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The Effect of Green Accounting Dimensions on the Quality of Life of Communities Surrounding Mining Areas: A Panel Data Analysis of Mining Companies in Indonesia (2020–2024)

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Abstrak This study examines the effect of environmental, social, and economic dimensions of Green Accounting on the Quality of Life of communities surrounding mining companies in Indonesia. Using purposive sampling, the study analyzes panel data consisting of 95 observations from 19 mining companies over the period 2020–2024. The data are analyzed using panel regression with the Fixed Effects Model (FEM), selected based on model specification tests, and estimated with robust standard errors to ensure reliable results. The findings indicate that environmental performance has a positive and significant effect on Quality of Life, while social and economic performance do not show significant effects. The model explains 44.58% of the variation in Quality of Life, indicating a moderate explanatory power. These results suggest that environmental practices provide more direct and measurable impacts on community welfare compared to social and economic initiatives. This study contributes to the literature by providing empirical evidence that the effectiveness of Green Accounting dimensions is not uniform, where environmental aspects play a more dominant role in improving Quality of Life. The findings also extend Stakeholder Theory and Legitimacy Theory by highlighting that corporate environmental responsibility is more strongly associated with stakeholder welfare and social legitimacy than other dimensions. From a policy perspective, the results imply that mining companies and regulators should prioritize environmental performance as a key driver of community welfare, while improving the effectiveness and targeting of CSR programs and economic contributions to generate more tangible social impacts.

Keywords *Green Accounting; Environmental; Social; Economic; Quality of Life*

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I. INTRODUCTION

Environmental degradation has become a critical global issue, particularly in developing countries where economic growth is often driven by intensive natural resource exploitation. In Indonesia, mining activities especially in the nickel sector have significantly contributed to deforestation, environmental pollution, and ecosystem degradation (Forest Watch Indonesia, 2023; Musthofa et al., 2024). Despite ongoing regulatory efforts, environmental damage remains persistent, as reflected in continuous forest loss and declining environmental quality reported by the Ministry of Environment and Forestry (KLHK, 2024). At the local level, these environmental impacts have direct consequences on community welfare. Several studies indicate that mining activities lead to water pollution, land degradation, and increased health risks, which ultimately reduce the quality of life of communities living around mining areas (Rahmadani et al., 2025; Sirait & Abdullah, 2023). Cases such as environmental degradation in Morowali and the environmental and economic losses linked to PT Timah Tbk further demonstrate that mining activities not only damage ecosystems but also create social conflicts and economic disparities. These conditions highlight a critical issue: economic development driven by extractive industries often fails to improve, and may even deteriorate, the quality of life of surrounding communities.

In response to these challenges, the concept of Green Accounting has emerged as an approach that integrates environmental, social, and economic considerations into corporate decision-making. From a theoretical perspective, Stakeholder Theory and Legitimacy Theory explain that companies are required to fulfill the expectations of stakeholders and maintain social legitimacy by minimizing negative environmental and social impacts. Therefore, the implementation of Green Accounting is expected to serve as a strategic mechanism to balance economic performance with social welfare and environmental sustainability.

However, previous studies on Green Accounting have predominantly focused on its impact on financial performance (Husda & Azmiana, 2023; Nisa et al., 2020), while its role in improving the quality of life of communities remains underexplored. Furthermore, existing studies show inconsistent findings. Some studies suggest that environmental and social initiatives positively influence stakeholder welfare, while others indicate that such initiatives are often symbolic and do not significantly affect community outcomes. In addition, prior research has largely been conducted in sectors with relatively low environmental risk, such as banking (Linda & Tiara, 2022), limiting its applicability to high-impact industries like mining.

Based on these gaps, this study offers novelty by examining the effect of Green Accounting on community quality of life within the mining sector using a more comprehensive approach. Unlike previous studies, this research integrates environmental (PROPER), social (CSR), and economic (ROA) indicators to capture the multidimensional nature of Green Accounting. This study also contributes by extending the application of Stakeholder Theory and Legitimacy Theory in explaining how corporate environmental and social responsibility translates into tangible improvements in community welfare.

Therefore, this study aims to analyze the influence of Green Accounting, measured through environmental, social, and economic indicators, on the quality of life of communities surrounding mining companies in Indonesia.

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II. LITERATURE REVIEW

Stakeholder Theory in the Mining Context

Stakeholder Theory explains that companies are not only responsible to shareholders but also to all stakeholders affected by their operations, including local communities. In the mining industry, which is characterized by high environmental and social risks, corporate activities directly influence the welfare of surrounding communities. Therefore, companies are required to manage these impacts responsibly in order to meet stakeholder expectations (Freeman et al., 2020; Harrison et al., 2019).

In this context, companies that effectively address stakeholder interests through responsible environmental and social practices are more likely to contribute positively to community welfare. Thus, Stakeholder Theory provides a fundamental basis for understanding how corporate activities can influence the Quality of Life of communities surrounding mining operations.

Legitimacy Theory and Its Influence on Quality of Life

Legitimacy Theory posits that companies seek to obtain and maintain social approval by aligning their activities with societal norms and values (Deegan, 2019; Cho et al., 2021). In modern business environments, legitimacy is not only achieved through regulatory compliance but also through the implementation of sustainable and socially responsible practices.

In the mining sector, companies that demonstrate accountability in managing environmental and social impacts are more likely to gain public trust and legitimacy. Conversely, failure to manage such impacts may result in social conflict and loss of legitimacy. Therefore, legitimacy pressures encourage companies to adopt Green Accounting practices as a means of demonstrating accountability to society.

Green Accounting as an Operationalization of Theory

Green Accounting represents an approach that integrates environmental, social, and economic dimensions into corporate accounting systems. This approach enables companies to systematically measure and evaluate the impact of their operational activities on both the environment and society (Larrinaga & Garcia-Torea, 2021; Qian et al., 2018).

In this study, Green Accounting is operationalized through three main dimensions, namely environmental, social, and economic performance, which are proxied by PROPER, Corporate Social Responsibility (CSR), and Return on Assets (ROA), respectively. Environmental performance measured by PROPER reflects the company's ability to manage pollution and maintain environmental quality. Improvements in environmental performance indicate the company's capability to reduce environmental damage, such as water and air pollution, which in turn lowers health risks and creates a cleaner and safer living environment, thereby enhancing the Quality of Life of surrounding communities.

Furthermore, social performance measured through CSR reflects the company's contribution to improving community welfare. Increased CSR activities indicate efforts to enhance access to education and healthcare, promote community empowerment, and strengthen social participation in local development. Through these mechanisms, CSR can generate tangible benefits that improve the Quality of Life of communities.

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Meanwhile, economic performance measured by ROA reflects the company's ability to generate profits from its assets. Companies with strong economic performance have greater capacity to create employment opportunities, increase local income, and stimulate regional economic growth. As a result, improved economic performance can indirectly contribute to enhancing the Quality of Life of surrounding communities.

Synthesis of Prior Studies

Previous studies on Green Accounting and corporate sustainability have produced mixed findings. Several studies indicate that environmental, social, and economic performance positively influence community welfare and Quality of Life (Siregar et al., 2018; Oktaviani & Nugroho, 2020; Haryanto et al., 2019). However, other studies suggest that such practices may be symbolic and do not necessarily produce meaningful social outcomes (Cho et al., 2021; Qian et al., 2018).

Moreover, most prior research has focused primarily on financial performance, with limited attention given to the broader impact of Green Accounting on community Quality of Life, particularly in high-impact industries such as mining. These inconsistencies highlight the need for a more integrated approach that simultaneously examines environmental, social, and economic dimensions.

Table 1. Synthesis of Prior Studies and Hypothesis Development

No	Author(s) (Year)	Theoretical Basis	Key Mechanism	Variables Examined	Main Findings	Implication for This Study
1	Siregar et al. (2018)	Stakeholder Theory	Environmental management reduces pollution and improves community health	Environmental Performance (PROPER) → Quality of Life	Positive effect	Supports the relationship between environmental performance and Quality of Life
2	Larrinaga & Garcia-Torea (2021)	Legitimacy Theory	Environmental responsibility enhances legitimacy and environmental quality	Environmental Practices → Social Welfare	Positive effect	Strengthens environmental dimension in explaining Quality of Life
3	Oktaviani & Nugroho (2020)	Stakeholder Theory	CSR programs improve access to social services and community welfare	CSR → Quality of Life	Positive effect	Supports the role of CSR in improving Quality of Life
4	Cho et al. (2021)	Legitimacy Theory	CSR may function as symbolic legitimacy without real social impact	CSR → Social Outcomes	Mixed results	Indicates inconsistency in CSR impact, justifying further investigation
5	Haryanto et al. (2019)	Stakeholder Theory	Economic performance increases income and employment opportunities	ROA → Quality of Life	Positive effect	Supports economic performance as a determinant of Quality of Life
6	Qian et al. (2018)	Legitimacy Theory	Strong financial performance enables broader social responsibility	Economic Performance → Welfare	Positive effect	Reinforces economic dimension in Green Accounting
7	Jovanović (2023)	Green Accounting Theory	Integration of environmental, social, and economic aspects enhances sustainability outcomes	Green Accounting → Welfare	Positive effect	Supports integrated model of Green Accounting

Table above demonstrates that prior studies provide mixed evidence regarding the relationship between environmental, social, and economic dimensions and community welfare. Several studies indicate that environmental performance, CSR, and economic performance positively affect quality of life. However, other studies reveal that such practices may be symbolic and do not necessarily produce tangible social outcomes.

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These inconsistencies highlight the need for a more comprehensive approach that integrates environmental, social, and economic dimensions within a single framework. Therefore, this study develops a model based on Green Accounting to examine how these dimensions simultaneously influence the Quality of Life of communities surrounding mining companies.

The Effect of Environmental Performance on Quality of Life

Based on Stakeholder Theory, communities as primary stakeholders are directly affected by environmental conditions surrounding the company. Therefore, companies are expected to manage environmental impacts responsibly in order to fulfill stakeholder expectations. In addition, Legitimacy Theory suggests that companies will attempt to reduce environmental damage in order to gain and maintain social acceptance.

Environmental performance, as measured by PROPER, reflects the company's ability to manage pollution and maintain environmental quality. Improved environmental performance indicates that the company is capable of reducing environmental degradation, including minimizing water and air pollution, lowering health risks, and creating a cleaner and safer environment. These improvements in environmental conditions are expected to contribute directly to enhancing the Quality of Life of communities surrounding mining operations.

Previous studies have shown that environmental performance has a positive effect on community welfare (Siregar et al., 2018; Larrinaga & Garcia-Torea, 2021). Therefore, the following hypothesis is proposed:

H1: Environmental performance positively influences the Quality of Life of communities surrounding mining companies in Indonesia.

The Effect of Social Performance on Quality of Life

From the perspective of Stakeholder Theory, companies are required to address social needs through the implementation of Corporate Social Responsibility (CSR) programs. Legitimacy Theory further emphasizes that social activities conducted by companies serve as a mechanism to obtain legitimacy from society.

Social performance, as measured by CSR, reflects the company's contribution to improving community welfare. An increase in CSR activities indicates that the company actively supports education, healthcare, and community empowerment initiatives. These efforts enhance access to essential services, strengthen social participation, and ultimately improve the overall well-being of the community. Through these mechanisms, CSR is expected to generate tangible impacts on improving the Quality of Life of local communities.

Previous studies indicate that CSR has a positive influence on community welfare (Oktaviani & Nugroho, 2020; Cho et al., 2021). Therefore, the following hypothesis is proposed:

H2: Social performance positively influences the Quality of Life of communities surrounding mining companies in Indonesia.

The Effect of Economic Performance on Quality of Life

Economic performance reflects a company's ability to generate economic value and contribute to local development. According to Stakeholder Theory, strong economic performance enables companies to provide broader benefits to stakeholders, including local communities.

Economic performance, as measured by Return on Assets (ROA), indicates the company's ability to generate profit from its assets. Higher economic performance suggests that the

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company has greater capacity to create employment opportunities, increase community income, and stimulate local economic growth. These economic improvements are expected to indirectly enhance the Quality of Life of communities surrounding mining areas.

Previous studies have demonstrated that economic performance is associated with improvements in community welfare (Haryanto et al., 2019; Qian et al., 2018). Therefore, the following hypothesis is proposed:

H3: Economic performance positively influences the Quality of Life of communities surrounding mining companies in Indonesia.

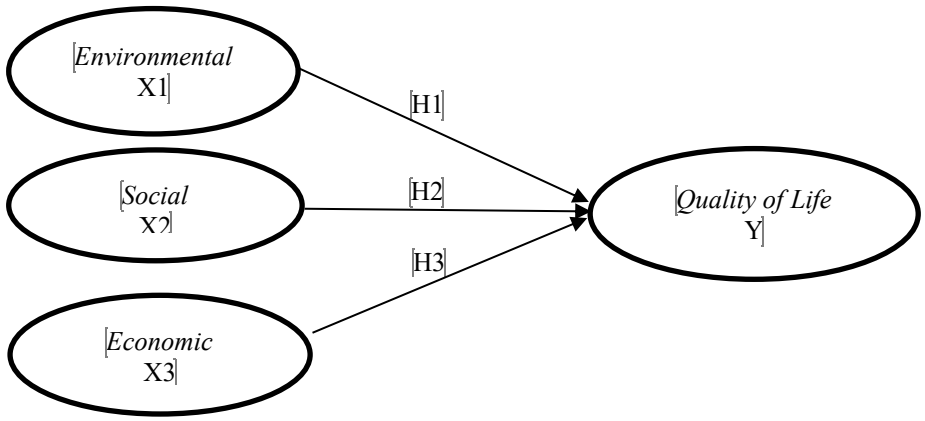

Figure 1. Research Model

III. RESEARCH METHODOLOGY

This study employs a quantitative approach with an explanatory research design aimed at analyzing causal relationships among variables. The data used in this study are secondary data obtained from the annual reports of mining companies listed on the Indonesia Stock Exchange (IDX), as well as supporting data from official institutions.

The population of this study consists of 62 mining companies listed on the IDX during the period 2020–2024. The sample was selected using a purposive sampling technique based on the following criteria: (1) mining companies consistently listed on the IDX during the observation period, (2) companies that disclose Corporate Social Responsibility (CSR) expenditures in their annual reports, and (3) companies that participate in the PROPER environmental performance assessment conducted by the Ministry of Environment and Forestry. Based on these criteria, a total of 19 mining companies were selected as the research sample.

This study utilizes panel data, which combines cross-sectional and time-series data. The cross-sectional dimension consists of 19 mining companies, while the time-series dimension covers a five-year period from 2020 to 2024, resulting in a total of 95 observations (19 × 5). The panel data used in this study is balanced, as each company has complete data for all variables across the observation period.

The unit of analysis in this study is mining companies. Meanwhile, the dependent variable, Quality of Life, is measured at the regional level using the Human Development Index

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(HDI). The use of HDI in this study serves as a proxy for community welfare in the regions where the companies operate. This approach assumes that corporate activities contribute to regional socio-economic conditions. However, this approach may introduce potential limitations in the form of ecological fallacy; therefore, the results should be interpreted with caution.

The operational definitions of variables used in this study are presented in Table 2.

Table 2. Operational Definition of Variables

Variable	Proxy	Measurement	Source
Quality of Life (Y)	Human Development Index (HDI)	Composite index consisting of health, education, and income dimensions	Statistics Indonesia (BPS)
Environmental (X1)	PROPER	PROPER score (scale 1–5) reflecting corporate environmental performance	Ministry of Environment
Social (X2)	CSR	Natural logarithm of CSR expenditure (Ln CSR)	Annual Reports
Economic (X3)	Return on Assets (ROA)	Net income divided by total assets	Annual Reports

Table 3. List of Sample Companies

No	Company Name
1	PT Adaro Energy Tbk
2	PT Baramulti Suksessarana Tbk
3	PT Bumi Resources Tbk
4	PT Bayan Resources Tbk
5	PT Dian Swastatika Sentosa Tbk
6	PT Golden Energy Mines Tbk
7	PT Harum Energy Tbk
8	PT Indika Energy Tbk
9	PT Indo Tambangraya Megah Tbk
10	PT Resource Alam Indonesia Tbk
11	PT Mitrabara Adiperdana Tbk
12	PT Bukit Asam Tbk
13	PT Golden Eagle Energy Tbk

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14	PT TBS Energi Utama Tbk
15	PT Dwi Guna Laksana Tbk
16	PT Alfa Energi Investama Tbk
17	PT Dana Brata Luhur Tbk
18	PT Astrindo Nusantara Infrastruktur Tbk
19	PT Surya Esa Perkasa Tbk

Quality of Life is measured using the Human Development Index (HDI), which is a composite indicator consisting of health, education, and income dimensions. Environmental performance is measured using the PROPER score, which is treated as an ordinal scale ranging from 1 to 5. Social performance is measured using Corporate Social Responsibility (CSR) expenditure, which is transformed into its natural logarithm (Ln CSR) to reduce scale differences and potential skewness. Economic performance is measured using Return on Assets (ROA), which reflects the company's ability to generate profit from its assets.

Hypothesis testing is conducted using panel data regression analysis. To determine the most appropriate model, a series of model selection tests are performed, including the Chow test to compare the Common Effect Model and the Fixed Effect Model, the Hausman test to choose between the Fixed Effect Model and the Random Effect Model, and the Lagrange Multiplier (LM) test to compare the Common Effect Model and the Random Effect Model.

The regression model used in this study is formulated as follows:

$$Y\_it = \beta0 + \beta1\ X1\_it + \beta2\ X2\_it + \beta3\ X3\_it + \varepsilon\_it$$

Where:

Yit = Quality of Life of company *i* in year *t*
X1it = Environmental performance of company *i* in year *t*
X2it = Social performance of company *i* in year *t*
X3it = Economic performance of company *i* in year *t*
β0 = Intercept (constant)
β1, β2, β3 = Regression coefficients for each independent variable
uit = Error term

In panel data analysis, classical assumption tests are conducted to ensure the robustness of the model. Multicollinearity is tested using the Variance Inflation Factor (VIF) to detect high correlations among independent variables. Heteroskedasticity is tested using the Breusch-Pagan test or the Modified Wald test to identify unequal error variances. If heteroskedasticity is detected, robust standard errors are applied to obtain consistent estimates.

Normality testing is not a primary requirement in panel data regression, particularly when the number of observations is sufficiently large, as parameter estimation relies on asymptotic properties based on the central limit theorem. Therefore, this study does not specifically perform normality tests, but ensures that data transformations are appropriately applied to minimize distributional distortions.

All data processing and statistical analyses in this study are conducted using Stata 17 software.

IV. RESULTS AND DISCUSSION

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RESULTS

Descriptive Statistics

Table 4. Descriptive Statistics

Keterangan	Environmental (X1)	Social (X2)	Economic (X3)	Quality of Life (Y)
N	95	95	95	95
Mean	3,5789	60551,9158	13,4526	72,4632
Median	3	40700	9	73
Mode	3	14200.00[a]	2.00[a]	72
Std. Deviation	0,8822	64299,0866	13,61302	2,52144
Minimum	2	346	-10	66
Maximum	5	276000	62	78
Sum	340	5752432	1278	6884

Table 4 presents the descriptive statistics of the variables used in this study, namely environmental performance (PROPER), social performance (CSR), economic performance (ROA), and Quality of Life (HDI).

The mean value of environmental performance (X1), measured using the PROPER score, is 3.58, indicating that most companies fall within the moderate to good environmental performance category. This suggests that, in general, the mining companies included in the sample have complied with environmental management standards. However, the relatively low standard deviation (0.88) indicates limited variation across firms, which may reduce the explanatory power of this variable in capturing differences in Quality of Life.

The social variable (X2), measured by CSR expenditure, has an average value of 60,551.92 million Rupiah. However, the standard deviation is considerably high (64,299.09), indicating substantial disparities in CSR allocation across companies. This suggests that CSR implementation is uneven, where some firms allocate significantly larger budgets while others contribute relatively small amounts. Such inconsistency may weaken the overall impact of CSR on improving community welfare.

Economic performance (X3), proxied by Return on Assets (ROA), has a mean value of 13.45%, indicating that, on average, companies are able to generate profits from their assets. However, the relatively high standard deviation (13.61%) and the presence of negative values (–10%) indicate significant variation in financial performance across firms. This implies that not all companies have the same capacity to contribute economically to surrounding communities.

The dependent variable, Quality of Life (Y), measured using the Human Development Index (HDI), has a mean value of 72.46, indicating a moderate to high level of human development. The relatively low standard deviation (2.52) suggests that the level of human development across regions is fairly homogeneous. This limited variation may reduce the ability of the independent variables to explain differences in Quality of Life, as the dependent variable itself exhibits low dispersion.

Furthermore, the wide range of values observed in CSR and ROA indicates the potential presence of outliers, which may influence the regression estimation results.

Model Selection Test

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In panel data regression analysis, three estimation models are commonly used, namely the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). To determine the most appropriate model, several statistical tests must be conducted, including the Chow Test, Hausman Test and Lagrange Multiplier (LM) Test.

```
. xtreg y x1 x2 x3, fe

Fixed-effects (within) regression               Number of obs      =        95
Group variable: id                              Number of groups   =        19

R-squared:                                      Obs per group:
     Within  = 0.4458                                         min =         5
     Between = 0.8208                                         avg =       5.0
     Overall = 0.6665                                         max =         5

                                                F(3,73)            =     19.58
corr(u_i, Xb) = 0.5535                          Prob > F           =    0.0000

------------------------------------------------------------------------------
           y | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
          x1 |   1.510774   .2024032     7.46   0.000     1.107385    1.914163
          x2 |   1.32e-06   3.57e-06     0.37   0.713    -5.80e-06    8.45e-06
          x3 |  -.0026297   .0110051    -0.24   0.812    -.0245628    .0193034
       _cons |   67.01151     .79635    84.15   0.000     65.42438    68.59863
-------------+----------------------------------------------------------------
     sigma_u |  1.3603969
     sigma_e |  1.0713474
         rho |   .61720905   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(18, 73) = 4.56                     Prob > F = 0.0000
```

Figure 2. The Results of the Chow Test Using Stata 17

The Chow test is applied in panel data analysis to determine whether the appropriate model is the Common Effect Model (CEM) or the Fixed Effect Model (FEM). The decision rule states that if the probability value is greater than 0.05, the CEM is accepted; however, if the probability value is less than 0.05, the FEM is preferred. Based on the results of the Chow test using Stata 17, the probability value obtained is 0.000 < 0.05, indicating that the Fixed Effect Model (FEM) is the more appropriate model.

```
             ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |       fe           re         Difference          Std. err.
-------------+------------------------------------------------------------
          x1 |   1.510774    1.976904        -.4661301        .0937238
          x2 |   1.32e-06   -3.61e-07        1.68e-06        2.32e-06
          x3 |  -.0026297   -.0205971         .0179674        .0028692
------------------------------------------------------------------------------
                b = Consistent under H0 and Ha; obtained from xtreg.
 B = Inconsistent under Ha, efficient under H0; obtained from xtreg.

Test of H0: Difference in coefficients not systematic

    chi2(2) = (b-B)'[(V_b-V_B)^(-1)](b-B)
            =  42.77
Prob > chi2 = 0.0000
```

Figure 3. The Results of the Hausman Test Using Stata 17

The Hausman test results show a probability value of 0.000, which is less than the significance level of 0.05. This indicates that the Fixed Effect Model (FEM) is more suitable

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than the Random Effect Model (REM). Therefore, the FEM is selected as the appropriate model for further analysis. Consequently, the Lagrange Multiplier (LM) test is not required, as the selection between FEM and REM has already been determined.

The results of the F-test show that the F-statistic value is 19.58 with a probability value of 0.000 < 0.05. This indicates that the independent variables, namely Environmental (X1), Social (X2), and Economic (X3), simultaneously have a significant effect on Quality of Life (Y).

Classical Assumption Tests

Test of Multicollinearity

```
. 
. vif

    Variable |      VIF       1/VIF
-------------+----------------------
          x2 |     1.03    0.967487
          x1 |     1.03    0.969553
          x3 |     1.00    0.997427
-------------+----------------------
    Mean VIF |     1.02
```

Figure 4. Test of Multicollinearity Using Stata 17

The multicollinearity test was conducted using the Variance Inflation Factor (VIF). The results show that all VIF values are close to 1, with a mean VIF of 1.02, indicating that there is no multicollinearity problem among the independent variables. This suggests that each variable provides distinct information in explaining the dependent variable.

Heteroskedasticity Test

```
. xttest3

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (19)  =        4289.79
Prob > chi2 =          0.0000
```

Figure 5. Heteroskedasticity Test Using Stata 17

The heteroskedasticity test was conducted using the Modified Wald test. The results show a probability value of 0.000, which is less than 0.05, indicating the presence of heteroskedasticity. Therefore, to address this issue, the regression model was estimated using robust standard errors to ensure reliable and consistent results.

Panel Regression Results

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```
. xtreg y x1 x2 x3, fe robust

Fixed-effects (within) regression               Number of obs      =        95
Group variable: id                              Number of groups   =        19

R-squared:                                      Obs per group:
     Within  = 0.4458                                         min =         5
     Between = 0.8208                                         avg =       5.0
     Overall = 0.6665                                         max =         5

                                                F(3,18)            =     19.92
corr(u_i, Xb) = 0.5535                          Prob > F           =    0.0000

                                    (Std. err. adjusted for 19 clusters in id)
------------------------------------------------------------------------------
             |               Robust
           y |      Coef.   Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
          x1 |    1.51077   .2498264     6.05   0.000     .9859079    2.035639
          x2 |   1.32e-06   6.09e-06     0.22   0.831    -.0000115    .0000141
          x3 |  -.0026297   .0099022    -0.27   0.794    -.0234334     .018174
       _cons |    67.0115   1.043784    64.20   0.000      64.8186    69.20442
-------------+----------------------------------------------------------------
     sigma_u |  1.3603969
     sigma_e |  1.0713474
         rho |   .61720905   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Figure 5. Panel Regression Results (Fixed Effects Model with Robust Standard Errors) Using Stata 17

The results of the panel regression analysis using the Fixed Effects Model with robust standard errors are presented in Table X. The model shows an R-squared (within) value of 0.4458, indicating that 44.58% of the variation in Quality of Life can be explained by the independent variables included in the model.

The F-test results indicate that the model is statistically significant, with an F-statistic value of 19.92 and a probability value of 0.000 (< 0.05). This suggests that environmental, social, and economic variables jointly have a significant effect on Quality of Life.

Based on the partial test (t-test), environmental performance (X1) has a positive and significant effect on Quality of Life, with a coefficient of 1.5107 and a probability value of 0.000 (< 0.05). This indicates that an increase in environmental performance is associated with an improvement in Quality of Life.

In contrast, social performance (X2), measured by CSR expenditure, does not have a statistically significant effect on Quality of Life, as indicated by a probability value of 0.831 (> 0.05). Similarly, economic performance (X3), proxied by Return on Assets (ROA), also does not show a significant effect, with a probability value of 0.794 (> 0.05).

These findings indicate that only environmental performance significantly influences Quality of Life, while social and economic performance do not show statistically significant effects in this model.

DISCUSSION

The Effect of Environmental Performance on Quality of Life

The findings indicate that environmental performance has a positive and significant effect on Quality of Life. This result suggests that improvements in corporate environmental management, as reflected by higher PROPER scores, are associated with better living conditions in surrounding communities. One possible explanation is that environmental performance has a direct and observable impact on daily life, particularly through reduced pollution, improved air and water quality, and better waste management. These conditions

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directly influence public health and environmental safety, which are key components of Quality of Life.

This finding is consistent with previous studies that report a positive relationship between environmental performance and community welfare (Siregar et al., 2018; Larrinaga & Garcia-Torea, 2021). Compared to other dimensions, environmental improvements tend to produce immediate and tangible benefits, making their impact more detectable in empirical analysis.

From a theoretical perspective, this result supports Stakeholder Theory, which emphasizes that companies must address the interests of communities affected by their operations. Environmental responsibility represents a direct response to stakeholder demands for a safe and healthy environment. In addition, Legitimacy Theory explains that strong environmental performance enhances corporate legitimacy, as communities directly experience the benefits of environmentally responsible practices. Within the Green Accounting framework, environmental performance serves as a measurable indicator of corporate sustainability, and the results confirm that its implementation contributes to improving Quality of Life.

The Effect of Social Performance on Quality of Life

The results show that social performance, measured by CSR expenditure, does not have a significant effect on Quality of Life. This finding indicates that higher CSR spending does not necessarily translate into measurable improvements in community welfare. One possible explanation is the uneven distribution of CSR funds across companies, as indicated by the high variation in CSR expenditure. This inconsistency suggests that CSR implementation is not standardized and may not effectively address community needs.

Another explanation is that CSR programs may be short-term, symbolic, or compliance-driven, rather than designed to create long-term social impact. As a result, the benefits of CSR activities may not be sufficiently strong or sustained to influence broader indicators such as the Human Development Index (HDI).

This result is consistent with studies that find CSR practices often function as symbolic legitimacy rather than substantive social impact (Cho et al., 2021; Qian et al., 2018). From the perspective of Stakeholder Theory, this indicates that corporate social initiatives may not yet fully align with the actual needs of stakeholders. Similarly, Legitimacy Theory suggests that CSR activities that do not produce tangible outcomes may fail to strengthen corporate legitimacy. Within the Green Accounting framework, this finding highlights the importance of not only measuring CSR expenditure but also evaluating its effectiveness in generating social outcomes.

The Effect of Economic Performance on Quality of Life

The results indicate that economic performance, proxied by ROA, does not have a significant effect on Quality of Life. This suggests that higher corporate profitability does not necessarily lead to improved welfare for surrounding communities. One explanation is that profitability primarily reflects internal efficiency and financial performance, which may not directly translate into external benefits for society.

Additionally, the presence of variation and negative values in ROA indicates that not all companies have stable economic performance, which may limit their ability to contribute consistently to community development. Furthermore, economic benefits generated by companies may not be evenly distributed to local communities, reducing their impact on broader welfare indicators.

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This finding is consistent with previous research suggesting that financial performance alone is insufficient to improve social welfare without effective distribution mechanisms (Haryanto et al., 2019). From a theoretical perspective, Stakeholder Theory implies that economic performance must be accompanied by stakeholder-oriented policies to generate broader benefits. Legitimacy Theory also suggests that profitability alone is not enough to gain social acceptance if it does not result in tangible contributions to society. In the context of Green Accounting, this finding reinforces the importance of balancing environmental, social, and economic dimensions, as strong financial performance alone does not guarantee improvements in Quality of Life.

Regression Equation Interpretation

Based on the estimation results, the panel regression equation can be expressed as follows:

$$Y = 67.01 + 1.51\ X1 + 0.0000032\ X2 - 0.002297\ X3$$

The coefficient of environmental performance (X1) indicates that an increase of one unit in the PROPER score is associated with an increase of 1.51 points in Quality of Life, holding other variables constant. This confirms that environmental improvements contribute directly to community welfare.

Meanwhile, the coefficients of social (X2) and economic (X3) variables are not statistically significant, indicating that changes in CSR expenditure and profitability do not produce measurable effects on Quality of Life within the observed period.

Overall, these findings suggest that among the three dimensions of Green Accounting, environmental performance plays the most critical role in influencing community welfare, while social and economic dimensions require more effective implementation to generate measurable impacts.

V. CONCLUSSION

This study examines the effect of environmental, social, and economic dimensions of Green Accounting on the Quality of Life of communities surrounding mining companies in Indonesia. The findings reveal that environmental performance has a positive and significant effect on Quality of Life, while social and economic performance do not show significant effects.

These results address the research gap by demonstrating that, within the mining sector, the impact of Green Accounting is not uniformly distributed across its dimensions. Environmental performance appears to have a more direct and measurable influence on community welfare, whereas social and economic dimensions may not effectively translate into improvements in Quality of Life without proper implementation mechanisms.

From a theoretical perspective, this study contributes to the development of Stakeholder Theory and Legitimacy Theory by providing empirical evidence that corporate environmental responsibility plays a more critical role in fulfilling stakeholder expectations and achieving social legitimacy compared to social and economic activities. In addition, this study extends the application of Green Accounting by highlighting that the effectiveness of its dimensions depends not only on their existence but also on how they are implemented and aligned with community needs.

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This study also has several limitations. First, the use of the Human Development Index (HDI) as a proxy for Quality of Life at the regional level may introduce potential ecological bias, as it does not fully capture firm-level impacts. Second, the measurement of social performance using CSR expenditure may not reflect the actual effectiveness or quality of CSR programs, as it only captures the amount of funds allocated rather than their outcomes. Based on these limitations, future research is recommended to use more specific indicators of community welfare that are directly linked to corporate activities, as well as to incorporate qualitative or impact-based measures of CSR effectiveness. Further studies may also explore additional variables or alternative approaches to better capture the relationship between corporate sustainability practices and community Quality of Life.

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