ANALYSIS OF LEADING ECONOMIC SECTORS IN PEKANBARU CITY

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ABSTRACT

Identification of leading sectors in an area is the first step in determining a strategic area as an economic center. This identification is carried out using the Location Quotient (LQ), Dynamic Location Quotient (DLQ), Shift-Share and Klassen Typology methods. The data used in this study are Gross Regional Domestic Product (GRDP) data from the city of Pekanbaru and Riau Province from 2016 to 2020. The data collection process was carried out using secondary data obtained from the Central Statistics Agency for Pekanbaru City and the Central Statistics Agency for Riau Province. Based on the research results, there are three leading sectors in the city of Pekanbaru, namely the electricity and gas procurement sector, the information and communication sector, the health services sector and social activities. The government's attention can be directed to these leading sectors in order to encourage economic growth in the city of Pekanbaru.

1. INTRODUCTION

In the realm of regional economic development, understanding the dynamics and composition of the local economy is crucial for making informed decisions. One key aspect of this understanding lies in identifying the basic and non-basic sectors within a region. The concept of basic and non-basic sectors forms the foundation of many economic development strategies, as it aids policymakers in identifying industries that drive economic growth within a region.

The determination of basic and non-basic sectors can be carried out through various analytical tools, and one widely used method is the Location Quotient (LQ) analysis. Location Quotient analysis provides a convenient way to assess specific industries within a regional economy in comparison to a larger reference area, such as a Province or a Country. By measuring the Location Quotient for each industry, prominent sectors and sectors needing attention can be identified.

Understanding basic and non-basic sectors in a regional economy holds significant implications for policymakers, economic planners, and society at large. Identifying basic sectors characterized by export orientation and strong inter-industry linkages allows a region to focus on expanding industries that drive regional economic growth. Conversely, non-basic sectors often heavily rely on local consumption and might be susceptible to economic shocks. Identifying these sectors can inform strategies aimed at economic diversification and reducing vulnerability.

One indicator of successful economic development in a region can be observed through the structure and economic growth of that region. Economic activities significantly higher than in previous years indicate improved economic growth compared to previous years.

Table 1 Economic Growth Rate of Pekanbaru City

Year	Economic Growth Rate
2016	5.68
2017	6.12
2018	5.39
2019	5.99
2020	-4.41

Source: Central Statistics Agency, processed by the author

Based on data from the Central Statistics Agency, the economic growth rate of Pekanbaru city during the years 2016 through 2020 still experienced frequent fluctuations. In 2016, the economic growth of Pekanbaru city increased by 5.68% from the previous year. In 2017, the economic growth of Pekanbaru city saw another rise by 6.12% from the preceding year. However, in 2018, the economic growth of Pekanbaru city experienced a decrease of 0.73% from 2017, settling at 5.39%. The economic growth of Pekanbaru city once again improved in 2019, reaching 5.99%

compared to the previous year. In 2020, the economic growth of Pekanbaru city declined significantly by -4.41% from the previous year. Observing the fluctuating economic growth of Pekanbaru city, the author suggests that further research is necessary to identify potential economic sectors in Pekanbaru city that can reinvigorate its economic growth.

Through an in-depth analysis of the Location Quotient analysis and its application, this research aims to identify key sectors present in Pekanbaru city. The findings will serve as valuable considerations for policymakers to formulate strategies that foster sustainable economic development.

2. LITERATURE REVIEW

Regional Economy

Regional economics is a branch of economics that emphasizes the spatial aspects within economic analysis. Regional economics is a field where the spatial characteristics of an economic system can be understood (Hoover & Giarratani, 1999). It pertains to economic activities taking place within a geographical area. Regional economics employs the Gross Regional Domestic Product (GRDP) as a foundation for calculating the economic base of activities focused on the structure of the local economy (Anwar, 2023).

In measuring the economic growth of a region, one instrumental tool is the Gross Regional Domestic Product (GRDP). The GRDP encompasses the total value added generated by all business units within that region. This value added can take the form of the final value of goods and services produced by business units within the area. GRDP calculations can be divided into two types: GRDP at constant prices and GRDP at current prices. GRDP at constant prices is computed using a base year to calculate the value added of goods and services for each subsequent year, while GRDP at current prices calculates the value added using the prices of each corresponding year. In practice, GRDP at constant prices serves as a basis for determining the economic growth of a region, whereas GRDP at current prices is used as a basis for understanding the economic structure of a region. This GRDP serves as an indicator to assess the success of local governments in utilizing available resources and serves as a consideration for regional government planning and decision-making (Gultom et al., 2018).

Location Quotient

Location Quotient (LQ) analysis is an examination of the relative role of a sector in a region compared to its national significance. According to Richardson (1985), location quotients are ratios that allow for the distribution of employment within an area based on industries in comparison to the total industries. At the District/City level, LQ analysis involves comparing the industrial output of a sector in a District/City with the output of the same sector in the province (Jumiyanti, 2018).

Location Quotient analysis can be divided into two types:
1. Static Location Quotient
2. Dynamic Location Quotient

Both analyses aim to measure key sectors in a region, but the difference lies in how the Dynamic Location Quotient employs the growth rate of that sector to determine its prominence. Location Quotient analysis is used to discuss economic conditions and identify specialization in economic activities that can be designated as key sectors within industrial activities (Jumiyanti, 2018).

In the income approach, Location Quotient is calculated by using the percentage of GRDP in a sector at a lower geographical level divided by the percentage of GRDP in the same sector at a higher geographical level. This Location Quotient analysis can be computed as follows:

$$LQ_i = \frac{\left(\frac{V_{iK}}{V_K}\right)}{\left(\frac{V_{iP}}{V_P}\right)}$$

Where:

- LQ_i represents the Location Quotient for sector *i* in that region,
- V_{iK} denotes the output value of GRDP in sector *i* in region *k,*
- V_K signifies the total output value of GRDP in region *k*
- V_{iP} stands for the output value of GRDP in sector *i* in region *p*
- V_P represents the total output value of GRDP in region *p*

The results of the Location Quotient analysis can be interpreted as follows:

- $LQ > 1$, The sector is a basic sector, indicating it has a comparative advantage in the region.
- $LQ = 1$, The sector is a non-basic sector, implying it lacks a comparative advantage compared to other sectors in the region.
- $LQ < 1$, The sector is a non-basic sector that requires imports from outside to fulfill its demands.

Sectors with LQ values greater than 1 can be designated as key sectors. However, if multiple sectors within a region have LQ values above 1, the sector with the highest LQ value is considered the most prominent in that area. This is because a higher LQ value in a region corresponds to a greater potential advantage of that sector compared to others (Jumiyanti, 2018).

Dynamic Location Quotient

According to Gultom et al. (2018), the Dynamic Location Quotient (DLQ) analysis is conducted to address the limitations of the conventional LQ, which provides insights only at a specific point in time. Essentially, the difference between LQ and DLQ analysis lies in the economic growth of each sector used in the DLQ analysis. This economic growth is assumed to be associated with the individual average growth rate of both sectoral value and GRDP.

DLQ examines the rate of proportional growth in sector *i* within a region compared to the rate of proportional growth of that sector in the province.

$$DLQ_{ij} = \left[\frac{(1 + g_{ij})\big/(1 + g_j)}{(1 + G_i)\big/(1 + G)}\right]^t$$

Where:

- DLQ_{ij} : Index of sector *i* potential in the region
- g_{ij} : Growth rate of sector *i* in the region
- g_i : Average growth rate within the regional sector
- G_i : Growth rate of sector *i* in the province
- G : Average growth rate of sectors in the province
- t : Difference between the end year and the start year

The measurement criteria for DLQ are as follows:
(1) If DLQ > 1, it indicates that the developmental potential of sector *i* in the region is growing faster than the same sector in the province.
(2) If DLQ = 1, it means that the developmental potential of sector *i* in the region is growing at the same rate as the same sector in the province.
(3) If DLQ < 1, it suggests that the developmental potential of sector *i* in the region is lower than that of the same sector in the Province.

Base And Non-Base Sectors

According to Arsyad (1999, cited in Jumiyanti, 2018), the primary determinant of regional economic growth is related to the demand for goods and services originating from outside the area. The economic base theory explains that export activities serve as the growth engine, where the growth of a region depends on its performance in exporting to other areas (Indrawati, 2013). The economic base theory categorizes sectors into basic and non-basic sectors. Glasson (1990, cited in Muklis et al., 2019) explains that basic sector activities involve exporting goods and services beyond the region, while non-basic sector activities are those that only cater to the local population's needs within the region.

The economic base theory can be employed to identify potential sectors in a region using GRDP data. Developing viable potential sectors can drive regional economic growth, leading to increased income for the area. A region can be differentiated into leading and non-leading regions, which can

further be categorized into potential and non-potential sectors (Jumiyanti, 2018).

Shift-Share

According to Martinez Prat & Armenta Ramirez (2013), the Shift-Share analysis is a technique used to examine differences in economic growth among different regions. This analysis is called "Shift-Share" because it observes the changes or shifts in the economic value of a sector based on productive regional sectors or a series of sectors. There are two components used to determine regional economic growth during a specific period. These components are the share component and the shift component. The shift component is further divided into two sub-components: differential shift and proportional shift (Setiono, 2011).

According to Soepono (1993, cited in Wati & Arifin, 2019), shift-share compares the growth rate of a region to examine the shift in development outcomes of that region compared to the national level. This method analyzes the progress of a sector within a region and assesses whether the sector's growth aligns with the observed region. The shift-share analysis is performed using growth rates from the initial year of analysis to the final year for a specific area concerning the national context (Wati & Arifin, 2019).

Previous Research

Several previous studies have examined the economic sectors in Pekanbaru city, including research conducted by Vaulina & Elida (2014), Alhempi et al. (2014), and Muklis et al. (2019). Vaulina & Elida (2014) used data from 1992, 2002, and 2012 to calculate the Location Quotient in Pekanbaru city. Their study indicated that the primary sector in Pekanbaru is not a basic sector, hence the city needs to import from outside to meet the demands of the primary sector.

Alhempi et al. (2014) conducted research to determine the Potential Economic Sectors in Riau Province using Gross Regional Domestic Product (GRDP) data from 2006 to 2012. The results of this study showed that the basic sector in Pekanbaru city is the service sector. Being a modern city, Pekanbaru relies on the tertiary sector as the driving force of its economy.

Meanwhile, Muklis et al. (2019) identified the potential economic sectors in Pekanbaru city using the Location Quotient analysis method with GRDP data from 2010 to 2016. The Muklis study revealed that nearly all sectors exhibit comparative advantages, except for agriculture, forestry, and fisheries sectors, mining and quarrying sector, and the processing industry sector, which are non-basic sectors in Pekanbaru city.

3.   METHODOLOGY & RESEARCH DATA

The methodology employed in this study is qualitative-descriptive, utilizing analytical tools such as Location Quotient (LQ), Dynamic Location Quotient (DLQ), Shift-Share, and Klassen Typology. Descriptive research involves the collection and analysis of data to draw conclusions from the conducted study. According to Singaribun and Sofyan (1989, as cited in Gultom et al., 2018), descriptive research can be conducted without pre-formulated hypotheses, and any formulated hypotheses are not systematically tested.

4.   RESULTS AND DISCUSSION
Location Quotient Analysis

The Location Quotient analysis is employed to identify the comparative advantages of economic activities (commonly referred to as basic categories) in Pekanbaru city by comparing them against Riau Province. Based on the Location Quotient analysis depicted in Figure 1, only three non-basic economic sectors are present in Pekanbaru city. These non-basic sectors include agriculture, forestry, and fisheries; mining and quarrying; and processing industry sectors. Notably, the highest average LQ values are observed in the Financial and Insurance Services sector. This signifies that banking, capital markets, pension funds, and insurance-related businesses can thrive effectively in Pekanbaru city.

Figure 1: Location Quotient Analysis Results of Pekanbaru City
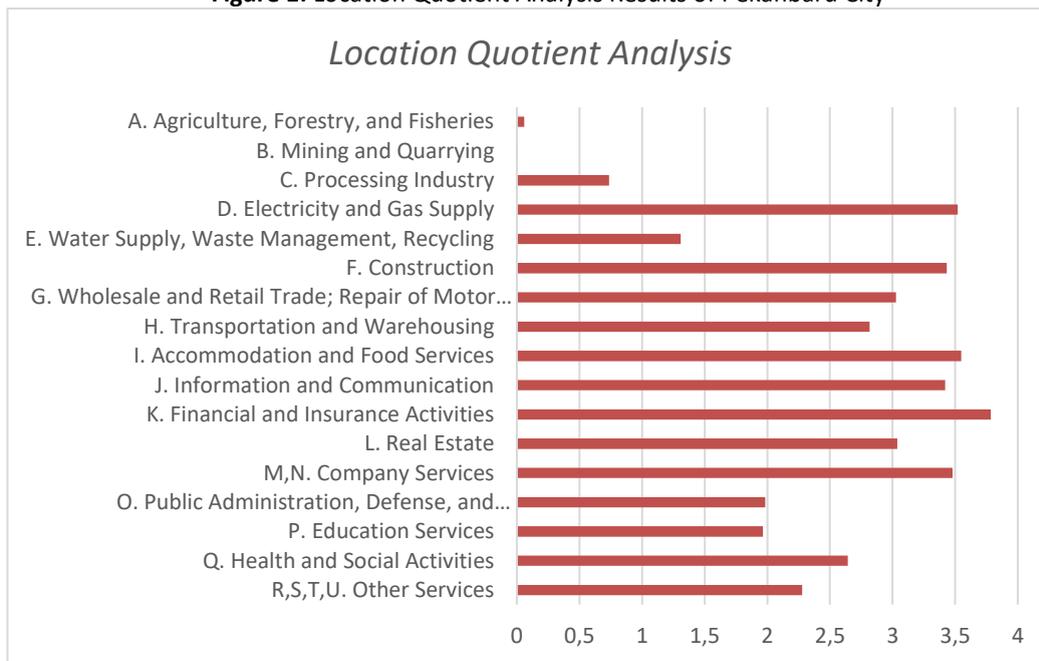
Source: Processed by the author

Using the Dynamic Location Quotient Analysis as shown in Table 2, there are three prominent economic sectors that possess the potential for sustained growth in Pekanbaru city. The electricity and gas supply sector, information and communication sector, as well as the health and social activities sector, are key sectors that hold the potential for continuous expansion in Pekanbaru city. This growth can be attributed to the increasing population of Pekanbaru city year by year. The demand for electricity and gas is likely to rise alongside the population growth in an area, thus resulting in rapid growth within the electricity and gas supply sector. The advancement in the health and social activities sector in Pekanbaru city is attracting interest from residents in the surrounding regions, making Pekanbaru a preferred destination for individuals seeking improved healthcare services.

Table 2: Results of Location Quotient and Dynamic Location Quotient Analysis in Pekanbaru City

	Business Field Sector (2010 Series)	LQ	DLQ	Final Interpretation	Quadrant
A	Agriculture, Forestry, and Fisheries	0.059	0.942	Non-Basis, not prospective	IV
B	Mining and Quarrying	0.001	1.234	Non-Basis, prospective	II
C	Processing Industry	0.736	0.967	Non-Basis, not prospective	IV
D	Electricity and Gas Supply	3.521	1.009	Basis, prospective	I
E	Water Supply, Waste Management, Recycling	1.309	0.958	Basis, not prospective	III
F	Construction	3.433	0.989	Basis, not prospective	III
G	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	3.029	0.969	Basis, not prospective	III
H	Transportation and Warehousing	2.818	0.969	Basis, not prospective	III
I	Accommodation and Food Services	3.549	0.925	Basis, not prospective	III
J	Information and Communication	3.421	1.103	Basis, prospective	I
K	Financial and Insurance Activities	3.784	0.973	Basis, not prospective	III
L	Real Estate	3.038	0.951	Basis, not prospective	III
M,N	Company Services	3.479	0.984	Basis, not prospective	III
O	Public Administration, Defense, and Mandatory Social Security	1.984	0.975	Basis, not prospective	III
P	Education Services	1.966	0.939	Basis, not prospective	III

Business Field Sector (2010 Series)		LQ	DLQ	Final Interpretation	Quadrant
Q	Health and Social Activities	2.643	1.181	Basis, prospective	I
R,S,T,U	Other Services	2.279	0.969	Basis, not prospective	III

Source: Processed by the author

Pekanbaru has one sector with the potential to be developed into a prominent sector. The mining and quarrying sector in Pekanbaru is not currently a leading sector, but according to DLQ analysis, this sector has growth potential that should be harnessed by the local government of Pekanbaru. Government support in developing the mining and quarrying sector is expected to facilitate its growth and transform it into one of the leading sectors in Pekanbaru city.

Shift-Share Analysis and Klassen Typology

The economic growth rate in Riau Province stood at 6.8% from 2016 to 2020. This economic growth rate was also mirrored in Pekanbaru city with a growth rate of 13.3%. Based on the Shift-Share analysis, it is evident that the sectors experiencing rapid and robust advancement include the processing industry, electricity and gas supply sector, construction sector, information and communication sector, and the health and social activities sector. Meanwhile, the sectors experiencing slower growth include the accommodation and food services sector.

Table 3: Shift-Share Analysis and Klassen Typology Results in Pekanbaru City

Quadrant IV	Quadrant I
Mining and Quarrying	Processing Industry
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	Electricity and Gas Supply
Transportation and Warehousing	Construction
Financial and Insurance Activities	Information and Communication
Company Services	Health and Social Activities
Public Administration, Defense, and Mandatory Social Security	
Other Services	
Quadrant III	**Quadrant II**
Accommodation and Food Services	Agriculture, Forestry, and Fisheries
	Water Supply, Waste Management, Recycling
	Real Estate
	Education Services

Source: Processed by the author

Based on the results of the Overlay analysis that combines all the analyses, it can be determined that the leading sectors in Pekanbaru city are the electricity and gas supply sector, the information and communication sector, and the health and social activities sector. This is derived from the LQ-DLQ analysis results, which indicate that these sectors are in Quadrant I, signifying they are both basic and prospective sectors. Furthermore, the analysis conducted using shift-share and Klassen Typology also positions these sectors in Quadrant I, indicating that they are advanced and experiencing rapid growth.

5. CONCLUSIONS

Leading sectors depict thriving business areas that contribute significantly to the economic development of a region. In the years 2016-2020,

Pekanbaru city exhibited three leading sectors that serve as the economic foundation and demonstrated robust growth. These leading sectors are the electricity and gas supply sector, the information and communication sector, and the health and social activities sector. As a city undergoing continuous growth, Pekanbaru faces the demand for fulfilling the needs of its populace. The economic transformation and shifts in Pekanbaru have revealed the emergence of non-basic sectors that are advancing and experiencing rapid growth compared to other sectors. The construction sector has notably advanced and grown swiftly in Pekanbaru, as evidenced by the expansion of housing and the establishment of new shopping centers.

The city government of Pekanbaru should leverage the opportunities presented by these growing

business sectors, offering support and nurturing their development to transform them into foundational and leading sectors in the city. However, this escalation in economic growth should not overlook other non-basic sectors. A balanced approach should be pursued to ensure that the economy across all sectors in Pekanbaru thrives and collectively propels the city's economic potential forward.

6.   LIMITATIONS AND IMPLICATIONS

This study did not examine the overall impact of Covid-19 on the economy of Pekanbaru city; therefore, the same conclusions cannot be drawn regarding the economic conditions of Pekanbaru during the Covid-19 year. For future research, a specific study could be conducted to analyze the leading sectors in Pekanbaru city during the Covid-19 pandemic. This could provide insights into whether any shifts have occurred in the leading sectors of Pekanbaru as a result of the pandemic.

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