

Research Article

Multiplier Effect of Investment in the Tourism Sector of West Papua Province on Regional Economic Development

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Abstract.

Tourism is one of the sectors that can be used as a mainstay for economic growth in a region oriented towards sustainable development. The tourism sector in this study uses the proxy of the accommodation and food and beverage provision sector. This study aims to see the multiplier effect value arising from investments made in the tourism sector locally (in West Papua Province) and nationally (in all provinces). The approach used in seeing the multiplier effect value is Inter-Regional Input Output (IRIO). The analysis results show that the multiplier effect value of investment in the tourism sector in West Papua Province is 1.51 times the investment value that will be received by West Papua Province and 1.86 times the total investment for the nation. This shows that the tourism sector can be used as one of the options for improving the economy of West Papua Province with the concept of sustainable development.

Keywords: investment, tourism sector, regional economic, development

1. Introduction

The development and economic structure in Indonesia are still spatially dominated by the provinces in the Western Region of Indonesia, especially Java Island. The level of inequality measured using the Williamson Index in Indonesia is still very high, which is 0.759 in 2019 (1). Development that has been Java-centric is the main cause of this inequality. Tourism is one of the economic drivers that can bridge regional divides. Accordingly, the growth of tourism has an impact on the advancement and well-being of the national economy (2).

Eastern Indonesia is famous for its biodiversity and natural beauty which is still pristine. Data from Kusmanaa and Hikmat (3) show that the richness of eastern Indonesia

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(Maluku and Papua) is 1,410 species with 61 endemic species. In addition, east Indonesia is also famous for the world's coral triangle. The world's coral triangle has 30% of all types of coral reefs in the world, 86% of the world's sea turtle species, 2,228 fish species, and more than 500 coral reef species. Most of eastern Indonesia is included in the world's coral triangle area.

The concept of sustainable development that is currently often echoed by various parties demands that economic growth be directed towards environmentally friendly growth. One sector that can be used as a source of economic growth is tourism. Tourism is not only located in one sector in 17 business fields but causes several business fields, one of which is the provision of accommodation and food and beverages.

West Papua Province is one of the provinces that has designated itself as a Conservation Province with the issuance of the Special Regional Regulation of Papua Province (PERDASUS) Number 10 of 2019 concerning Sustainable Development in West Papua Province. For this reason, the regional government needs to seriously initiate development that leads to sustainable development with the main focus on sustainable economic growth as well. Gross Regional Domestic Product (GRDP) data based on current prices in 2023 shows that the economic growth of West Papua Province is still based on extractive commodities.

This study aims to see the multiplier effect of the tourism sector, which in this case is seen in the accommodation and food and beverage provision sector on the regional economy. The multiplier effect can be seen in the economy of West Papua Province and the economy throughout Indonesia.

2. Methods

The information utilized is from IRIO 2016, which classified 34 provinces and 17 sectors. The BPS of West Papua Province is the source of this data. The provision of lodging and food and beverage is the business sector that this study uses as a stand-in for the tourism industry. The provision of food and drinks for immediate consumption as well as short-term lodging for tourists and other travelers fall under this business field category. There are significant differences in the quantity and kind of extra services offered in this category. The provision of long-term housing, such as principal dwellings, the preparation of food or beverages that are not intended for immediate consumption, and wholesale and retail trade activities are not included.

TABLE 1: Distribution of GRDP at Current Market Prices by Industrial Origin (Percent), 2023.

GDP by Industrial Origin	Percent (%)
A. Agriculture, Forestry and Fishing	12.43
B. Mining and Quarrying	10.30
C. Manufacturing	17.31
D. Electricity and Gas	0.08
E. Water supply, Sewerage, Waste Management and Remediation Activities	0.16
F. Construction	14.81
G. Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	13.06
H. Transportation and Storage	4.11
I. Accommodation and Food Service Activities	1.16
J. Information and Communication	3.15
K. Financial and Insurance Activities	2.70
L. Real Estate Activities	1.88
M,N. Business Activities	0.18
O. Public Administration and Defence; Compulsory Social Security	13.49
P. Education	3.37
Q. Human Health and Social Work Activities	1.32
R,S,T,U. Other Services Activities	0.52

The analysis used is Inter Regional Input Output (IRIO). The basic framework of the IRIO table proposed by Miller and Blair (4) is as follows:

Thus, the matrix S can be written as follows:

$$S = \begin{bmatrix} S^{PP} & S^{PQ} \\ S^{QP} & S^{QQ} \end{bmatrix}$$

Where Interregional Linkage (trade between regions) is shown by the S^{QP} and S^{PQ} matrices. While the S^{PP} and S^{QQ} matrices show the linkages between regions. Based on the IRIO basic framework, if read in rows, the matrix can be arranged for each region as follows:

Region P

$$X_1^P = S_{11}^{PP} + S_{12}^{PP} + S_{13}^{PP} + S_{11}^{PQ} + S_{12}^{PQ} + Y_1^P$$

$$X_2^P = S_{21}^{PP} + S_{22}^{PP} + S_{23}^{PP} + S_{21}^{PQ} + S_{22}^{PQ} + Y_2^P$$

$$X_3^P = S_{31}^{PP} + S_{32}^{PP} + S_{33}^{PP} + S_{31}^{PQ} + S_{32}^{PQ} + Y_3^P$$

Region Q

TABLE 2: Clasification of Industrial Origin and Their Codes.

GDP by Industrial Origin	Code
Agriculture, Forestry and Fishing	A
Mining and Quarrying	B
Manufacturing	C
Electricity and Gas	D
Water supply, Sewerage, Waste Management and Remediation Activities	E
Construction	F
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	G
Transportation and Storage	H
Accommodation and Food Service Activities	I
Information and Communication	J
Financial and Insurance Activities	K
Real Estate Activities	L
Business Activities	M,N
Public Administration and Defence; Compulsory Social Security	O
Education	P
Human Health and Social Work Activities	Q
Other Services Activities	R,S,T,U

TABLE 3: Interindustry, Interregional Flows of Goods.

Description		Region P			Region Q		Final Demand	Total Output
		1	2	3	1	2		
Region P	1	S_{11}^{PP}	S_{12}^{PP}	S_{13}^{PP}	S_{11}^{PQ}	S_{12}^{PQ}	Y_1^P	X_1^P
	2	S_{21}^{PP}	S_{22}^{PP}	S_{23}^{PP}	S_{21}^{PQ}	S_{22}^{PQ}	Y_2^P	X_2^P
	3	S_{31}^{PP}	S_{32}^{PP}	S_{33}^{PP}	S_{31}^{PQ}	S_{32}^{PQ}	Y_3^P	X_3^P
Region Q	1	S_{11}^{QP}	S_{12}^{QP}	S_{13}^{QP}	S_{11}^{QQ}	S_{12}^{QQ}	Y_1^Q	X_1^Q
	2	S_{21}^{QP}	S_{22}^{QP}	S_{23}^{QP}	S_{21}^{QQ}	S_{22}^{QQ}	Y_2^Q	X_2^Q
Total Input		V_1^P	V_2^P	V_3^P	V_1^Q	S_2^Q		

Source: Miller dan Blair (2009) modified

$$X_1^Q = S_{11}^{QP} + S_{12}^{QP} + S_{13}^{QP} + S_{11}^{QQ} + S_{12}^{QQ} + Y_1^Q$$

$$X_2^Q = S_{21}^{QP} + S_{22}^{QP} + S_{23}^{QP} + S_{21}^{QQ} + S_{22}^{QQ} + Y_1^Q$$

Where:

X = Total Output

Y = Final Dimand

S = The amount of transactions from one sector to another (within the region itself, or between regions).

From the equation above, if it is derived, we will obtain the Leontief equation as follows:

$$X = (I - A)^{-1}Y$$

Where:

I = identity matrix

Y = final demand

X = Total Output

$(I - A)$ = Leontief matrix

$(I - A)^{-1}$ = Leontief inverse matrix

The value of the Leontief inverse matrix if added up per business field will obtain the total value of the output multiplier. The Leontief inverse matrix if multiplied by the value of one rupiah as the investment shock used, will obtain the multiplier impact of investment in a sector on other sectors both internally and regionally.

3. Result and Discussions

The condition of economic structure and growth can describe the economy of a region. In addition, the economic structure can also be described through the interaction between economic sectors in the region. The limitations of a region in terms of resources will certainly create spatial relationships with the flow of goods and services transactions between regions (5). The IRIO table is used as a tool that can be used to see an overview of the role of an economic sector both in the region and in other regions. The IRIO table can show the value of demand, consumption, investment, exports and imports, and gross added value.

The economic demand structure in the IRIO Table is divided into two, namely intermediate demand and final demand. The highest intermediate demand in West Papua Province is the Manufacturing industry of IDR 23.87 trillion, which is mostly supported by the Oil and Gas Refining Industry. While the smallest intermediate demand is in the Water supply, Sewerage, Waste Management and Remediation Activities sector of IDR 62.18 billion. The Accommodation and Food Service Activities sector has an intermediate demand of IDR 1.08 trillion. While for final demand, the contribution of the

Manufacturing industry sector is the highest at IDR 24.38 trillion and the lowest in the Business Activities sector at IDR 62.24 billion. The Accommodation and Food Service Activities sector has a final demand of IDR 866.23 billion.

TABLE 4: Structure of Demand for Economic Sectors in West Papua Province (IDR billion).

Code	Intermediate (miliar)	Percent (%)	Final (miliar)	Persen (%)	Total (miliar)	Persen (%)
A	1,432.40	2.57	3,812.04	5.56	5,244.44	4.22
B	4,598.84	8.26	865.41	1.26	5,464.25	4.40
C	23,874.13	42.89	24,388.84	35.56	48,262.97	38.84
D	2,417.93	4.34	254.77	0.37	2,672.70	2.15
E	62.18	0.11	88.15	0.13	150.33	0.12
F	5,570.07	10.01	12,366.62	18.03	17,936.69	14.44
G	1,596.84	2.87	3,796.30	5.54	5,393.14	4.34
H	3,871.96	6.96	3,479.18	5.07	7,351.14	5.92
I	1,008.24	1.81	866.23	1.26	1,874.47	1.51
J	844.54	1.52	798.91	1.16	1,643.44	1.32
K	351.77	0.63	583.65	0.85	935.42	0.75
L	741.25	1.33	1,326.23	1.93	2,067.48	1.66
MN	435.99	0.78	62.24	0.09	498.23	0.40
O	6,360.95	11.43	11,072.97	16.15	17,433.92	14.03
P	1,195.71	2.15	2,761.23	4.03	3,956.93	3.18
Q	853.29	1.53	1,363.75	1.99	2,217.04	1.78
RSTU	453.97	0.82	689.25	1.01	1,143.22	0.92
Total	55,670.05	100.00	68,575.76	100.00	124,245.81	100.00

The IRIO table shows that consumption is divided into two, namely household consumption and government consumption. The largest value of household consumption is in the Transportation and Storage sector of IDR 2.45 trillion, and the smallest is in the Public Administration and Defence; Compulsory Social Security sector of IDR 920 million. The Accommodation and Food Service Activities sector has a household consumption value of IDR 546.46 billion. For government consumption, the largest value is in the Public Administration and Defence; Compulsory Social Security sector of IDR 11.07 trillion, or 80.49% of total government consumption. The Accommodation and Food Service Activities sector has a household consumption value of IDR 4.81 billion.

The investment value in the IRIO table is obtained from the sum of gross fixed capital formation and inventory changes. A negative value indicates no additional inventory or a decrease in inventory from the previous year, while in that year there was no additional

TABLE 5: Structure of Household Consumption and Government Consumption in the Economic Sector of West Papua Province (IDR billion).

Code	Household Consumption		Government Consumption	
	Value	Percent (%)	Value	Percent (%)
A	1,317.87	10.99	-	-
B	0.18	0.00	-	-
C	2,175.82	18.14	68.80	0.50
D	254.09	2.12	-	-
E	68.35	0.57	17.59	0.13
F	8.86	0.07	-	-
G	1,226.19	10.22	12.63	0.09
H	2,446.11	20.39	2.22	0.02
I	546.46	4.56	4.81	0.03
J	585.40	4.88	12.61	0.09
K	471.36	3.93	50.59	0.37
L	1,180.69	9.84	-	-
MN	5.27	0.04	0.00	0.00
O	0.92	0.01	11,069.89	80.49
P	1,123.45	9.36	1,584.00	11.52
Q	332.03	2.77	910.06	6.62
RSTU	253.56	2.11	19.57	0.14
Total	11,996.61	100.00	13,752.77	100.00

new stock. The largest investment value in West Papua Province is in the construction sector at IDR 12.35 trillion, or 89.49 percent. For the Accommodation and Food Service Activities sector, it is IDR 3.31 billion or 0.02 percent.

The IRIO table provides export and import conditions, where imports consist of two, namely overseas imports and inter-provincial imports. The largest export value in the economy of West Papua Province is the Manufacturing Industry sector of IDR 21.9 trillion, or 89.07 percent of total exports. The Accommodation and Food Service Activities sector can contribute 0.04 percent, or IDR 10 billion, to the economy of West Papua Province. The largest value of imports is in the Construction sector IDR 349.94 billion, or 36.57 percent. The largest value for inter-provincial imports is the Corporate Services sector of IDR 3.07 trillion, or 21.17 percent. The Accommodation and Food Service Activities sector has an import value of IDR 6.77 billion and 326.61 billion for inter-provincial imports.

TABLE 6: Investment Structure of the Economic Sector of West Papua Province (IDR billion).

Code	Gross Fixed Capital Formation		Changes in Inventories		Investment	
	Value	Percent (%)	Value	Percent (%)	Value	Percent (%)
A	597,79	4,29	115,33	(81,59)	713,12	5,17
B	3,68	0,03	(43,63)	30,86	(39,94)	(0,29)
C	146,92	1,05	(216,05)	152,84	(69,12)	(0,50)
D	0,06	0,00	(0,01)	0,01	0,05	0,00
E	0,03	0,00	0,00	(0,00)	0,03	0,00
F	12.353,10	88,58	-	-	12.353,10	89,49
G	655,23	4,70	1,88	(1,33)	657,11	4,76
H	99,81	0,72	0,31	(0,22)	100,12	0,73
I	3,30	0,02	0,01	(0,01)	3,31	0,02
J	50,33	0,36	0,06	(0,04)	50,39	0,36
K	0,26	0,00	0,00	(0,00)	0,26	0,00
L	-	-	-	-	-	-
MN	18,28	0,13	0,00	(0,00)	18,28	0,13
O	2,09	0,02	-	-	2,09	0,02
P	0,60	0,00	0,00	(0,00)	0,60	0,00
Q	0,60	0,00	0,01	(0,01)	0,61	0,00
RSTU	13,76	0,10	0,71	(0,51)	14,48	0,10
Total	13.945,84	100,00	(141,36)	100,00	13.804,49	100,00

In the IRIO Table, Gross Added Value is calculated by adding up labor compensation, business surplus, and taxes on production minus subsidies on production. The largest Gross Added Value is in the Mining and Quarrying sector of Rp16.26 trillion or 23.97 percent of the economy of West Papua Province. Meanwhile, the Accommodation and Food Service Activities sector can contribute Rp908 billion or 1.34 percent.

The multiplier effect analysis shows that if there is an investment in the tourism sector, which is proxied by the accommodation and food and beverage provision sector, the economy of West Papua Province will experience an increase of 1.51 times from the total investment given. The sector that benefits the most from other than the accommodation and food and beverage provision sector is the Agriculture, Forestry, and Fisheries sector at 9.08 percent of the total effect received by West Papua Province.

Tourism sector investment can be done in various components, including transport infrastructure, social infrastructure, and environmental infrastructure on attractions to tourists. In the long run, three infrastructure investments need to be built, namely

TABLE 7: Export and Import Structure of the Economic Sector of West Papua Province (IDR billion).

Kode	Export		Overseas Imports		Inter-Provincial Imports	
	Value	Percent (%)	Value	Percent (%)	Value	Percent (%)
A	22.35	0.09	2.42	0.25	479.09	3.30
B	905.17	3.68	129.05	13.49	1,911.16	13.15
C	21,929.66	89.07	140.66	14.70	1,806.41	12.43
D	0.04	0.00	10.69	1.12	243.96	1.68
E	0.05	0.00	1.71	0.18	19.16	0.13
F	4.57	0.02	349.94	36.57	2,012.24	13.85
G	1,322.49	5.37	27.16	2.84	779.46	5.36
H	397.80	1.62	78.66	8.22	1,706.42	11.75
I	10.00	0.04	6.77	0.71	326.61	2.25
J	5.81	0.02	15.38	1.61	309.37	2.13
K	3.44	0.01	7.95	0.83	130.67	0.90
L	3.38	0.01	68.81	7.19	291.04	2.00
MN	13.23	0.05	11.79	1.23	280.56	1.93
O	0.07	0.00	65.27	6.82	3,075.72	21.17
P	1.21	0.00	30.37	3.17	582.24	4.01
Q	1.44	0.01	5.93	0.62	417.28	2.87
RSTU	1.00	0.00	4.37	0.46	157.51	1.08
Total	24,621.72	100.00	956.91	100.00	14,528.90	100.00

communication, the hotel and restaurant industry, and recreational facilities (6). Through sustainable tourism development, recent studies have demonstrated that tourism infrastructure improves locals' quality of life both directly and indirectly (7).

Meanwhile, the multiplier effect of investment in the tourism sector in West Papua Province on the regional economy is 1.86 times the investment value. This shows that the investment made provides greater benefits for the region itself, in this case West Papua Province. The province that receives the greatest impact from investment in the tourism sector in West Papua Province is DKI Jakarta Province at 5.11 percent.

West Papua Province's natural resources are an asset that can be used to grow the travel and tourist industry. The wellbeing of local communities, particularly indigenous Papuans, will improve if this comparative advantage is used effectively. For indigenous communities, tourism can be a significant source of revenue, offering chances for economic diversification and entrepreneurship (8). Additionally, community residents,

TABLE 8: Structure of Gross Added Value of the Economic Sector of West Papua Province (IDR billion).

Industrial Origin	Code	Value	Percent (%)
Agriculture, Forestry and Fishing	A	6,489.82	9.56
Mining and Quarrying	B	16,264.38	23.97
Manufacturing	C	14,962.51	22.05
Electricity and Gas	D	235.43	0.35
Water supply, Sewerage, Waste Management and Remediation Activities	E	130.60	0.19
Construction	F	7,086.50	10.44
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	G	4,983.42	7.34
Transportation and Storage	H	3,415.40	5.03
Accommodation and Food Service Activities	I	908.62	1.34
Information and Communication	J	1,426.35	2.10
Financial and Insurance Activities	K	1,296.29	1.91
Real Estate Activities	L	1,923.32	2.83
Business Activities	MN	657.08	0.97
Public Administration and Defence; Compulsory Social Security	O	5,323.35	7.84
Education	P	1,629.21	2.40
Human Health and Social Work Activities	Q	567.06	0.84
Other Services Activities	RSTU	563.14	0.83
	Total	67,862.47	100.00

especially those with traditional knowledge and abilities, may be able to find work through tourism-related activities including guided tours, cultural performances, and handicraft manufacture (9). Tourism can have both direct and indirect economic effects, such as boosting demand for goods and services in local markets and encouraging investment in infrastructure development (10). Additionally, the money made from tourism in indigenous communities can support more extensive economic development projects like infrastructure upgrades, healthcare, and education, improving the general standard of living for local residents (11).

4. Conclutions

The challenge of the world economy in the future is how to create an environmentally friendly economy. One sector that can answer this challenge is the tourism sector.

TABLE 9: Multiplier effect of tourism sector investment on the economy of West Papua Province.

Industrial Origin	Code	Value	Percent (%)
Agriculture, Forestry and Fishing	A	0,14	9,08
Mining and Quarrying	B	0,06	4,22
Manufacturing	C	0,11	7,52
Electricity and Gas	D	0,05	3,24
Water supply, Sewerage, Waste Management and Remediation Activities	E	0,01	0,64
Construction	F	0,00	0,12
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	G	0,05	3,22
Transportation and Storage	H	0,03	1,71
Accommodation and Food Service Activities	I	1,00	66,56
Information and Communication	J	0,01	0,53
Financial and Insurance Activities	K	0,00	0,25
Real Estate Activities	L	0,02	1,45
Business Activities	MN	0,01	0,78
Public Administration and Defence; Compulsory Social Security	O	0,00	0,13
Education	P	0,00	0,03
Human Health and Social Work Activities	Q	0,00	0,02
Other Services Activities	RSTU	0,01	0,50
	Total	1,51	100,00

The results of the analysis show that investment in the tourism sector in West Papua Province, which is proxied by the accommodation and food and beverage provision sector, can provide a multiplier effect of 1.51 times the value of the investment invested. The spillover effect from this investment is also felt by other regions in Indonesia, where DKI Jakarta Province benefits by 5.11 percent of the total multiplier effect created from investment in the tourism sector in West Papua Province.

The results above show that investment in the tourism sector is quite promising. The ease of investing in the tourism sector needs to be considered by the government in addition to aspects of security and comfort. Tourism is expected to be able to grow the local economy, where most of those who have tourism assets are Indigenous Papuans. Thus, the government's policy to invest in the tourism sector has an impact not only on the macroeconomy but also on increasing the income of Indigenous Papuans in West Papua Province.

TABLE 10: Multiplier effect of tourism sector investment on the regional economy.

Province	Value	Percent (%)
11. Aceh	0,0009	0,05
12. Sumatera Utara	0,0041	0,22
13. Sumatera Barat	0,0029	0,15
14. Riau	0,0023	0,12
15. Jambi	0,0011	0,06
16. Sumatera Selatan	0,0022	0,12
17. Bengkulu	0,0004	0,02
18. Lampung	0,0040	0,21
19. Kep. Bangka Belitung	0,0002	0,01
21. Kep. Riau	0,0028	0,15
31. DKI Jakarta	0,0948	5,11
32. Jawa Barat	0,0154	0,83
33. Jawa Tengah	0,0416	2,24
34. DI Yogyakarta	0,0038	0,20
35. Jawa Timur	0,0405	2,18
36. Banten	0,0203	1,09
51. Bali	0,0023	0,12
52. Nusa Tenggara Barat	0,0009	0,05
53. Nusa Tenggara Timur	0,0007	0,04
61. Kalimantan Barat	0,0020	0,11
62. Kalimantan Tengah	0,0013	0,07
63. Kalimantan Selatan	0,0013	0,07
64. Kalimantan Timur	0,0089	0,48
65. Kalimantan Utara	0,0008	0,05
71. Sulawesi Utara	0,0049	0,27
72. Sulawesi Tengah	0,0032	0,17
73. Sulawesi Selatan	0,0678	3,66
74. Sulawesi Tenggara	0,0040	0,22
75. Gorontalo	0,0001	0,00
76. Sulawesi Barat	0,0006	0,03
81. Maluku	0,0031	0,17
82. Maluku Utara	0,0033	0,18
91. Papua Barat	1,5069	81,18
94. Papua	0,0066	0,36
Total	1,8561	100,00

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