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# A COMPARISON OF TOURISM SECTORS IN EAST JAVA IN FACING SPENDING SHOCK OF DOMESTIC AND FOREIGN TOURISTS

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## A COMPARISON OF TOURISM SECTORS IN EAST JAVA IN FACING SPENDING SHOCK OF DOMESTIC AND FOREIGN TOURISTS

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### Abstract

The tourism plays an important role in the development of region economic potential. East Java has a lot of unique natural, cultural and religious attractions. It attracts domestic and foreign tourists. This study aims to analyze the linkage, the dispersion and impact of output changes of East Java Tourism. This study used a quantitative analysis by mapping and comparing input-output of 11 sectors of East Java Tourism between 2010 and 2015. The result of linkage analysis showed that the land transportation sector consistently has a high forward and backward linkage index. The result of dispersion index analysis showed that the entertainment, arts and recreation services were the key tourism sectors. The simulation results in the form of domestic and foreign tourist expenditure showed a significant impact on increasing output. In conclusion, the tourism sector became one of the priority sectors in driving economic growth and poverty alleviation in East Java.

Keywords: input-output, forward-backward linkage, multiplier effect, tourism spread and sector.

### 1. INTRODUCTION

Tourism is one of the economic and service sectors that has a fairly rapid growth and becomes the major revenue source for several countries in the world. Indonesian government is committed to **continue encouraging** tourism development so that it can compete with other countries (Nesparnas, 2018). East Java Province, with its strategic geographical location, has abundant tourism resources. It has cultural, artistic, ethnic, and religious attractions which attract foreign and domestic tourists. This potential becomes an opportunity and a challenge for the **local** government, private sectors and also the community.

The increasing number of tourists, both foreign and local **tourists**, is expected to also increase the amount of tourist consumption and spending in East Java. Tourist spending and consumption spurs the tourism sector to develop. This development can be **benefited** **enjoyed** by various parties and has major impact on regional economic growth. However, the competition in tourism sector becomes an increasingly fierce competition, so that viable strategies and innovations are needed. Tourism is not only related to the tourism characteristic industry like restaurants, transportation and hotels, but it also involves indirectly-related industries such as banking and fisheries. The linkages between the tourism and other sectors become the driving chain of economic growth and development.

Sastry and Sushil (2018) explain that globalization creates new opportunities in the tourism industry. For example, technology is now used to introduce and market a tourist destination. **The impact of** technology implementation in the tourism sector not only has an impact on sectors that are directly related, but also sectors that do not have a direct linkage such as banks. The banks can benefit from the increasing transaction and creating new job opportunities for **IT** educated generations.

Wiranatha, Antara & Suryawardani (2017) conducted research on increasing the leakage of the tourism sector in Bali. The results showed that economic leakage has an impact on employment and economic growth. On the contrary, a reduction in imports of various products and services for the accommodation sector has a positive impact on growth in the economic sector.

Handayani (2017) stated that the tourism sector has close forward and backward links. The growing tourism sector can also increase the economy and output in all sectors in South Kalimantan Province. Her analysis of the distribution of power **index** and sensitivity index showed that the tourism sector is ready to be the key sector in South Kalimantan. This result is in line with **research conducted by** Socci, Ali, Ciaschini, Pretaroli and Severin

(2016) ~~who~~ ~~which~~ found that tourism <sup>1</sup> is one of the fastest growing industries in Italy and has proven to be a source of prosperity.

Aslanoglu and Balakan (2016) argued that tourism activities have close links with development. It has an impact on increasing income, more adequate infrastructure and quality labor. It also influences the balance of payments in the tourist destinations. It is now becoming more complex. Therefore, a diversification plan needs to be carried out and expanded through different segments. Their study found that the sea transportation is the sub-sector with the highest output growth and open more employment opportunity. Their finding is in line with ~~a research conducted by~~ Abumoud, Ibrahim & Hijawi (2019) ~~who~~ ~~which~~ found that the majority of tourists spent a lot on food and drinks. This spending in turn makes an impact on local communities as it becomes a new source of income and increases employment opportunity.

This study aimed to prove the impact of domestic and foreign tourist expenditure on the increase in output in the tourism sector in East Java Province. It also aimed to analyze the forward and backward linkage index as well as the spread analysis.

## 2. METHOD

East Java Province was chosen as the research location because of its strategic geographical location bordering 3 provinces, namely Special Region of Yogyakarta, Central Java and Bali ~~Province~~. It is also supported by abundant tourism resources in the form of natural, ethnic, cultural, cultural and religious tourism. These resources make East Java a well-known destination for local and foreign tourists.

This study used secondary data obtained from ~~Central Bureau of Statistics (CBS)~~ ~~BPS~~ and the East Java Tourism Office. Data from ~~CBS~~ ~~BPS~~ was in the form of input-output transaction table, data for 2010 and 2015 with dimensions of 110 x 110. Data from the East

Java Tourism Office was in the form of domestic and foreign tourists spending in 2017 and 2014, which was used for shock. Data were analyzed using the Input-Output model which consists of three parts, namely (1) linkage analysis, both forward linkage and backward linkage, (2) dispersion index analysis, consisting of the Power of Dispersion Index (PDI) and the Sensitivity of Dispersion Index (SDI), and (3) multiplier impact the output.

Tourism-related sector classification was based on law number 10 of 2009 on **Tourism** article 14 concerning tourism, which consists of retail traders, railway transportation, land transportation, sea transportation, lake and cross river transportation, air transportation, hospitality services, food and beverage providers, information and communication, company services, and arts, entertainment and recreation services. **Table 1** presents the distribution of sub-sector of tourism industry in east Java province of Indonesia.

**Table 1. Sub-sector of East Java Tourism Industry**

No	Sub-sector of East Java Tourism Industry	Code I-O 2010	Code I-O 2015
1	retail traders	87	85
2	railway transportation	89	86
3	land transportation	90-91	87
4	sea transportation	92	88
5	lake and cross river transportation	93	89
6	air transportation	94	90
7	hospitality services	97	94
8	food and beverage providers	98	95
9	information and communication	99	96
10	company services	105	102-103
11	arts, entertainment and recreation services	109	108

Source: Law No. 10 of 2009 article 14 and Table I-O East Java of 2010 and 2015

## 2.1 Linkage Analysis

**Linkages** analysis was used to prioritize economic sectors in achieving economic growth. It consists of two types of linkages, (1) forward linkage, the calculation based on rows and is related to the sale of finished goods and (2) backward linkage, the calculation based on column and related to raw materials.

### 2.1.1 Forward Linkage

The higher the forward linkage index ( $TFL_j > 1$ ), the greater is the impact on the performance of the tourism sector in encouraging the downstream sector to develop. The formula of forward linkage index is as follows (Hartono, 2013):

$$TFL_i = \frac{\sum_{j=1}^n b_{ij}}{1/n \sum_{i=1}^n \sum_{j=1}^n b_{ij}}$$

Where  $TFL_j$  is total forward linkage for a tourism sector,  $b_{ij}$  is Leontief inverse matrix element row  $i$ , to column  $j$ , and  $n$  is number of sector.

### 2.1.2 Backward Linkage

The higher the backward linkage index ( $TBL_j > 1$ ), the greater is the impact on tourism dependence on other economic sectors and is expected to encourage growth in the upstream sector. The backward linkage index formulation is as follows (Hartono, 2013):

$$TBL_i = \frac{\sum_{i=1}^n b_{ij}}{1/n \sum_{i=1}^n \sum_{j=1}^n b_{ij}}$$

Where  $TBL_j$  is total backward linkage for a tourism sector,  $b_{ij}$  is Leontief Inverse matrix element row  $i$ , to column  $j$ , and  $n$  is number of sector.

## 2.2 Dispersion Index Analysis

### 2.2.1 Power of Dispersion Index (PDI)

To find out the impact of the development of a sector on other sectors is done through an input market mechanism. If the value of PDI is greater than one ( $> 1$ ), the tourism sector has a high dispersion power. The formula for calculating the spread power is as follows:

$$PDI = \frac{n \sum_{j=1}^n a_{ij}}{\sum_{i=1}^n \sum_{j=1}^n a_{ij}}$$

Where PDI is power of dispersion index of a tourism sector and  $\alpha_{ij}$  is Leontief Inverse matrix.

### 2.2.2. Sensitivity of Dispersion Index

SDI shows the performance of one sector in supporting the growth of production in other sectors. The tourism sector has a high Sensitivity of Dispersion Index if the SDI value is greater than one ( $> 1$ ).

$$SDI = \frac{n \sum_{j=1}^n \alpha_{ij}}{\sum_{i=1}^n \sum_{j=1}^n \alpha_{ij}}$$

Where SDI is sensitivity of dispersion index of a tourism sector and  $\alpha_{ij}$  is Leontief Inverse matrix.

### 2.3 Multipliers Effect Analysis

Output multipliers analyze showed changes from exogenous factors to other sectors. The greater the output multiplier of a sector, the more leading a sector is. The output multiplier showed the impact of changes in a sector's final demand on the entire sectors. To analyze the impact of the output multiplier, shock was carried out on exogenous variables in the form of total expenditure of domestic and foreign tourists in East Java Province in 2014 and 2017. Table 2 provides the data on the distribution of domestic and foreign tourists in East Java province.

**Table 2. Total Expenditures of Domestic and Foreign Tourists in East Java**

Sumber: LKJIP, 2018		
Expenditure	2014	2017
Foreign tourist (in million Rupiah)	5,123,750	7,064,112
Domestic tourist (in million Rupiah)	33,769,000	23,838,000

To calculate the impact of changes in output can be interpreted as follows:

$$O_{ij} = \sum_i^n \alpha_{ij}$$

Where  $O_{ij}$  is multipliers effect index of a tourism sector,  $a_{ij}$  is Leontief Inverse matrix, and  $i$  is raw number 1, 2, ..., n.

### 3. RESULTS AND DISCUSSION

#### 3.1 Linkage Index

##### 3.1.1 Forward Linkage

Table 3 presents the results of analysisi using forward linkage.

**Table 3. Forward linkage of Tourism Sectors of East Java Province in 2015**

Sector	Table I-O 2010		Table I-O 2015	
	value	Rank	Value	Rank
retail traders	4.592	1	3.404	1
railway transportation	0.623	11	0.573	10
land transportation	2.171	2	1.155	4
sea transportation	0.910	6	0.956	7
lake and cross river transportation	0.660	10	0.7002	8
air transportation	0.861	7	1.205	3
hospitality services	0.715	8	0.679	9
food and beverage providers	0.933	5	1.047	6
information and communication	1.462	4	1.788	2
company services	1.759	3	1.139	5
arts, entertainment and recreation services	0.696	9	0.568	11

*Source: BPS, 2010 and 2015 (processed)*

Forward linkage ( $\alpha_i > 1$ ) means that the tourism sector is able to encourage its downstream sectors to develop. An increase in demand for output by one unit directly causes the allocation of the output of the tourism sector to other economic sectors to increase by the value of its linkages, including the tourism sector itself.

In 2010, there were four sub-sectors **having** ~~that had~~ a high forward linkage index, namely retail trade, land transportation, information and communication and corporate services. that number increased in 2015. In 2015, there were six sectors that **have** a high forward linkage index, namely retail traders, information and communication, air transportation, land transportation and corporate services. The retail sector has the highest



forward linkage index both in 2010 and 2015. This was because retail trade includes several types of trade directly related to tourism activities, such as souvenir sellers and small food traders. The lowest linkage in 2010 is of the railway transportation (0.623). It was because railway transportation services were neither optimal nor excellent. For example, ticket reservations were less flexible and departure and arrival were not on-time. As a result, passengers preferred other public transportations. In 2015, this sector was improved. The arts, entertainment and recreation services had the lowest forward linkages in 2015 (0.568). This was because tourists were more attracted to nature-based tourist destinations located far from the hustle and bustle of the city with interesting sights for photography.

### ***3.1.2 Backward Linkage***

The value of backward linkage index input and output of more than one ( $\alpha_j > 1$ ) means that the tourism sector is able to provide a strong impetus to the upstream sector or that the tourism sector has the ability to develop other sectors as providers of inputs for the production needs of the sector.

In 2010, there were five sub-sectors that had a high backwardness index or more than one ( $\alpha_j > 1$ ). The sub-sectors are land transportation, sea transportation, hospitality services, information and communication as well as lake, river and crossing transportation. The land transportation subsector has the highest backward linkage among other tourism sub-sectors with a link value of 1.193.

The land transportation sector has a high backward linkage because every tourism activity requires land transportation in the form of cars (private and rental) or public transportation such as buses. Land transportation is the right choice because it is flexible in determining travel routes, departure times, arrival times and stops. Land transportation can take tourists to tourist destination locations that are difficult to reach and remote areas.

The lowest linkages were seen in the food and beverage service sector. This can be caused by lack of innovation and legality. Food and beverage providers don't innovate much, nor do they take care of legalities such as BPOM permits, PIRT and halal certificates. This makes tourists less interested in buying food and drinks at tourist sites. **Table 4 provides the results of testing backward linkage.**

**Table 4. Backward linkage of Tourism Sectors of East Java Province in 2015**

Sector	Table I-O 2010		Table I-O 2015	
	Value	Rank	Value	Rank
retail traders	0.774	9	0.775	11
railway transportation	0.979	6	1.362	2
land transportation	1.193	1	1.138	5
sea transportation	1.153	2	1.415	1
lake and cross river transportation	1.040	4	1.204	4
air transportation	0.770	10	1.257	3
hospitality services	1.120	3	0.881	9
food and beverage providers	0.719	11	1.025	6
information and communication	1.008	5	0.838	10
company services	0.969	7	0.986	8
arts, entertainment and recreation services	0.842	8	1.018	7

*Source: BPS, 2010 and 2015 (processed)*

In 2015, backward linkages increased to seven sub-sectors. The sea transportation sub-sector had the highest backwardness rate of 1.145. Sea transportation such as ferries, cruises, and boats became the choice of tourist transportation because it gives distinct experience and impression. Tourists also began to be interested in natural tourist destinations that have not been touched by humans, some of which are isolated islands and can only be reached by sea transportation. In opposite of sea transportation, retail traders sector had the lowest backward linkage because some of their products lacked legality and higher selling prices.

### 3.3 Dispersion Index Result

**Table 5 presents the results of test using sensitivity and power of dispersion.**

**Table 5. Sensitivity and Power of Dispersion Index of 2010 and 2015**

Sector	Sensitivity of Dispersion Index				Power of Dispersion Index			
	2010		2015		2010		2015	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank
retail traders	0.18	11	0.234	11	1.00	1	1.00	1
railway transportation	1.26	1	1.361	2	0.79	7	0.58	11
land transportation	0.37	10	0.692	9	0.70	9	0.70	8
sea transportation	0.88	6	0.844	5	0.70	8	0.59	10
lake and cross river transportation	1.19	2	1.134	4	0.69	11	0.70	9
air transportation	0.96	5	0.739	7	0.80	6	0.73	7
hospitality services	1.08	4	1.146	3	0.91	4	0.87	3
food and beverage providers	0.85	7	0.750	6	0.69	10	0.76	5
information and communication	0.55	8	0.522	10	1.10	2	1.08	2
company services	0.48	9	0.711	8	0.84	5	0.81	4
arts, entertainment and recreation services	1.18	3	1.374	1	1.05	3	0.76	6

Source: BPS, 2010 and 2015 (processed)

As show in Table 5, there are four quadrants. XXX → aku ga jelas kuadrannya mana!

Quadrant I, sector whose power of dispersion index and sensitivity of dispersion index of higher than 1 ( $> 1$ ) or called the leading sector. It was arts, entertainment and recreation services.

Quadrant II, sectors whose a low power of dispersion index ( $< 1$ ) and high sensitivity of dispersion index ( $> 1$ ) or called the developing sub-sector. There were three sectors, namely railway transportation, river, lake, and cross transportation, and hospitality services.

Quadrant III, sectors whose a high power of dispersion index ( $> 1$ ) and low sensitivity of dispersion index ( $< 1$ ) or called the potential sub-sector. It was the sector of information and communication.

Quadrant IV, sectors whose low power of dispersion index and low sensitivity of dispersion index ( $< 1$ ) or called the underdeveloped sub-sectors. There were three sectors, namely land transportation, sea transportation and air transportation.

### 3.4 Multiplier Effects

Table 6 depicts the simultaneous results of domestic and foreign expenditures

**Table 6. Simulation Results of Domestic and Foreign Tourist Expenditure**

Sector	Foreign Tourist	Domestic Tourist
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	2010		2015		2010		2015	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank
retail traders	5,233,991	6	7,160,271	7	34,495,563	6	24,162,490	7
railway transportation	3,173,232	9	7,079,137	10	34,095,119	9	23,888,703	10
land transportation	3,408,832	3	7,300,080	4	35,647,884	3	24,634,280	4
sea transportation	5,331,163	5	7,333,577	3	35,135,996	5	24,747,315	3
lake and cross river transportation	5,183,460	8	7,209,678	6	34,162,533	8	24,329,216	6
air transportation	5,498,086	1	8,071,426	2	36,236,131	1	27,237,204	2
hospitality services	5,110,660	10	7,075,318	11	33,814,542	10	23,875,816	11
food and beverage providers	5,221,095	7	7,124,005	8	34,410,570	7	24,040,109	8
information and communication	5,341,412	4	8,436,669	1	35,203,542	4	28,469,724	1
company services	3,481,019	2	7,268,046	5	36,123,647	2	24,526,181	5
arts, entertainment and recreation services	4,011	11	7,086,494	9	35,793,583	11	23,913,527	9
<b>Total</b>	<b>53,006,963</b>		<b>81,144,702</b>		<b>385,110,109</b>		<b>273,824,563</b>	

Source: BPS, 2010 and 2015 (processed)

Table 6 shows the simulation results in the form of domestic and foreign tourist expenditure on output multipliers. In 2010, the sector that received the highest impact was air transportation. This was because air transportation is the most effective mode of transportation to reach tourist destinations, between cities, provinces and countries. The sectors that received the lowest impacts were arts, entertainment and recreation services. This was because tourists were more interested in nature-based tourism, away from the hustle and bustle of the city, with a beautiful, relaxing panorama.

In 2015, the sector that received the highest impact was information and communication. This was because all information was globally presented through information technology, for example the use of social media to introduce tourist destinations in East Java. Thus, the tourist destination was not only known by the local people, but also foreign tourists. The role of social media is very significant in attracting tourists. One of its roles is through uploading photos or stories of a tourist destination. This has been proved to be effective in attracting other tourists to visit. The hotel services sector received the lowest

impact. This was because tourists were more interested in choosing illegal lodgings at more affordable prices. Thus, official hospitality services revenue decreased.

The total output of domestic tourists is higher than the total output of foreign tourists. This is because the simulation value of the amount of domestic tourist shopping is higher. This means that tourists visiting the East Java Province are dominated by domestic tourists. From 2010 to 2015, total output multipliers from total foreign tourist spending have increased. This can be interpreted that foreign tourists visiting East Java Province continues to experience an increase. This can be due to tourist destinations in the province of East Java continue to grow and be improved, so as to attract foreign tourists to visit. On the other hand, the output multiplier from the domestic tourist shopping side has decreased. This is caused by the price of transportation tickets, especially air transportation which continues to increase.

#### **4. CONCLUSIONS AND SUGGESTIONS**

##### **4.1 Conclusions**

This study tries to find evidence on the impact of domestic and foreign tourist expenditure on the increase in output in the tourism sector in East Java Province of Indonesia using data from 2010 to 2015. In addition, it also examines the forward and backward linkage index as well as the spread analysis. The linkage analysis shows that only the land transportation sector that consistently has high forward or backward linkages ( $> 1$ ). It showed that the land transportation sector has a high ability in developing the downstream and upstream sectors. The description of the deployment analysis shows that the arts, entertainment and recreation services sector as the leading sector (Quadrant I), the railway transportation sector, river, lake and crossing transportation, and hospitality services as the developing sectors (Quadrant II), the information and communication sector as the potential

sector (Quadrant III), and land transportation, air transportation and sea transportation sectors as the underdeveloped sectors (Quadrant IV). The simulation results in the form of total expenditure for domestic and foreign tourists show that in 2010 the air transport sector received the highest impact, while the arts, entertainment and recreation services sector received the lowest impact. In 2015, the information and communication sector received the highest impact and the hotel sector received the lowest impact.

Based on the conclusions, three suggestions are put forward. First, the government, the private sector and the community can play an active role in driving East Java's economic growth through promotion, investment, improvement of the quality and quantity of tourist destinations. Second, the land transportation, sea transportation and air transportation sectors as underdeveloped sectors need support from various parties in order to further develop. Lastly, the simulation results are expected to be a reference for the government to make policies, especially in the highest and lowest impacts sectors and for the private sector and the community, it is expected to be a reference in investment and business. For local government of East Java province, it is recommended that it has to compile a Regional Tourism Satellite Balance (NESPADA) to see the forward and backward linkage of the tourism sector to other sectors and to support the economic growth of East Java Province.

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