitive advantages by decomposing performance changes into three components: national/regional share, industry mix, and competitive position (Li et al., 2022). Under this framework, rapid growth alone does not automatically qualify a sector as "leading"; a sector is considered more promising when its expansion is accompanied by a positive competitive position, indicating locally driven performance beyond broader provincial trends. Accordingly, Shift Share provides a sharper basis for policy prioritization: sectors that outperform East Java and display competitiveness signals can be prioritized for investment reinforcement, productivity upgrading, and value-chain development, whereas lagging sectors provide evidence for reassessing strategies and designing corrective interventions. The results of Lamongan's Shift Share analysis are presented below.

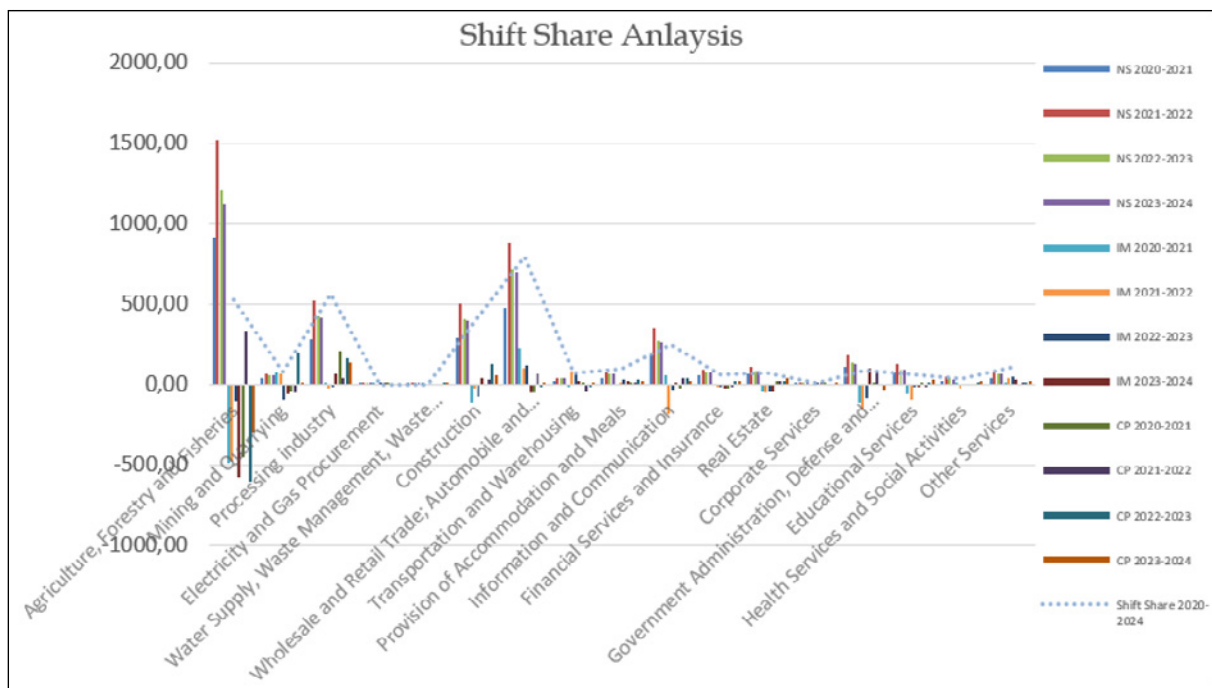


Figure 5. Results of the Shift Share Analysis

Following the classical Shift–Share methodology, the analysis used a two-period framework comparing the initial year (2020) with the final year (2024). We calculated National Share, Industrial Mix, and Competitive Position only once for the entire observation period. This approach avoids inconsistencies arising from averaging Shift–Share components across multiple annual intervals, as each annual calculation would otherwise rely on different base-year economic structures.

The 2020–2024 Shift Share results indicate that a limited number of key sectors drive sectoral performance in Lamongan Regency. Wholesale and retail trade; repair of motor vehicles and motorcycles ranks highest, with an average Shift share value of 796.87, followed by manufacturing (558.43), agriculture, forestry and fisheries (526.60), and construction (414.17). These findings suggest that these four sectors contribute most substantially to Lamongan’s growth dynamics over the study period. In the trade sector, the large Shift share value is mainly explained by a strong National/Regional Share (NS) effect (average 693.53) and a favorable Industry Mix (IM) effect (100.27), indicating that trade growth in Lamongan is largely supported by overall provincial expansion and a relatively advantageous industrial structure in East Java. By contrast, the Competitive Position (CP) contribution is small (average 3.08), implying that trade performance is not yet strongly driven by distinct local competitive advantages.

Manufacturing exhibits a more explicitly competitive profile. Its high CP (average 138.45), supported by NS 409.68 and IM 10.30, indicates that manufacturing growth in Lamongan is not merely following provincial trends, but is also underpinned by locally specific competitiveness factors. In contrast, although agriculture records a relatively large overall Shift share value, its component structure signals potential structural challenges: while the NS effect is very large (1,193.90), both IM (“412.50) and CP (“254.81) are negative. This suggests that agriculture in Lamongan is concentrated in an industrial structure that is less favorable than provincial trends and has performed worse relative to the province. Construction shows a more balanced profile: despite a negative IM (“42.52), it maintains a positive CP (54.36) supported by NS 402.33, indicating that construction remains reasonably competitive locally even when the broader industrial mix effect is not fully supportive.

Among the mid-performing sectors, information and communication posts a Shift share value of 249.75. Although its IM is negative (“36.60), the sector achieves a positive CP (19.56) supported by NS 266.78, suggesting that local competitiveness compensates for a less favorable provincial industry mix. Other services (104.93) displays a relatively balanced growth composition, with NS (61.55), IM (31.92), and CP (11.46) all positive. Accommodation and food services (97.38) also appears promising, with positive IM (16.17) and CP (17.87), indicating that its growth reflects not only provincial momentum but also meaningful local competitiveness. Meanwhile, public administration, defense and compulsory social security (92.29) is driven primarily by a large NS (141.51) and a positive CP (12.37) despite a negative IM (“61.59), underscoring its stabilizing role in the local economy even under a less favorable provincial industry mix.

Further, mining and quarrying (78.76) shows a relatively strong CP (27.02) with near-neutral IM (“3.71) and NS 55.45, indicating some local competitiveness despite exposure to volatility. Real estate (68.06) also records a positive CP (25.74), although its negative IM (“43.40) suggests that growth is more strongly supported by local factors than by provincial sectoral dynamics. In contrast, transportation and warehousing (67.85) presents an opposite pattern—positive IM (39.78) but negative CP (“5.65), implying that Lamongan lags behind other areas in East Java in a sector that is otherwise growing at the provincial level. Financial services and insurance (63.12) and education (60.04) are primarily driven by the general growth effect (high NS), with relatively small CP and negative IM, indicating limited contributions from local competitiveness. Finally, the lowest Shift share values are observed in human health and social

work activities (32.77; small positive CP but negative IM), business services (9.99; slightly negative CP despite a marginally positive IM), and utilities such as water supply and waste management (3.40) and electricity and gas (2.42). These low-scoring sectors generally function as enabling sectors and/or still require performance strengthening.

Regional Development Policy Priorities

The Location Quotient (LQ) results for 2020–2024 indicate that Lamongan Regency has several relatively stable base sectors ($LQ > 1$) compared with East Java Province. The highest degree of specialization is found in Agriculture, Forestry, and Fisheries (average $LQ = 2.88$), reaffirming its strategic role as the foundation of the local economy. Several institutional and service sectors are also classified as base sectors, including Public Administration (1.75), Information and Communication (1.46), Real Estate (1.43), Human Health and Social Work Activities (1.41), and Other Services (1.33). In addition, enabling sectors such as Water Supply and Waste Management (1.25), Construction (1.23), and Wholesale and Retail Trade (1.04) also function as base sectors. Increasing LQ values in information and communication, real estate, construction, and water/waste services suggest gradual economic diversification, although agriculture shows a slight decline. Conversely, sectors that dominate the provincial economy such as manufacturing, transportation, and accommodation remain non-base sectors in Lamongan, indicating the need for acceleration policies if these sectors are to become new sources of growth.

Table 1. Regional Development Policy Priorities Based on the Comparison of LQ and Shift Share

Industry Sector	Location Quotient		Shift Share	
	Skor LQ	Rank LQ	Skor SS	Rank SS
Agriculture, Forestry and Fisheries	2,88	1	526,6	3
Mining and Quarrying	0,40	12	78,755	9
Processing industry	0,37	13	558,425	2
Electricity and Gas Procurement	0,22	17	2,42	17
Water Supply, Waste Management, Waste and Recycling	1,25	7	3,4	16
Construction	1,23	8	414,1725	4
Wholesale and Retail Trade; Automobile and Motorcycle Repair	1,04	9	796,8725	1
Transportation and Warehousing	0,28	16	67,8525	11
Provision of Accommodation and Meals	0,31	15	97,385	7
Information and Communication	1,46	3	249,7525	5
Financial Services and Insurance	0,78	11	63,115	12
Real Estate	1,43	4	68,0575	10
Corporate Services	0,34	14	9,99	15
Government Administration, Defense and Compulsory Social Security	1,75	2	92,285	8
Educational Services	1,01	10	60,04	13
Health Services and Social Activities	1,41	5	32,7725	14
Other Services	1,33	6	104,9325	6

Source: Processed by Author, 2026.

The Shift Share analysis over the same period further clarifies Lamongan's growth engines and sources of competitiveness. Based on average Shift share values, trade (796.87) and manufacturing (558.43) rank highest, followed by agriculture (526.60) and construction (414.17). However, growth drivers differ across sectors. Trade growth is primarily driven by the overall provincial growth effect and a favorable provincial industrial structure, reflected in a high National/Regional Share (693.53) and positive Industry Mix (100.27), while its Competitive Position contribution is relatively small. In contrast, manufacturing exhibits the strongest local competitiveness, with a high Competitive Position (138.45), making it a priority target for scaling up investment and production capacity. For agriculture, despite its large structural contribution, negative Industry Mix and Competitive Position values indicate a need for policies focused on productivity enhancement, downstream processing, and modernization to convert structural advantages into competitive advantages. Meanwhile, mid-performing sectors such as information and communication, other services, and accommodation and food services show positive competitive signals and may be developed as supporting growth sectors. Overall, these findings imply that regional development policy priorities should emphasize: (i) strengthening competitive base sectors, (ii) accelerating the transformation of traditional base sectors, and (iii) scaling up competitive non-base sectors as new growth engines to promote more inclusive and sustainable development in Lamongan.

Based on the combined Location Quotient and Shift Share results, several sector categories can be delineated to guide regional economic development priorities in Lamongan Regency. The LQ estimates identify multiple base sectors ($LQ > 1$), led by Agriculture, Forestry, and Fisheries (2.88; rank 1), followed by Public Administration (1.75), Information and Communication (1.46), Real Estate (1.43), Human Health and Social Work Activities (1.41), and Other Services (1.33). Enabling sectors such as Water Supply and Waste Management (1.25) and Construction (1.23) are also classified as base sectors. These patterns indicate that Lamongan's economy is relatively specialized in primary activities and a range of service sectors, including public and social services. Nevertheless, the Shift share findings show that not all base sectors perform competitively relative to East Java. In other words, a sector may be structurally large and locally significant yet still fail to grow faster or show stronger competitiveness relative to the provincial benchmark.

The agricultural sector presents an interesting paradox. Although the Location Quotient (LQ) shows that agriculture remains the basic sector with comparative advantages in Lamongan Regency, the negative competitiveness shift shows a decline in its relative competitiveness compared to the provincial economy. This contradiction theoretically makes sense because LQ reflects structural specialization that accumulates over time, whereas Shift-Share captures dynamic changes in growth performance. The findings show that although agriculture continues to play a dominant role in regional economies, its productivity and competitiveness growth is increasingly constrained by land conversion, aging farmers, technological limitations, and structural transformations towards manufacturing and services.

The agricultural sector in Lamongan Regency is the backbone of the regional economy because of its vast farmland, well-established production system, and significant contribution to regional Gross Domestic Product (GDP). A negative competitive position indicates that agricultural growth is slower than in East Java Province. Several structural factors may explain this phenomenon, including relatively low technology adoption, limited value-added processing, land conversion, an aging farmer population, climate variability, and increased competition from the manufacturing and service sectors. In addition, the negative Industrial Mix shows that agriculture is among the sectors of the economy whose overall growth at the provincial level is relatively slower than faster-growing sectors such as manufacturing, information and communications, and modern services.

From the Shift share perspective, Lamongan's highest-performing and most competitive sectors are Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles (796.87), Manufacturing (558.43), Agriculture (526.60), and Construction (414.17). These results suggest that trade and construction can serve as near-term growth engines because of their substantial contribution to sectoral shifts. A key finding is that manufacturing, although not a base sector by LQ (0.37), demonstrates strong relative competitiveness compared with East Java and thus represents a strategic candidate for scaling up. Conversely, several sectors that are base sectors by LQ show low-to-moderate Shift share values—such as water/waste services, real estate, public administration, education, health, and parts of the broader service economy—suggesting they are structurally important but not yet competitive enough to drive relative growth. In addition, non-base and less competitive sectors—such as electricity and gas, transportation and warehousing, accommodation and food services, business services, and financial services and insurance—should be treated selectively, primarily as enabling sectors that support the overall economic ecosystem.

Policy interventions in Lamongan should therefore pursue quick wins by accelerating investment in leading growth sectors while upgrading production and logistics-supporting infrastructure. Strengthening connectivity to strategic areas and production centers is essential to reduce transaction costs and improve goods flows. Strengthening the local supply chain, especially through partnerships with MSME suppliers, should be prioritized to broaden the distribution of growth benefits. Downstream development should also be accelerated so that base sectors, particularly agriculture, move beyond primary production, generate higher value added, and absorb more labor. In the short term, strengthening the business climate through streamlined licensing, land and industrial area certainty, and productivity support will be crucial to ensure that priority sectors, particularly trade and construction, function as sustainable growth drivers. Sectors with relatively high growth but limited specialization should be guided to become more competitive and more deeply embedded in the local economy; in this regard, manufacturing stands out as a promising transformation engine despite its non-base status.

These findings show that the agricultural sector, as a leading sector, should not only depend on preserving existing production capacity. Instead, policy interventions should focus on improving sectoral competitiveness through agricultural modernization, technological innovation, digital agriculture, downstream agro-industry development, supply chain integration, and productivity improvement. The strategic priority for agriculture is not sectoral expansion, but rather maintaining its structural advantage while increasing its competitiveness in an ever-growing regional economy.

As Rohman's research states, increasing public awareness is a key prerequisite for the community to play an active role in managing local potential. The research also shows that BUMDes have not fulfilled their role in increasing community awareness optimally, so community participation in developing village potential has not developed as expected (Rohman et al., 2023). These findings show that the success of developing superior potential depends not only on the availability of natural resources or the region's comparative advantage, but also on institutional capacity to build community awareness, participation, and collaboration.

For the medium to long term, policy should shift toward deepening the economic structure and strengthening development resilience. Medium-term priorities include developing clusters and innovation ecosystems, especially in agroindustry, reinforcing education-industry linkages, and improving logistics efficiency to lower production costs and enhance competitiveness. At the same time, base sectors with weaker competitiveness such as real estate and social services (education and health) should be strengthened in quality and productivity as foundations for inclusive growth. In the long term, the

strategy should focus on productivity and innovation upgrading, stronger regional logistics integration, and systematic strengthening of sectors that remain weak both structurally and in relative performance through institutional reform and improved service efficiency.

5. Conclusion

Based on the analysis, Lamongan Regency's economy is supported by a mix of structurally advantaged sectors and sectors with relatively strong growth performance. The Location Quotient results indicate that Lamongan has several base sectors, most notably agriculture, alongside a range of service and enabling sectors, reflecting the region's economic specialization. Meanwhile, the Shift share results suggest that Lamongan's main growth drivers are wholesale and retail trade, manufacturing, agriculture, and construction. Importantly, manufacturing demonstrates strong growth competitiveness despite not yet being a structural base sector, indicating its strategic potential as an engine of regional economic transformation. Conversely, several sectors that are important for the economic structure and public service provision still display limited relative performance and therefore require further strengthening.

In the short term, policy priorities should target quick wins by accelerating investment in key growth-driving sectors, strengthening production and logistics infrastructure, improving connectivity to production centers, and reinforcing local supply chains through MSME-based partnerships. Enhancing the business climate through streamlined licensing, greater certainty over land and industrial areas, and productivity support will be critical to ensure that priority sectors operate effectively as sustained growth locomotives. Over the medium term, priorities should shift toward deepening the economic structure by developing clusters and innovation ecosystems, particularly in agro-industry, strengthening education-industry linkages, and improving logistics efficiency to reduce production costs and enhance competitiveness. In the long term, the development strategy should pursue sustainable structural transformation through productivity and innovation upgrading, stronger regional logistics integration, and strengthening sectors that remain weak both structurally and in relative performance through institutional reforms and improved service quality, thereby enabling regional growth to become more equitable and sustainable.

6. Recommendations

The Lamongan Regency Government should adopt a differentiated sectoral development strategy based on the combined results of the Location Quotient and Shift-Share analyses. In the short term, policy support should prioritize trade and construction by improving business licensing, logistics infrastructure, market connectivity, and partnerships with local MSMEs. Manufacturing should be scaled up as an emerging growth engine by attracting investment, developing industrial clusters, strengthening vocational education-industry linkages, and integrating local suppliers into regional production networks. Agriculture, although it remains the strongest base sector, needs modernization through technology adoption, digital agriculture, downstream agro-industry, supply-chain integration, and productivity improvements to reverse its declining competitive position. Meanwhile, enabling sectors such as information and communication, transportation, water and waste management, education, health, and financial services should be strengthened to support productivity, formal employment, and inclusive regional growth. Future studies should complement LQ and Shift-Share analysis with constant-price GRDP data and additional indicators related to labor absorption, productivity, investment, institutional capacity, and employment quality.

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