The Economic Potential of Natural Tourism Teroh-Teroh Waterfall on Community Income Langkat District

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ABSTRACT

Ecotourism is ecologically sustainable tourism that focuses on nature management to encourage understanding, appreciation, and conservation of the environment and culture. This paper analyzed the potential of Teroh-teroh waterfall ecotourism to increase the income of the community around the tourist attractions. This study aims to determine the factors of attractiveness, science and technology, facilities and infrastructure, security, and the number of visitors who are relevant in influencing the income of the community around the location of the Teroh-teroh waterfall tourist attraction in Rumah Galuh Village, Sei Bingai District, Langkat Regency, North Sumatra. This research uses a quantitative approach. Quantitative data is a type of research data in the form of numbers and analysis using statistics. Data was processed using variable test analysis and then using multiple linear regression. The data obtained and the distribution of questionnaires was processed using SPSS software Version 25.0 for Windows. The results of this study indicate that of the 7 variables analyzed Based on the results of the management of Confirmatory Factor Analysis (CFA) on the rotation output (Rotated Component Matrix) the largest component 1 is the infrastructure of 0.965, worthy of influencing Community income. So it can be concluded from the results of this study that infrastructure has a significant effect on community income around the Teroh-through waterfall tourist location and shows that ecotourism of 0.839 is feasible to affect community income. So it can be concluded that ecotourism also has a significant effect on community income around the Teroh-teroh Waterfall tourist location.

KEYWORDS

CFA; community income; ecotourism; infrastructure

1. INTRODUCTION

Tourism development can support and accelerate economic growth, its activities also realize consumption and investment demand in turn grow the production of goods and services. When traveling, tourists usually shop. Thus, it creates demand (tourism's final demand), namely the market for goods and services. In addition, the final demand of tourists indirectly makes demand in the form of capital goods and raw materials (investment-derived demand) in production to fulfill tourists' needs for goods and services. To meet demand, there is a need for a good investment in the fields of transportation and communication, hospitality and other accommodations, handicraft industries and consumer product industries, service industries, restaurants, restaurants, and so on (Spillane, 2004). Tourism is not only important as a determinant of economic growth and development but also an effective tool in achieving balanced regional development.

Langkat Regency is part of 33 districts/cities in North Sumatra. Having a population of around 902,986 people, Langkat Regency consists of 23 sub-districts with an area of 6,272 km^2. Its location, which can be said to be quite large, supports that Langkat Regency has tourism potential located in various sub-districts and villages, one of which is the terror-through waterfall located in Rumah Galuh Village, Sei Bingai District, Langkat Regency. For this reason, the culture and tourism office is required to be more observant and able to handle and see these opportunities.

The terror-through waterfall tourism area is located in Rumah Galuh Village, Sei Bingai District, Lalat Regency, North Sumatra. Sei Bingai District has an area of 331.75 km2 with a population of 44,508 with a density of 134 people/km2 and has 15 villages and 1 sub-district. Teroh-through waterfall tourism is located in a forest area that functions as a water catchment area, a source of wood, and is also one of the natural resources that play a role in maintaining, maintaining and increasing the availability of water and soil fertility, has considerable tourism potential and should be developed.

The attraction of this through-through waterfall natural tourist attraction is natural tourism, enjoying the natural scenery, camping, bathing in waterfalls, and others. Teroh-through Waterfall is located in a mixed community forest area with an agroforestry system dominated by community forests consisting of various types of trees that are planted in a mixed manner whose land management status is by the community and cultivated to improve welfare. Various types of trees are also nature conservation areas to collect plants and or natural animals that are used for research, science, education, supporting cultivation, culture, tourism, and recreation.

From an economic aspect, this is of course very beneficial for the local community. But from another aspect, there is no government intervention, resulting in competition in grabbing visitors to be unhealthy and prone to conflict. The increasing proliferation of tour guide communities that compete to get as many visitors as possible is the reason for the conditions that often occur in the natural tourism of the Teroh-through waterfall. The action of grabbing visitors by stopping vehicles on the streets is one example of how the practice of unfair competition takes place. Some visitors were even quoted a sum of money when crossing the villages around the tourist attractions.

2. METHODOLOGY

This study uses a type of quantitative research, quantitative research is research that aims to find out the degree of relationship and pattern/form of influence between two or more variables. Where with this research, a theory will be built that functions to explain, predict, and control a phenomenon. To support quantitative analysis, the CFA (Confirmatory Factor Analysis) model is used where this model is used to summarize several variables. Then test the classical assumption to obtain the best linear unbiased estimator (BLUE) of a multiple regression equation with the least squares method Least Squares.

The equation or formula for factor analysis is as follows:

X1 = Ai1 F1 + Ai2F2 + A13F3 + Ai4F4 +.....+ ViUi..... (3.1)

Where:

Fi = Ith normalized variable

All = Regression coefficient from variable to I in common factor I

Vi = Normalized regression coefficient of variable I on unique factor to I F = Common factor

Ui = Unique variable for a variable to I M = Number of common factors

Common factors can be formulated as follows:

Fi = WiX1 + Wi2X2 + Wi3 X3 +.....+ Wik Xk..... (3.2)

Where:

Fi = Factor I estimation

WI = Factor weight or factor coefficient score

X K = Number of variables

The main principle of factor analysis is correlation, so the assumptions related to the correlation statistical method:

a. The magnitude of the correlation or correlation between independent variables must be strong enough.
b. The magnitude of the partial correlation, the correlation between two variables by assuming the other variable.
c. Testing of a correlation matrix is measured by the Barlett Test Of Spericity or by Measure Sampling Adequacy (MSA).

Then using multiple linear regression analysis to solve problems and prove the correctness of the hypothesis that has been proposed, this study aims to see the relationship between the selected variables to the income of the community (Y) by using multiple regression analysis with the formula:

$Y = \alpha + \beta 1\ X1 + \beta 2\ X2 + \beta 3\ X3 + \beta 4\ X4 + \beta 5\ X5 + \beta 6\ X6 + \beta 7\ X7 + \beta 8\ X8 + \varepsilon$

where:

Y = Community Income

a = Constant

b1-b2 = Regression coefficient

X1 = Attraction

X2 = Facilities and infrastructure

X3 = Security

X4 = number of visitors

X5 = Location

X6 = Infrastructure

X7 = Ecotourism

e = Error

3. RESULTS AND DISCUSSION

3.1. Results of Data Analyss Confirmmatory Factor Analysis (CFA)

The method used in this factor analysis is the main component method. From the Table 1, the value of Kaiser Mayer Olkin (KMO) is 0.740. This value indicates that the data is valid for further analysis with factor analysis. The Bartlett test value of 249,661 with a significant value of 0.000 is very far below 5%, so the correlation matrix formed is an identity matrix, or in other words, the factor model used is very good.

Table 1. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.740
Bartlett's Test of Sphericity	Approx. Chi-Square	249.661
	Df	21
	Sig.	.000

Table 2. Anti-image Matrices

		Attractiveness	Facilities and infrasturcture	Security	Number of visitors	Location	Infrastructure	Ecotourism
Anti-image covariance	Attractiveness	.297	-.074	-.066	.052	-.004	.024	-.025
	Facilities and infrasturcuture	-.074	.361	.014	.182	.002	-.090	-.025
	Security	-.066	.014	.707	.040	.045	.189	-.036
	Number of visitors	.052	.182	.040	.421	.006	-.239	-.027
	Location	-.004	.002	.045	.006	.053	.031	-.046
	Infrastructure	.024	-.090	.189	-.239	.031	.473	-.017
	Ecotourism	-.025	-.025	-.036	-.027	-.046	-.017	.049
Anti-image Correlation	Attractiveness	.936a	-.227	-.145	.147	-.034	.065	-.208
	Facilities and infrasturcuture	-.227	.832a	.027	.467	.018	-.218	-.187
	Security	-.145	.027	.712a	.073	.232	.327	-.192
	Number of visitors	.147	.467	.073	.633a	.038	-.535	-.188

Location	-.034	.018	.232	.038	.693a	.197	-.915
Infrastructure	.065	-.218	.327	-.535	.197	.667a	-.115
Ecotourism	-.208	-.187	-.192	-.188	-.915	-.115	.680a

3.4.1 Measures of Sampling Aqequacy (MSA)

From the Table 2, it is known that the variables in this study have an MSA value of > 0.5 so that the variables can be analyzed as a whole further. Furthermore, to see which variables have a commonalities correlation value above or below 0.5, the following results are known:

Table 3. Communalities

	Initial	Extraction
Attractiveness	1.000	.814
Facilities and infrastructure	1.000	.700
Security	1.000	.534
Number of visitors	1.000	.717
Location	1.000	.918
Infrastructure	1.000	.736
Ecotourism	1.000	.933

The results of data analysis showed that the greater the commonalities of a variable, the closer the relationship with the factors formed. The communalities table shows that nine variables have a contribution that exceeds 0.5 or 50%, namely attractiveness, facilities and infrastructure, security, number of visitors, location, infrastructure, and ecotourism. However, the feasibility should be further tested with Variance Explained

Table 4. Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loading			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.787	54.099	54.099	3.787	54.099	54.099	3.242	46.307	46.307
2	1.565	22.363	76.462	1.565	22.363	76.462	2.111	30.155	76.462
3	.690	9.854	86.316						
4	.488	6.977	93.293						

5	.240	3.433	96.726
6	.203	2.899	99.625
7	.026	.375	100.000

Based on the results of the total variance explained in the initial table of Eigenvalues, it is known that there are only 2 variable components that are factors affecting people's income. Eigenvalues show the relative importance of each factor in calculating the variance of the 7 variables analyzed. From the table above, it can be seen that there are only five factors that are formed. Because both factors have a total value of eigenvalues above 1, which is 3.787 for factor 1 and 1.565 for factor 2. So the factoring process stops at only 2 factors that will participate in the next analysis.

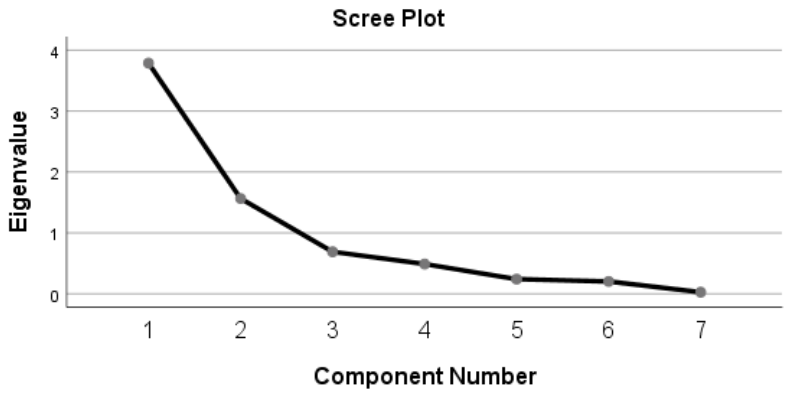

Figure 1. Scree Plot Graph

The scree plot graph shows that from one to two factors (the line of the Component Number axis) = From the number 1 to 2 the direction of the graph decreases, while from the numbers 3 to 4 the line is already below the number 1 of the Y axis (Eigenvalues). This shows that two factors are best for summarizing the seven variables.

Table 5. Component Matrix

	Component	
	1	2
Attractiveness	.890	.147
Facilities and infrastructure	.827	.129
Security	.431	-.590
Number of visitors	-.562	.633
Location	.861	.420
Infrastructure	-.571	.640
Ecotourism	.861	.437

After it is known that two factors are the most optimal number, it can be seen in the Component Matrix table showing the distribution of the seven variables in the two factors formed. Meanwhile, the numbers in the table are factor loadings, which show the magnitude of the correlation between a variable with factor 1 and factor 2. The process of determining which variable will go into which factor, is carried out by making a large comparison of correlations in each row. The component matrix table shows a correlation above 0.5. In factor 1, namely:
1. Attractiveness has a loading factor of 0.890
2. Facilities and infrastructure have a loading factor of 0.827
3. The location has a loading factor of 0.861
4. Ecotourism has a loading factor of 0.861
In factor 2, which is a variable that shows a correlation above 0.5, namely:
1. The number of visitors has a loading factor of 0.633
2. Infrastructure has a loading factor of 0.640

Table 7. Rotated Component Matrix[a]

	Component	
	1	2
Attractiveness	.846	-.314
Facilities and infrastructure	.782	-.297
Security	.082	-.726
Number of visitors	-.174	.829
Location	.956	-.061
Infrastructure	-.179	.839
Ecotourism	.965	-.047

The Rotated Component Matrix shows a clearer and more tangible distribution of variables. The determination of variable input to a certain factor is based on the amount of correlation between variables and factors, namely to a large correlation.
Based on the results of the component matrix value, it is known that of the seven factors, the ones that are worthy of influencing the income of the community are two factors that come from:
a. Component 1 of the largest: Ecotourism
b. Component 2: Infrastructure
Furthermore, the multiple linear regression equation model in this study is formulated:
Y = a + b1x1 + b2x2 + e
Where:
Y = Community Income
X1 = Ecotourism
X2 = Infrastructure
e = Error term
The multiple linear regression model in this study uses a classical assumption test, namely:
a. Normality Test
b. Multicollinearity Test
c. Heteroscedasticity Test

3.4.2 Multiple Linear Regression

Table 8. Multiple Linear Regression

Model	Unstandardized Coefficient		Standardized Coefficient	t	Sig.	Collinearity Statistics	
	B	Std. error	Beta			Tolerance	VIF
(Constant)	56.040	7.000		8.006	.000		
Infrastructure	.242	.341	-.101	1.689	.481	.939	1.065
Ecotourism	1.414	.443	-.452	3.193	.003	.939	1.065

Dependent Variable: community income
Based on the table above, multiple linear regressions are obtained as follows
Y = 56,040 + 0.242 X1 + 1,414 X2
The interpretation of the multiple linear regression equation is:

1. If everything in the independent variables is considered to be fixed, the value of the Community Income is 56.040
2. If infrastructure increases, then the community's income will increase by 0.242 per unit of value.
3. If ecotourism increases, then the community's income will increase by 1,414 per unit of value.

3.4.3 Goodness of Fit Test

Table 9. T-test

Model	Unstandardized Coefficient		Standardized Coefficient	t	Sig	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	56.040	7.000		8.006	.000		
Infrastructure	.242	.341	-.101	1.689	.481	.939	1.065
Ecotourism	1.414	.443	-.452	3.193	.003	.939	1.065

Based on the Table 9, it can be seen that the influence of infrastructure on community income. count 1.689 > table 1.678 and significant 0.481 < 0.05, then Ha is accepted and H0 is rejected, which states that infrastructure significantly affects the income of the community. The influence of ecotourism on community income. count 3.193 > table 1.678 and significant 0.003 < 0.05, then Ha is accepted and H0 is rejected, which states that ecotourism significantly affects the income of the community.

Table 10. F-test

Model		Sum of squares	Df	Mean Square	F	Sig.
1	Regression	108.321	2	54.160	5.101	.010b
	Residual	456.549	43	10.617		
	Total	564.870	45			

The F test (simultaneous test) was carried out to see the influence of the independent variable on the bound variable simultaneously. The method used is to look at the level of significance (= 0.05). If the significance value is less than 0.05 then H0 is rejected and Ha is accepted. Based on the Table 10, it can be seen that the Fcal is 5.101 > the Ftable is 2.30 and significantly smaller than 0.05, namely 0.010 < 0.05, so the Ha received infrastructure and ecotourism together significantly affects the income of the community in Lalat Regency.

3.4.4 Coefficient of Determination

Table 11. Determination Coefficient Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.738a	.592	.554	3.258

Based on the table above, it can be seen that the adjusted R Square figure of 0.554 which can be called a determination coefficient which in this case means that 55.4% of the income of the community in Langkat Regency can be obtained and explained by infrastructure and ecotourism. While the remaining 100% - 55.4% = 44.6% was influenced by other variables that were not included in the model or not studied.

The Effect of Attractiveness on Community Income Based on the results of the processing of the comfirmatory factor analysis (CFA) on the rotational output (rotated component matrix), it shows that the attraction factor is not feasible to affect the income of the community. So it can be concluded that the attraction is not significant to the income of the community around the Teroh-teroh waterfall tourist location.

The influence of advice and infrastructure on community income Based on the results of the processing of the comfirmatory factor analysis (CFA) on the rotational output (rotated component matrix), it shows that the factors of facilities and infrastructure are not suitable to affect the income of the community. So it can be concluded that the facilities and infrastructure are not significant to the income of the community around the Teroh-teroh Waterfall tourist location.

The effect of security on people's income. Based on the results of the processing of the comfirmatory factor analysis (CFA) on the rotational output (rotated component matrix), it shows that the safety factor is not feasible to affect the income of the community. So it can be concluded that safety is not significant to the income of the community around the Teroh-teroh waterfall tourist location.

The effect of the number of visitors on the income of the community. Based on the results of the processing of the comfirmatory factor analysis (CFA) on the rotation output (rotated component matrix), it shows that the factor of the number of visitors is not suitable to affect the income of the community. So it can be concluded that the number of visitors is not significant to the income of the community around the Teroh-teroh waterfall tourist location.

The influence of location on community income. Based on the results of the processing of the comfirmatory factor analysis (CFA) on the rotational output (rotated component matrix), it shows that the location factor is not feasible to affect the income of the community. So it can be concluded that the location is not significant to the income of the community around the Teroh-teroh waterfall tourist location.

The influence of infrastructure on community income. Based on the results of the management of Confirmatory Factor Analysis (CFA) on the rotational output (Rotated Component Matrix), it shows that the largest component 1 is infrastructure of 0.965, which is feasible to affect the income of the community. So it can be concluded that infrastructure has a significant effect on the income of the community around the Teroh-teroh Waterfall tourist location.

4. CONCLUSION

The CFA test on the KMO and Bartlett's Test table shows that the data is valid and can be further analyzed by factor analysis. The Bartlett test value states that the correlation matrix formed is an identity matrix, or in other words, the factor model used is good and in the Rotated Matrix table it is known that of the seven factors, two factors should affect people's income, namely infrastructure and ecotourism. The results of multiple linear regression show that if there is an increase in infrastructure, the community's income will increase, if there is an ecotourism development, the community's income will increase. The results of the partial hypothesis test show that infrastructure and ecotourism have a significant effect on the income of the community around the area of the tooth-through waterfall tourist location.

Based on the results and conclusions of this study, the researcher tries to provide some suggestions for the elements related to this study. The suggestions that the researcher can give in this thesis research are maintain the cleanliness of the Teroh-teroh waterfall tourist attraction so that the waterfall is not polluted and preserve the nature around the location of the tourist attraction by not cutting down trees carelessly to reduce natural disasters. The manager can cooperate with the community the Sei Bingai sub-district government and the Tourism Office to conduct marketing or promotion related to tourist locations through mass media, research institutions, the Internet, and television and the management needs to add supporting facilities such as the creation of rest areas, procurement of eating places, information centers, mullah, and guard posts

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