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Investigating Fiscal Independence across Regencies and Cities in Aceh Province: A Sectoral Competitiveness Analysis

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Abstract: Fiscal independence is an essential aspect of assessing the economic stability of a region. Also, sectoral competitiveness is a vital benchmark in evaluating the superiority of a sector in the economy. The fiscal independence level of districts and cities in Aceh Province indicates that the budget management of all districts and cities in Aceh Province still depends on central government funds to finance regional development. Thus, through a sectoral competitiveness analysis, this study examines fiscal independence across regencies and cities in Aceh province. Using 23 districts and cities in Aceh Province during the 2014-2020 (quarterly data) of Gross Regional Domestic Product (GRDP), this study applies shift-share analysis. The results show significant variations in the competitiveness of certain economic sectors in different regions. Nagan Raya Regency leads the agriculture sector, while West Aceh Regency dominates the mining and quarrying sector. Aceh Tamiang district stands out in the manufacturing sector, while Aceh Besar district is the centre of competitiveness in the construction sector. Bireun district showed the best performance in the wholesale and retail trade and repair of cars and motorcycles, while Aceh Utara achieved excellence in the transportation sector. The city of Banda Aceh consistently performs best in the accommodation and food supply sector, the real estate sector, and the other services/tourism sector. In addition, the findings of this study also show that from the perspective of the dominance of the highest sectoral competitiveness value per region, there are 6 (six) dominating sectors out of a total of 9 (nine) sectors observed, namely the industrial sector, wholesale, and retail, trade sector repair of cars and motorcycles, mining and quarrying sector, construction sector and agricultural sector. However, this study's findings also show significant potential for economic diversification, which could significantly improve the region's fiscal independence.

Keywords: sectoral competitiveness; fiscal independence; shift-share; economic policy

1. Introduction

Regional development is needed to support national development. Indonesia has introduced regional autonomy and fiscal decentralisation to encourage the dynamics of regional economic growth. The forms of decentralisation implemented in Indonesia include political, administrative, and fiscal decentralisation. Fiscal function is a function at the economic level that is essentially identical to the current ability of the state/region to generate revenue to meet its needs

and then allocate the existing budget, or can be called the state / regional budget, and distribute it (Ritonga et al., 2023). Implementing fiscal decentralisation in Indonesia aims to create aspects of independence in the regions, namely regional fiscal independence (Sidig, 2018). Fiscal independence is a crucial indicator in measuring the ability of local governments to self-finance local government activities without depending on external assistance, including from the central government (World Bank, 1994).

According to the 2020 Review Report on the Fiscal Independence of Local Governments issued by the Supreme Audit Agency of the Republic of Indonesia (2021), fiscal independence between regions in Indonesia is uneven. The gap is significantly pronounced when comparing data on fiscal independence between provinces in Indonesia. Figures 1 and 2 display the value of the fiscal independence index in 2020; 7 (seven) provinces in Indonesia have a fiscal independence index value in the "independent" category, namely with a value in the range between 0.50 (included) and less than 0.75 (0.50 ≤ IKF < 0.75), namely DKI Jakarta Province, Banten Province, East Java Province, West Java Province, Bali Province, Central Java Province, and East Kalimantan Province. While provinces that have a fiscal independence index value in the category "towards independence", namely with values in the range between 0.25 (including) and less than 0.50 (0.25 ≤ IKF < 0.50), there are 16 provinces. As for those in the "not yet independent" category, namely with values in the range between 0.00 (included) and less than 0.25 (0.00 ≤ IKF < 0.25), there are ten provinces, namely West Papua Province, North Maluku Province, Aceh Province, West Sulawesi Province, Maluku Province, Gorontalo Province, East Nusa Tenggara Province, North Kalimantan Province, North Sulawesi Province and Southeast Sulawesi Province.
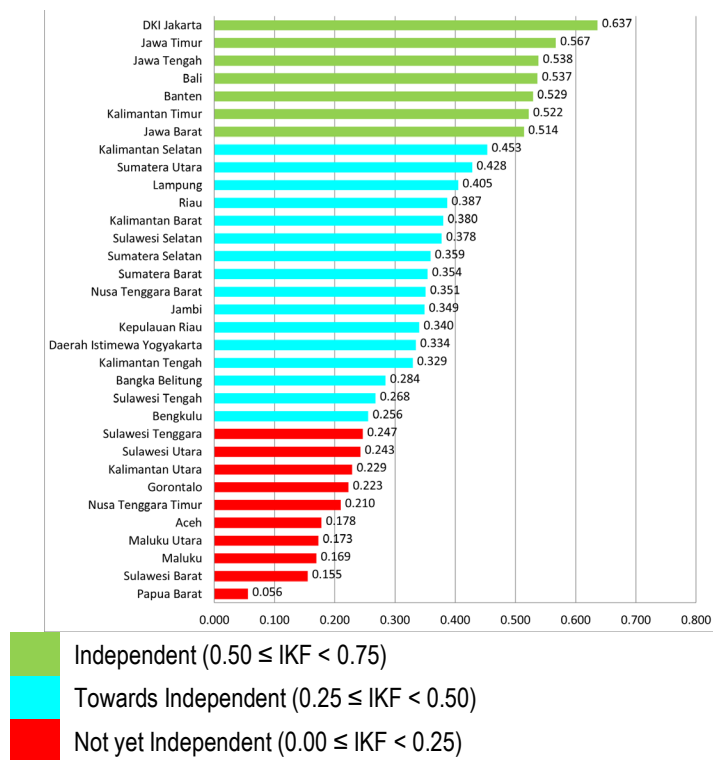

Figure 1. Level of Fiscal Independence of Provinces in Indonesia in 2020
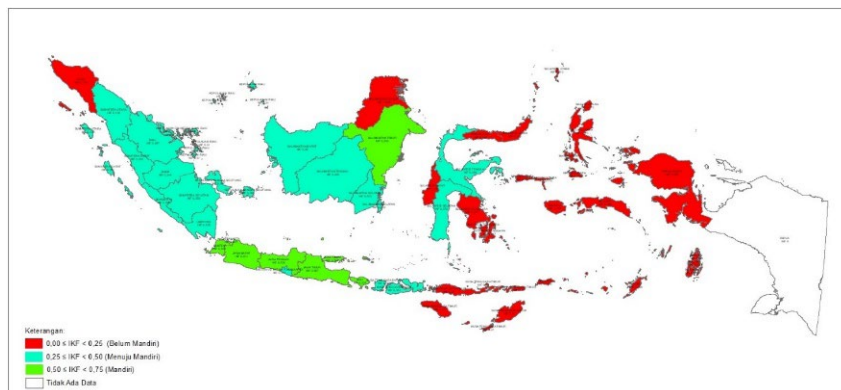

Figure 2. Map of the Level of Fiscal Independence of Provinces in Indonesia in 2020

Figure 2 shows that Aceh Province is the only province on the island of Sumatra. In 2020, the value of its fiscal independence index is in the category of not yet independent, which means that in managing the budget, Aceh Province is still very dependent on central government transfer funds in financing development in the region. This is also supported by a report published by the Regional Office of the Directorate General of Treasury of Aceh Province (2019), which explains that in the composition of the APBD, Aceh Province's dependence on transfer funds from the Central Government is still relatively high. In 2018, the total transfer revenue for all local governments in Aceh Province (Balancing et al., and Village Fund Allocation) had a proportion of 85.96 %. On the other hand, the proportion of Aceh's own-source revenue in the 2018 APBD was only 11.77 %.
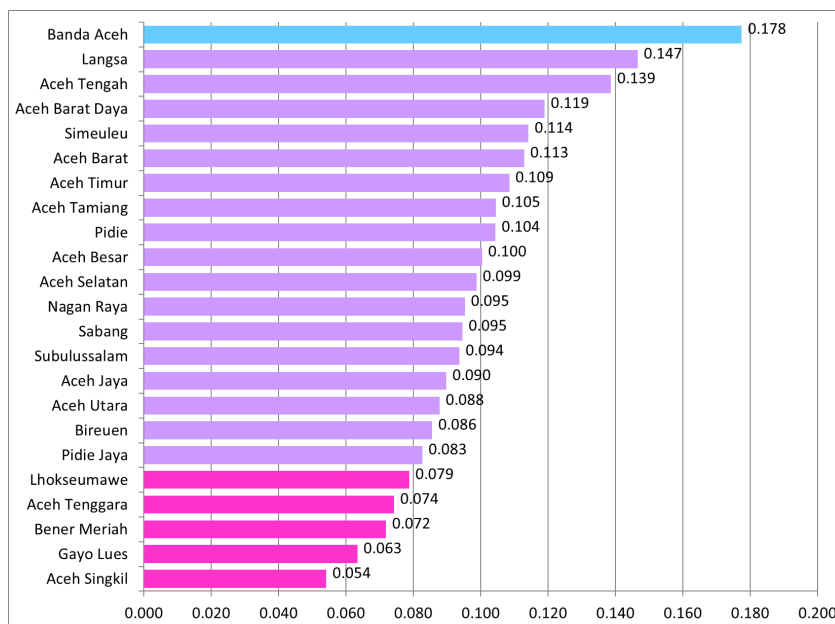

Figure 3. Level of Fiscal Independence of Regency / City in Aceh Province in 2020

Figure 3 indicates a high level of provincial dependence on the central government and the low financial capacity experienced by most provinces in Indonesia. Figures 3 and 4 show that all districts and cities in Aceh Province in 2020 fell into the "not yet independent" category, where the value of the fiscal independence index of all districts and cities in Aceh Province was less than 0.25. In this study, the "not yet independent" category in all districts and cities in Aceh Province is further classified into 3 (three) groups, namely, "High Independence (0.000 ≤ IKF < 0.083)", "Moderate Independence (0.083 ≤ IKF < 0.167)", and "Low Independence (0.167 ≤ IKF < 0.250)". Figures 3 and 4 show that regions that fall into the "high independence" category, namely with values in the range between 0.000 (including) and less than 0.083 in 2020, namely there are five regions, Aceh Singkil Regency, Gayo Lues Regency, Bener Meriah Regency, Southeast Aceh Regency and Lhokseumawe City. While those in the category of "moderate independence", namely with values in the range between 0.083 (including) and less than 0.167 (0.083 ≤ IKF < 0.167), namely there are 11 regions, Pidie Jaya Regency, Bireun Regency, North Aceh Regency, Aceh Jaya Regency, Subulussalam City, Sabang City, Nagan Raya Regency, South Aceh Regency, Aceh Besar Regency, Pidie Regency, Aceh Tamiang Regency, East Aceh Regency, West Aceh Regency, Simeuleu Regency, Southwest Aceh Regency, Central Aceh Regency and Langsa City.   As for those in the "low independence" category, namely with values in the range between 0.167 (included) and less than 0.250 (0.167 ≤ IKF < 0.250), there is one region, namely the City of Banda Aceh.
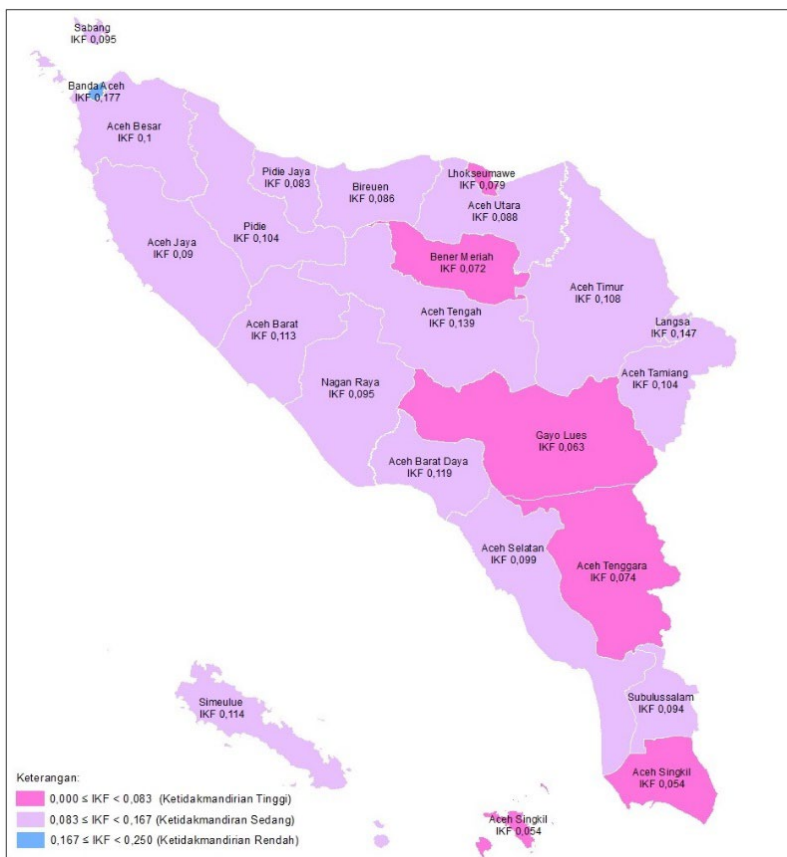
Figure 4. Map of Regency / City Fiscal Independence Levels in Aceh Province in 2020

On the basis of the data on the realisation of Regional Revenues of all districts and cities in Aceh Province published in the APBD data portal of the Ministry of Finance of the Republic of Indonesia, as illustrated in Figure 5, it explains that in 2016, the proportion of transfer funds from the central government (TKDD) for the total of all districts and cities in Aceh Province was 78.56 %, while in 2019 it decreased to 77.94 %. Based on this %age value, the level of regional financial dependence of all districts and cities in Aceh Province in 2016 and 2019 was in the category of a very high level of dependence on transfer funds from the central government. In Zukhri's research (2020), the degree of dependence shows the ratio of the transfer income from the central government to the Total Regional Revenue (TPD). The degree of dependence consists of 6 (six) categories, namely a) Very Low (0.00 % - 10.00 %), b) Low (10.01 % - 20.00 %), c) Medium (20.01 % - 30.00 %), d) High (30.01 % - 30.00 %). Moderately High (30.01 % - 40.00 %), e) High (40.01 % - 50.00 %), f) Very High (>50.01 %). As for local revenue in 2016, as seen in Figure 1, the proportion of local revenue for all districts and cities in Aceh Province was 9.01 %, while in 2019, it increased to 9.62 %. The contribution of local taxes to local revenue in 2016 amounted to 1.26 % and increased to 1.67 % in 2019. The contribution of local retribution to local revenue in 2016 amounted to 0.78 %; in 2019, the value remained the same at 0.78 %. Based on this %age value, the degree of fiscal decentralisation of all districts and cities in Aceh Province in 2016 was in the inferior category (9.01 %). 2019 it was still in the inferior category (9.62 %). In Zukhri's research (2020), the degree of fiscal decentralisation shows the ratio between Regional Original Revenue (PAD) and Total Regional Revenue (TPD). The degree of fiscal decentralisation consists of 6 (six) categories, namely a) Very Less (0.00 % - 10.00 %), b) Less (10.01 % - 20.00 %), c) Medium (20.01 % - 30.00 %), d) (30.01 % - 40.00 %), e) Good (40.01 % - 50.00 %), f) Very Good (>50.01 %).
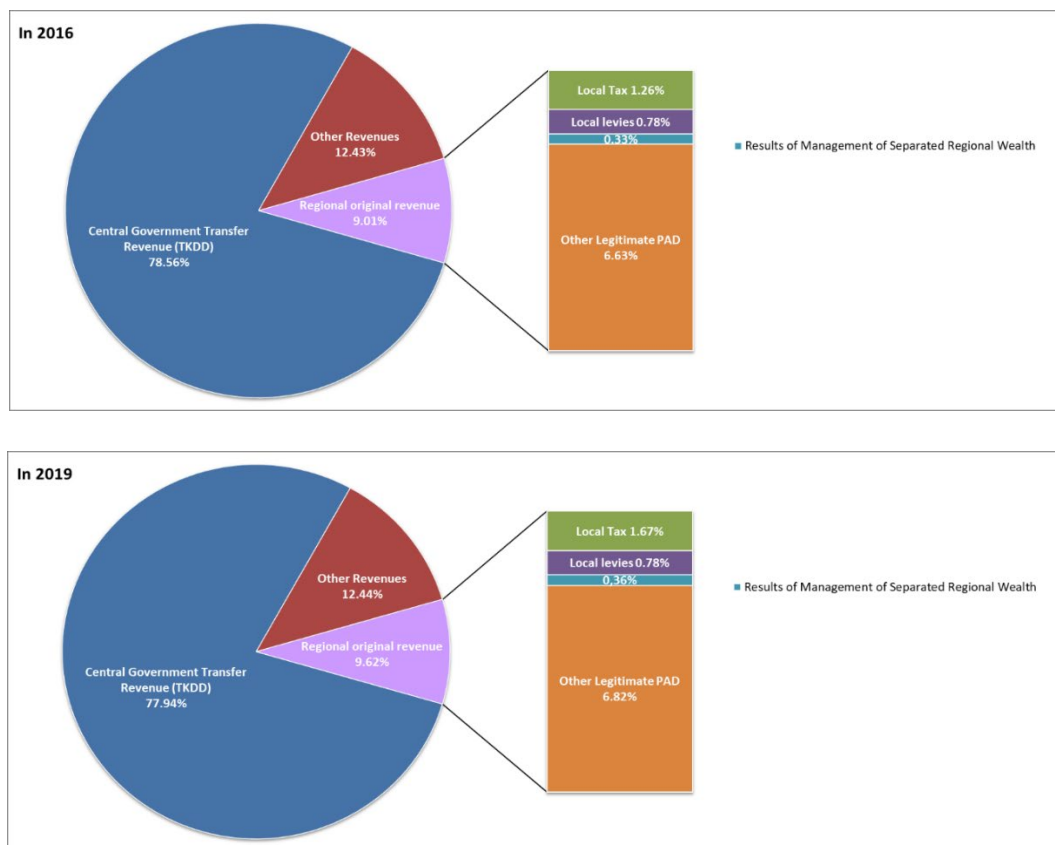
Figure 5. Total Local Revenue Realisation of All Districts and Cities in Aceh Province in 2016 and 2019

Figure 5 displays that the budget management of all districts and municipalities in Aceh Province still depends on central government transfer funds in financing development in their regions. This means that local revenue in all districts and cities in Aceh Province is not empowered to finance its region, and the ability of the region to explore the potential sources of local revenue in terms of local taxes and local levies is still low and not optimal. The powerlessness of local revenue shown by districts and cities in Aceh Province in financing their regions can show that all districts and cities in Aceh Province have not succeeded in achieving the objectives of implementing regional autonomy, namely to increase regional independence, and the purpose of implementing fiscal decentralisation, namely to reduce regional fiscal dependence on the central government.

Regional independence, which is the goal of fiscal decentralisation according to the Ministry of Finance of the Republic of Indonesia (2014), can be achieved through increased competitiveness. Competitiveness is the ability of a region compared to other regions to determine the right strategy to improve people's welfare. In other words, competitiveness is a complex interaction between input factors (the main factor forming competitiveness) and output (the core of economic performance, namely improving people's welfare) in each region. By creating leading sectors that are based on the needs and capabilities of the region, regional economic competitiveness seeks to encourage sustainable economic growth and improve people's welfare (Ministry of Finance of the Republic of Indonesia, 2014). Competitiveness is one of the main issues in development. One of the criteria and sources of a nation's resilience in sustainable development is its level of competitiveness. In their study, Voinescu and Moisoiu (2015) explained that at the global level, international economic organisation's view increasing a country's competitiveness as a prerequisite for global economic stability and growth.

According to Porter (1990), competitiveness results from processing a country's capacity to innovate based on existing key sectors. Krugman (1994) explains that competitiveness means another way to increase productivity or boost living standards based on the ability to increase productivity and creativity. Reiljan et al. (2000) explain that competitiveness is a multi-dimensional feature of an economic entity, such as a firm, industry, region, or country, operating in a market economy that describes its economic performance compared to other entities. Huggins et al. (2021) explain that competitiveness involves economic improvement and development in all places simultaneously, not improvement in one place at the expense of another. However, competitiveness does involve balancing the different types of advantages that a place may have over other places, i.e. the different sets of strengths that the socio-economic environment of a place has compared to other places. According to Bank Indonesia, competitiveness is defined as the ability of the regional economy to achieve a high and sustainable level of welfare while remaining open to domestic and

international competition (Ristek-BRIN, 2020). Meanwhile, according to the World Economic Forum (2017), competitiveness is defined as the capacity of an economic entity (country or region) to generate rapid and sustainable growth. Meanwhile, the Institute for Management Development (2014) defines competitiveness as the ability of a country to create and maintain an environment that supports the creation of more excellent added value for its companies and greater prosperity for its people. The European Commission (2013) defines competitiveness as the ability to produce goods and services by the needs of the global market, accompanied by the ability to maintain high and sustainable income, more generally, the ability (region) to create relatively high income and employment opportunities while still faced with external competition. Competitiveness can also be interpreted as a reflection of a region's productivity, progress, competition and independence (Ristek-BRIN, 2020). Meanwhile, Abdullah (2002) explains that the idea of competitiveness is generally associated with the concept of comparative advantage, which refers to the presence of additional components in the production process that allow a country to attract investors and encourage them to invest in the country compared to other countries.

In their study, Ritonga and Hidayat (2004) explained that competitiveness is one of the criteria for determining a country's success and achieving a better goal by increasing income and economic growth. Competitiveness is identified with productivity issues, namely by looking at the level of output produced for each input used. The increase in productivity is caused by an increase in the number of physical inputs of capital and labour, an increase in the quality of inputs used and an increase in technology. Meanwhile, in his research, Apridar (2014) stated that for a country or region to be able to compete, the country or region must focus on the ability to increase productivity and efficiency levels. In this case, the government is vital in improving competitiveness as a facilitator and regulator to maintain market dynamism. Ra'is and Rohman (2020) stated that regional innovation will foster regional competitiveness so that it has economic resilience. Regions with high competitiveness have the potential to obtain adequate sources of local revenue in more significant amounts. Various innovations can help a region accelerate its economic recovery. The diverse economic potential in the region will be accelerated through innovation, thus providing added value to the resilience of the local economy and society.

Competitiveness or the ability to compete is needed so that the economic sector can continue to grow and support the community's welfare. In their study, Irawati et al. (2008) explained that the welfare of a nation's citizens increases along with the level of competitiveness. As a tool to improve the welfare of society, this competence can be seen, among others, in the degree of production, efficiency, and possibility (World Bank, 1995). This encourages economic growth to achieve maximum and sustainable prosperity (Ministry of Finance of the Republic of Indonesia, 2014).

Aceh Province obtained special autonomy through Law No.18 of 2001, later enhanced by Law No.11 of 2006 on the Government of Aceh. In this law, Aceh Province was given the authority to regulate its region more broadly, especially in the authority to obtain regional revenue sources. This broader authority is expected to allow Aceh Province to explore various sources to increase its fiscal revenue (Hasibuan et al., 2021; Sugiharjo et al., 2022; and Suriani et al., 2020) and it is important to pay attention to physical spending to increase economic growth (Nugroho et al., 2022) According to the Regional Office of the Directorate General of Treasury of Aceh Province (2019), to increase regional fiscal capacity, namely by increasing the quality of APBD spending to be prioritised to economic sectors, which will generate regional income to increase regional fiscal capacity. This aligns with the theory put forward by Musgrave (1969) in the theory of fiscal federalism, which reveals that managing regional spending that prioritises quality spending will significantly affect economic growth. Meanwhile, the research of Ismaulina et al. (2022) stated that government spending has significantly contributed to reducing income inequality. Samuelson (1971), in the fast-track growth theory, also known as the turnpike, refers to the need for a region to identify sectors or commodities with great potential and can be developed quickly because of their advantages over other sectors or commodities. This suggests that the sector or commodity can create more value-added in less time and with the exact capital requirements. Where these activities can make a significant contribution to the economy (Yasin, 2016). Hismendi et al. (2021) stated in their research that the government's role in economic growth is to make policies in the economic sector, such as creating added value, not exporting semi-finished goods. Policies favouring domestic industrial companies will certainly generate innovation, and the financial sector can significantly support capital for industrial development.

So, to realise fiscal independence in Aceh Province and reduce dependence on funding from the central government, it is essential to identify competitive economic sectors that can increase local revenue. This study examines the competitiveness of 9 (nine) economic sectors, namely the competitiveness of the agricultural sector, the competitiveness of the mining and quarrying sector, the competitiveness of the manufacturing sector, the competitiveness of the construction sector, the wholesale and retail trade sector; car and motorcycle repair, the competitiveness of the transportation and warehousing sector, the competitiveness of the accommodation and food supply sector, the competitiveness of the real estate sector and the competitiveness of other service sectors.

2. Materials and Methods

The main focus of this study is to observe the competitiveness of nine economic sectors, namely the agricultural, mining and quarrying sectors, manufacturing, construction, wholesale and retail trade sectors; car and motorcycle

repair, transportation and warehousing sectors, accommodation and food supply sectors, real estate sector and other service sectors. The data is Gross Regional Domestic Product (GRDP) at constant prices from 23 districts/cities in Aceh Province for the 2014-2020 observation year (quarterly data) obtained from the Central Statistics Agency (BPS) districts and cities in Aceh Province. To analyse the competitiveness of the economic sector in districts and cities in Aceh Province, the solution method used is the shift-share analysis method, namely by looking at the positive or negative Competitive Shift (CS) numbers. If the value is positive, the sector is identified as competitive, and if the value is negative, then the sector is identified as not competitive. In this study, the shift-share component used in analysing the sectoral competitiveness of the regional economy, according to Dunn (1960) is using the differential shift component (Competitive Shift / CS) with the equation:

$$\mathbf{CS} = \left[\boldsymbol{yi^0} \left(\left(\frac{\boldsymbol{yi^t}}{\boldsymbol{yi^0}} \right) - \left(\frac{\boldsymbol{Zi^t}}{\boldsymbol{Zi^0}} \right) \right) \right]$$

Where, Yi^0: GRDP of sector i in the district/city at the beginning of the analysis year, Yi^t: GDP of sector i in the district/city at the end of the analysis year, Zi^t : GDP of sector i in Aceh Province at the end of the analysis year, Zi^0: GDP of sector i of Aceh Province at the beginning of the year of analysis

Dunn (1960) called this the "Differential shift" and later the regional competitiveness effect, as it shows how regional industries gain or lose market share. It is also stated by Goschin (2014) that the Differential shift component is the growth/decline in gross value added or regional employment caused by certain local factors that reflect regional comparative advantages, such as natural resources, advantageous location and efficient labour markets, or regional weaknesses such as lack of capital or low human resources. The Differential shift component is perhaps the most essential part of a shift-share analysis, as it allows the identification of each region's economic strengths or weaknesses.

A positive value of the Differential shift component for a particular sector indicates that the region has a local comparative advantage, thus creating additional employment growth. In contrast, a positive total region component indicates that the region is competitive nationally. A negative value of the Differential shift component indicates sectors characterised by local comparative weakness. In contrast, a negative total regional share component is specific to regions that are less than average competitive (Goschin, 2014). Wibisono et al. (2019). The differential shift (Competitive Shift or CS) or (Competitive Effect) component describes or explains the competitiveness of economic sectors in a region. If the CS value in a sector is positive, it can be said that it has relatively higher competitiveness than other sectors in the analysed region. If the region has excess resources, then the region will have a positive CS value. If the region has few resources, then the CS analysis results in the region will be negative.

Dogru and Sirakaya-Turk (2017) argue that shift-share analysis is widely used to analyse the competitiveness of various industries in a region relative to a country's general economic development level. Spanish scientists Chico et al. (2021), in their research, used the shift-share analysis method to assess the competitiveness of the food agriculture sector in their country. Mo et al. (2020) also used the shift-share analysis method to analyse the competitiveness of Gwangyang Port for the coal, iron ore, natural gas, and vegetable materials sectors. At the same time, Dogru & Sirakaya-Turk (2017) used the shift-share method to measure the strength of the competitiveness of the tourism industry in the state of South Carolina. Montanía et al. (2023) explained that one of the most significant characteristics of shift-share analysis is its ability to help policymakers and analysts identify the most competitive and vulnerable sectors in a region's economy, which can be the basis for more accurate hypotheses and policy interventions. Meanwhile, Sishidiyati et al. (2021) explained that the results of the shift-share analysis are needed to map the region's potential, so it is expected to analyse potential resources for strengthening regional competitiveness.

A shift-share analysis is a statistical technique that describes the performance of sectors in a region compared to the national economy's performance. Thus, regional economic development results shift if the region makes progress in accordance with its position in the national economy. This technique compares the growth rates of sectors in a region with the growth rates of the national economy and its sectors and observes deviations from these comparisons.

Although it has been attributed to Dunn (1960), according to Lahr & Ferreira (2020), the first ideas related to this method were proposed by MacDougall (1940), Jones (1940) and Creamer (1943), while its popularisation as a relevant instrument in the field of regional science began with the application proposed by Perloff et al. (1960). The shift-share model generally decomposes regional growth into three components: the national component (NC), the industry mix component (IM), and the competitive component (CS). The effect of national growth is called share, the effect of industry mix is called proportional shift or composition mix, and the effect of competitive advantage is called differential shift (Soepono, 1993; Lahr & Ferreira, 2020; Lee & Kim, 2020; Montanía et al., 2021).

3. Results

Using the shift-share analysis method with the initial data in 2014 until 2020, this study found that the competitiveness of the agricultural sector is highest in Nagan Raya Regency, with a value of IDR 387.55 billion, while

West Aceh Regency is an area that has the highest mining and quarrying sector competitiveness with a value of IDR 1,152.87 billion. The manufacturing sector's competitiveness is highest in Aceh Tamiang District, with a value of IDR 186.60 billion. Meanwhile, the construction sector has the highest competitiveness value in Aceh Besar District, IDR 471.19 billion. Bireun Regency has the highest competitiveness value in the wholesale and retail trade sector, repairing cars and motorbikes compared to other regions in Aceh Province, with a value of IDR 226.65 billion. The competitiveness of the transportation sector is highest in North Aceh District, with a value of IDR 79.85 billion. The city of Banda Aceh is an area that has the highest competitiveness value for the 3 (three) sectors, namely the provision of accommodation and eating and drinking, the real estate sector and other services/tourism sectors with a value of IDR 31.98 billion, IDR 139.84 billion and IDR 26.68 billion respectively.

Meanwhile, when viewed from the dominance of the highest sectoral competitiveness value per region, six sectors out of 9 are observed: the industrial sector, wholesale and retail trade sector, repair of cars and motorcycles, mining and quarrying sector, construction sector and agricultural sector. The industrial sector is dominated by several regions, namely Banda Aceh City, Langsa City, Aceh Tamiang Regency, Aceh Jaya Regency, Subulussalam City, Pidie Jaya Regency, Aceh Singkil Regency and Gayo Lues Regency, which is the sector that has the highest competitiveness index value of the other 9 (nine) sectors observed. In the wholesale and retail trade sector, repair of cars and motorcycles is in Central Aceh Regency, Bireun Regency, North Aceh Regency, Sabang City, Southwest Aceh Regency, South Aceh Regency, Simeulue Regency and Southeast Aceh Regency. The mining and quarrying sector has the highest competitiveness value in West Aceh Regency, with IDR 1,152.87 billion. Meanwhile, in Pidie and Aceh Besar Districts, the construction sector is the sector that has the highest competitiveness value compared to the other 9 (nine) sectors observed. The agricultural sector is the most competitive in the Nagan Raya and Bener Meriah districts. For Lhokseumawe City, the transportation sector is the most competitive. For more details, see Table 1.

Table 1. Results of Sectoral Competitiveness Analysis of District/City Economies in Aceh Province in 2020

No	District/City	PRTN	PRTBG	IDTR	KTRS	PRDG	TRPT	AKMD	EST	JSL
1	Banda Aceh	18.52	-	141.67	-245.90	-61.85	-110.11	31.98	139.84	26.68
2	Langsa	-33.05	4.21	116.14	8.31	74.76	32.92	21.99	-28.38	-5.31
3	Aceh Tengah	-285.62	16.17	45.18	-3.49	59.29	4.76	1.17	-39.17	-6.68
4	Pidie	-106.49	100.85	90.26	106.00	27.50	57.92	-10.52	-35.18	-8.34
5	Aceh Barat	90.62	1,152.87	47.65	16.70	-2.09	36.07	-3.63	-37.40	-0.31
6	Bireuen	-218.59	63.47	58.72	-16.38	226.65	45.58	-15.66	-36.86	-12.87
7	Aceh Utara	33.39	-950.90	-18.31	55.90	225.73	79.85	7.33	-5.80	11.98
8	Aceh Tamiang	119.09	74.10	186.60	-25.49	-5.71	18.40	-2.76	-9.44	-1.23
9	Aceh Besar	58.83	17.80	101.83	471.19	86.27	-184.62	-4.73	2.30	-0.26
10	Sabang	-5.23	1.68	11.37	16.65	17.00	9.39	-5.43	-10.02	-0.85
11	Aceh Barat Daya	12.09	-75.40	29.95	7.41	54.42	18.67	-3.50	-18.92	-14.27
12	Aceh Selatan	-24.42	19.90	45.66	-0.93	68.36	28.22	-4.43	-13.88	-5.25
13	Nagan Raya	387.55	234.08	129.64	126.71	59.89	27.93	1.48	-2.01	-0.13
14	Aceh Timur	-306.92	-794.58	155.26	53.11	93.20	65.82	4.09	-3.49	-9.38
15	Lhokseumawe	-33.90	7.45	-1,477.53	-126.02	-163.45	31.52	26.01	8.85	5.24
16	Bener Meriah	41.87	6.42	35.87	-24.21	7.29	20.25	-2.13	-11.29	-3.23
17	Simeulue	-36.82	10.87	8.89	5.57	15.50	2.63	-2.89	-9.03	-1.13
18	Aceh Jaya	2.80	-5.74	33.59	-5.49	7.55	-0.38	-1.79	-6.05	-0.27
19	Subulussalam	-10.50	-39.40	98.92	39.69	63.66	21.01	0.93	-5.60	0.49
20	Aceh Tenggara	-113.43	15.23	25.56	20.59	44.50	12.91	-2.17	-24.74	-7.38
21	Pidie Jaya	-89.36	15.04	32.40	27.87	20.56	8.95	-3.96	-15.42	-1.28
22	Aceh Singkil	-58.26	9.34	40.94	14.84	21.85	-3.15	-1.59	-16.21	-2.30
23	Gayo Lues	-68.78	-9.98	91.70	-60.36	32.37	3.32	9.23	-8.52	-0.74

Note: *PRTN (Agriculture sector competitiveness), PRTBG (Competitiveness of the mining and quarrying sector), IDTR (Competitiveness of the manufacturing sector), KTRS (Construction sector competitiveness), PRDG (Competitiveness of wholesale and retail trade sector; repair of cars motorcycles), TRPT (Transportation and warehousing sector competitiveness), AKMD (Competitiveness of accommodation and food service sector), EST (Real estate sector competitiveness), JSL (Competitiveness of other services sector).*
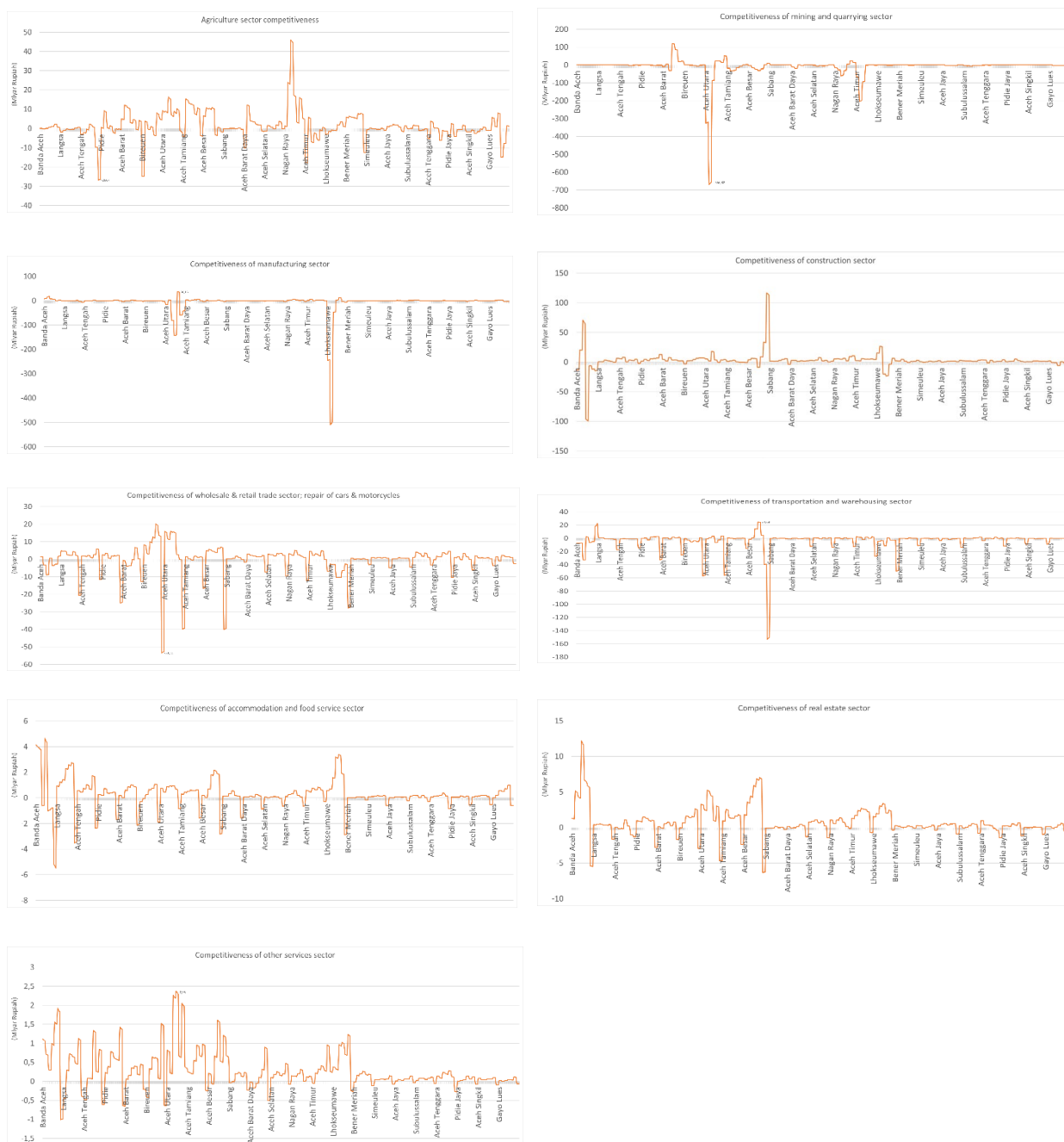
Figure 6. Development of Economic Sectoral Competitiveness Value of Districts and Municipalities in Aceh Province 2014-2020

Figure 6 shows the competitiveness scores of economic sectors (9 observed sectors) per quarter in districts/cities in Aceh Province from 2014-2020, namely: (a) Agriculture sector competitiveness - Nagan Raya Regency was the region that 2016, in the first quarter (Q1), had the highest competitiveness value of the agricultural sector in Aceh Province, with a value of IDR 46.03 billion. Meanwhile, in 2020 in the first quarter (Q1), Aceh Tengah Regency was the region with the lowest agricultural sector competitiveness value in Aceh Province, with a value of IDR -26.67 billion. (b) Competitiveness of the mining and quarrying sector - In the first quarter (Q2) of 2017, West Aceh Regency had the highest competitiveness value of the mining and quarrying sector in Aceh Province, with IDR 118.83 billion. In the first quarter (Q2) of 2015, North Aceh Regency had the lowest competitiveness value, IDR -666.74 billion. (c) competitiveness of the manufacturing sector - North Aceh Regency is an area that, in 2018, in the first quarter (Q1), had the highest competitiveness value of the processing industry sector in Aceh Province, with a value of IDR 36.53 billion. In 2015, in the second quarter (Q2), Lhokseumawe City was the region that had the lowest competitiveness value of the manufacturing sector in Aceh Province, with a value of IDR -506.75 billion. (d) Construction sector competitiveness - Aceh Besar District is an area that in 2020 in the first quarter (Q1) had the highest value of

construction sector competitiveness in Aceh Province, with a value of IDR116.50 billion. Meanwhile, in 2017, in the fourth quarter (Q2), Banda Aceh City was the region with the lowest construction sector competitiveness value in Aceh Province, with a value of IDR-99.60 billion. (e) Competitiveness of wholesale & retail trade sector; repair of cars & motorcycles - Bireuen Regency is the region that 2018, in the first quarter (Q1), had the highest competitiveness value of the wholesale and retail trade sector, repair of cars and motorcycles in Aceh Province, with a value of IDR 20.14 billion. Meanwhile, in 2020, in the second quarter (Q2), North Aceh Regency was the region with the lowest competitiveness value of the wholesale and retail trade sector, repair of cars and motorcycles in Aceh Province, with a value of IDR -53.24 billion.

(f) Transportation and warehousing sector competitiveness - Aceh Besar District is the region that in 2017, in the first quarter (Q1), had the highest competitiveness value of the transportation sector in Aceh Province, with a value of IDR 24.94 billion. Meanwhile, in 2020, in the first quarter (Q1), Aceh Besar Regency was the region that had the lowest value of transportation sector competitiveness in Aceh Province, with a value of IDR-153.09 billion. (g) Competitiveness of accommodation and food service sector - Banda Aceh City was the region that in 2017, in the first quarter (Q1), had the highest competitiveness value of the food and beverage accommodation sector in Aceh Province, with a value of IDR 4.63 billion. While in 2020, in the fourth quarter (Q4), Banda Aceh City is the region that has the lowest value of competitiveness in the food and beverage accommodation sector in Aceh Province, with a value of IDR -5.50 billion. (h) h. Real estate sector competitiveness - Banda Aceh City is an area that in 2017 in the first quarter (Q1) had the highest value of real estate sector competitiveness in Aceh Province, with a value of IDR 12.24 billion. Whereas in 2020, in the first quarter (Q1), Aceh Besar Regency is the region with the lowest Real Estate sector competitiveness value with a value of IDR -6.32 billion. (i) Competitiveness of other services sector - Banda Aceh City was the region that 2017 in the first quarter (Q1), had the highest competitiveness value of the other services sector in Aceh Province, with a value of IDR 2.38 billion. While in 2014, in the third quarter (Q3), Banda Aceh City was the region with the lowest competitiveness value in the other services sector in Aceh Province, with a value of IDR-1.00 billion.

Agriculture sector

Mining and quarrying sector

Manufacturing sector

Construction sector

Wholesale & retail trade sector

Transportation and warehousing sector

| Accommodation and food service sector | Real estate sector | Other services sector |

Figure 7. Sectoral Competitiveness Map of District and City Economies in Aceh Province in 2020

Figure 7 shows the competitive economic sectors (9 observed sectors) in districts/cities in Aceh Province, namely: (i) Agriculture Sector for Southwest Aceh, Aceh Jaya, North Aceh, Nagan Raya, Banda Aceh, Aceh Besar, West Aceh, Bener Meriah and Aceh Tamiang. (ii) Mining and quarrying sector (Aceh Tengah, Bireuen, Lhokseumawe, Nagan Raya, Simeulue, Aceh Besar, Pidie, Langsa, Aceh Singkil, Pidie Jaya, Aceh Tenggara, Aceh Barat, Bener Meriah, Aceh Tamiang, Sabang and Aceh Selatan). (iii) Processing industry sector (Southwest Aceh, Aceh Jaya, Central Aceh, Bireuen, Nagan Raya, Simeulue, Aceh Besar, Langsa, Aceh Singkil, Pidie Jaya, Pidie, Southeast Aceh, West Aceh, Bener Meriah, Aceh Tamiang, Sabang, South Aceh, Banda Aceh, Subulussalam, East Aceh and Gayo Lues). (iv) Construction sector (Southwest Aceh, Nagan Raya, Simeulue, Aceh Besar, North Aceh, Langsa, Aceh Singkil, Pidie Jaya, Pidie, Southeast Aceh, West Aceh, Bener Meriah, Aceh Tamiang, Sabang, South Aceh, Subulussalam, East Aceh and Gayo Lues). (v) Wholesale and retail trade; repair of cars and motorcycles (Southwest Aceh, Aceh Jaya, Central Aceh, Bireuen, Nagan Raya, Simeulue, Aceh Besar, North Aceh, Langsa, Aceh Singkil, Pidie Jaya, Southeast Aceh, Pidie, Bener Meriah, Sabang, South Aceh, Subulussalam, East Aceh and Gayo Lues). (vi) Transportation sector (Southwest Aceh, Lhokseumawe, Central Aceh, Bireuen, Nagan Raya, Simeulue, North Aceh, Pidie, Langsa, Pidie Jaya, Southeast Aceh, West Aceh, Bener Meriah, Sabang, South Aceh, Subulussalam, Aceh Tamiang, East Aceh and Gayo Lues). (vii) Food and beverage accommodation sector (Lhokseumawe, Central Aceh, Nagan Raya, North Aceh, Langsa, Banda Aceh, Subulussalam, East Aceh and Gayo Lues). (viii) Real estate sector (Lhokseumawe, Banda Aceh and Aceh Besar). (ix) Another services sector (Lhokseumawe, Banda Aceh, North Aceh and Subulussalam)

4. Discussion

The study found that there is significant variation in the competitiveness of economic sectors in Aceh, with each region having a comparative advantage in a particular sector. This finding is consistent with the hypothesis that each region has a potential and comparative advantage in its economic sector. For example, the districts of Southwest Aceh, Aceh Jaya, North Aceh, Nagan Raya, Banda Aceh, Aceh Besar, West Aceh, Bener Meriah and Aceh Tamiang are competitive in the agricultural sector, which is in line with Siagian and Santoso (2013), Wulandari (2018), Munandar et al. (2019), Aufa (2019) and Husna and Husein (2023), while the districts of Aceh Tengah, Bireuen, Lhokseumawe, Nagan Raya, Simeulue, Aceh Besar, Pidie, Langsa, Aceh Singkil, Pidie Jaya, Aceh Tenggara, Aceh Barat, Bener Meriah, Aceh Tamiang, Sabang and Aceh Selatan excel in the mining and quarrying sector where this is in line with Abdullah et al. (2014), Syahputra et al. (2015) and Munandar et al. (2019). The districts of Southwest Aceh, Aceh Jaya, Central Aceh, Bireuen, Nagan Raya, Simeulue, Aceh Besar, Langsa, Aceh Singkil, Pidie Jaya, Pidie, Southeast Aceh, West Aceh, Bener Meriah, Aceh Tamiang, Sabang, South Aceh, Banda Aceh, Subulussalam, East Aceh and Gayo Lues display the best performance in the manufacturing sector which is in line with Abdullah et al. (2014), Sitorus & Utami (2023), Jannah and Junaidi (2022) and Husna and Husein (2023).

While the districts of Southwest Aceh, Nagan Raya, Simeulue, Aceh Besar, North Aceh, Langsa, Aceh Singkil, Pidie Jaya, Pidie, Aceh Tenggara, Aceh Barat, Bener Meriah, Aceh Tamiang, Sabang, Aceh Selatan, Subulussalam, Aceh Timur and Gayo Lues became the centre of competitiveness in the construction sector this is also in line with Wulandari (2018), (Yusuf et al., 2018). , 2021) and Sitorus & Utami (2023). The districts of Southwest Aceh, Aceh Jaya, Central Aceh, Bireuen, Nagan Raya, Simeulue, Aceh Besar, North Aceh, Langsa, Aceh Singkil, Pidie Jaya, Southeast Aceh, Pidie, Bener Meriah, Sabang, South Aceh, Subulussalam, East Aceh and Gayo Lues stand out in the wholesale and retail trade sector; repair of cars and motorbikes where this is in line with Fazil & Siregar (2016), Wulandari (2018), Zakaria et al. (2018), Munandar et al. (2019), (Yusuf et al., 2021), Fauzan et al. (2022) and Husna and Husein (2023). While the districts of Southwest Aceh, Lhokseumawe, Central Aceh, Bireuen, Nagan Raya, Simeulue, North Aceh, Pidie, Langsa, Pidie Jaya, Southeast Aceh, West Aceh, Bener Meriah, Sabang, South Aceh, Subulussalam, Aceh

Tamiang, East Aceh and Gayo Lues are superior in the transportation sector where this is also in line with Wulandari (2018) and Munandar et al. (2019).

At the same time, the cities of Banda Aceh, Lhokseumawe, Central Aceh, Nagan Raya, North Aceh, Langsa, Banda Aceh, Subulussalam, East Aceh and Gayo Lues are the regions with the highest competitiveness in the provision of accommodation and eating and drinking sector where this is in line with Munandar et al. (2019) and Husna and Husein (2023). At the same time, the competitive real estate sector is in the cities of Banda Aceh, Lhokseumawe and Aceh Besar, which is in line with Munandar et al. (2019) and (Yusuf et al., 2021). Meanwhile, other competitive services/tourism sectors are in the cities of Lhokseumawe, Banda Aceh, North Aceh, and Subulussalam, which is in line with Fazil and Siregar (2016). This finding supports previous research that highlights the importance of identifying the comparative advantage of each region for sustainable economic development.

5. Conclusions

This study concludes that the various economic sectors in Aceh Province display varying levels of competitiveness across regions. Nagan Raya stands out in agriculture, while Aceh Barat dominates in mining and quarrying. Aceh Tamiang district performed best in the manufacturing sector, while Aceh Besar district became the centre of competitiveness in the construction sector. Bireun stands out in the wholesale and retail trade, including the repair of cars and motorcycles, while Aceh Utara excels in the transportation sector. The city of Banda Aceh consistently performed best in providing accommodation and food, real estate, and other services/tourism sectors. From the perspective of the dominance of the highest sectoral competitiveness value per region, 6 (six) sectors dominate out of a total of 9 (nine) sectors observed, namely the industrial sector, wholesale and retail trade sector, repair of cars and motorcycles, mining and quarrying sector, construction sector, and agricultural sector. The industry sector dominates in several regions, including Banda Aceh City, Langsa, Aceh Tamiang, Aceh Jaya, Subulussalam, Pidie Jaya, Aceh Singkil, and Gayo Lues. Meanwhile, the wholesale and retail trade repair of cars and motorcycles sector excels in Central Aceh District, Bireun District, North Aceh District, Sabang City, Southwest Aceh District, South Aceh District, Simeulue District, and Southeast Aceh District.

The mining and quarrying sector shows the highest competitiveness in West Aceh Regency, while the construction sector excels in Pidie Regency and Aceh Besar Regency. Meanwhile, the agriculture sector stands out in Nagan Raya and Bener Meriah districts. Lhokseumawe City showed the best performance in the transportation sector. The conclusions of this study offer valuable insights for policymakers in formulating more effective and inclusive economic development strategies in Aceh Province. Based on this study's findings, several practical policy implications can be applied to improve the competitiveness of economic sectors, namely: (a). Development of Superior Potential: Regions that show high competitiveness in a sector need to be encouraged to continue to develop their superior potential through investment in supporting infrastructure, workforce training, and other policy incentives. (b) Economic Diversification: Regions with low competitiveness in a sector must diversify their economy to reduce dependence on a particular sector. This can be done by identifying alternative sectors that have the potential to be developed and allocating appropriate resources to support such diversification. (c) Infrastructure Improvement: Adequate infrastructure is an essential factor in improving economic competitiveness. Therefore, the government needs to focus on infrastructure development that supports inter-regional connectivity, market accessibility, and efficiency in distributing goods and services. (d). Strengthening Institutional Capacity: The capacity of regional institutions needs to be strengthened to improve the quality of public services, accelerate regulatory and licensing processes, and support the development of local economic sectors. (e) Investment and Tourism Promotion: Regions must actively promote their investment and tourism potential to attract investment and tourists, which can drive economic growth and job creation.

Implementing relevant policy recommendations based on the findings of this study is expected to improve the overall economic competitiveness of districts/municipalities in Aceh Province, which is expected to generate and increase local own-source revenues and reduce the dependence on local government funding/budgeting from the central government which can ultimately improve the fiscal capacity of districts and municipalities in Aceh province by one of the objectives of fiscal decentralisation, namely creating regional independence.

The implications of these findings are crucial in formulating regional economic policies. Local governments must consider each region's potential and comparative advantage in designing effective economic development strategies. For example, districts/municipalities with high competitiveness in certain sectors can be given priority in resource allocation and other supporting policies to increase their competitive advantage, which is expected to generate local revenue and increase their fiscal capacity. This finding also underscores the importance of inter-regional collaboration in regional economic development. Districts or cities that have comparative advantages in specific sectors can collaborate with other regions that have complementary advantages to create synergies and strengthen the competitiveness of the regional economy, which is expected to generate and increase local revenue, which in turn can increase the fiscal capacity of districts and cities in Aceh province.

Thus, this study provides a better understanding of the regional economic dynamics in Aceh Province and valuable insights for policy decision-making and future research directions. The findings' implications can assist in formulating

sustainable and inclusive economic development strategies at both local and national levels. Future research could further explore the factors that influence the competitiveness of economic sectors at the local level. A more in-depth analysis of infrastructure, regulation, market access, and investment could provide a more comprehensive understanding of regional economic dynamics. Explore the relationship between external factors such as national policies, climate change, or global market changes and the competitiveness of specific sectors at the local level. Identify policy strategies that can improve the competitiveness of economic sectors in the long term, including investment in infrastructure, human capital development, or promotion of innovation in critical sectors. In addition, research could involve a cross-sectoral approach to understand the interactions between economic sectors and their impact on overall competitiveness, as well as the relationship between sector competitiveness and the level of local fiscal independence.

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