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REGIONAL POTENTIAL-BASED DEVELOPMENT PLANNING: A STUDY OF LOCATION QUOTIENT, SHIFT SHARE, AND KLASSEN TYPOLOGY IN TULANG BAWANG REGENCY

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Abstract
This study aims to analyze the structure and economic potential of Tulang Bawang Regency for the 2019–2023 period as the basis for development planning based on regional potential. Three quantitative approaches are used in an integrated manner, namely Location Quotient (LQ) to identify the base sector, Shift Share to assess the contribution of sectoral growth, and the Klassen Typology to group sectors based on their growth and contribution to GDP. The results of the analysis show that the Agriculture and Processing Industry sector is the base sector with an LQ value of > 1. In general, the economic growth of Tulang Bawang Regency is dominated by national influence, but some sectors such as Agriculture, Trade, and Education show local competitive advantages. Klassen's typology identifies the Processing, Information and Communication Industries, and Government Administration sectors as developed and fast-growing sectors, while the Construction, Transportation, and Social Services sectors are classified as lagging behind. These findings recommend strengthening leading sectors and strategic interventions in potential and underdeveloped sectors to support inclusive and sustainable regional economic development.

Keywords: Location Quotient, Shift Share, Klassen Typology, Onion Bones

1. Introduction

Regional economic development is a process that aims to improve community welfare through the use of local potential owned by each region. In the context of fiscal decentralization in Indonesia, the role of districts in encouraging economic growth is very strategic (Rambe & Febriani, 2020). Tulang Bawang Regency, as one of the regions in Lampung Province, holds significant economic potential in the agriculture, processing industry, and trade sectors. However, the optimization of this potential has not been fully reflected in the structure and growth of the region's Gross Regional Domestic Product (GDP) in the period 2019–2023.

The selection of Tulang Bawang Regency as the focus of this study is based on its strategic geographical position as part of the Sumatra economic corridor as well as the sectoral contribution of GDP which shows a stagnant tendency in several leading sectors (Juhandi, 2016). On the other hand, despite having abundant natural resource potential, there is a gap between sectors in encouraging regional economic growth evenly. The agricultural sector, for example, still dominates GDP, but is not followed by strong growth in the secondary and tertiary sectors, creating structural inequality (Mimma & Maulida, 2022).

The main gap that this study aims to address is the lack of in-depth sectoral mapping of the regional economic base and sectoral contribution to regional growth. In addition, there have not been many studies that integrate three quantitative approaches

simultaneously — namely Location Quotient (LQ) to identify the base sector, Shift Share to measure sectoral growth contribution, and Klassen Typology to classify regions based on growth rate and sectoral contribution — in the context of Tulang Bawang Regency longitudinally. This approach is needed so that local governments can design measurable and sustainable sectoral data-based economic development strategies.

Thus, this study aims to analyze the structure and dynamics of the GDP of Tulang Bawang Regency during the 2019–2023 period in order to identify leading sectors and potential for region-based economic growth. The results of this study are expected to provide concrete recommendations to support more effective regional development planning based on sectoral potential.

2. Theoretical Background

2.1. Theory of Regional Economic Development

Regional economic development is the process of increasing the capacity of a region to encourage sustainable economic growth, improve community welfare, and reduce gaps between regions (Todaro & Smith, 2015). This process involves the optimal utilization of local resources, both human and natural, to create added value and strengthen economic resilience. In the context of regional autonomy, each district/city has the responsibility to identify and develop its sectoral potential to create a competitive economic structure. The success of regional development is not only measured by high economic growth rates, but also by how equitable the distribution of development results is to all levels of society and how sustainable the development is for future generations. Therefore, development policies must be designed to be inclusive and environmentally sound, taking into account the specific potential and challenges of each region.

2.2. Base Sector Theory

This theory, also known as the export base theory, explains that the economic growth of a region is determined by the base sectors (export base theory), which are sectors that are able to generate surpluses and supply the needs of other regions. These sectors function as the engine of the regional economy because they bring in external income, which then circulates and multiplies within the region through the local economic circuit. The non-base sector (or service sector) tends to be consumptive and serves local needs. It is highly dependent on the performance of the base sector, as its existence is supported by the purchasing power generated from the base sector's activities. Identification of the base sector is important to determine regional economic development priorities (Nur & Safaringa, 2019). The analytical tools commonly used to identify these sectors are Location Quotient (LQ), Shift-Share, and Klassen Typology, which help policymakers focus resources on sectors with the highest comparative and competitive advantages. A strong and diversified base sector is key to a region's economic resilience against external shocks.

2.3 Integration of LQ, Shift-Share, and Klassen Typology Analysis

The integration of these three analytical tools provides a comprehensive framework for regional potential-based development planning. LQ analysis identifies base sectors, Shift-Share analysis reveals the performance and competitiveness of these sectors, while Klassen typology provides strategic guidance for sector development based on growth characteristics and their contributions. The synergy of these three analytical approaches enables the formulation of more targeted, effective, and efficient development policies according to the specific potential and characteristics of each region.

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3. Methods

3.1 Types of Data Sources

This study uses secondary data in the form of Gross Regional Domestic Product (GDP) data of Tulang Bawang Regency based on constant prices according to business fields for the period 2019 to 2023, obtained from the Central Statistics Agency (BPS) of Tulang Bawang and Lampung Province. Provincial GDP data is used as a comparison in the Location Quotient analysis.

3.2 LQ Analysis

Location Quotient (LQ) analysis is one of the quantitative methods used in regional economic studies to measure the level of specialization of an economic sector in a certain region compared to a larger region, such as a province or country. This approach is very useful in identifying leading sectors that are the relative strength of a region in the context of local economic development. (Monsaputra, 2024)

In particular, in the context of the food crop subsector, LQ analysis is used to find out which commodities have comparative advantages in a district or city. This advantage indicates that a commodity is produced with higher efficiency and potential than the average reference area (usually province). If the LQ value of a commodity is greater than 1 (LQ > 1), then it can be concluded that the commodity is a base sector, meaning that the commodity is more concentrated and more dominant in the region compared to the province as a whole. In other words, these commodities have the potential to be developed as a leading sector and become the driving force of the regional economy.

In practice, LQ is calculated by comparing the proportion of output or contribution of a particular sector to the total economic output at the district or city level, with the same proportion at the provincial level. Mathematically, the formula LQ can be written as follows:

$$\mathrm{LQ} = \frac{Vi/Vt}{Yi/Yt}$$

Information:
Vi = Value of GDP sector I at the regional level of Tulang Bawang Regency
Vt = Total GDP at the regional level of Tulang Bawang Regency
Yi = Value of GDP sector I at the regional level of Lampung Province
Yt = Total GDP at the regional level of Lampung Province

The results of this calculation provide a strong picture of the extent to which an economic sector is superior or underdeveloped in the region, so that it can be the basis for development planning, determination of investment priorities, and regional economic development strategies based on local potential. (Riswanda et al., 2023).

3.3 Shift Share Analysis

This approach is used to analyze the contribution of sectoral growth to regional economic growth. The shift-share method is used to analyze the contribution of a region's economic growth to overall economic growth. In this context, the analysis was carried out on the GDP of Tulang Bawang Regency and Lampung Province.
General Formula:

$$\text{Thigh} = \text{Nij} + \text{Me} + \text{Cij}$$

Information:
- Dij = Total change in GDP sector i in Tulang Bawang (Shift-share)
- Nij = National Growth Component (KPN)

- Mij = Proportional Growth Component (KPP)
- CIJ = Competitive Advantage Component (KKK)

Definitions and Formulas:

1) Rij = Growth rate of sector i in Tulang Bawang Regency, calculated as:

$$row = (Y^*ij - Yij) / Yij$$

2) Rin = Growth rate of sector i in Lampung Province, calculated as:

$$rin = (Y^*in - Yin) / Yin$$

3) Rn = National total growth rate (or total Lampung), calculated as:

$$rn = (Y^*n - Yn) / Yn$$

4) Nij (KPN) = Components of national growth sector i in Tulang Bawang:

$$Nij = Yij * rn$$

5) Mij (KPP) = Proportional growth component:

$$Me = Yij * (rin - rn)$$

6) Cij (KKK) = Components of competitive advantage:

$$Cij = Yij * (row - rin)$$

Interpretation:

1) If Mij > 0: Sector i is growing faster in Lampung than the national average growth (proportional).
2) If the CIJ > 0: Sector i in Tulang Bawang is superior to the same sector in Lampung as a whole (competitive).
3) If all values are positive, the sector becomes a base and strategic sector to be developed.

This analysis provides a strong quantitative basis in determining regional leading sectors based on productivity relative to the wider region. (Dwi Pratikno & Dikna Sari, 2021)

3.4 Klassen typology

The Klassen typology classifies regions or sectors of the economy into four growth quadrants based on the combination of the rate of economic growth and the contribution to total GDP:

1) Quadrant I: Advance and grow fast
2) Quadrant II: Forward but depressed
3) Quadrant III: Potential for growth
4) Quadrant IV: Relatively behind

This classification helps to prioritize regional development spatially and sectorally (Saputro & Putri, 2022).

Table. 1 Klassen Typology Matrix of GDP Sector

Sectoral Contribution	Contribution Sector Big (gi ≥ g)	Small Sector Contribution (gi < g)
Fast Growth Sector Big (si ≥ s)	Advanced and Rapid Sectors (Quadrant I)	Developed but Stressed Sector (Quadrant II)
Small Sector Growth Rate (si < s)	Potential or Rapidly Growing Sectors (Quadrant III)	Relatively Underdeveloped Sectors (Quadrant IV)

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4. Results And Discussion

4.1 Location Quotient (LQ) Analysis

The identification of leading economic sectors in the Tulang Bawang Regency area was carried out through the Location Quotient Analysis (LQ) approach. This method is used to determine the relative contribution of added value of a sector in Tulang Bawang Regency compared to the contribution of the same sector at the Lampung Province level. In the analysis process, economic sectors are classified into two main categories, namely the base sector that has comparative advantages and potential as a driver of the regional economy, and the non-base sector whose role is more supportive of local economic activities.

Table 2. Results of LQ Analysis of Tulang Bawang Regency 2019 - 2023

LQ Value			
Category	Business Field	LQ Average	INFORMATION
A	Agriculture. Forestry and Fisheries	1.29	BASE
B	Mining and Quarrying	0.20	NON BASIS
C	Processing Industry	1.07	BASE
D	Electricity and Gas Procurement	0.75	NON BASIS
E	Procurement of water, waste management and recycling	0.47	NON BASIS
F	Construction	0.91	NON BASIS
G	Large and retail trade; Car and Bicycle Repair	0.87	NON BASIS
H	Transportation and Warehousing	0.73	NON BASIS
I	Accommodation and Meal Provision	0.89	NON BASIS
J	Information and Communication	0.87	NON BASIS
K	Financial Services and Insurance	0.57	NON BASIS
L	Real Estate	0.70	NON BASIS
MN	Corporate Services	0.29	NON BASIS
O	Defense and Social Security Administration	0.82	NON BASIS
P	Educational Services	0.65	NON BASIS
Q	Health Services and Social Activities	0.42	NON BASIS
RSTU	Other Services	0.44	NON BASIS
GDP		1	

Source: calculations using excel

Based on the results of the Location Quotient (LQ) analysis of the economic structure of Tulang Bawang Regency, it is known that there are only two base sectors, namely the Agriculture, Forestry, and Fisheries sector (LQ = 1.29) and the Processing Industry sector (LQ = 1.07). These two sectors have an LQ value of > 1, which indicates that both have comparative advantages and are sectors that are able to generate surpluses to support regional economic growth. Meanwhile, the majority of other sectors are categorized as non-base sectors, as their LQ values are below 1, which means their contribution is still below the provincial average. With reference to the results of the LQ, future development strategies need to be focused on strengthening and down streaming the agricultural and processing industry sectors, as well as transforming and developing non-base sectors that have the potential to grow in the medium and long term.

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4.2 Shift Share Analysis

Table 3. Shift Share Analysis of Tulang Bawang Regency 2019 – 2023

Component							
Category	Row	Rin	Rn	Nij	Me	Scij	Thigh
A	0.07	0.06	0.08	777571.75	-208302.53	104656.58	673925.80
B	0.07	-0.03	0.08	23487.32	-33052.20	30373.88	20809.00
C	0.05	0.05	0.08	549853.82	-209827.66	-10550.65	329475.50
D	0.05	0.02	0.08	2339.83	-1919.82	892.20	1312.20
E	0.02	0.02	0.08	1107.23	-902.07	101.64	306.80
F	0.07	0.10	0.08	195357.81	28694.13	-61907.94	162144.00
G	0.18	0.15	0.08	235795.38	178057.87	82299.35	496152.60
H	0.27	0.30	0.08	94854.10	244911.43	-33529.53	306236.00
I	0.10	0.15	0.08	30132.54	23198.88	-16788.21	36543.20
J	0.09	0.08	0.08	77278.98	-2922.22	12049.94	86406.70
K	0.03	0.05	0.08	26848.18	-9885.61	-7572.26	9390.30
L	0.02	0.03	0.08	43101.16	-27617.32	-3807.43	11676.40
MN	0.05	0.09	0.08	973.65	117.71	-517.76	573.60
O	0.03	0.01	0.08	58917.59	-48705.30	12025.41	22237.70
P	0.06	0.06	0.08	42717.64	-13279.06	1289.32	30727.90
Q	0.05	0.07	0.08	9494.40	-1527.28	-2090.82	5876.30
RSTU	0.17	0.20	0.08	10344.55	14778.31	-4678.55	20444.30
GDP	1.39	1.41	1.43	37063090.09	509504.353	395066.114	36158519.62

Description: Category (A) Agriculture, Forestry, and Fisheries; (B) Mining and Quarrying; (c) Processing Industry; (D) Electricity and Gas Procurement; (e) Water Procurement, Waste Management, Waste Recycling; (f) Construction; (g) Wholesale and Retail Trade, Car and Motorcycle Repair; (H) Transportation and Warehousing; (i) Provision of Accommodation and Eating and Drinking; (j) Information and Communications; (k) Financial Services and Insurance; (L) Real Estate; (MN) Corporate Services; (O) Administration, Defence and Compulsory Social Security; (P) Educational Services; (Q) Health Services and Social Activities; (RSTU) Other Services.

The results of the Shift Share analysis of economic sectors in Tulang Bawang Regency during the 2019–2023 period show that in general this region is experiencing positive economic growth. This is reflected in the positive total DIJ value, which reflects the contribution of growth from almost all components, both from national influence, proportional sectoral growth, and the competitiveness of the local sector.

The national growth component (NIJ) contributes the largest to the growth of sectors in the region, which means that most of the regional economic dynamics follow the national economic growth pattern. Meanwhile, the proportional growth (Mij) and competitive advantage (Cij) components show that some sectors are able to grow faster than the provincial average, reflecting the existence of specific superior potentials that can be further developed.

Sectors such as agriculture (Category A), wholesale and retail trade (G), and education (P) show positive competitive advantages, indicating that these sectors have relatively higher competitiveness than similar sectors in other regions. On the other hand, sectors such as corporate services (MN) and construction (F) experienced negative growth both proportionally and competitively, requiring attention in future development strategies.

4.3 Klassen typology

Klassen's Typology Analysis groups the economic sectors in Tulang Bawang Regency into four quadrants based on a combination of economic growth rate and sector

contribution to GDP, with a comparative provincial average (Lampung). The results show a diverse distribution between excellent, potential, and disadvantaged sectors, as described below:

Table 4. Typology of Klassen PDRB Tulang Bawang Regency

Category	Lampung		Tulang Bawang		Quadrant
	Average Growth	Average Contribution	Average Growth	Average Contribution	
A	0.05	28%	0.04	37%	2
B	0.05	5%	0.05	1%	3
C	0.03	19%	2.27	20%	1
D	0.00	0%	0.04	0%	1
E	0.05	0%	0.05	0%	1
F	0.07	10%	0.05	9%	4
G	0.12	12%	0.08	11%	4
H	0.16	6%	0.14	4%	4
I	0.06	2%	0.05	1%	4
J	0.05	4%	0.06	4%	1
K	0.05	2%	0.05	1%	3
L	0.03	3%	0.03	2%	3
MN	0.08	0%	0.04	0%	2
O	0.03	3%	0.03	3%	1
P	0.05	3%	0.06	2%	3
Q	0.07	1%	0.06	0%	4
RSTU	0.11	1%	0.13	0%	4

Description: Category (A) Agriculture, Forestry, and Fisheries; (B) Mining and Quarrying; (c) Processing Industry; (D) Electricity and Gas Procurement; (e) Water Procurement, Waste Management, Waste Recycling; (f) Construction; (g) Wholesale and Retail Trade, Car and Motorcycle Repair; (H) Transportation and Warehousing; (i) Provision of Accommodation and Eating and Drinking; (j) Information and Communications; (k) Financial Services and Insurance; (L) Real Estate; (MN) Corporate Services; (O) Administration, Defence and Compulsory Social Security; (P) Educational Services; (Q) Health Services and Social Activities; (RSTU) Other Services

Table 5. Analysis of the Klassen Typology of Tulang Bawang Regency

Sectoral Contribution	Contribution Sector Big ($gi \geq g$)	Small Sector Contribution ($gi < g$)
Fast Growth Sector Big ($si \geq s$)	Advanced and Rapid Sectors (Quadrant I) C. Processing Industry D. Electricity and Gas Procurement E. Wastewater Management J. Information and Communication	Developed but Stressed Sector (Quadrant II) A. Agriculture, Forestry and Fisheries MN. Corporate Services

Sectoral Contribution	Contribution Sector Big (gi ≥ g)	Small Sector Contribution (gi < g)
	Oh. Government Administration	
Small Sector Growth Rate (si < s)	Potential or Rapidly Growing Sectors (Quadrant III) B. Mining and Quarrying K. Financial Services and Insurance L. Real Estate P. Education Services	Relatively Underdeveloped Sectors (Quadrant IV) F. Construction G. Trade and Repair H. Transportation and Warehousing I. Accommodation and Dining Q. Health and Social Services RSTU. Other Services

Based on the analysis of the Klassen Typology, the economic sector in Tulang Bawang Regency is divided into four quadrants. Quadrant I (advanced and rapid sectors) include the treatment industry, electricity and gas, wastewater management, information-communication, and government administration — these sectors have a high contribution and growth. Quadrant II (advanced but depressed) includes the agricultural sector and corporate services, which contribute greatly but have low growth.

Meanwhile, Quadrant III (potential sectors) consists of the mining, finance, real estate, and education sectors which are growing high despite a small contribution. Finally, Quadrant IV (relatively underdeveloped) contains sectors such as construction, trade, transportation, accommodation, health, and other services that have low contributions and growth. This classification is important for determining sectoral development priorities based on the actual potential of the region.

5. Conclusion

This study aims to analyze the economic structure and dynamics of Tulang Bawang Regency in 2019–2023 using the Location Quotient (LQ), Shift Share, and Klassen Typology approaches. Based on the results of the analysis:

1) The Location Quotient (LQ) shows that only two sectors are classified as the base sector, namely the Agriculture, Forestry, and Fisheries sectors, and the Processing Industry, which have a comparative advantage over Lampung Province.
2) Shift Share Analysis reveals that the economic growth of Tulang Bawang Regency is mostly influenced by national factors, but several sectors such as Agriculture, Trade, and Education have competitive advantages that are worth developing.
3) Klassen's typology groups sectors into four quadrants, where the Processing, Information and Communication Industry, and Government Administration sectors are classified as advanced and rapid sectors (Quadrant I), while Construction, Transportation, and Health are in the relatively underdeveloped sectors (Quadrant IV).

Overall, Tulang Bawang Regency has great sectoral potential, but there is still an imbalance in contribution and growth between sectors that requires strategic intervention.

Based on the research findings, the following strategic recommendations for this research are proposed:

1) Focus on base and flagship sectors such as Agriculture and Processing Industries, through increased productivity, down streaming, and technological innovation to remain regionally competitive.
2) Encourage the growth of potential sectors such as Finance, Education, and Real Estate through investment incentives and improvements to supporting infrastructure.
3) Increase the capacity of disadvantaged sectors with policy intervention approaches, increased market access, and strengthening human resources, especially in the Construction, Transportation, and Social Services sectors.
4) It is necessary to collaborate between local governments, the private sector, and academics to design a development strategy based on regional potential that is more inclusive and sustainable.

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