

Multiplier Effect Analysis on Local Wisdom-Based Mangrove Forest Ecotourism for Sustainable Economic Development in Langsa City, Aceh

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Abstract. The development of ecotourism clusters based on local wisdom has the potential to create a positive multiplier effect for the local economy. Langsa Mangrove Forest Tourism has an area of around 8,000 hectares and is one of the largest mangrove forests in Southeast Asia. At least, there are around 38 types of mangroves living in the location. The purpose of this study was to analyze the impact of activities at the Langsa Mangrove Forest tourist attraction based on local wisdom on sustainable economic development in Langsa City. The analysis technique used is descriptive analysis to identify all stakeholders and Keynesian Income Multiplier analysis to identify multiple impacts in the Langsa City Mangrove Forest. The results of the research show that based on the data obtained to determine the magnitude of the economic impact on Langsa Mangrove Forest Tourism, the Keynesian Multiplier Effect value was obtained, namely 2.3, which means that every time there is an increase in tourist spending by one rupiah, it will have a direct impact of 2.3 rupiah. The Type 1 Income Multiplier Ratio is 1.84, which means that every one rupiah increase in business unit revenues will result in an increase of 1.84 rupiah in the income of surrounding workers (in the form of business owner income and labor wages). Furthermore, the value obtained from the Type 2 Income Multiplier Ratio is 2.56, which means that if there is an increase of one rupiah in business unit revenues, it is predicted that it will result in an increase of 2.56 rupiah in the business unit owner's income, labor income and labor consumption expenditure in local level. The development of mangrove ecotourism in Langsa City should be able to improve the welfare of the surrounding community, preserve the environment, and strengthen cultural identity. This concept is in line with the principles of sustainable development which emphasizes the balance between economic, social, and environmental aspects.

Keywords: Keynesian Income Multiplier, Ratio Income Multiplier Types 1 and 2, Langsa City Mangrove Forest

INTRODUCTION

Nature-based tourism, especially ecotourism, has become a promising global trend in recent decades. This phenomenon not only provides significant economic opportunities, but also offers a more sustainable approach to the tourism industry. Among the various ecosystems that have the potential to be developed as ecotourism destinations, Mangrove Forests are an attractive and prospective choice. With mangrove forests, as a unique coastal ecosystem, they have great potential to be developed as tourist destinations that not only offer stunning natural beauty, but also invaluable ecological and socio-cultural values.[1]

Langsa Mangrove Forest Tourism has an area of around 8,000 hectares and is one of the largest mangrove forests in Southeast Asia. At least, there are around 38 types of mangroves living in the location such as various types of birds, monkeys, mammals, fish, crabs, mollusks, and reptiles. [2] In addition, in this Mangrove Forest now stands a magnificent building. The building is named the Langsa Mangrove Forest Park Tower. The presence of the tower signifies the presence of a new tourism icon in Indonesia, especially in Langsa City, Aceh. In addition, the Langsa City Mangrove Forest has also received an award at the Anugerah Pesona Indonesia (API) Awards in the Popular Ecotourism category in 2019. [3]

The development of mangrove ecotourism in Langsa City should be able to improve the welfare of the surrounding community, preserve the environment, and strengthen cultural identity. This concept is in line with the principles of sustainable development which emphasizes the balance between economic, social, and environmental aspects. However, the results of the researcher's observations found that local communities, who should be the main actors in ecotourism development, often do not have adequate capacity to manage and develop tourism potential in their areas. According to Tudorache's research results, these limitations cover various aspects, ranging from understanding the concept of ecotourism, business management skills, to the ability to interpret and

present local wisdom to visitors accepted by the local community to be limited. [4] In addition, limited human resources can also result in excessive dependence on outside parties in ecotourism management, which in turn can reduce the sense of ownership of local communities towards the ecotourism initiative. [5]

The development of ecotourism clusters based on local wisdom also has the potential to create a positive multiplier effect for the local economy. The multiplier is a number that shows how much the increase in the community's economic income is as a result of changes (increases or decreases) in economic variables. The multiplier value describes the comparison between the amount of change (increase or decrease) in income with the amount (increase or decrease) in expenditure that has caused changes in the economic income of rural communities. [6] The multiplier effect analysis was carried out by identifying all business actors and tourists in the Langsa Mangrove Forest. The purpose of this study was to analyze the impact of activities at the Langsa Mangrove Forest tourist attraction based on local wisdom on sustainable economic development in Langsa City. Through a cluster approach, various small and medium businesses related to ecotourism can be interconnected and create a strong value chain. This includes not only accommodation and transportation businesses, but also local food producers, souvenir craftsmen, local tour guides, and other supporting service providers. [6]

RESEARCH METHODOLOGY

This research is a field research, which is a research conducted in the field in a real scene. This field research is essentially a method to find out specifically and realistically about what is happening. The data obtained from the location is the community around the Langsa Mangrove Forest tourist area.

Based on its type, this research uses qualitative. Terminologically, qualitative research is a research procedure that produces descriptive data in the form of written or spoken words from people and actors that can be observed. [8]

Multiplier effect analysis will be conducted on each group of tourism actors. The first group is local business units providing goods and services for tourism activities. Important information related to economic impacts are:

- (1) the proportion of money turnover originating from visitor spending to the business unit,
- (2) the proportion of job opportunities that can be created by the business unit,
- (3) the proportion of money turnover to local workers, suppliers, investors, taxes,
- (4) the type and quantity of raw materials needed
- (5) future investment plans.

From this information, it is expected to obtain estimates regarding the direct impact of visitor spending on the local community, estimates of the cost of resources needed to provide goods and services needed by visitors, and estimates regarding future investment plans.

The second group is local workers in local business units providing goods and services for tourism activities. Important information related to economic impacts is (1) the number of workers at the tourist location, (2) the number of working hours and wage levels, (3) the proportion of daily worker expenditures incurred inside and outside the area, and (4) the conditions of employment before working at the current business unit. From these data, it is hoped that estimates can be obtained regarding the indirect impact and the subsequent impact (induced impact) of visitor expenditure. The last group is the local community, where important information related to economic impacts is information regarding the benefits and costs arising from the tourism activity, pride at the local community level, and the extent to which they value the available resources.

From the overall information of the respondents, information will be obtained regarding visitor expenditure, as well as the flow of money of the amount of funds that will have a direct impact, indirect impact, and subsequent impact on the local economy. This economic impact can be measured using the multiplier effect of the money flow that occurs. In measuring the economic impact of tourism activities at the local level, there are two types of multipliers, namely:

1. Keynesian Local Income Multiplier, which is a value that shows how much visitor expenditure has an impact on increasing local community income.

2. Ratio Income Multiplier, which is a value that shows how much direct impact is felt from visitor expenditure on the overall local economy.

This multiplier measures the indirect impact and induced impact.

Mathematically formulated:

$$\text{Keynesian Income Multiplier} = \frac{D + N + U}{E}$$

$$\text{Rasio Income Multiplier, Tipe 1} = \frac{D + N}{D}$$

$$\text{Rasio Income Multiplier, Tipe 2} = D + N + U$$

Description:

E : visitor expenditure (Rupiah)

D : local income obtained directly from E (Rupiah)

N : local income obtained indirectly from E (Rupiah)

U : local income obtained induced from E (Rupiah)

By identifying the economic impacts and leakages that occur, the indirect and induced impacts of tourism activities can be estimated. Furthermore, this information can be used to identify what products are needed but not yet available at the location, and what benefits will be received by the community.

RESULTS AND DISCUSSION

A. Characteristics of Respondents of Langsa Mangrove Forest Tourists

Table 1
Karakteristik Responden Wisatawan Berdasarkan Faktor Demografi

Jenis Kelamin	Frekuensi	(%)
Laki-laki	23	50
Perempuan	23	50
Jumlah	46	100
Usia		
<20 tahun		
20-30 tahun	30	65.2173913
31-40 tahun	5	10.86956522
41-50	7	15.2173913
>50 tahun	4	8.695652174
Jumlah	46	100
Pekerjaan		
Mahasiswa	27	58.69565217
Wiraswasta	6	13.04347826
ASN	4	8.695652174
Karyawan Swasta	4	8.695652174
Yang lain	5	10.86956522
Jumlah	46	100
Pendidikan Terakhir		
SMP		0
SMA	41	89.13043478
Diploma		0
S1/S2	4	8.695652174
Yang lain	1	2.173913043
Jumlah	46	100

Based on Table 1, it can be seen that the respondents of Langsa Mangrove Forest tourists are dominated by tourists aged between 20-30 years, this is possible because the condition of the tourist attraction itself requires tourists to walk quite far, so that extra energy is needed from tourists to be able to enjoy this tourist attraction. So

that tourists from the older age group will be reluctant to visit this tourist attraction. In addition, in the younger age group, someone usually has a more adventurous spirit.

Based on the survey results, the last level of education of the tourist respondents was a high school graduate, which was 89% of the total respondents. This can be seen from the number of respondents who came ranging from 20 to 30 years. The types of jobs are grouped into five groups, namely students, ASN, self-employed, private employees and others. Based on the results in the field, it was obtained that the average tourist was dominated by students who had a percentage of 58.7%, so it can be concluded that most of the respondents of Langsa Mangrove Forest tourists were not working.

B. Characteristics of Respondents of the Workforce Around the Langsa Mangrove Forest

Table 2

Karakteristik Responden Tenaga Kerja

Jenis Kelamin	Frekuensi	(%)
Laki-laki	7	50
Perempuan	7	50
Jumlah	14	100
Usia		
<20 tahun		
20-30 tahun	11	78.57142857
31-40 tahun	3	21.42857143
Jumlah	14	100
Pekerjaan		
Bagian Keuangan	1	7.142857143
Penjaga Malam	1	7.142857143
Penjaga Pos	3	21.42857143
Locket	5	35.71428571
Petugas Lapangan	1	7.142857143
Korlab	1	7.142857143
Parkir	1	7.142857143
Penjaga Toilet	1	7.142857143
Jumlah	14	100
Pendidikan Terakhir		
SD	2	14.28571429
SMP	4	28.57142857
SMA	6	42.85714286
Diploma		
S1/S2	2	14.28571429
Yang lain		
Jumlah	14	100

The development of Langsa Mangrove Forest tourism into a tourist spot also plays a role in creating jobs for the local community, thereby reducing the unemployment rate around the tourist location. This can be seen from the fact that most of the workforce in Langsa Mangrove Forest are people who live around the tourist location. This shows that the development of tourist attractions provides its own benefits for the surrounding community.

The workforce respondents in this study consisted of 14 people with a balanced proportion between men and women of 50%. The average age of respondents ranged from 20 to 30 years, which is 78.6% of the total respondents. The majority of respondents were high school graduates with a proportion of 42.8%. The average occupation of the workforce respondents was a ticket keeper of 35.8%.

C. Characteristics of Respondents in Business Units Around Langsa Mangrove Forest

Table 3
Karakteristik Responden Unit Usaha

Jenis Kelamin	Frekuensi	(%)
Laki-laki	1	16.66666667
Perempuan	5	83.33333333
Jumlah	6	100
Usia		
<20 tahun		
20-30 tahun	2	33.33333333
31-40 tahun	3	50
41-50	1	16.66666667
>50 tahun		0
Jumlah	6	100
Pekerjaan		
Tower	1	16.66666667
Warung Makan	5	83.33333333
ASN		0
Karyawan Swasta		0
Yang lain		0
Jumlah	6	100
Pendidikan Terakhir		
SMP	2	0
SMA	3	50
Diploma		0
S1/S2	2	33.33333333
SD	1	16.66666667
Jumlah	6	100

The respondents of business units in this study based on table 3 were 6 people. Based on the interview results, all business unit owners around the Langsa Mangrove Forest tourist attraction are native residents who have lived around the tourist location for more than 10 years. This characteristic shows that this tourist attraction has an important role for the economy of the community around the tourist attraction.

The respondents of business units in the Langsa Mangrove Forest are dominated by male business unit owners, namely 83%. The average respondent is dominated by an age ranging from 31 to 40 years, namely 50% with the majority of respondents' last education being high school graduates. The majority of types of businesses owned by respondents are food and beverage stalls, namely 83%. They open businesses around the location of this tourist attraction because they want to get additional income, especially female respondents, who want to help their husbands whose income is still not enough to meet their daily needs.

D. Proportion of Tourist Respondents' Expenditure in Langsa Mangrove Forest

Tabel 4

Proporsi Pengeluaran Responden Wisatawan di Hutan Mangrove Langsa

Biaya Pengeluaran	Nilai (Rp)
A. Pengeluaran di luar kawasan wisata	
1. Biaya Transportasi	19,347.83
2. Konsumsi dari rumah	25,978.26
Total A (Kebocoran)	45,326
B. Pengeluaran di dalam lokasi wisata	
2. Konsumsi di lokasi	52,869.57
5. Biaya parkir	2,000
6. Biaya masuk kawasan	20,000
7. Biaya jasa permainan anak-anak	3,260.87
Total B (Penerimaan di lokasi wisata))	78,130
Total Pengeluaran Wisatawan (C=Total A+Total B	123,457
Kunjungan wisatawan per bulan (D) (orang)	500
Total Pengeluaran wisatawan per bulan di lokasi	
wisata (proporsi B*C*D) Rp	1,929,142,344,045.37
Total Kebocoran per bulan (proporsi A*C*D) Rp	1,119,160,207,939.51

In Table 4, it can be seen that consumption on site is the largest cost incurred by tourist respondents and has a value of IDR 52,869, - from the average total expenditure of tourist respondents. This shows that consumption on site has a major influence on tourist expenditure when they do tourism activities. The amount of costs incurred by tourists will vary according to the distance from home to the tourist area they will visit.

The proportion of expenditure made by tourists is related to the diversity of business units and recreational facilities available. The average total expenditure of tourists for one visit is around IDR 123,457.00. This is influenced by the tourist's area of origin, number of dependents, type of vehicle used, and others. Table 4 shows the amount of tourist expenditure per month at tourist locations of IDR 1,929,142,344,045.37. This amount is adjusted to the average number of tourists per month, which is 500 people. The amount of money flow will show the magnitude of the economic impact from tourist expenditure.

Leakage is the portion of money spent by tourists that is not re-spent and does not affect local economic activities. In general, seen from the proportion of recreation costs, the expenditure of tourists who go to the Langsa Mangrove Forest experiences leakage of Rp 1,119,160,207,939.51 for one visit, which is in the form of travel costs and consumption from home. This proportion of leakage is high, therefore it needs to be minimized by improving facilities around tourist locations, for example by increasing the diversity of types of food stalls so that the proportion of expenditure outside tourist locations can be reduced.

E. Direct Economic Impact

Tabel 5
Sebaran Pendapatan Pemilik Responden Unit Usaha dan Dampak Langsung yang Dirasakan Di Hutan Mangrove Langsa

Jenis unit usaha	Jumlah Unit	Total Pendapatan
Tower	1	8,000,000
Warung makan	9	18,000,000
Total Penerimaan (Dampak Langsung) Rp		26,000,000

It can be seen in Table 5, that the food stalls have the largest income in Langsa Mangrove Forest, which is IDR 18,000,000.00 per month, while the smallest income is in Tower which only has an average income of IDR 8,000,000.00 per month. It can be seen in Table 5, the total average income from all business unit respondents is IDR 2,600.00 per month, from the total income there is income from business unit owners (direct economic impact) felt by business unit owners, which is IDR 2,166,66.00 per month. The total direct impact income from all business units located around the tourist location is IDR 26,000,000.00.

F. Indirect Economic Impact

Tabel 6
Sebaran Total Biaya Unit Usaha di Dalam Lokasi Wisata dan Dampak Ekonomi Tidak Langsung yang dirasakan Akibat Keberadaan Wisata Hutan Mangrove Langsa

Jenis Unit Usaha	Jumlah unit usaha	Upah TK	Bahan Baku	Transportasi	Total Biaya	Total
		(Rp)	(Rp)	(Rp)	(Rp)	(Rp)
	- 1	- 2	- 3	- 4	(5=2+3+4)	(6=1*5)
Tower	1	6,600,000	-	-	6,600,000	6,600,000
Warung Makan A	1	-	500,000	500,000	1,000,000	1,000,000
Warung Makan B	1	2,000,000	1,500,000	300,000	3,800,000	3,800,000
Warung Makan C	1	-	150,000	100,000	250,000	250,000
Warung Makan D	1	-	1,000,000	300,000	1,300,000	1,300,000
Warung Makan E	1	-	1,500,000	300,000	1,800,000	1,800,000
Warung Makan F	1	-	500,000	400,000	900,000	900,000
Warung Makan G	1	-	500,000	300,000	800,000	800,000
Warung Makan H	1	-	1,000,000	300,000	1,300,000	1,300,000
Warung Makan I	1	100,000	600,000	300,000	1,000,000	1,000,000
Total Dampak Tidak Langsung						18,750,000

Based on Table 6, it can be seen that the magnitude of the indirect economic impact that can be felt from the existence of Langsa Mangrove Forest tourism varies depending on the type of business unit. The largest indirect economic impact is felt from the Tower business unit type, this is because this business unit is a new symbol of tourism in Langsa Mangrove Forest, which is IDR 6,600,000.00. The magnitude of the indirect economic impact

that can be felt from the existence of Langsa Mangrove Forest tourism can be seen from the total amount of costs incurred by all business units, which is IDR 18,750,000.00 per month.

G. Induced Impact

Tabel 7
Sebaran Pengeluaran Responden Tenaga Kerja (TK) dan Dampak Lanjut yang dirasakan di Wisata Hutan Mangrove Langsa

Jenis Pekerjaan	TK	Pengeluaran per bulan	Total Pengeluaran
	Total (orang)	(Rp)	(Rp) (3=1*2)
	- 1	- 2	
Tower	6	1,500,000	9,000,000
Warung Makan A	-	500,000	
Warung Makan B	4	3,000,000	12,000,000
Warung Makan C	-	1,500,000	-
Warung Makan D	-	1,500,000	-
Warung Makan E	-	1,500,000	-
Warung Makan F	-	600,000	-
Warung Makan G	-	500,000	-
Warung Makan H	-	1,000,000	-
Warung Makan I	1	1,000,000	1,000,000
Total (Dampak Lanjutan)			22,000,000

From table 7 above, it can be seen that the continued economic impact felt from the existence of Langsa Mangrove Forest tourism is IDR 22,000,000.00.

H. Multiplier Effect Value of Tourist Respondents' Expenditure

Tabel 8
Nilai Pengganda (Multiplier Effect) dari Arus Uang yang Terjadi di Wisata Hutan Mangrove Langsa

Multiplier	Nilai
Keynesian Income Multiplier	2,3
Ratio Income Multiplier Tipe 1	1,84
Ratio Income Multiplier Tipe 2	2,56

Based on the data obtained to determine the magnitude of the economic impact on Langsa Mangrove Forest Tourism, the Keynesian Multiplier Effect value was obtained, which is 2.3, which means that every increase in tourist spending of one rupiah, will have a direct impact of 2.3 rupiah on the economy of the surrounding community. So if there is tourist spending of IDR 10,000.00, it will have a direct impact of IDR 23,000.00 on the economy of the surrounding community. The value of the Type 1 Income Multiplier Ratio is 1.84, which means that every increase of one rupiah in business unit revenue will result in an increase of 1.84 rupiah in the income of the surrounding workforce (in the form of business owner income and labor wages).

Furthermore, the value obtained from the Type 2 Income Multiplier Ratio is 2.56, which means that if there is an increase of one rupiah in business unit revenue, it is estimated that it will result in an increase of 2.56 rupiah in the income of business unit owners, labor income, and labor consumption expenditure at the local level.

Based on the results of the previous explanation, it can be concluded that the existence of Langsa Mangrove Forest Ecotourism has had a real economic impact on the economy of the surrounding community, especially for people who open their businesses in the Langsa Mangrove Forest environment. The economic impact that occurred in this study was said to be very high, as can be seen from the Keynesian Income Multiplier value obtained, which was 2.3. This is because tourists who come to this location tend to spend their expenses in tourist

attractions. In other words, the proportion of leakages (leakage/expenditure outside the tourist location) is smaller than the proportion of expenditure at the tourist location. The Type 1 Income Multiplier Ratio and Type 2 Income Multiplier Ratio can be said to have had an economic impact on tourism activities because the Type 1 and Type 2 Income Multiplier Ratio values are greater than or equal to one (≥ 1). The Keynesian Income Multiplier value can still be increased in line with efforts to increase the development of the natural tourism sector by continuing to increase the number of tourists visiting, increasing the empowerment of local communities and providing goods needed by tourists by existing business units in order to attract tourists to buy consumption at business units around tourist locations. This is expected to increase the proportion of tourist expenditure at tourist attractions (tourist expenditure), which will directly or indirectly have an impact on the economic conditions of the surrounding community.

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