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Green Accounting Policy for Water Transportation Services to Support Sustainable Tourism in the Lake Toba Area

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Abstract: The Lake Toba area is not only an important tourism attraction in Indonesia, but also one of the five super priority tourist destinations that the Ministry of Tourism and Creative Economy focuses on, namely Lake Toba, Likupang, Borobudur, Mandalika, and Labuan Bajo. However, the rapid growth of tourism in the region has led to increased pressure on the environment and ecosystem of Lake Toba, including the negative impact of the water transportation sector which has the potential to damage the environment. The purpose of this study is to obtain the relationship between the green accounting policy of water transportation services and its driving factors including CSR programs for water transportation services, management support, and community support. The research methods used in this study are data collection on 65 samples of water transportation services, literature study, identifying problems, pre-processing, analyzing data, data analysis results, final evaluation, research approach with a mix method (qualitative and quantitative). Based on the results of the qualitative test of Nvivo data processing, the concept of green accounting policy carried out by water transportation business actors in Lake Toba tourist destinations is environmentally friendly technology, community support, management support and corporate social responsibility activities. This result is supported by the results of a quantitative test, namely the determination coefficient test where community support, management support and corporate social responsibility have an effect on green accounting policies.

Keyword: Policy, Green Accounting, Water Transportation Services, Sustainable Tourism, Lake Toba

INTRODUCTION

Sustainable tourism is the main focus in the development and management of tourist destinations in various regions, including the Lake Toba Area (Tanjung et al., 2024). As one of the main tourist destinations in Indonesia, Lake Toba attracts tourists from within the country and internationally, however, the rapid growth of the tourism industry often has a negative impact on the environment and the sustainability of the local economy (Widianingsih et al.,

2023). In this context, the implementation of green accounting policies in the water transportation services sector is relevant because of the potential for significant environmental impacts of transportation activities on the ecosystem (Alsaifi et al., 2023) and the sustainability of the Lake Toba area. Therefore, this study aims to investigate the extent to which green accounting policies in water transportation services can support efforts towards sustainable tourism in the Lake Toba area.

Based on theory, sustainable tourism covers three aspects, namely economic, environmental, and social, so these three factors in this study are tested to determine the company's green accounting policy (Zulvianti et al., 2022). The variables used in this study include Corporate Social Responsibility (CSR) as X1, management support as X2, community support as X3, and green accounting policy for water transportation services as variable Y. CSR variables are identified as one of the key factors influencing green accounting policies, considering that strong corporate social responsibility can be a key driver in the adoption of environmentally friendly accounting practices (Cater et al., 2023). CSR has been recognized as an important factor in the formation of sustainable corporate policies and practices, while management support and community support can be key determinants in the implementation of policies that promote the environment and sustainability.

This study also highlights the importance of integrating the concept of green accounting in management practices and business policies, especially in the water transportation sector which has a direct impact on the aquatic ecosystem and the surrounding environment (Christ et al., 2017). By analyzing the factors that affect green accounting policies, this study is expected to provide useful guidance for water transportation companies and other stakeholders in improving the sustainability of the tourism industry in the Lake Toba area.

The formulation of the problems to be studied are: 1) How does Corporate Social Responsibility (CSR) affect the green accounting policy of water transportation services in the Lake Toba Area?. 2) What is the effect of management support on the green accounting policy of water transportation services in the Lake Toba Area?. 3) How does community support affect green accounting for water transportation services in the Lake Toba Area?. (4) What is the influence of Corporate Social Responsibility (CSR), management support, and community support on green accounting of water transportation services in the Lake Toba Area?

This research has a very important urgency considering the strategic role of water transportation services in supporting sustainable tourism in the Lake Toba area. The Lake Toba area is not only an important tourism attraction in Indonesia, but also one of the five super priority tourist destinations that the Ministry of Tourism and Creative Economy focuses on, namely Lake Toba, Likupang, Borobudur, Mandalika, and Labuan Bajo (Ariestani et al, 2023). However, the rapid growth of tourism in the region has led to increased pressure on the environment and ecosystem of Lake Toba, including the negative impact of the water transportation sector which has the potential to damage the environment. Therefore, the establishment of a green accounting policy in the water transportation sector is very urgent to maintain the sustainability of the Lake Toba ecosystem and ensure that sustainable tourism growth can be achieved.

METHOD

The research methods used in this study are data collection on 65 samples of water transportation services, literature study, identifying problems, pre-processing, analyzing data, data analysis results, final evaluation, research approaches with mixed methods (qualitative and quantitative). Qualitative data processing analysis using Nvivo. Then quantitative analysis with the data analysis method, namely using Statistical Product and Service Solutions (SPSS) by testing questionnaires, validity, reliability, data normality, multicollinearity, heteroscedasticity, multiple regression analysis, and testing the determination coefficient.

RESULTS AND DISCUSSION

Qualitative Testing Results

Based on data analysis regarding green accounting policies carried out by water transportation business actors in the Lake Toba tourist area, as well as the perceptions of business actors that most often appear, several keywords were found using Nvivo software in the form of word clouds. These words include language, green, accounting, policy, business, community, csr, management, support, positive, engaged, environmental, active, activity, initiative, awareness, power, customer, resource, water, large, employee, transportation, related, program, interview, sustainable, in, activity, communication.



Gambar 1. Word Cloud

Source : Nvivo 12 Pro Data Processing Results

Then the next feature is similar to the diagram above, but uses numbers to show that there is a significant correlation in the data that has been analyzed. The results are shown in the image above, which is a summary of the source of this study.

Table 1. Coding Results

Word	Length	Count	Weighted Percentage (%)
Green	5	1231	4,48
accounting	10	1218	4,43
Effort	5	1056	3,84
Policy	9	713	2,59
community	10	609	2,22
Csr	3	464	1,69
management	9	465	1,69
backing	8	300	1,09
Positive	7	292	1,06
involved	8	246	0,89
milieu	10	239	0,87
Active	5	228	0,83
Activities	8	220	0,80

inisiative	9	210	0,76
awareness	9	183	0,67
power	4	145	0,53
custumer	9	146	0,53
source	6	145	0,53
helpfull	8	136	0,49
water	3	129	0,47
big	5	128	0,47
employee	8	128	0,47
transportasion	12	129	0,47
relate	9	115	0,42
Programe	7	109	0,40
Interviews	9	111	0,40
sustainable	13	106	0,39
impact	6	104	0,38
Dialogue	6	94	0,34
communication	10	81	0,29

Source : Nvivo 12 Pro Data Processing Results

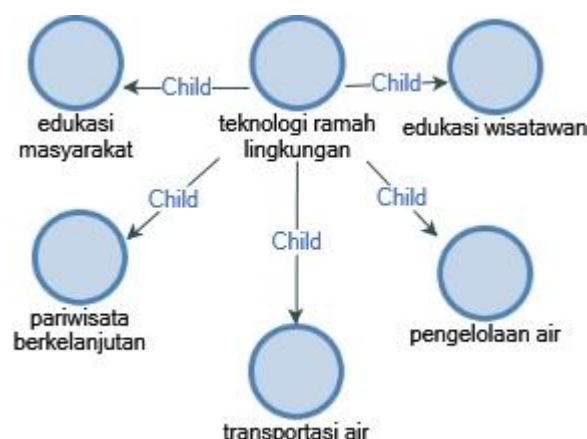
The next feature used is the Hierarchy Chart Mind Map. With this feature, graphs can be generated that show various types of green accounting policy concepts carried out by water transportation business actors in Lake Toba tourist destinations. In the figure below, it can be seen that these types of policies include environmentally friendly technology, community support, corporate social responsibility activities, and management support.



Gambar 2. Hierachy Chart Mind Map

Source : Nvivo 12 Pro Data Processing Results

Then the next feature used is the Hierarchy Chart Project Map. This feature can produce graphs in the environmentally friendly technology section, there are 5 (five), namely community education, sustainable tourism, water transportation, water management, and tourism education.



Gambar 3. Hierarchy Chart Project Map

Source : Nvivo 12 Pro Data Processing Results

Water transportation has an important role in supporting the tourist experience in destinations such as Lake Toba, not only acting as a service provider, but also as an integral part of the tourism ecosystem that helps maintain the sustainability of the local economy and provide an authentic experience to tourists. Therefore, it is hoped that water transportation actors must be able to master and even create 3 (three) important elements, namely:

- Interaction: water transport actors are connected to interaction. This shows that interaction with tourists, especially those who come to Lake Toba tourism destinations, is very important in tourism activities. Effective interaction can increase consumer trust and good social relationships.
- Trust: from interaction comes trust. This reflects the importance of building and maintaining trust with travelers through good speech and behavior. High trust can create long-term relationships that are mutually beneficial.
- Professionalism: water transportation actors are also directly connected to professionalism. This indicates that professionalism in trading, both in terms of product knowledge, service, and ethics is very important for business success. Professionalism usually contributes to increasing customer trust.

Quantitative Testing Results

Validity Test

The validity test is interpreted as to find out the extent of accuracy and precision of a measuring instrument in performing its measurement function. A valid instrument means that it can be used to measure what it is supposed to measure. The following are the results of the validity test:

Table 2. Validity Test Results

No Item	r hitung	r tabel 5 %	Sign	Kriteria r hitung > r tabel	Kriteria Nilai Sign (<0.05)
1	0.839	0.2441	0.000	Valid	valid
2	0.917	0.2441	0.000	Valid	valid
3	0.879	0.2441	0.000	Valid	valid
4	0.896	0.2441	0.000	Valid	valid
5	0.911	0.2441	0.000	Valid	valid
6	0.872	0.2441	0.000	Valid	valid
7	0.913	0.2441	0.000	Valid	valid
8	0.911	0.2441	0.000	Valid	valid
9	0.949	0.2441	0.000	Valid	valid
10	0.709	0.2441	0.000	Valid	valid
11	0.932	0.2441	0.000	Valid	valid

12	0.937	0.2441	0.000	Valid	valid
13	0.773	0.2441	0.000	Valid	valid
14	0.674	0.2441	0.000	Valid	valid
15	0.701	0.2441	0.000	Valid	valid
16	0.644	0.2441	0.000	Valid	valid

Source : SPSS Data Processing Results

The results of the validity test with the number of items on the instrument were 16 statements. The results of the analysis compare between the table and the calculation and see the criteria for significant values. The results are known from 16 statements stating that all items are valid because the calculation > the table.

Reliability Test

Reliability tests are carried out on question items that are declared valid. A variable is said to be reliable or reliable if the answer to the question is always consistent. An instrument can be recognized and trusted as a measuring tool to collect research data if the instrument is good and reliable. The following are the results of the reliability test:

Table 3. Reliability Statistics

Variabel	Realibility Coefficients	Cronbach's Alpha
X1	4	.904
X2	4	.921
X3	4	.908
Y	4	.647

Source : SPSS Data Processing Results

Based on the output of the reliability test, it is known that the value of Cronbach's Alpha is above 0.60, so as the basis for decision-making in the reliability test above, it can be concluded that the 16 items of the questionnaire statement for these variables are reliable or consistent.

Classical Assumption Test

Normality Test

The normality test serves to determine whether the distribution of research data is normally distributed or not. The method used to test normality is the One-Sample Kolmogorov Smirnov Test method. The output is:

Table 4. Normality Test

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		65
Normal Parameters ^{a,b}	Mean	.0000000
	Std. Deviation	1.88877544
Most Extreme Differences	Absolute	.093
	Positive	.093
	Negative	-.063
Test Statistic		.093
Asymp. Sig. (2-tailed)		.200 ^{c,d}

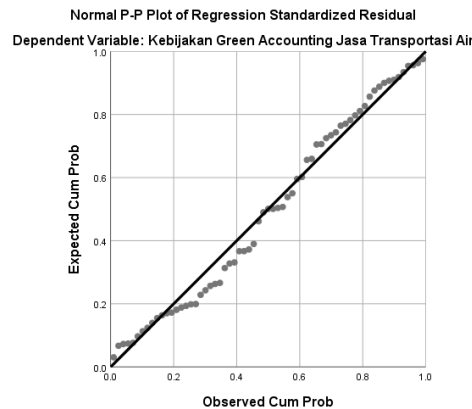
a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

d. This is a lower bound of the true significance.

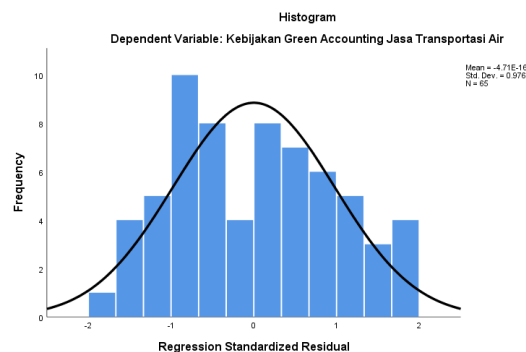
Based on the output of the normality test, the asymp value can be known. The sig (2-tailed) is $0.200 > 0.05$, so according to the basis of decision-making in the Kolmogorov-Smirnov normality test above, it can be concluded that the data is normally distributed. Thus, the assumptions or normality requirements in the regression model have been met. It can also be seen through histogram images and PP Plot. If the pattern of data distribution is around the diagonal line and close to the direction of the diagonal line, it is said that the data is normally distributed Histogram and P plot graph of this study, which is as follows:



Picture 4. P Plot

Source : SPSS Data Processing Results

Based on the output results of the PP Plot graph, it can be concluded that the data spreads around the diagonal line and follows the direction of the diagonal line. So it can be concluded that the data is distributed normally.



Gambar 5. Histogram

Source : SPSS Data Processing Results

Based on the output results of the histogram graph, it can be concluded that the data is not in the form of a bell and does not follow the direction of the diagonal line or histogram graph. So it can be concluded that the data is distributed normally.

Multicollinearity Test

The multicollinearity test serves to find out whether there are symptoms of multicollinearity in the regression equation, if there is a correlation between the independent variables. The output is:

Table 5. Multikolonieritas Test

Coefficients ^a								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	8.966	1.037		8.649	.000		
	Corporate Social Responsibility	.452	.054	.731	8.361	.000	.886	1.128
	Dukungan Manajemen	-.067	.050	-.112	-1.344	.184	.985	1.015
	Dukungan Masyarakat	.054	.048	.100	1.147	.256	.889	1.125

a. Dependent Variable: Green Accounting Policy for Water Transportation Services

Source : SPSS Data Processing Results

The basis for decision-making for the multicollinearity test is a tolerance value of more than 0.1 and a VIF value of less than 10. Based on the output of the multicollinearity test, it is known that:

- The corporate social responsibility variable has a tolerance value of $0.886 > 0.1$ and VIF is $1.128 < 10$, so it can be concluded that these variables do not have multicollinearity symptoms.
- The management support variable has a tolerance value of $0.985 > 0.1$ and VIF is $1.015 < 10$, then it can be concluded that the variable does not have multicollinearity symptoms.
- The community support variable has a tolerance value of $0.889 > 0.1$ and VIF is $1.125 < 10$, then it can be concluded These variables do not cause symptoms of multicollinearity.

Heteroscedasticity Test

The heteroscedasticity test serves to test whether there is an unevenness in variance in the regression model from the residual of one observation to another. The heteroscedasticity test can be performed with the scatterplot test. The output is:


Picture 6. Scatterplot

Source : SPSS Data Processing Results

Based on the output of the scatterplot graph, it can be concluded that there is no clear pattern, and there is no clear pattern, and the dots spread above and below or around the number 0. So it can be concluded that the data does not occur heteroscedasticity.

Multiple Linear Regression Test

Multiple linear regression analysis is a tool for forecasting the influence of two or more independent variables on bound variables to prove whether or not there is a functional

relationship between two or more independent variables and one bound variable. The output is:

Table 6. Multiple Linear Regression Test Results

Coefficients ^a					
Model		Unstandardized Coefficients		Standardized Coefficients	Sig.
		B	Std. Error	Beta	
1	(Constant)	8.966	1.037		8.649
	Corporate Social Responsibility	.452	.054	.731	8.361
	Dukungan Manajemen	-.067	.050	-.112	1.344
	Dukungan Masyarakat	.054	.048	.100	1.147

a. Dependent Variable: Green Accounting Policy for Water Transportation Services

Source : SPSS Data Processing Results

Based on the output results of the multiple linear regression test, a linear regression equation can be made as follows: $Y = 8.966 + 0.452 X_1 - 0.067 X_2 + 0.054 X_3$

The meaning in the multiple linear regression equation is:

- The variable corporate social responsibility has a positive regression coefficient of 0.452, which means that if corporate social responsibility increases, then green accounting policies will increase, and vice versa.
- The management support variable has a negative regression coefficient of 0.067, which means that if management support increases, then the green accounting policy will decrease, and vice versa.
- The variable of management support has a negative regression coefficient of 0.054 which means that if management support increases, then the green accounting policy will decrease, and vice versa

Hypothesis Test

Coefficient of Determination Test

The determination coefficient (R²) test aims to find out what percentage of the simultaneous influence of independent variables on dependent variables. The output is:

Table 7. Determination test

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.766 ^a	.586	.566	1.935	2.256

a. Predictors: (Constant), Community Support, Management Support, Corporate Social Responsibility

b. Dependent Variable: Green Accounting Policy for Water Transportation Services

Source : SPSS Data Processing Results

Based on the results of the determination coefficient test output, it is known that the R Square (Model Summary) in the regression output result is 0.566 (56.6%). Thus, it can be explained that the variables of corporate social responsibility, management support and community support have an influence of 56.6% on the variables of green accounting policies.

Discussion

Based on the results of the qualitative test of Nvivo data processing, the concept of green accounting policy carried out by water transportation business actors in Lake Toba tourist destinations is environmentally friendly technology, community support, management support and corporate social responsibility activities. This result is supported by the results of a quantitative test, namely the determination coefficient test where community support, management support and corporate social responsibility have an effect on green accounting policies.

CONCLUSION

Based on the results of the qualitative test of Nvivo data processing, the concept of green accounting policy carried out by water transportation business actors in Lake Toba tourist destinations is environmentally friendly technology, community support, management support and corporate social responsibility activities. This result is supported by the results of a quantitative test, namely the determination coefficient test where community support, management support and corporate social responsibility have an effect on green accounting policies.

REFERENCE

- Tanjung RP, Purwoko A, Tarigan J. Analysis of Tourism Sector Development on Regional Development Through Road Infrastructure in Lake Toba National Tourism Strategic Area in Indonesia. *Journal of Law and Sustainable Development*. 2024 Jan 12;12(1):e2174-. Available from: <https://ojs.journalsdsg.org/jlss/article/view/2174>
- Widianingsih I, Abdillah A, Herawati E, Dewi AU, Miftah AZ, Adikancana QM, Pratama MN, Sasmono S. Sport tourism, regional development, and urban resilience: a focus on regional economic development in Lake Toba District, North Sumatra, Indonesia. *Sustainability*. 2023 Mar 29;15(7):5960. Available from: <https://www.mdpi.com/2071-1050/15/7/5960>
- Alsahafi R, Alzahrani A, Mehmood R. Smarter sustainable tourism: data-driven multi-perspective parameter discovery for autonomous design and operations. *Sustainability*. 2023 Feb 25;15(5):4166. Available from: <https://www.mdpi.com/2071-1050/15/5/4166>
- Zulvianti N, Aimon H, Abror A. The influence of environmental and nonenvironmental factors on tourist satisfaction in halal tourism destinations in West Sumatra, Indonesia. *Sustainability*. 2022 Jul 27;14(15):9185. Available from: <https://www.mdpi.com/2071-1050/14/15/9185>
- Čater T, Čater B, Milić P, Žabkar V. Drivers of corporate environmental and social responsibility practices: A comparison of two moderated mediation models. *Journal of Business Research*. 2023 Apr 1;159:113652. Available from: <https://www.sciencedirect.com/science/article/pii/S0148296323000103>
- Christ KL, Burritt RL. Water management accounting: A framework for corporate practice. *Journal of Cleaner Production*. 2017 May 20;152:379-86. Available from: <https://www.sciencedirect.com/science/article/abs/pii/S0959652617306005>
- Ariestyani K, Utami AB. The Heart Beat of Toba: A Storynomics of Super-priority Tourism Destination Branding in the New Normal Era. *Tourism and Sustainable Development Review*. 2022 Mar 29;3(1):91-104. Available from: <https://tsdr.psdku.unpad.ac.id/index.php/journal/article/view/65>
- Kholis A. Determinants of corporate social performance (CSP) through corporate social responsibility (CSR) of foreign investment companies (PMA) in Indonesia. *International Journal of Economic Research*. 2016;13(05):2005-27.
- Anis VM, Sabijono H, Walandouw SK. Penerapan Akuntansi Lingkungan Dalam Hal Pengelolaan Limbah Produksi Pada Perusahaan Pengalengan Ikan Tuna PT. Samudra Mandiri Sentosa Bitung. *Going Concern: Jurnal Riset Akuntansi*. 2020 Jul 8;15(3):360-5.
- Sela AY, Karamoy H, Mawikere LM. Analisis penerapan akuntansi lingkungan pada RSUD DR. Sam Ratulangi Tondano. *Indonesia Accounting Journal*. 2019 Dec 9;1(2):63-73.
- Nurhidayat E, Junaid A, Kamase J. Penerapan Akuntansi Lingkungan Berdasarkan Triple Bottom Line Pada Rsud HM Djafar Harun Kabupaten Kolaka Utara. *Jurnal Ilmu Akuntansi*. 2020 Sep 28;2(2):38-80.

- Triana W, Aggeraini F. Analisis Layanan Jasa Pospay Terhadap Pengendalian Intern Atas Pendapatan pada PT. Pos Indonesia (Persero) Cabang Kisaran. *Skylandsea Profesional Jurnal Ekonomi, Bisnis dan Teknologi*. 2022 Jul 30;2(2):194-205. Available from: <https://www.jurnal.yappsu.org/index.php/skylandsea/article/view/111>
- Triana W, Syera IA. The Influence of Financial Literacy, Financial Inclusion, and the Ability to Prepare Financial Reports Against MSME Financial Performance Asahan District. *International Journal of Economics (IJEK)*. 2023 Nov 21;2(2):669- 78. Available from: <https://ejournal.ipinternasional.com/index.php/ijec/article/view/567>
- Syera IA, Tanjung AA, Triana W. The Effect of Human Development Index, Inflation and Economic Growth on Unemployment in Medan City. *International Journal of Economics (IJEK)*. 2023 Aug 22;2(2):410-22. Available from: <https://ejournal.ipinternasional.com/index.php/ijec/article/view/517>