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Analysis of Economic Transformation in East Kalimantan

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A B S T R A C T
This study aims to analyze economic transformation and identify leading sectors in East Kalimantan Province. The study uses a descriptive quantitative approach with Gross Regional Domestic Product (GRDP) data by business sector for the 2014–2023 period sourced from the Central Statistics Agency. The analytical methods used include Location Quotient, Shift Share, and Klassen Typology to determine the base sector, competitiveness, and regional economic growth patterns. The results show that the mining and quarrying sector still dominates the regional economic structure, but several service sectors are beginning to show increased competitiveness and growth. The economic transformation towards a more diverse structure is taking place gradually, so economic diversification policies are needed to support sustainable regional economic growth.

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INTRODUCTION

East Kalimantan Province is a highly strategic region in Indonesia, not only because of its location in the eastern part of Kalimantan Island, which borders directly with Southeast Asian countries, but also because of its rich natural resources. These abundant resources, particularly in the areas of coal, oil, and natural gas mining, have made East Kalimantan one of the driving forces of the national economy (Herry, 2017).

Table 1. Distribution of ADHB GRDP by Business Sector

Business Field	Year								
	2016	2017	2018	2019	2020	2021	2022	2023	2024
A. Agriculture, Forestry, and Fisheries	8.22	7.98	7.89	7.95	8.8	8.49	7.05	8.02	8.66
B. Mining and Excavation	43.19	46.6	46.69	45.52	41.27	45.1	53.18	43.19	38.38
C. Processing Industry	20.63	18.93	18.14	17.87	19.02	17.77	15.04	17.73	18.26
F. Construction	8.28	7.92	8.42	8.98	9.59	8.95	7.76	10.31	11.87
G. Wholesale and Retail Trade; Car and Motorcycle Repair	5.55	5.41	5.54	5.87	6.43	5.95	5.17	6.3	6.9
H. Transportation and Warehousing	3.71	3.59	3.62	3.69	3.63	3.33	3.14	4.06	4.5
J. Information and Communication	1.3	1.25	1.26	1.33	1.55	1.47	1.2	1.41	1.51
K. Financial Services	1.72	1.53	1.53	1.57	1.73	1.61	1.45	1.82	1.94
M.N. Corporate Services	0.22	0.21	0.2	0.21	0.22	0.2	0.16	0.2	0.22
O. Government Administration, Defense and Compulsory Social Security	2.32	1.97	1.94	2	2.1	1.89	1.57	1.86	2.21
P. Educational Services	1.61	1.53	1.59	1.67	1.93	1.77	1.43	1.67	1.81

Source: BPS Indonesia 2025

The dominance of the mining and quarrying sector in East Kalimantan's GRDP structure is clearly evident in the GRDP distribution data from 2021 to 2024, where this sector's contribution consistently occupies the largest portion compared to other sectors. This high dependence on the mining sector has resulted in East Kalimantan's economic structure being less diverse and more vulnerable to fluctuations in global commodity prices. Whenever global coal or oil prices decline, regional economic growth is impacted, as reflected in fluctuations in GRDP and regional revenues.(Nurcahyaningsih et al., 2022).

Strengthening leading sectors is a crucial step in East Kalimantan's economic development, which has been dominated by the mining sector. To encourage sustainable economic growth, the regional government needs to understand which sectors have significant potential and can make a significant contribution to the regional economy. Research conducted by(Espinosa et al., 2024)This study shows that potential sectors in East Kalimantan, such as Balikpapan and Samarinda, continue to grow through the development of basic sectors. This is in line with the results of the study.(Cholida et al., 2024)which found rapid growth in the health services and social activities sectors amidst the dominance of the mining sector.

LITERATURE REVIEW

Chenery's Development Pattern Theory

Theory of Development Patterns developed by (Chenery & Syrquin, 1975) explains that the economic development process in a country or region is generally characterized by a transformation of the economic structure from the dominance of the primary sector (such as agriculture and mining) to the secondary (manufacturing industry) and tertiary (services) sectors. Chenery's theory is highly relevant given the region's high dependence on the mining sector. The decline in the mining sector's contribution should serve as momentum to accelerate the economic transformation toward the processing industry and services sectors, as directed in various national and regional development policies (Bappenas, 2021).

Lewis's Theory of Development

The two sector theory developed by (Lewis, 1954) highlights the process of economic transformation from the traditional sector to the modern sector. Lewis divides the economies of developing countries into two main sectors: the traditional sector (usually agriculture or mining) which is characterized by excess labor and low productivity, and the modern sector (industry and services) which has higher productivity and is capable of generating faster economic growth (Todaro & Smith, 2020).

Economic Basis Theory

The economic base theory is a fundamental approach to regional development analysis used to identify and understand the economic structure of a region. This theory was first developed by regional economists such as (North, 1955) and then reinforced by various further studies including (Richardson, 1978) And (Robinson Tarigan, 2024) The essence of this theory is the division of economic activities into two large categories, namely the basic sector and the non-basic sector.

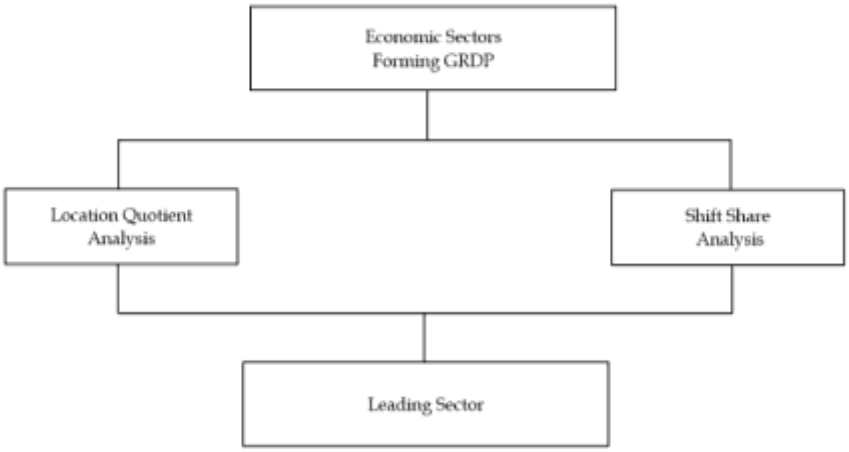

Figure 1. Conceptual Framework

METHODOLOGY

This study applies a multi-method analysis approach to obtain more comprehensive results. Using the Location Quotient (LQ) and shift share (SS)

analysis techniques, this study aims to identify local economic sectors with significant potential to influence regional economic growth.

RESEARCH RESULT

Location Quotient (LQ) Analysis

The LQ is used to identify basic and non-basic sectors in the regional economy. This method identifies sectors with comparative advantages in East Kalimantan compared to the national economy. The LQ calculation then serves as the basis for determining leading sectors with the potential to drive sustainable regional economic growth (Robinson Tarigan, 2024).

To obtain a more comprehensive picture, the LQ calculation in this study is divided into two periods based on the regional development timeframe: 2014–2018 (Governor Awang Faroek Ishak) and 2019–2023 (Governor Isran Noor). This division aims to trace the dynamics of basic sectors across two distinct time periods, thus revealing the direction of East Kalimantan's economic transformation in the medium term.

Table 2. Location Quotient Analysis for the 2014 -2018 Period

Business Field Category	Location Quotient Analysis for the 2014 -2018 Period						
	2014	2015	2016	2017	2018	Average LQ	Information
A. Agriculture, Forestry, and Fisheries	0.45	0.46	0.44	0.45	0.46	0.45	Non-Basic
B. Mining and Excavation	5.46	5.38	5.14	5.20	5.14	5.26	Base
C. Processing Industry	0.87	0.86	0.87	0.86	0.83	0.86	Non-Basic
D. Procurement of Electricity and Gas	0.03	0.04	0.04	0.04	0.05	0.04	Non-Basic
E. Water Supply, Waste Management, Waste and Recycling	0.50	0.48	0.49	0.51	0.50	0.50	Non-Basic
F. Construction	0.70	0.65	0.60	0.59	0.60	0.63	Non-Basic
G. Wholesale and Retail Trade; Car and Motorcycle Repair	0.34	0.33	0.33	0.34	0.35	0.34	Non-Basic
H. Transportation and Warehousing	0.67	0.65	0.62	0.61	0.60	0.63	Non-Basic
I. Provision of Accommodation and Food and Drink	0.22	0.23	0.23	0.24	0.24	0.23	Non-Basic
J. Information and Communication	0.27	0.27	0.26	0.26	0.25	0.26	Non-Basic
K. Financial Services	0.37	0.35	0.33	0.31	0.30	0.33	Non-Basic
L. Real Estate	0.28	0.28	0.26	0.26	0.26	0.27	Non-Basic
M.N. Corporate Services	0.12	0.11	0.10	0.09	0.09	0.10	Non-Basic
O. Government Administration, Defense and Compulsory Social Security	0.49	0.49	0.46	0.43	0.43	0.46	Non-Basic
P. Educational Services	0.36	0.37	0.38	0.39	0.40	0.38	Non-Basic
Q. Health Services and Social Activities	0.39	0.41	0.42	0.43	0.43	0.42	Non-Basic
R,S,T,U. Other Services	0.26	0.26	0.26	0.26	0.26	0.26	Non-Basic

Source: data processed in 2025

Based on the data in the table above, the results of the LQ analysis for the 2014–2018 period show that of all economic sectors in East Kalimantan, only the mining and quarrying sector consistently showed an LQ value above 1, with an average of 5.26 over the five years of observation. This confirms that the mining sector is a basic sector or the main leading sector that has relatively higher competitiveness compared to the national scale. This condition is in line with the characteristics of the East Kalimantan economy which is still dominated by the exploitation of natural resources, especially coal and petroleum, which are the largest contributors to the GRDP structure.

Meanwhile, other sectors such as agriculture, manufacturing, construction, trade, transportation, education, and health services show LQ values <1. This means that these sectors are categorized as non-basic, meaning their contribution to East Kalimantan's GRDP is relatively smaller compared to their national contribution. For example, the agricultural sector has an average LQ of 0.45, indicating that despite its important role in providing employment, this sector has not been able to become the main driver of the regional economy. Similarly, the manufacturing sector with an average value of 0.86 indicates that industrialization capacity in East Kalimantan is still lower than the national average.

This situation indicates that during the 2014–2018 period, East Kalimantan's economic structure remained heavily dependent on the extractive sector, particularly mining, with relatively weak diversification into other sectors. This creates vulnerability to fluctuations in global commodity prices, so the regional economic development strategy in the next period needs to be directed at strengthening non-basic sectors to become a more sustainable economic pillar. This effort is crucial so that East Kalimantan's economic transformation does not rely solely on the natural resources sector, but also is able to drive growth in the industrial, trade, transportation, and services sectors.(Todaro & Smith, 2020).

Table 3. Location Quotient Analysis for the 2019 -2023 Period

Business Field Category	Location Quotient Analysis for the Period 2019 -2023						
	2019	2020	2021	2022	2023	Average LQ	Information
A. Agriculture, Forestry, and Fisheries	0.46	0.45	0.44	0.44	0.44	0.45	Non-Basic
B. Mining and Excavation	5.43	5.28	5.19	5.15	5.10	5.25	Base
C. Processing Industry	0.80	0.80	0.79	0.78	0.78	0.82	Non-Basic
D. Procurement of Electricity and Gas	0.05	0.05	0.05	0.05	0.06	0.05	Non-Basic
E. Water Supply, Waste Management, Waste and Recycling	0.49	0.49	0.49	0.51	0.52	0.50	Non-Basic
F. Construction	0.61	0.62	0.63	0.66	0.73	0.64	Non-Basic
G. Wholesale and Retail Trade; Car and Motorcycle Repair	0.35	0.37	0.36	0.37	0.38	0.35	Non-Basic
H. Transportation and Warehousing	0.57	0.63	0.63	0.59	0.56	0.61	Non-Basic

Business Field Category	Location Quotient Analysis for the Period 2019 -2023						
	2019	2020	2021	2022	2023	Average LQ	Information
I. Provision of Accommodation and Food and Drink	0.24	0.26	0.25	0.25	0.24	0.24	Non-Basic
J. Information and Communication	0.25	0.24	0.24	0.24	0.24	0.25	Non-Basic
K. Financial Services	0.29	0.29	0.29	0.32	0.34	0.32	Non-Basic
L. Real Estate	0.25	0.25	0.24	0.24	0.25	0.26	Non-Basic
M.N. Corporate Services	0.08	0.09	0.09	0.08	0.08	0.09	Non-Basic
O. Government Administration, Defense and Compulsory Social Security	0.42	0.41	0.42	0.44	0.47	0.45	Non-Basic
P. Educational Services	0.39	0.39	0.40	0.41	0.42	0.39	Non-Basic
Q. Health Services and Social Activities	0.42	0.45	0.46	0.47	0.48	0.44	Non-Basic
R,S,T,U. Other Services	0.25	0.25	0.25	0.24	0.24	0.25	Non-Basic

Source: data processed in 2025

The LQ calculation results for the 2019–2023 period again show a similar pattern to the previous period. The mining and quarrying sector remains the sole base sector, with an average LQ of 5.25. This figure demonstrates the continued strong dominance of the extractive sector in East Kalimantan, even after the COVID-19 pandemic. With a contribution far exceeding the national average, the mining sector remains a key pillar of the regional economy, although its vulnerability to commodity price fluctuations remains a significant concern.

Other sectors during this period were still classified as non-basic with LQ values <1. Agriculture, forestry, and fisheries recorded an average LQ of 0.45, almost the same as the 2014–2018 period, indicating no significant shift in the competitiveness of the primary sector outside of mining. The processing industry actually showed a decrease in the average LQ from 0.86 (2014–2018) to 0.82 (2019–2023), so that East Kalimantan's industrialization efforts have not experienced significant strengthening. This emphasizes that the downstreaming of mining and agricultural products is still limited, so that economic added value is mostly enjoyed outside the region.

Interestingly, the construction sector showed a slight increase with an average LQ of 0.64, up from 0.63 in the previous period. This increase can be attributed to major infrastructure developments, including the Indonesian Capital City (IKN) project, which began construction in 2019. Furthermore, the healthcare sector also showed an improving trend with an average LQ of 0.44, higher than the 2014–2018 period (0.42), influenced by the increased need for healthcare services during and after the pandemic.

In general, the results of the LQ analysis for the 2019–2023 period confirm that East Kalimantan's economic structure has not yet shifted away from its dependence on the mining sector. Although there are indications of growth in the construction and healthcare sectors, their relative contribution to the national economy remains small. Therefore, the challenge of East Kalimantan's economic

transformation remains the diversification and strengthening of non-basic sectors to support sustainable development.(Arsyad, 2020).

Shift Share (SS) Analysis

In addition to using the Location Quotient (LQ) method, this study also applies Shift Share (SS) analysis to assess the dynamics of sectoral growth in East Kalimantan. The SS analysis aims to determine the extent to which regional economic changes are influenced by three main components: Nij (national growth/regional share), Mij (industry mix effect/influence of national sectoral structure), and Cij (differential shift/regional competitive advantage or disadvantage). By separating these components, it can be identified whether sectoral growth in East Kalimantan is supported more by national factors, sectoral growth patterns, or local advantages.

Table 4. Shift Share Analysis for the 2014-2018 Period

Business Field Category	Period 2014 - 2018			
	Nij	Mij	Cij	Dij
A. Agriculture, Forestry, and Fisheries	5.39	0.85	-3.12	3.12
B. Mining and Excavation	45.82	0.12	0.36	46.30
C. Processing Industry	17.12	3.13	-14.72	5.54
D. Procurement of Electricity and Gas	0.03	0.00	1.63	1.67
E. Water Supply, Waste Management, Waste and Recycling	0.04	0.01	1.18	1.22
F. Construction	6.13	1.64	- 7.21	0.56
G. Wholesale and Retail Trade; Car and Motorcycle Repair	4.18	0.71	- 2.37	2.52
H. Transportation and Warehousing	2.31	0.77	- 2.69	0.39
I. Provision of Accommodation and Food and Drink	0.60	0.13	0.69	1.41
J. Information and Communication	1.11	0.44	- 0.95	0.61
K. Financial Services	1.25	0.37	- 0.83	0.80
L. Real Estate	0.75	0.13	0.47	1.35
M.N. Corporate Services	0.18	0.06	0.68	0.92
O. Government Administration, Defense and Compulsory Social Security	1.55	0.28	- 0.38	1.44
P. Educational Services	1.00	0.22	0.25	1.46
Q. Health Services and Social Activities	0.38	0.11	0.85	1.34
R,S,T,U. Other Services	0.37	0.14	0.65	1.16
Gross Regional Domestic Product	88.20	17.44	-87.16	18.48

Source: data processed in 2025

The results of the Shift Share analysis for the 2014–2018 period indicate that East Kalimantan's economic growth is generally still supported by the effects of national growth and sectoral composition, while the relative competitiveness between sectors in this region shows quite striking variations. The total Nij value of 88.20 confirms that the structure of the East Kalimantan economy during this period received a significant boost from national growth. Similarly, the Mij component of 17.44 indicates that the national sectoral growth pattern is quite beneficial for East Kalimantan. However, the negative Cij component of –87.16 indicates that, relatively speaking, most sectors in East Kalimantan grew slower than the performance of the same sectors at the national level. Nevertheless, the

final result remains positive (Dij = 18.48), so that in aggregate, the East Kalimantan economy during this period experienced net growth.

Overall, the results of the 2014–2018 SS period confirm that East Kalimantan's economy remains heavily dependent on the mining sector, while the services sector is beginning to show more competitive growth, despite its small contribution. This is in line with the economic base theory, which states that the basic sector will dominate the regional economy, but to achieve sustainable development, diversification through strengthening non-basic sectors is necessary. Thus, the implication is the need for a more serious regional development strategy that encourages economic transformation towards modern processing and service sectors, so that dependence on extractive commodities can gradually decrease.

Table 5. Shift Share Analysis for the 2019-2023 Period

Business Field Category	Period 2019 - 2023			
	Nij	Mij	Cij	Dij
A. Agriculture, Forestry, and Fisheries	4.02	0.30	- 1.43	2.88
B. Mining and Excavation	28.15	3.65	-29.22	2.58
C. Processing Industry	11.66	1.18	- 8.75	4.09
D. Procurement of Electricity and Gas	0.03	0.01	1.33	1.37
E. Water Supply, Waste Management, Waste and Recycling	0.03	0.01	1.23	1.26
F. Construction	4.33	0.28	- 1.03	3.57
G. Wholesale and Retail Trade; Car and Motorcycle Repair	3.24	0.37	- 1.87	1.74
H. Transportation and Warehousing	1.71	0.34	- 1.64	0.41
I. Provision of Accommodation and Food and Drink	0.52	0.08	0.49	1.09
J. Information and Communication	0.93	0.34	- 1.53	- 0.25
K. Financial Services	0.84	0.10	0.45	1.39
L. Real Estate	0.52	0.04	0.70	1.27
M.N. Corporate Services	0.11	0.01	1.00	1.13
O. Government Administration, Defense and Compulsory Social Security	1.00	0.04	0.83	1.87
P. Educational Services	0.85	0.04	0.78	1.67
Q. Health Services and Social Activities	0.34	0.11	0.61	1.06
R,S,T,U. Other Services	0.33	0.06	0.63	1.02
Gross Regional Domestic Product	58.60	7.06	-57.50	8.16

Source: data processed in 2025

The results of the Shift Share analysis for the 2019–2023 period show different economic dynamics in East Kalimantan compared to the previous period. In aggregate, the Nij component of 58.60 indicates that national growth continues to make a positive contribution to regional economic performance. Similarly, the Mij component is 7.06, indicating that the national sectoral structure is relatively supportive of East Kalimantan's growth during this period. However, the Cij component has a significant negative value, at -57.50, indicating that relatively many sectors in East Kalimantan still lag behind national sectoral performance. Nevertheless, the final result remains positive with a Dij of 8.16, indicating that the regional economy is generally still experiencing net growth despite relatively weakened competitiveness.

Overall, the results of the 2019–2023 SS confirm that mining dominance in East Kalimantan is beginning to show signs of declining relative advantage, while several service and utility sectors are beginning to gain new competitiveness. Therefore, the direction of regional economic development should be directed towards strengthening the modern service, utility, and real estate sectors, while continuing to encourage the downstream processing industry. This finding is consistent with the theory of economic transformation, which emphasizes the need for a shift in labor and capital from the primary to the secondary and tertiary sectors to drive sustainable growth.

Class Typology Analysis

Table 6. Class Typology Analysis 2014-2023

Business Field Category	National		East Kalimantan		Quadrant
	G	S	Gi	Si	
A. Agriculture, Forestry, and Fisheries	3%	6.65%	3%	13.12%	3
B. Mining and Excavation	1%	48.03%	1%	8.14%	1
C. Processing Industry	2%	20.18%	4%	21.78%	4
D. Procurement of Electricity and Gas	12%	0.06%	4%	1.08%	3
E. Water Supply, Waste Management, Waste and Recycling	5%	0.05%	5%	0.09%	3
F. Construction	5%	7.38%	4%	10.24%	3
G. Wholesale and Retail Trade; Car and Motorcycle Repair	5%	5.45%	4%	13.73%	3
H. Transportation and Warehousing	4%	2.88%	7%	4.18%	4
I. Provision of Accommodation and Food and Drink	6%	0.84%	5%	3.09%	3
J. Information and Communication	7%	1.63%	9%	5.72%	4
K. Financial Services	4%	1.50%	5%	4.18%	4
L. Real Estate	3%	0.88%	3%	3.05%	3
M.N. Corporate Services	2%	0.19%	6%	1.84%	4
O. Government Administration, Defense and Compulsory Social Security	3%	1.73%	3%	3.45%	3
P. Educational Services	6%	1.41%	4%	3.22%	3
Q. Health Services and Social Activities	9%	0.63%	7%	1.26%	3
R,S,T,U. Other Services	6%	0.52%	7%	1.84%	4

Source: data processed in 2025

The results of the Klassen Typology analysis indicate that East Kalimantan's economy has a unique structure, with a distinct sector distribution compared to national performance. Overall, the four-quadrant mapping shows the mining sector dominating in Quadrant I (developed and fast-growing), while most other sectors are in Quadrant III (potential) and Quadrant IV (relatively lagging).

The mining and quarrying sector falls into quadrant I, meaning it contributes significantly to East Kalimantan's GRDP and recorded a growth rate above the national average. This is consistent with previous LQ and SS results, which indicated mining as a key base sector. However, overreliance on this sector presents vulnerabilities, particularly in the face of fluctuations in global commodity prices.

Conversely, several important sectors, such as agriculture, forestry, and fisheries, construction, and wholesale and retail trade, are in quadrant III (potential sectors). This position indicates that although these sectors contribute quite significantly to East Kalimantan's GRDP, their growth rates are still below the national average. Therefore, these sectors play a vital role in the regional economy but require policy support to accelerate their growth and enable them to compete with similar sectors at the national level.

Meanwhile, sectors such as manufacturing, transportation and warehousing, information and communication, financial services, corporate services, and other services fall into quadrant IV (relatively lagging). This means these sectors have a higher growth rate than the national average, but their contribution to East Kalimantan's GRDP remains low. This situation indicates the potential for sustainable growth in these sectors, particularly modern services, although the scale is still limited. If supported by investment and increased productivity, these sectors have the potential to become new drivers of regional economic growth.

On the other hand, many public service sectors, such as education, health, government administration, and accommodation and food and beverage, fall into quadrant III. This means these sectors contribute significantly to the region's GRDP, but their growth remains below national average. This fact indicates that while the social services sector continues to expand, its growth rate is not yet optimal, necessitating policy intervention to strengthen public services in East Kalimantan.

Overall, the results of the Klassen Typology show that East Kalimantan's economic transformation is still progressing slowly. Dependence on mining as the primary sector remains dominant, while potential sectors have not yet fully transformed into leading sectors. On the other hand, sectors in quadrant IV offer new hope because they demonstrate relatively high growth dynamics despite their still small contribution scale. Therefore, the direction of development policy needs to emphasize strengthening potential sectors in quadrant III and encouraging fast-growing sectors in quadrant IV to increase their contribution to GRDP, so that East Kalimantan's economy is not solely dependent on mining.

To obtain a more comprehensive picture of sectoral economic development patterns, the analysis is conducted not only using the LQ and Shift Share methods, but also using the Klassen Typology. This method is useful for mapping economic sectors into four main categories: advanced and fast-growing sectors, advanced but depressed sectors, potential sectors, and relatively lagging sectors. The application of the Klassen Typology allows for the identification of the relative position of each sector based on the combination of its growth rate and contribution to Gross Regional Domestic Product (GRDP). Thus, this analysis is expected to provide a clearer picture of which sectors are driving growth, sectors that require policy intervention, and sectors that have the potential for future development.

Table 7. Klassen Typology Quadrants

Quadrant I	Quadrant II
Mining and Quarrying	
Quadrant III	**Quadrant IV**
Agriculture, Forestry, and Fisheries Electricity and Gas Procurement Water Supply, Waste Management, Waste and Recycling Construction Wholesale and Retail Trade; Automobile and Motorcycle Repair Provision of Accommodation and Food and Beverages Real Estate Government Administration, Defense and Compulsory Social Security Educational Services Health Services and Social Activities	Processing industry Transportation and Warehousing Information and Communication Financial Services Corporate Services Other Services

Source: data processed in 2025

DISCUSSION

Leading Sectors Based on LQ

The Location Quotient (LQ) analysis provides an overview of the basic and non-basic sectors in the East Kalimantan economy. The calculation results show that only the mining and quarrying sector consistently served as a basic sector throughout the 2014–2018, 2019–2023, and 2014–2023 combined periods, with an average LQ value of around 5.25. This means that the mining sector's contribution to the regional economy is far greater than its national contribution. This is in line with the economic structure of East Kalimantan, which has long been known as one of the main producers of oil, natural gas, and coal in Indonesia.

On the other hand, all other sectors have LQ values <1, thus categorized as non-basic sectors. Several sectors, such as agriculture, forestry, and fisheries (LQ ~0.45), construction (LQ ~0.64), and transportation and warehousing (LQ ~0.61), have values relatively close to 1, indicating potential for further development. However, service sectors such as education, health, and information and communication remain below the threshold, so their contribution is smaller than the national average.

This finding is consistent with the economic base theory, where the base sector is the main driver of a region's economy because of its ability to produce output that exceeds local needs and export it outside the region.(Arsyad, 2020)The dominance of mining in East Kalimantan demonstrates the central role of this basic sector. However, in accordance with Lewis and Chenery's structural transformation theory, sustainable economic development requires a shift from the primary sector to the secondary and tertiary sectors. Excessive reliance on

mining has the potential to create vulnerability, particularly to global commodity price volatility, necessitating an economic diversification strategy.

Study(McMillan et al., 2014)This shows that a country or region's productivity growth is highly dependent on the shift of production factors from low-productivity sectors to modern ones. In the context of East Kalimantan, this underscores the importance of strengthening the modern manufacturing and service sectors. Furthermore,(Sachs & Warner, 2001)explains the resource curse phenomenon that occurs in resource-rich regions, where overreliance on the extractive sector can hinder diversification and sustainable growth. This condition is relevant to East Kalimantan, which remains heavily dependent on mining.

Based on the LQ results, the regional government needs to formulate policies to reduce dependence on mining and encourage non-basic sectors to become basic sectors. First, the construction sector can be optimized by accelerating infrastructure development, including the Indonesian Capital City (IKN) project. Second, the agricultural sector's productivity needs to be increased through technological modernization so that it not only serves as a buffer for food security but also as an export resource. Third, the health and education services sectors must be strengthened as pillars of human capital development. With this strategy, East Kalimantan's development can move toward a more balanced and sustainable economic structure.

This section allows you to describe your research findings academically. You may not enter figures related to your statistical tests here; instead, you should explain those numbers here. You should structure your discussion with academic support for your studies and a good explanation according to the specific area you are investigating.

Leading Sectors Based on SS

The SS analysis shows that throughout the 2014–2018, 2019–2023, and 2014–2023 combined periods, East Kalimantan's economy remains heavily reliant on the mining and quarrying sector. This sector consistently contributes significantly to total change (Dij), but the negative Cij value in the final period indicates a weakening of the relative competitiveness of mining in East Kalimantan compared to the same sector at the national level. This means that mining's dominance remains intact, but its position is no longer as strong as in the previous period.

Outside of mining, several non-basic sectors are beginning to show signs of strengthening. The health, education, real estate, business services, and accommodation and food and beverage sectors recorded positive Cij values for most of the period. This indicates that, despite their small contribution to GRDP, these sectors are growing faster than the national average. Conversely, strategic sectors such as agriculture, manufacturing, trade, transportation, and construction recorded negative Cij, indicating slower growth compared to their counterparts at the national level. These findings underscore East Kalimantan's challenge to undertake a more comprehensive structural transformation, particularly in strengthening the industrial and trade sectors as pillars of a sustainable economy.

This finding aligns with the economic base theory, which states that a region's growth is strongly influenced by its base sectors, which are able to attract external revenue. In the case of East Kalimantan, the mining sector is clearly the primary base sector. However, in accordance with Chenery and Lewis's theory of economic transformation, sustainable development requires a shift in labor and capital from the primary sector to the secondary and tertiary sectors. Without diversification, resource-rich regions are likely to face the risk of the resource curse, an over-reliance on primary commodities that are vulnerable to international price volatility (Sachs & Warner, 2001). Therefore, strengthening the service and utility sectors, which are beginning to grow competitively, needs to be a cornerstone of the regional economic transformation agenda.

The SS findings underscore the need for an economic diversification strategy in East Kalimantan. First, although mining remains dominant, regional policy should be geared toward downstreaming to create more added value within the region. Second, the regional government needs to encourage the growth of modern service sectors such as healthcare, education, and real estate by strengthening infrastructure, creating a conducive investment ecosystem, and improving workforce quality. Third, sectors experiencing negative CIJ, such as manufacturing, trade, and transportation, need intervention in the form of fiscal policy, industrial incentives, and improved logistics connectivity to prevent them from falling further behind national performance.

Leading Sectors Based on Classification Typology

The Klassen Typology analysis shows that East Kalimantan's economy remains highly polarized. The mining and quarrying sector is in quadrant I (developed and rapidly growing), indicating a high contribution and growth above the national average. This confirms that this sector has remained the backbone of the regional economy for a decade. However, this position also highlights the risk of heavy dependence on fluctuations in global commodity prices, which could impact regional fiscal stability.

Most other sectors are concentrated in quadrant III (advanced but with slower growth). The agriculture, forestry, and fisheries, construction, and wholesale and retail trade sectors are prime examples. This position indicates that these sectors contribute significantly to regional GRDP, but their growth rates remain below national performance. This means that while these sectors support the local economy, they have not shown sufficient acceleration to drive broader economic transformation.

Meanwhile, sectors such as manufacturing, transportation and warehousing, information and communication, financial services, corporate services, and other services fall into quadrant IV (relatively lagging). This situation demonstrates growth potential, as these sectors are growing faster than the national average, although their contribution to East Kalimantan's GRDP remains low. Therefore, sectors in quadrant IV can be considered emerging sectors, which, despite their small scale, have significant potential to become new drivers of growth if they receive serious attention.

On the other hand, public services sectors such as education, health, and government administration are in quadrant III, indicating a significant role for

society but with suboptimal growth. This fact indicates the need for policies that not only target the commercial sector but also strengthen the social sector so that human development can go hand in hand with economic growth.

Practically, local governments can use the results of the Klassen Typology to set development priorities. Quadrant I (mining) needs to be directed towards downstream processing to avoid becoming merely a producer of raw materials. Quadrant III (agriculture, construction, trade) should be targeted for productivity improvement through fiscal policy and investment incentives. Quadrant IV (processing industry, modern services) should be positioned as a strategic sector supported by infrastructure, pro-investment regulations, and human resource development programs. In this way, East Kalimantan's economic structure can shift from a single-sector dominance to a more diverse and sustainable basis.

CONCLUSIONS

Based on the results of the analysis of Location Quotient (LQ), Shift Share (SS), and Klassen Typology, the following conclusions can be drawn:

1. The mining and quarrying sector consistently served as the primary base sector during the 2014–2023 period, with an average LQ value of >5 and positioned in Quadrant I of the Klassen Typology. This dominance indicates that East Kalimantan's economic structure remains heavily dependent on the extractive sector.
2. Shift Share (SS) analysis reveals significant changes in sectoral competitiveness. In the 2019–2023 period, the mining sector began to lose its relative advantage (negative Cij), while several modern service sectors, such as health, education, real estate, corporate services, and several utilities, recorded positive Cij, indicating increasing competitiveness, although their absolute contribution remains low.
3. The results of the Klassen Typology confirm that most potential sectors are in Quadrant III (advanced but depressed) such as agriculture, construction, and trade; while sectors such as processing industry, transportation and warehousing, information and communication, financial services, corporate services, and other services are in Quadrant IV, which means that their growth is relatively faster than similar sectors nationally but their contribution is still low.

RECOMMENDATIONS

Based on the conclusions above, there are several suggestions that can be given to both local governments and further researchers, so that the results of this study can provide broader practical and academic benefits.

1. Regional governments are expected to strengthen economic diversification efforts to gradually reduce the high dependence on the mining sector and provide greater space for non-basic sectors to develop.
2. 2. The government needs to encourage increased productivity in potential sectors, such as agriculture, construction, and trade, so that these sectors can make a greater and more equitable contribution to the economy in the future.

3. Modern service sectors that have shown indications of competitive growth, such as health, education, and corporate services, need to be facilitated in their development so that they can become part of the driving force of regional economic transformation.
4. For further researchers, it is recommended to develop a research approach using additional analysis methods or include other variables to obtain a broader picture of the economic transformation process in East Kalimantan.

ADVANCED RESEARCH

This study has several limitations, including the use of descriptive methods such as Location Quotient, Shift Share, and Klassen Typology, which are unable to fully explain the causal relationships and determinants of economic transformation. Furthermore, the study only uses sectoral GRDP data as the main variable without including other factors such as investment, labor, productivity, technology, and government policies that have the potential to influence changes in economic structure. Another limitation is the use of secondary data for the 2014–2023 period, which depends on the availability and accuracy of statistical data and does not fully capture the latest economic dynamics, including the impact of the development of the Indonesian Capital City. Furthermore, the analysis conducted at the aggregate level of East Kalimantan Province means that differences in characteristics and economic disparities between districts/cities cannot be analyzed in greater detail.

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