

Is the Tourism Sector a Leading Sector in West Sumatra?

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ABSTRACT

This study aims to determine whether the tourism sector in West Sumatra is a leading sector. The method used is the Klassen Typology, Location Quotient, Growth Ratio Model, Overlay and Shift-Share. The data in this study uses the average West Sumatra GRDP (based on 2010 constant prices) according to business from 2011-2019. The study concludes that the tourism sector in West Sumatra is not included as a leading sector because the sector is only categorized as potential sectors according to the Klassen Typology, non-base according to Location Quotient, a sector whose growth is small but a large contribution according to Overlay, and occupies the fourteenth Dij value according to shift-share. However, this sector is the dominant sector according to the Growth Ratio Model.

Keywords: *leading sector, tourism sector*

1. INTRODUCTION

The disruptive era is a time filled with change, transformation and challenges for governments and economic actors in driving development progress. These changes, transformations and challenges must be faced so that the government and economic actors can create creative innovations so as to increase added value for development.

In a disruptive era like today, the tourism sector is one of the mainstays to encourage development at both the national and regional levels. Tourism Minister Joko Widodo's administration for the 2014-2019 period, Arief Yahya, said the tourism sector will be a driving factor for Indonesia's economy in the future. Even he wishes if later, the driving force for the Indonesian economy will no longer come from oil and gas and non-oil but rather from tourism (<https://economy.okezone.com>).

In the National Medium-Term Development Plan (RPJMN) 2020-2025 (2019) it is said that the contribution of national tourism in foreign exchange creation increased from USD 11.2 billion in 2014 to USD 15.2 billion in 2017. This increase in foreign exchange resulted from increased visits foreign tourists (tourists) to enjoy natural and cultural tourism in Indonesia from 9.4 million people in 2014 to 15.8 million people in 2018. The tourist activity of the archipelago also increased from 252 million people in 2014 to 277 million people in the year 2017.

In line with the above, West Sumatra Province also encourages the tourism sector as a mainstay sector to encourage economic growth. In the West Sumatra Regional Medium-Term Development Plan (RPJMD) 2016-2021 (2018) it is said that one of the development goals of West Sumatra is to make West Sumatra a major destination for religious and cultural-based tourism. In addition, in the RPJMD the tourism

sector is also said to have tremendous potential, both in terms of natural beauty and in terms of geographical location. Based on this potential, tourism which is a leading sector is expected to be able to encourage economic growth and expand employment opportunities.

However, if traced statistical data from the Central Bureau of Statistics (BPS) on average from 2011-2019 the contribution of the tourism sector to the Gross Regional Domestic Product (GRDP) of West Sumatra on the basis of constant 2010 prices is very small. On average, the contribution of this sector to GRDP is only 1.04%. However, the average growth of this sector can be considered good because the average growth of this sector from 2011-2019 reached 7.11%.

To deal with changes and transformations, especially in the economic sector in the current disruptive era, studies need to be carried out to prove scientifically whether the tourism sector in West Sumatra is categorized as a leading sector or not. This study uses 5 methods of determining leading sectors based on the results of Satrianto & Sasongko's research (2019). According to Satrianto & Sasongko (2019) a sector is said to be the leading sector if the sector is categorized as Advanced Sectors based on the *Klassen Typology* method, categorized by the Base Sector according to the Location Quotient (LQ) method, has a value of Reference Area Growth Ratio (Rpr) and Study Area Growth Ratio (Rps) each positive (+) according to the Growth Ratio Model (GRM) method, has a positive LQ value and Rps (+) according to the Overlay method and has the highest shift-share value (Dij) according to the shift-share method. So, if the sector falls into each of the best categories according to the 5 methods, then the sector is said to be a leading sector that will encourage increased regional economic progress.

Satrianto & Sasongko's research (2019) was used as the main reference because previous studies in Indonesia only analyzed the determination of leading sectors based on each method. These studies include Basuki (2009), Amalia (2012), Putra (2013), Wahyuningtyas (2013), Hajeri (2015), Sapriadi (2015), Syahputra

(2015), Mangilaleng (2015), Hariyanti (2016), Mardiana (2017), Kharisma (2018), Yodfiatfinda (2018), Putra (2019), Rahman (2020). However, these researchers only determine the leading sector of an area according to each method.

For example, Amalia (2012) concluded that based on the LQ method the leading sectors of Bone Bolango Regency were agriculture, manufacturing, finance, leasing and corporate services. Whereas according to the shift-share method the leading sectors are the financial sector, leasing, and corporate services. Syahputra (2015) found that from the LQ calculation results it can be seen that the mining and quarrying sector, and the manufacturing sector are the leading sectors (base sectors) that are potential to be developed in West Aceh. Kharisma (2018) in her research found strong evidence that Maluku Province had 8 economic categories that had a base sector, there was one sector that had the highest Rps value and there were 2 leading sectors according to the overlay method.

Same with studies in Indonesia, studies outside Indonesia such as Mesrinezhad (2005), Billings (2012), Morrissey (2014), Faisal (2015), & Titova (2017) also determine leading sectors based on each method. They determine the leading sectors in each country by using the LQ, Shift-Share method and others. Their research generally concluded that there were a number of different leading sectors based on each method.

2. METHODS

The data used in this study is the average data of West Sumatra GRDP Based on 2010 Constant Prices from 2011-2019 according to business. The output value of the West Sumatra tourism sector is based on the output value of the Provision of Accommodation and Food and Beverage sectors according to the GRDP of the business field (this method based on Wulandari, 2018).

The method used to answer the purpose of this study is *Klassen Typology*, Location Quotient (LQ), Growth Ratio Model, Overlay and Shift-Share.

According to Satrianto & Sasongko (2019) a sector is said to be a leading sector if the sector must:

1. Located in quadrant I according to Klassen Typology (Advanced Sector)
2. Categorized base sectors according to LQ (Base Sector)
3. Has a value of Rpr (+) and Rps (+) according to the GRM (Classification 1)
4. It comes with LQ values ≥ 1 and Rps (+) according to Overlay (Classification 1)
5. Being in the position with the highest Dij value

Klassen's typology classifies sectors based on growth criteria and contributes to the total value of output in a region. These criteria can be seen in Table 2. Sectors that are in quadrant I (advanced sector) are called leading sectors.

Table 1. Classification of Leading Sectors according to the Klassen Typology

Quadrant I	Quadrant II
Developed Sector $s_i > s$ and $s_{ki} > k$	<i>Stagnant Sector</i> $s_i < s$ and $s_{ki} > k$
Quadrant III	Quadrant IV
<i>Potential Sector</i> $s_i > s$ and $s_{ki} < k$	<i>Under developed Sector</i> $s_i < s$ and $s_{ki} < k$

Source : Sjafrizal (2018)

Where :

s_i = average growth of sector i (certain) in GRDP West Sumatra 2011-2019

s = average of average growth of all sectors in GRDP West Sumatra 2011-2019

s_{ki} = average contribution of sector i (certain) to GRDP West Sumatra 2011-2019

sk = average contribution from all sectors to GRDP West Sumatra 2011-2019

LQ is used to determine whether a sector is categorized as a base sector or a non-base sector. In other words, the base sector is called the superior sector. The LQ formula can be seen as follows:

$$LQ = \frac{v_i/v_k}{v_i/v_k} \tag{1}$$

Where :

v_i = average value of GRDP sector West Sumatra 2011-2019

v_t = total value of GRDP West Sumatra 2011-2019

V_i = average value of GRDP sector i Indonesia 2011-2019

V_t = total value of GRDP Indonesia 2011-2019

If the LQ value is ≥ 1 , it means that sector i in West Sumatra has a greater role than sector i in Indonesia. This sector is called the superior sector or base. If the LQ value is < 1 , it means that sector i in West Sumatra has a smaller role than sector i in Indonesia. This sector is called the non-superior or non-base sector.

The growth ratio model determines the leading sector if the sector has a value of Rpr (+) and Rps (+). Rpr is the ratio of the GDP growth rate of sector i in Indonesia to the growth rate of Indonesia's total GDP. Whereas Rps is the ratio of sector i GRDP growth in West Sumatra to the sector i growth rate in Indonesia. The RPr and RPs formulas can be seen as follows:

$$RP_R = \frac{(Eir_t - Eir_{t-1})/Eir_{t-1}}{(ER_t - ER_{t-1})/ER_{t-1}} \tag{2}$$

Where :

Eir_t =the average GRDP of the sector i in a particular year in West Sumatra from 2011 to 2019

Eir_{t-1} = average GDP of sector i in the previous year in West Sumatra from 2011-2019

ER_t = the average total GDP of a particular year in Indonesia from 2011-2019

ER_{t-1} = the average total GDP of the previous year in Indonesia from 2011-2019

$$RP_s = \frac{(Eir_t - Eir_{t-1}) / Eir_{t-1}}{(EiR_t - EiR_{t-1}) / EiR_{t-1}} \quad (3)$$

Where :

Eir_t=average GDP of the sector i in a particular year in West Sumatra from 2011-2019

Eir_{t-1}=average GDP of sector i in the previous year in West Sumatra from 2011-2019

ER_t=total GDP of sector i in a particular year in Indonesia from 2011-2019

ER_{t-1}=average total GDP of sector i in the previous year in Indonesia from 2011-2019

From the GRM calculation there are 4 sector classifications:

1. Classification 1, value Rpr (+) and Rps (+)
2. Classification 2, value Rpr (+) and Rps (-)
3. Classification 3, value Rpr (-) and Rps (+)
4. Classification 4, value Rpr (-) and Rps (-)

Furthermore Overlay determines leading sectors with LQ and IDR criteria in the GRM model. From the calculation of Overlay also obtained 4 sector classifications:

1. Classification 1, LQ value (≥ 1) and Rps (+)
2. Classification 2, LQ value (≥ 1) and Rps (-)
3. Classification 3, LQ value (<1) and Rps (+)
4. Classification 4, LQ value (<1) and Rps (-)

A sector is said to be a superior sector according to Overlay if the sector has LQ ≥ 1 and Rps (+) or the sector is in classification 1.

Whereas according to the Shift-Share method the determination of leading sectors is based on the sector with the highest Dij value. To determine the Dij value for each sector, look like the following formula:

$$D_{ij} = N_{ij} + M_{ij} + C_{ij} \quad (4)$$

$$N_{ij} = E_{ij} \cdot r_n \quad (5)$$

$$M_{ij} = E_{ij} \cdot (r_{ij} - r_n) \quad (6)$$

$$C_{ij} = E_{ij} (r_{ij} - r_n) \quad (7)$$

Where :

D_{ij} = shift – share Value

N_{ij} = regional share

M_{ij} = proportionality shift

C_{ij} = differential shift

r_{ij}, *r_{in}*, and *r_n* can be determined by the following formula:

$$r_{ij} = \frac{(E_{ijt} - E_{ijt-1})}{E_{ijt-1}} \quad (8)$$

Where :

r_{ij}=the average growth rate of sector i in West Sumatra from 2011-2019

E_{ijt}=average GDP of the sector i in a particular year in West Sumatra from 2011-2019

E_{ijt-1}=average GDP of sector i in the previous year in West Sumatra from 2011-2019

$$r_{in} = \frac{(E_{int} - E_{int-1})}{E_{int-1}} \quad (9)$$

Where :

r_{in}=average growth rate of sector i in Indonesia from 2011-2019

E_{int}=the average GDP of the sector i in a particular year in Indonesia from 2011-2019

E_{int-1}= average GDP of sector i in the previous year in Indonesia from 2011-2019

$$r_n = \frac{(E_{nt} - E_{nt-1})}{E_{nt-1}} \quad (10)$$

Where :

r_n=average GDP growth rate for a particular year in Indonesia from 2011-2019

E_{nt}=average GDP of a certain year in Indonesia from 2011-2019

E_{nt-1}=previous year's average GDP in Indonesia from 2011-2019

3. RESULTS AND DISCUSSION

As explained in the previous section, the purpose of this study is to determine whether the West Sumatra tourism sector is a superior sector or not. To prove this, 5 methods for determining

leading sectors are used Satrianto & Sasongko (2019).

3.1 Klassen's Typology

Table 2 shows the results of determining leading sectors according to the Klassen Typology. Determination of leading sectors according to this method is done by finding the average GRDP of each sector from 2011-2019. Then the average yield of the GRDP is determined by its growth and contribution.

From the calculation of the average growth and contribution from 2011-2019 it is seen that the tourism sector in West Sumatra is in quadrant III. This means that this sector has an average growth above the average of all sectors

while the average contribution is below the average contribution of all sectors. The average growth of this sector from 2011-2019 was 7.11% while the average of all sectors was 6.18%. The average contribution of this sector is 1.04% while the average contribution of all sectors is 5.88%.

Based on this calculation it can be said that the West Sumatra tourism sector is not a leading sector because this sector on average from 2011-2019 is not in quadrant I but it is in quadrant III. According to Satrianto & Sasongko (2019) the tourism sector must be in quadrant I because the sector in quadrant I is the sector that has an average growth above the average growth of all sectors and has an average contribution above the average contribution entire sector.

Table 2. Classification of Development Sectors in West Sumatra Based on the Klassen Typology Approach from 2011-2019

		Growth	
		Above Average Growth	Below Average Growth
Contribution	Above Average Contributions	Transportation and Warehousing Construction Wholesale and retail trade; Car and Motorcycle Repair Transportation and Warehousing Information and Communication	Agriculture, Forestry, and Fisheries Processing industry
	Below Average Contributions	Electricity and Gas Procurement Provision of Accommodation and Food and Beverage (Tourism) Educational Services Health Services and Social Activities Other services	Mining and excavation Water Supply, Waste Management, Waste and Recycling Financial Services and Insurance Real estate Company Services Government Administration, Defense and Mandatory Social Security

Source: West Sumatra Central Bureau of Statistics (Processing Results)

3.2 Location Quotient (LQ)

LQ analysis looks at how big is the role of sector i or a particular sector compared to the same sector in a wider area. For example, how big is the role of the Agriculture, Forestry and Fisheries sector in West Sumatra compared to the

same sector in Indonesia. If the role of the sector is large, the LQ value of the Agriculture, Forestry and Fisheries sector in West Sumatra will be greater than 1. However, if the role of the sector is small, the LQ value of the Agriculture, Forestry and Fisheries sector in West Sumatra will be

smaller than 1. Sectors with a value greater than 1 this is what the leading sector said according to the LQ analysis.

If you look at the LQ value of the West Sumatra tourism sector from 2011-2019 in Table 3 it turns out that the LQ value of the sector is smaller than 1. The LQ value of this sector is smaller than 1 because the value of this sector's

output to the total West Sumatra GRDP is smaller than the value of the sector's output the same for Indonesia's GDP. This means that this sector has a small role compared to the same sector in Indonesia. Thus this sector is not a superior sector according to the LQ method.

Table 3. West Sumatra LQ Values of Each Development Sector from 2011-2019

No	Sectors	LQ Average	Criteria
1	Agriculture, Forestry and Fisheries	1.81	Base
2	Mining and excavation	0.50	Non Base
3	Processing industry	0.50	Non Base
4	Procurement of Electricity and Gas	0.10	Non Base
5	Water Supply, Waste, Waste and Recycling Management	1.24	Base
6	Construction of Transportation and Warehousing	0.90	Non Base
7	Large and Retail Trade; Car and Motorcycle Repair	1.15	Base
8	Transportation and Warehousing	2.93	Base
9	Provision of Accommodation and Eating Drinks (Tourism)	0.35	Non Base
10	Information and Communication	1.40	Base
11	Financial and Insurance Services	0.78	Non Base
12	Real estate	0.67	Non Base
13	Company Services	0.27	Non Base
14	Government Administration, Defense and Compulsory Social Security	1.67	Base
15	Education Services	1.18	Base
16	Health Services and Social Activities	1.24	Base
17	Other services	1.00	Non Base

Source: West Sumatra and Indonesia Central Bureau of Statistics (Processing Results)

3.3 Growth Ratio Model

The growth ratio model looks at the growth of a sector at the national level and the growth of a sector in the region compared to the same sector at the national level. The growth of a sector at the national level is called Rp. And the growth of a sector in the region compared to the same sector at the national level is called Rps.

According to the calculation results from the growth ratio model in Table 4, the tourism sector in West Sumatra is categorized as a superior

sector. This sector is categorized as a leading sector because this sector has a value of Rpr (+) and Rps (+). In other words, this sector is classified as Class 1 according to the calculation of the growth ratio model. This means that according to the growth ratio model this sector is the dominant sector in growth both at the national and regional levels.

Table 4. Results of the West Sumatra GRM Development Sector Calculation from 2011-2019

No	Sectors	Rpr		Rps	
		Value	Criteria	Value	Criteria
1	Agriculture, Forestry and Fisheries	0.75	-	0.92	-
2	Mining and excavation	0.22	-	2.75	+
3	Processing industry	0.87	-	0.63	-
4	Procurement of Electricity and Gas	0.91	-	1.77	+
5	Water Supply, Waste, Waste and Recycling Management	0.94	-	1.00	-
6	Construction of Transportation and Warehousing	1.23	+	1.22	+
7	Large and Retail Trade; Car and Motorcycle Repair	0.94	-	1.39	+
8	Transportation and Warehousing	1.38	+	1.02	+
9	Provision of Accommodation and Eating Drinks (Tourism)	1.09	+	1.27	+
10	Information and Communication	1.83	+	0.96	-
11	Financial and Insurance Services	1.33	+	0.71	-
12	Real estate	1.00	-	1.03	+
13	Company Services	1.62	+	0.70	-
14	Government Administration, Defense and Compulsory Social Security	0.74	-	1.13	+
15	Education Services	1.13	+	1.47	+
16	Health Services and Social Activities	1.41	+	1.06	+
17	Other services	1.56	+	0.94	-

Source: West Sumatra and Indonesia Central Bureau of Statistics (Processing Results)

3.5 Overlay

Overlay method in determining leading sectors based on the value of LQ and Rps of each sector. This method looks at the role of the same sector between regional and national. A sector is said to be a leading sector if the LQ value of the sector (≥ 1) and the value of Rps (+). Based on LQ calculations the same sector output values are compared to regional output and national output. Whereas based on the calculation of Rps compare the growth of the same sector at the regional and national levels.

From the calculation of the overlay for the West Sumatra tourism sector in Table 5, it appears that the LQ of the tourism sector is smaller than 1 and the value of Rps (+). In other words, this sector is categorized as Class 3 because of the value of LQ (<1) and Rps (+). Therefore, according to the overlay method the West Sumatra tourism sector is not a leading sector. If the tourism sector is considered a

leading sector according to this method West Sumatra tourism sector should be categorized as Class 1.

3.6 Shift-Share

The determination of leading sectors according to Satrianto & Sasongko (2019) is based on the shift-share method seen from the sector that has the highest Dij value. Because the sector with the highest Dij value means that the sector has a contribution of regional share (Nij), proportionality shift (Mij), and high differential shift (Cij). Regional share means that the sector growth component is caused by external factors. Shift proportionality shows the sector growth component from within the region itself. Whereas differential shift shows the sector growth component because of sector-specific competitive conditions.

Table 6 shows the results of the calculation of the shift-share value of each sector forming West Sumatra's GRDP on average from 2011-2019.

From this table it can be seen that the tourism sector (Provision of Accommodation and Eating Drinks) of West Sumatra does not occupy the highest Dij value. This sector only ranks 14th from the highest Dij value order. The low value of Dij

in this sector is due to the low contribution of Nij, Mij and Cij. This low shift-share value indicates that the tourism sector is not really worth mentioning as a superior sector.

Table 5. Results of Calculation of the Development Sector Overlay in West Sumatra from 2011-2019

No	Sectors	LQ		Rps	
		Value	Sign	Value	Sign
1	Agriculture, Forestry and Fisheries	1.81	+	0.92	-
2	Mining and excavation	0.50	-	2.75	+
3	Processing industry	0.50	-	0.63	-
4	Procurement of Electricity and Gas	0.10	-	1.77	+
5	Water Supply, Waste, Waste and Recycling Management	1.24	+	1.00	-
6	Construction of Transportation and Warehousing	0.90	-	1.22	+
7	Large and Retail Trade; Car and Motorcycle Repair	1.15	+	1.39	+
8	Transportation and Warehousing	2.93	+	1.02	+
9	Provision of Accommodation and Eating Drinks (Tourism)	0.35	-	1.27	+
10	Information and Communication	1.40	+	0.96	-
11	Financial and Insurance Services	0.78	-	0.71	-
12	Real estate	0.67	-	1.03	+
13	Company Services	0.27	-	0.70	-
14	Government Administration, Defense and Compulsory Social Security	1.67	+	1.13	+
15	Education Services	1.18	+	1.47	+
16	Health Services and Social Activities	1.24	+	1.06	+
17	Other services	1.00	-	0.94	-

Source: West Sumatra and Indonesia Central Bureau of Statistics (Processing Results)

Table 6. West Sumatra Shift-Share Values in Each Development Sector from 2011-2019 (IDR Million)

No	Sectors	Nij	Mij	Cij	Dij
1	Agriculture, Forestry and Fisheries	1751011.35	-450642.76	-106987.50	1193381.09
2	Mining and excavation	320732.97	74343.17	199604.69	594680.82
3	Processing industry	804610.99	698619.30	-247141.63	1256088.66
4	Procurement of Electricity and Gas	7713.56	6895.43	2705.88	17314.86
5	Water Supply, Waste, Waste and Recycling Management	7534.58	7127.86	-535.33	14127.11
6	Construction of Transportation and Warehousing	655058.02	799539.89	166840.02	1621437.93
7	Large and Retail Trade; Car and Motorcycle Repair	1158585.67	1082421.32	338410.98	2579417.97

Table cont...

8	Transportation and Warehousing	859092.57	1188934.43	3758.79	2051785.78
9	Provision of Accommodation and Eating Drinks (Tourism)	78222.04	85474.98	23648.06	187345.07
10	Information and Communication	488185.92	884444.82	-36108.77	1336521.97
11	Financial and Insurance Services	220888.12	292378.91	-86341.84	426925.19
12	Real estate	146038.96	144404.28	-679.90	289763.34
13	Company Services	32662.34	53095.43	-16826.47	68931.30
14	Government Administration, Defense and Compulsory Social Security	430722.91	321599.60	53855.69	806178.20
15	Education Services	270950.18	302872.71	121298.85	695121.75
16	Health Services and Social Activities	99728.11	141165.12	6018.38	246911.61
17	Other services	122295.80	194782.66	-16241.84	300836.63

Source: West Sumatra and Indonesia Central Bureau of Statistics (Processing Results)

4. CONCLUSIONS

Based on the results of the research described in the previous section it can be concluded that the tourism sector in West Sumatra is not a leading sector. Because, of the 5 methods used to determine the leading sector, only 1 method concludes that the tourism sector in West Sumatra as the leading sector is the GRM method. Whereas 4 other methods stated not as a superior sector. This can be seen from the results of the calculation of the Klassen Typology method in the tourism sector not in quadrant I but instead in quadrant III. From the LQ method calculation this sector is categorized as non-base, from the Overlay method this sector is categorized as Class 3 not Class 1 and from the shift-share method this sector does not occupy the highest Dij value but it is in a fairly low position.

From the results of this study, recommendations that can be suggested are that local governments must continue to support the progress and growth of the tourism sector without ignoring the progress and growth of the truly superior sector of West Sumatra. From the 5 methods presented it can be seen that the leading

sector in West Sumatra is actually the Transportation and Warehousing sector. Because this sector is in quadrant I according to Klassen Typology, it is categorized bases according to the LQ method, is classified 1 according to GRM and Overlay and has the highest Dij value 2.

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