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Identification Of Leading Sectors As The Growth Pole Of Ambon City

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ABSTRACT

A growth pole is an area experiencing rapid expansion and is seen as a hub for development, with the potential to influence the development of neighboring areas. This research aims to identify key sectors that can serve as the economic driving force in Ambon city. The study utilized historical data, specifically time series data from the gross regional domestic product (GRDP) in 2010 constant prices. The research methodology employed several techniques, including Location Quotient (LQ) analysis, Dynamic Location Quotient (DLQ) analysis, and Klassen Typology analysis, to assess the prominent sectors in Ambon city. Additionally, the Shift-Share Analysis (SSA) approach was used to estimate the impact of these leading sectors on the city's economic growth. The LQ analysis revealed the existence of ten leading sectors in Ambon city. Furthermore, the Klassen Typology analysis categorized these sectors into five developed, five stagnant, five developing, and two underdeveloped sectors. The SSA analysis indicated that four sectors had the highest share value in the province's share component, four sectors showed positive values in the proportional shift component, and eleven sectors exhibited positive values in the differential shift component. The cumulative effect of these three components illustrates the significant impact of these sectors on Ambon city's economic growth.

INTRODUCTION

An economic growth pole is a viable option for mobilizing and stimulating development in order to raise the community's income. In other words, it refers to an area that is developing rapidly compared to other regions, and it is considered as a development center that can impact its environment, expecting them to progress (Khusaini, 2015). Potential places with adequate facilities will drive the economic growth of its surrounding, since the surrounding community will be motivated indirectly to keep up and develop. As a result, the growth poles at the regional level must be capable of integrating as many development interests as possible among development stakeholders (Bere et al., 2015; Dobrescu & Dobre, 2014).

According to (Robinson, 2014; Untung, et al., 2022), the growth pole can be perceived in two ways: functionally and geographically. The growth center, functionally, is a location for the concentration of business units that, due to the nature of their relationships, have aspects of dynamism, allowing them to boost economic activities, both internally and internationally (Dai et al., 2016; Norouzi et al., 2021). Meanwhile, geographically, the growth pole is a location that offers many facilities and conveniences, so that it becomes a pole of attraction, attracting various enterprises and people who are delighted to come

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to enjoy the facilities at that area. The growth pole must be in a fast-growing region, have a leading sector, and have economic connection with the regions surrounding it (Camacho et al., 2020; Veiga et al., 2019).

However, development planning is subject to a number of issues associated to regional growth, both in terms of economic and social indicators. In fact, there are numerous phenomena associated with the regional economic growth. Regional disparities and equitable development are the primary issues in the regional growth, and they are currently the major issues in developing nations (Gulo, 2015). The economic development cannot be achieved by itself, but involves a variety of planned and consistent activities. The economic development process can be carried out by utilizing potential sources with the aim of increasing the regional economic growth in a better direction. The economic growth is a situation where the economic condition of a region continuously experiences improvements towards a better condition during a certain period. Apart from that, the economic growth is also one of the benchmarks used to assess the regional development from various economic sectors which indirectly describes the level of economic change (Mahroji & Indrawati, 2020; Suhada et al., 2022).

Ambon city, in addition to being the capital of Maluku province, serves as an indicator of the province's economic growth. As an autonomous territory, Ambon city government has the authority to manage and plan the regional development, including the economic growth, as specified by Undang-Undang RI No. 32 Tahun 2004 . The Regional Government, according to Law Number 32 of 2004, needs to improve in order to increase their efficiency and effectiveness by paying more attention to aspects such as the composition of the central government and regional government, potential and diversity, opportunities and challenges of global competition, and granting the broadest possible authority to regions, accompanied by the granting of rights and obligations to carry out. One approach to accomplish this is to strive to enhance the regional economic growth by taking advantage of the existing economic potential.

The economic growth and its sustainable process are the primary prerequisites for long-term regional development. A region's economic development can be measured using a variety of indicators, such as economic growth, regional income, and etc (Untung, et al., 2022). These two indicators can be calculated using Gross Regional Domestic Product (GRDP) data. The GRDP is another important measure for determining a region's economic performance. The GRDP growth cannot be separated from the respective roles of each economic sector, therefore the size of each economic sector's revenue contribution is the consequence of regional planning and growth. The GRDP of Ambon city in 2023 is expected to reach IDR. 10,192,380,000. Meanwhile, the government administration, defense, and mandatory social security sectors contribute the most to the GRDP of Ambon City, followed by the wholesale and retail trade sector, car and motorcycle repair sector, transportation and warehousing sector, education services sector, and agriculture, forestry, and fisheries sector. Meanwhile, the mining and quarrying sector, as well as the real estate sector, contribute the least to the GRDP of Ambon city.

Studies identifying the leading sectors in a region have been widely explored, especially in terms of regional economic development studies. Hendrianto (2021) identified economic sectors categorized as the leading sectors in Semarang Regency, where they ranked first in the relative ranking of Semarang Regency's leading sectors. They included: 1) processing industry; 2) agriculture, forestry, and fisheries; 3) trade; and 4) construction. Furthermore, a study by Ahmad (2020) showed that, based on the Location Quotient (LQ) and Dynamic Location Quotient (DLQ) analysis, the agriculture, forestry, and fisheries sector was classified as the basis of leading sector, while based on the Shift-Share Analysis (SSA), it had a competitive advantage (Ma et al., 2019; Suliswanto, 2015).

Furthermore, in examining the economic structure and identifying the leading sectors in Tuban Regency, Krisna, et. al (2021) discovered that in the PR SSA calculations from 2015 to 2019, there were changes to sectors that fostered the growth of the same sector in East Java. The most recent study found by Wiwin, et al (2023), this study on identifying the superior potential of Central Kalimantan province as a foundation for future development planning. It was found that the e conomic structure of Central

Kalimantan province increased by IDR 45,765,000 billion from 2010 to 2021, owing to several factors, including the influence of Indonesia's economic growth of IDR 33,710,490 billion, the industrial mix of IDR 3,643,030 billion, and the competitive advantage of IDR 15,697,550 billion.

Hendrianto (2021), Ahmad (2020), Krisna, et. al (2021) and Wiwin, et al (2023), showed the positive aspects of each economic sector, particularly the agriculture sector and its sub-sectors. On the other hand, a leading sector does not necessarily imply a perfect (absolute) sector in terms of having completely positive values. In other words, the superiority of one sector over another in a region or area might be relative, particularly in island locations. For this reason, a study on leading sectors in Ambon city is crucial to investigate, making a room for discussion and improvements.

By understanding the economic potential of Ambon city, assessing the achieved development performance allows for an informed evaluation, enabling the formulation of focused regional development plans for the future. These plans can serve as a foundation for implementing priority-based policies to maximize the utilization of the region's economic potential and expedite growth. Therefore, the research question of this study is "What is the leading sector and the growth pole in the economic development in Ambon city?".

METHODS

This study was a quantitative-descriptive study conducted in Ambon city – one of the urban areas in Maluku province and a capital with a total area of 377 km2, or two fifths of the Ambon island area. Variables used in this study consisted of economic sector, leading sector, and economic growth in Ambon city.

Table 1. Research Variables and Indicators

No.	Variable	Indicator	Operational Definition
1.	Economic Sector	GRDP	A sector contributing to GRDP data which influences the rate of economic growth.
2.	Leading Sector	1. GRDP at Constant Prices 2. Growth rate of GRDP at Constant Prices 3. Contribution of GRDP at Constant Prices	A sector that has outstanding resilience and capability, which can be used as a basis or as a catalyst for growing the economy.
3.	Economic Growth	1. GRDP 2. Leading sector	A series of continuous changes in economic situations that lead to better conditions over a set period of time.

Source: Processed data, 2023

This study relied on secondary data from journals, books, government publications (Statistics Indonesia of Ambon City and Maluku Province), and other relevant sources. The data was then evaluated in order to:

1. Analyze the leading sectors in Ambon city

a) LQ Analysis

The LQ analysis referred to an approach used to measeure the concentration of an economic activity in an area by comparing its role in the regional economy with the role of similar economic activities in a wider scope (Arsyad, 2010);

$$LQ = \frac{Si/Ni}{S/N} = \frac{Si/S}{Ni/N}$$

Notes:

LQ = Location Quotient
Si = Sector i value in Ambon city
S = Total value of all economic sectors in Ambon city
Ni = Sector i value in Maluku province
N = Total value of all economic sectors in Maluku province

Based on the following criteria (Robinson, 2014):

1. If LQ > 1, the sector was classified as a base sector, indicating that the provincial level of specialization exceeded the national level. Production of the commodity in question had exceeded consumption needs in the region where it was produced, and the surplus could be sold outside the region (exported).
2. If LQ = 1, the provincial level of specialization matched the national level. The commodity in question was merely enough to meet local and regional demands.
3. If LQ is 1, the sector was classified as non-based, indicating that the district/city level of specialization was lower than the provincial level. The output of these goods was insufficient to meet the region's consumption needs, so they must be imported from other areas.

b) DLQ Analysis

The DLQ referred to the adjusted LQ that accounts for the rate of growth of economic sectors over time. The DLQ formula can be stated mathematically as follows:

$$\frac{(1 + gij)/ (1 + gi)}{(1 + Gi)/ (1 + G)}$$

Notes:
gij = Average rate growth of GRDP of sector i in Ambon city
gj = Average rate growth of GRDP of all sectors in Ambon city
Gi = Average rate growth of GRDP of sector i in Maluku province
G = Average rate growth of GRDP of all sectors in Maluku province
t = Projection year (next 5 years)

c) Klassen Typology Analysis

The Klassen Typology categorized regions primarily by considering two essential indicators: regional economic growth and per capita income at the regional level (Khusaini, 2015; Pangow et al., 2023). This analysis yielded four distinct characteristics of economic growth patterns and structures: developed and rapidly rising areas (fast growth and high income), developed but underdeveloped areas (high income but slow growth), areas with developing potential (fast growth but low income), and relatively underdeveloped areas (slow growth and low income) (Arsyad, 2010). The Klassen Typology analysis produced four sector categories with distinct characteristics, as shown below:

a. Quadrant 1: developed and rapidly rising sectors (developed sectors). This classification is denoted by si > s and ski > sk.
b. Kuadran 2: developed but underdeveloped sectors (stagnant sectors). This classification is denoted by si < s and ski > sk.
c. Kuadran 3: sectors with rapidly developing potential (developing sectors). This classification is denoted by si > s and ski < sk.
d. Kuadran 4: relatively underdeveloped sectors (underdeveloped sector). This classification is denoted by si < s and ski < sk.

Table 2. Klassen Typology Quadrants

Sectoral Contribution	Sectoral Growth	
	gi ≥ g	gi < g

Si ≥ s	Developed and rapidly rising sectors	Developed but underdeveloped sectors
Si < s	Sectors with rapidly developing potential	Relatively underdeveloped sectors

Notes:
gi = growth of sectors in Ambon city
g = growth of sectors in Maluku province
si = contribution of sectors in Ambon city
s = contribution of sectors in Maluku province

4. Understand the influence of leading sectors on the economic growth in Ambon city

a) SSA method

This method was used to determine the economic sectors' growth conditions and regional economic performance. It was needed as a comparison between the region or area (district/city) and bigger areas, both at the provincial and national level (Puspitawati, 2013). This method was formulated using simple mathematical calculations (Blair, 1991) as follows:

$$\Delta yi = [yi\ (Y\ t\ /Y\ 0 - 1)] + [yi(Y\ t\ i\ /\ Y\ 0\ i) - (Y\ t\ /\ Y\ 0)] + [yi\ (yi\ t\ /\ yi\ 0) - (Y\ t\ i\ /\ Y\ 0\ i)]$$

Notes:
Δyi = changes in added value of sector i
yi 0 = added value of sector i in the region at the beginning of the period
yi t = added value of sector i in the region at the end of the period
Y 0 i = added value of sector i at the national level at the beginning of the period
Y t i = added value of sector i at the national level at the end of the period

The GRDP values for higher levels, the Y 0 i and Y t i of the GRDP at the provincial level, are as follow:

1. Regional Share: [y i 0 (Y t /Y 0)- y i 0], referred to a component of the contribution of the reference region's overall economic growth to the regional economy. The share component referred to the condition of economic growth in the entire reference region in a specific time period expressed in the form of GRDP growth and employment opportunities.
2. Proportionality Shift (Mixed Shift): [(Y t i / Y 0 i) – (Y t / Y 0) y i 0], referred to a component of reference economic growth caused by sectoral adjustments in the reference economic structure.
3. Differential Shift (Competitive Shift): [y i t- (Y t i / Y 0 i) y i 0], referred to a component of regional economic growth as a result of competitive regional conditions.

RESULTS

Ambon City's population grew at a 0.46 percent annual pace between 2010 and 2020, reaching 347,844 people in 2020. Population growth could be defined as an index that compared one year's population to the previous year's population. The development of a population in an area was influenced by events, such as birth and death (natural increase), as well as population migration (movement of people in and out of an area). Essentially, the population growth rate could be utilized to make projections or estimates of future population numbers (Nugroho, et al., 2020; Seruni et al., 2020). The population of Ambon city grew at a 0.46% annual rate between 2010 and 2020, reaching 347,844 people in 2020.

The LQ Analysis

The LQ method was one method for determining the leading sectors in Ambon city. It compared the scope of role of a sector in Ambon city as an analysis area to the scope of role of that sector in the Maluku province region as a reference area. The findings of this analysis showed which sectors were categorized in the leading and non-leading sector in Ambon city. The following are the stages for the LQ analysis:

- Collecting the GRDP at Constant Prices data for Ambon city and Maluku province
- Inputting the LQ value according to the formula (performing calculations)

- Analyzing the collected data using the LQ criteria

This analysis produced three criteria as follows (Robinson, 2014):

1. If LQ > 1, the sector in question had considerably higher local production and was the leading or base sector in Ambon city.
2. If LQ < 1, the sector in question had considerably lower local production and was a non-leading or non-based sector in Ambon city.
3. If LQ = 1, the sector in question had the same level of specialization in Ambon city and Maluku province.

According to the results of the LQ analysis in the table above, there are ten sectors in Ambon city with a LQ value greater than 1 and are the basic or leading sectors. This demonstrated that these sectors were sectors that had a higher level of specialization or role than their regional level, in this case was in Maluku province. The sectors categorized as the leading sectors in Ambon city included: electricity and acquisition of gas, provision of water, management of waste, recycling, trade in wholesale and retail, maintenance of cars and motorcycles, transportation and storage, lodging and catering services, information and communication, financial and insurance services, corporate support services, governmental administration, and defense along with obligatory social security, and other service sectors, with the largest average LQ value being the information and communication sector, followed by the transportation and warehousing sector as well as the corporate services sector.

The basic sectors included the government administration, defense and mandatory social security, wholesale and retail trade, and automobile and motorcycle repair, since they contributed the most to the GRDP of Ambon city. Considering the enormous number of inflows and outflows to the area, the transportation and warehousing sector was the dominating sector in Ambon city. Furthermore, the information and communications sector was also a leading sector, as indicated by the increasing use of telecommunications services. Other service sectors, on the other hand, were divided into various categories, including arts, entertainment, and recreation, computer repair services, personal goods and domestic equipment, personal services for households, and other private services. These sectors had a reasonably broad category and a relatively high rate of growth, significant enough to become one of the supportive factors, including for the leading sectors. In Ambon city, there were 7 sectors with a LQ value of less than one that were non-based or non-leading, indicating that they had a lower level of specialization or role than their regional counterparts. These sectors included the agriculture, forestry, and fisheries, mining and quarrying, processing industry, real estate, construction, educational services, and health services and social activities sectors. The agriculture, forestry, and fisheries sector was non-based or non-leading sectors in Ambon city due to their poor local production. It was observed that these regions still required supplies from the neighboring districts.

The processing industry sector and the real estate sector have relatively low growth rates, which was one of the reasons why these two sectors were classified as non-based or non-leading. In comparison to East Seram Regency – one of oil producing locations in Maluku province – Ambon city lacked of this potential. As a result, it was not surprising that the mining and quarrying sector in Ambon city was also non-based or non-leading.

The DLQ Analysis

The DLQ analysis was an alternative to complete the LQ analysis. This was because the LQ value could not be used to forecast the future basis and non-base of a sector. As a result, this analysis aimed to forecast the future role of leading sectors. The results of the DLQ analysis for the ten leading sectors in Ambon city reveal that there were only five leading sectors in Ambon city during the next five years. These areas included the procurement of energy and gas, information and communications, financial services and insurance, government administration and mandated social security, and other service sectors. Meanwhile, the water supply, waste management, waste and recycling, transportation and warehousing, accommodation and food service, and corporate services would be the non-leading sectors in the future. The sectors with the highest DLQ value included the financial services and

insurance, government administration, defense and social security, as well as electricity and gas procurement, whereas the sector with the lowest value was the transportation and warehousing.

The Klassen Typology Analysis

The purpose of the Klassen Typology analysis was to classify economic sectors in Ambon city based on their growth patterns. This classification was achieved by considering the growth rate and contribution value of each sector to the Gross Regional Domestic Product (GRDP) in both Maluku province and Ambon city. The analysis resulted in four distinct sector categories. In Ambon city, the sectors that exhibited the most significant average GRDP growth were financial services and insurance, health services and social activities, and education services. On the other hand, the sectors with the slowest average GRDP growth included transportation and warehousing, accommodation and food service, and processing industries. In contrast, when considering Maluku province as a whole, the sectors with the highest average GRDP growth were financial services and insurance, health services and social activities, government administration, defense, and mandatory social security. Meanwhile, the mining and quarrying, transportation and warehousing, and accommodation and food service sectors had the lowest average GRDP growth. The government administration, defense, and mandatory social security sectors had the highest average contribution in Ambon city, accounting for 22.98%, followed by the wholesale and retail trade and car and motorcyle maintenance sectors, accounting for 22.21%. Table 3 categorizes the sectors based on the GRDP of Ambon city GRDP in 2018-2020 using the Klassen Typology method as follows:

Table 3. Classification of Sectors based on the GRDP of Ambon city in 2018-2020 using the Klassen Typology Method

Quadrant II	Quadrant I
Developed but Underdeveloped Sectors (Stagnant Sectors)	**Developed and Rapidly Rising Sectors (Developed Sectors)**
- Water Supply, Waste Management, Waste and Recycling Sector - Wholesale and Retail Trade Sector - Car and Motorcycle Repair Sector - Transportation and Warehousing Sector - Accommodation and Food Sevice Sector - Corporate Services Sector	- Electricity and Gas Procurement Sector - Information and Communication Sector - Financial Services Sector - Government Administration, Defense and Mandatory Social Security Sector - Other Service Sectors
Quadrant IV	**Quadrant III**
Relatively Underdeveloped Sectors (Underdeveloped Sectors)	**Sectors with Rapidly Developing Potential (Developing Sector)**
- Agriculture, Forestry and Fisheries Sector - Processing Industry Sector	- Mining and Quarrying Sector - Construction Sector - Real Estate Sector - Education Services Sector - Health Services Sector - Other Social Sector

Source: Processed data, 2023

The Shift Share Analysis (SSA)

The SSA method aimed to identify the growth conditions of economic sectors in a region, as well as the regional economic performance, needed as a comparison between the region or area (district/city) and bigger areas, both at the provincial and national level. The SSA was utilized in this

study to estimate the impact of leading sectors on the economic growth in Ambon city. This analysis generated the following three components:

a. The Provincial Share (PS) – measured the economic growth or shifts by considering the GRDP value of Ambon city in the beginning period, which was influenced by the shifts in Maluku province's economic growth. The results demonstrated the importance of the Maluku province region in impacting the Ambon city's economic growth.
b. The Proportional Shift – measured the relative changes in the sectors based on the GRDP of Ambon city in comparison to Maluku province. This measure determined whether the Ambon city economy was focused on the sectors developing faster than the Maluku province economy. If P > 0, Ambon city excelled in the sectors developing rather quickly in Maluku province. Meanwhile, if P = 0, Ambon city specialized in the sectors in Maluku province where the growth was slowing or dropping.
c. The Differential Shift – measured how competitive the industry (sectors in GRDP) in Ambon city was in comparison to the economy utilized as a reference, namely Maluku province. As a result, if the Differential Shift was positive, the sector had a comparative advantage over the same sector in other locations. This signified that the sector was concentrated in the region and growing faster than in other regions. If the Differential Shift was negative, this indicated that the sector's growth rate was slow.

The value of the provincial share component reflected the scope of Ambon city's GRDP growth relative to the Maluku province's GRDP growth. According to the findings of this analysis, the sectors with the highest share value in the provincial share component were the government administration, defense and mandatory social security, large and retail trade, car and motorcycle repair, transportation and warehousing, and information and communications. Meanwhile, the energy, gas, mining and quarrying, and real estate sectors had the lowest share value.

After calculating the provincial share value, then this study determined the value of the proportional shift component. A positive value in the proportional shift component indicated that a sector in Ambon city was experiencing faster growth compared to the corresponding sector in Maluku province, which served as the reference area. Conversely, a negative value in the proportional shift component signified that the sector was growing at a slower rate or possibly declining in comparison to the same sector in Maluku province. Among the GRDP sectors of Ambon city, nine exhibited a positive proportional shift component value. These sectors encompassed agriculture, forestry, and fisheries; electricity and gas procurement; water procurement; waste management; waste and recycling; construction; information and communication; financial services and insurance; government administration; defense and mandatory social security; education services; health services; and other social sectors. Meanwhile, there were 8 sectors with a negative proportional shift component value, including: the mining and quarrying, processing industry, wholesale and retail trade, car and motorcycle repair, transportation and warehousing, accommodation and food service, real estate, corporate services, and other service sectors.

Furthermore, the differential shift component value had both the positive and negative values. The positive differential shift component values were the mining and quarrying, electricity and gas procurement, water supply, waste management, waste and recycling, wholesale and retail trade, car and motorbike repair, information and communications, financial services and insurance, real estate, government administration, defense and mandatory social security, education services, health services, and other service sectors. These sectors were the ones that had a comparative advantage and their growth was faster than in Maluku province, because they had a positive value. The sectors with a negative value did not have a comparative advantage and their growth was slower than in Maluku province. These sectors included the agricultural, forestry and fisheries, processing industry, construction, transportation and warehousing, accommodation and food service, and corporate services sector. The sectors with a comparative advantage also had a competitive advantage.

The influence of leading sectors on the economic growth in Ambon city was determined after calculating the province's share component, proportional shift component, and differential shift component. The total value of the three components in the SSA could be used to calculate the economic growth. The sum of these three components revealed that the sectors with the greatest influence on economic growth in Ambon city were the government administration, defense and mandatory social security, financial services, wholesale and retail trade, and car and motorcycle repair, and information and communications sectors.

CONCLUSION

Based on the findings of each analysis, it could be concluded that the LQ analysis identified ten leading industries. Furthermore, the Klassen Typology analysis showed that there were 5 developed sectors, 5 stagnant sectors, 5 developing sectors, and 2 underdeveloped sectors. Then, the SSA revealed that there were 4 sectors have the highest share value in the province's share component, 4 sectors with a positive value in the proportional shift component, and 11 sectors with a positive value in the differential shift component. The total of these three components demonstrated that these sectors had a significant impact on the economic growth of Ambon city, consisting of the government administration, defense and mandatory social security, financial services and insurance, wholesale and retail trade, and car and motorcycle repair, and information and communications sectors.

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