

Influence of Corporate Social Responsibility on Household Wellbeing around the North Mara Gold Mine Area, Tanzania

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Abstract: North Mara Gold Mine Company has been practicing Corporate Social Responsibility (CSR) to the neighboring community since early 2000s. However, the information on the influence of CSR on the wellbeing of the households living around the company remains unclear. Therefore, this study examined the influence of CSR practices on the wellbeing of the surrounding household in six villages around the North Mara Gold Mine, using the cross sectional design with 358 households as respondents. Data collection involved a questionnaire, focus group discussions and an interview schedule. Analysis of data involved the Ordinal Logistic Regression Model to establish the influence of the independent variable on the dependent variable. Qualitative data was analyzed using the content analysis approach. The findings indicate that CSR practices, such as company support on household income generating activities, education, water, health and road services, provision of markets for local goods and employment have influence on the wellbeing of households living around the mining area. The study recommends that company should be proactive and strategic towards CSR implementation and embed CSR into the company's core values and policies as one of the main strategies to improve the wellbeing of nearby communities.

Keywords: Corporate Social Responsibility; Household wellbeing; Ordinal logistic regression model; Tanzania.

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Introduction

Corporate social responsibility (CSR) is a form of commitment by a company or business to contribute to the community development by focusing on economic, social and environmental

aspects in ways that are both good for business and for the community (Taylor *et al.*, 2018). According to Afrane and Adjei-Poku (2016), CSR is an institutional ethical obligation to the surrounding society. Saluja (2018) emphasized that CSR is a strategy that

incorporates economic issues, environmental issues, social issues and stakeholders' involvement. Notably, CSR in mining activities aims at developing the community, protecting the environment and stimulating stakeholders' engagement in fostering the communities' wellbeing (Rela *et al.*, 2020).

Tanzania has made significant strides in promoting CSR within its mining sector by establishing legal frameworks, launching policy initiatives and forming partnerships with mining companies. The Mining Act of 2010, along with its updates in 2017 and 2019 requires companies to actively participate in community development. Furthermore, the Natural Wealth and Resources (Permanent Sovereignty) Act of 2017 emphasized the importance of sharing benefits with local communities. Mining Development Agreements (MDAs) have also included CSR commitments, prompting companies like Geita Gold Mine and Acacia Mining to invest in vital areas, such as education, healthcare, access to clean water and support for local businesses. The Local Content Policy has further encouraged firms to focus on hiring locally and sourcing materials from within the community, thus promoting economic inclusion. Additionally, Environmental and Social Impact Assessments (ESIAs) have played a crucial role in ensuring that CSR efforts support the fabric of mining operations. Through these initiatives, Tanzania has effectively harnessed CSR to boost social and economic development in mining communities (Nawanda, 2021).

Proper implementation of the CSR took place after the formulation of the 2009 National Mineral Policy with some directives. According to Saluja (2018), poor relationships between mining companies and host communities and the negative effects of large-scale mining corporations on the environment and human health of people living around the mines promoted the introduction of the CSR. The Mining Policy directed that mining companies should contribute outstandingly to the development of communities surrounding the mines through CSR practices (United Republic of Tanzania, 2009). As a result, mining companies have been practising CSR to create good relation with the communities, increase workers' commitment toward the companies and make the communities feel part of the companies (John, 2019). CSR has been an essential requirement for companies to adhere to, such that the companies need to provide support and improve the wellbeing of the surrounding communities (Musimu, 2019).

Wellbeing is a multi-dimensional phenomenon that includes non-material and material living standards such as health, education, wealth, housing and personal activities (Gardiner, 2017). Household wellbeing is a combination of aspects essential for individuals to flourish, such as access to jobs, health, roads and water services, good quality schools and housing (Mganda, 2016). CSR is one of the important mining companies' instruments to improve the wellbeing of communities living around the mine (Chaffee, 2017; Latapí-Agudelo *et al.*, 2019).

North Mara Gold Mine in Tanzania is a partially government-owned mine, dedicated to supporting the development of host local communities' wellbeing through CSR programs (Nawanda, 2021). Barrick Gold Corporation and the Government of Tanzania have since 2019 jointly owned the mine (Kweka, 2020). The company's CSR initiatives contributed to household development through providing support in education, health, environment, infrastructure and job creation (Twiga Mineral Corporation, 2021).

There have been relatively limited empirical studies and evidence on the influence of the partially government-owned mining companies' CSR on the wellbeing of the households living around the mines in Tanzania. Martinez and Franks (2014), Jamali and Karam (2018) and Strotmann *et al.* (2019) argue that in many areas of the world, little evidence exists for state-owned mining companies concerning their influence on the wellbeing of the people. The review of CSR practices with its contribution to household wellbeing is still unclear, particularly how mining company CSR improves the wellbeing of communities living near the mining areas. To fill this knowledge gap, this study sought to establish the influence of the CSR practices of the North Mara Gold Mine surrounding communities.

Literature Review

This section provides the review of related literature and studies to strengthen the awareness of the variables under investigation. .

Corporate Social Responsibility in the Mining Sector

Literature cannot over emphasize the benefits of CSR to the firm, government and to the society. In line with this argument, Nawanda (2021) argues that companies that practice CSR through a social responsibility strategy become unique from their

competitors, gaining a competitive advantage over their competitors and have a positive impact to communities. Engagement of mining companies in CSR supports the promotion of corporate image. Mandina *et al.* (2014) reported that the CSR practices of mining companies improve companies' publicity and expand the market niche. The CSR initiatives enhance good relationships with stakeholders and build a strong base of competitive advantage. CSR in mining companies seeks to influence the communities' livelihoods and contribute to development through the revenues collected from taxes and royalties (Nikanori, 2015). According to Shoo (2020), the involvement of multinational companies investing in mining benefit the communities living near the large mines and have access to quality and affordable basic human needs in terms of health, education, employment, water, transport, better shelter and environmental protection. CSR in mining companies play a prominent role in addressing poverty, improving the communities' wellbeing and conserving the environment (Msoka & Mbirigenda, 2015; Gamu & Dauvergne, 2018; Taylor *et al.*, 2018). Narula *et al.* (2017) argue that most CSR activities in the mining sectors support environment protection, promote companies' image and motivate stakeholders' engagement in community development.

However, in Tanzania, studies have reported numerous complaints from local communities around mines and the public in general regarding the companies' CSR role. The weaknesses include lack of community needs assessment before the CSR implementation, poor community involvement in CSR activities and shortage of community knowledge of their role and rights. They view CSR as philanthropy (charity), not a must to do organization activity (Mulikuza, 2015; Mganda, 2016). Others includes lack of companies' knowledge on CSR, lack of CSR standards to adhere to, lack of governments' proper coordination, monitoring as well as evaluation of CSR practices (Asmeri *et al.*, 2017; Mbirigenda, 2018; Strotmann *et al.*, 2019). A study conducted by Msoka and Mbirigenda (2015) on CSR management systems in Tanzania found that there were no common CSR management systems in Tanzania and no common definition of CSR. In addition, there is limited specific CSR guidelines such that there is ambiguity in CSR directions, guidelines and limitation that lead organizations to contribute differently to the community development (Ngowi, 2015; Celik, *et al.*, 2019).

Theoretical Framework

The Theory of Legitimacy (Davis, 1973) and Stakeholder Theory (Freeman, 1984) guided this study. The two theories complement each other in guiding the study. They offered unique yet connected views on CSR. The theories highlight the ethical and moral responsibilities of companies to the society as well as the strategic and economic advantages of CSR. By blending these theoretical perspectives, the study gives a more comprehensive understanding of CSR practices, capturing both the reasons behind corporate involvement and the wider effects on stakeholders. This combined approach allowed for a deeper analysis, looking the CSR from different angles.

Davis (1973) developed the theory of legitimacy. It states that firms are social institutions that require legitimacy to operate and maintain functional relationship with the communities in which they operate. Therefore, they are expected to carry out activities that are acceptable to the community. According to Tembo (2019), a mining company engaging in CSR increases the organizational legitimacy and social licence to operate, but a legitimacy gap exists if the CSR activities do not tally with the community's expectations. In this study, the theory provides the theoretical reflections of CSR and guide companies to implement CSR in the best manner (Cherehani, 2019).

The Stakeholder Theory recognizes responsibilities of corporations towards their stakeholders (Freeman, 1984). It involves identification of a company's stakeholders and obligations of management in relation to the interests of its stakeholders (Hamidu *et al.*, 2015; Tembo, 2019). In the traditional view of the firm, stakeholders (shareholders, customers, employees and communities) are owners of the company and the firm has a duty to include their needs and involve them properly in the company's plans (Choongo, 2017). The theory further argues that the success of a firm depends on the extent of its relationship with its stakeholders and the level of their participation (Hamidu *et al.*, 2015). The theory provides theoretical reflections towards understanding the underlying behavior of the mining company in involving stakeholders into CSR activities, aiming at improving their wellbeing.

Conceptual Framework

The conceptual framework that guided this study was drawn from the literature reviewed, the

theories that guided this study. Durand (2015) argues that development is about improving people's wellbeing. Therefore, companies may contribute to the household development by practicing CSR. The independent variables for the study were CSR practices, such as company provision of employment, markets for local products, and support on income generating

activities (IGAs), water, roads, health, and education services. The dependent variable is Household wellbeing, measured using the combination of household assets and housing conditions. The intermediate variables are CSR policy, legal framework, stakeholder participation and community awareness and acceptability (Figure 1).

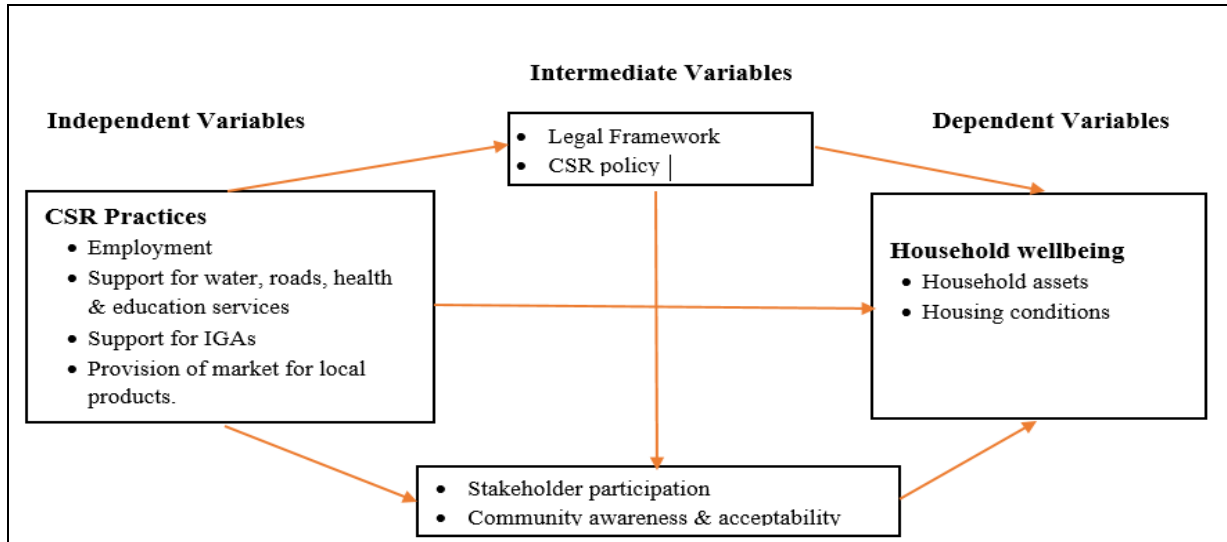


Figure 1: A Conceptual Framework Modified from Durand (2015)

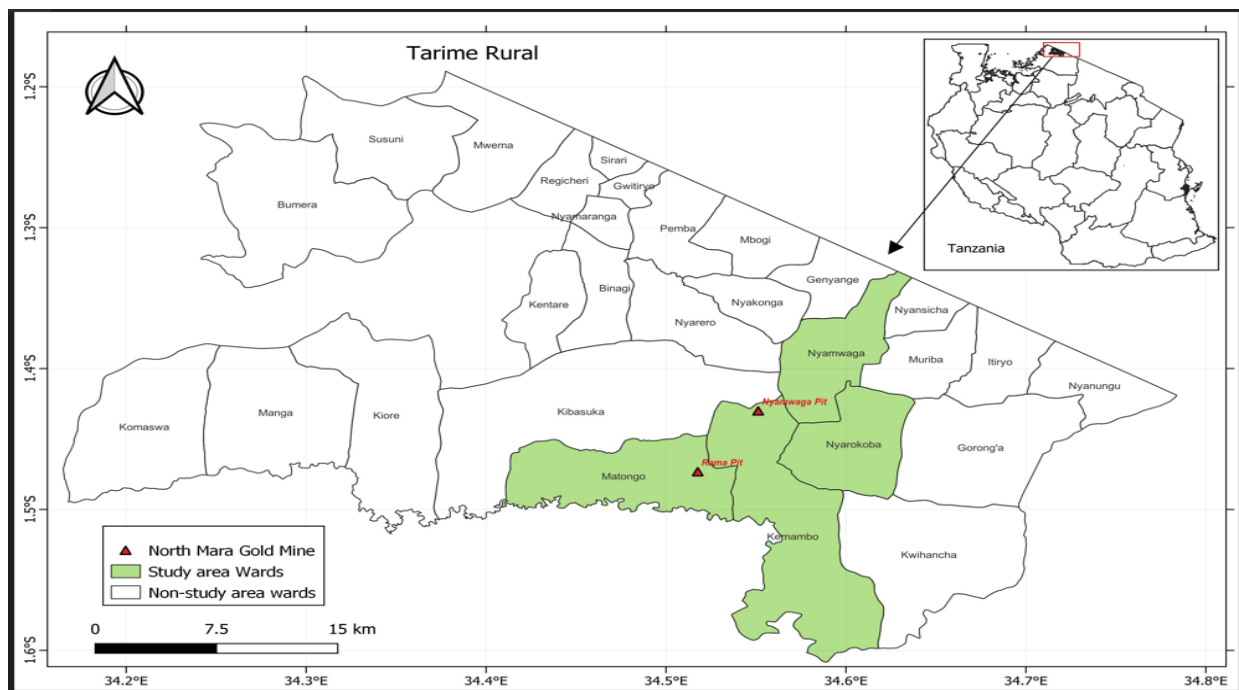


Figure 2: Location of the Study Area. Source: North Mara Mine Report (2022)

Methodology

This section presents the methodology that guided the study.

Description of the Study Area

The study took place in Tarime District, where North Mara Gold Mine (locally known as Nyamongo Gold

Mine) is located. Specifically, the study took place in six villages of Kewanja, Kerende (Kemambo Ward), Matongo, Nyangoto (Nyangoto Ward), Nyamwaga (Nyamwaga Ward) and Genkuru (Nyarokoba Ward) (Figure 2). The North Mara Gold Mine was purposely selected because it is the biggest partially government-owned mine, which practices CSR

around its areas of operations, with 16 percent government share. It provides a multifaceted perspective on the nature of company ownership and the interaction between mining operations and local communities served by company's CSR practices. Tarime District is among six districts of Mara Region in Tanzania, with 1,636.9 kilometres squares of land (United Republic of Tanzania, 2022). It is situated in the North-West of Tanzania, 15 kilometres South of a Kenyan border, 15 kilometres Northwest of Serengeti National Park and it lies between latitudes 1°00' and 1°45' South of Equator and longitudes 33°30' and 35°00' East of Greenwich (United Republic of Tanzania, 2022).

Research Design

The study used a cross-sectional research design, which involved gathering data at one specific moment to explore how CSR practices relate to the household wellbeing. This approach was appropriate because it offered a clear snapshot of how CSR initiatives affect various households,

making it a practical and budget-friendly way to evaluate the community welfare. By blending both quantitative and qualitative methods, the research design aimed at boosting the reliability and richness of the results.

Population and Sampling

This study focused on households from six villages that are part of the CSR initiatives supported by the North Mara Gold Mine. Households served as the main unit of analysis. To determine the sample size, the study used Panda's (2009) formula, which indicates that 5% of the total 7,160 households would give a sample of 358 households, chosen through systematic random sampling. In addition, the study purposefully selected 19 key informants, including leaders from the villages, wards, the district, the mining company and the Ministry of Minerals, all chosen due to their knowledge and experience in CSR practices. The sampling procedures appear in Table 1.

Table 1: The Number of Households Selected for the Study

Ward	Village	Total households in the village	Number of the households selected for the study per village
Kemambo	Kewanja	802	$0.05 \times 802 = 40$
	Kerende	820	$0.05 \times 820 = 41$
Nyangoto	Matongo	998	$0.05 \times 998 = 50$
	Nyangoto	3,280	$0.05 \times 3,280 = 164$
Nyamwaga	Nyamwaga	582	$0.05 \times 582 = 29$
Nyarokoba	Genkuru	678	$0.05 \times 678 = 34$
Total		7,160	358

Source: Tarime District Council (2022)

Data Collection Instruments

A household survey engaged 358 households using a semi-structured interview questionnaire to household heads. Information collected included the type of CSR practices introduced by the North Mara Gold Mine, housing conditions and the assets owned by the households. Apuke (2017) argues that survey is a flexible and convenient data collection method that is easy to conduct and useful in describing a large population. Nineteen key informant interview took place with key informants, selected based on their positions, considered to have much knowledge and experience about CSR practices. Kumar (2019) hold that interview is a powerful data collection method that allows flexibility, probing and enabling collection of specific as well as in-depth information from the respondents. Six Focus group discussions (FGDs) took place in six villages.

Validity and Reliability

The researchers had experts in CSR and community development review the instruments to ensure they address the study variables. They also ran a pilot test with 30 households outside the main study area to fine-tune the questionnaire and interview guides. For reliability, the study looked at internal consistency, using Cronbach's Alpha to evaluate the survey questionnaire, aiming for a threshold of 0.7. Furthermore, the researchers used triangulation by combining various data collection methods—like household surveys, key informant interviews, focus group discussions.

Statistical Treatment of Data

The study considers the level of household wellbeing as the response (dependent) variable, given the ordered categories, such as 0 if poor level of household wellbeing, 1 if middle level of

household wellbeing and 2 if rich level of the household wellbeing. The independent variables (CSR) used in this study were company support on income generating activities (IGAs), health,

education, water and road services, company provision of employment and market for local goods.

Table 2: Description of the Variables

Variables	Description
Y	Wellbeing (0 = Poor wellbeing, 1 = Middle wellbeing, 2 = Rich wellbeing)
x ₁	Employment (1= If at least one in the HH is employed in the mine, 0 = Otherwise)
x ₂	Support on household IGA (1 = If the household received support, 0 = Otherwise)
x ₃	Provision on market for local products (1 = Received market, 0 = Otherwise)
x ₄	Support on Health services (1 = If the household receives support, 0 = Otherwise)
x ₅	Support on education (1 = If the household receives support, 0 = Otherwise)
x ₆	Support on water services (1 = If the household receives support, 0 = Otherwise)
x ₇	Support on road services (1 = If the household receives support, 0 = Otherwise)

Data Processing and Analysis

To examine the influence of Corporate Social Responsibility practices on household wellbeing in the study area, the study used the Ordinal logistic regression model. The selection of this analysis based on the fact that the model represents quite significantly the relationship between an ordinal response variable (household wellbeing) and more other explanatory independent variables (employment opportunities, roads improvement, income generating activities, market provision, health services and education services). Ordinal logistic

regression is used when the dependent variable is ordinal and indicated by three or more ranks of the same variable e.g., poverty ranked as 0 = very poor, 1 = moderately poor, and 2 = non-poor (Field, 2018; Agresti & Tarantola, 2018). According to Pyon *et al.* (2011), Ordinal Logistic Regression (OLR) is a type of logistic regression analysis when the response variable has more than two categorizes, having natural order or rank. This analysis is suitable when ordinal variables are categorical with clear ordering of the category levels (Field, 2018). The model assessment was done by using Agresti and Tarantola (2018) formula:

$$P(Y) = \frac{e^{\alpha + \beta_1 x_1 + \dots + \beta_k x_k}}{1 + e^{\alpha + \beta_1 x_1 + \dots + \beta_k x_k}}$$

Where:

P (Y) = The probability of having Poor, Middle and Rich Household

e = The natural log

α = The intercept of the equation

β_1 to β_k = Coefficients of the predictor variables

Based on the above formulae, the model of this study was specified as follows;

Model specification

The **Ordinal Logistic Regression (OLR)** model used to examine the influence of Corporate Social Responsibility (CSR) practices on household wellbeing was specified as follows:

Model

$$\text{Logit}(P(Y)) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7$$

Where:

- **P(Y)** = Probability of a household being in one of the three wellbeing categories: Poor (0), Middle (1), or Rich (2).
- **Logit(P(Y))** = The log-odds of being in a higher category of wellbeing compared to a lower category (e.g., Middle or Rich compared to Poor).
- **α** = Intercept of the model (the log-odds of being in a higher wellbeing category when all predictors are 0).
- **β_1 to β_7** = Coefficients for each predictor variable (CSR practices).
- **x₁ to x₇** = Predictor variables representing CSR practices.

The predictor variables are:

- X_1 = Employment (1 = At least one household member employed at the mine, 0 = Otherwise)
- X_2 = Support on Income Generating Activities (IGA) (1 = Household received support, 0 = Otherwise)
- X_3 = Provision of a market for local products (1 = Household received market support, 0 = Otherwise)
- X_4 = Support on health services (1 = Household received health support, 0 = Otherwise)
- X_5 = Support on education (1 = Household received education support, 0 = Otherwise)
- X_6 = Support on water services (1 = Household received water services, 0 = Otherwise)
- X_7 = Support on road services (1 = Household received road improvement support, 0 = Otherwise)
- The **error term** is not explicitly added to the Ordinal Logistic Regression model because it does not operate like a linear regression model. The model focuses on estimating the **log-odds** of being in higher wellbeing categories, using predictor variables and thresholds. The nature of ordinal outcomes, combined with the proportional odds assumption, means the model does not need a traditional error term. The "error" in an ordinal logistic model is implicitly captured within the thresholds or cut points that separate the categories.

Table 3: Model fitting information

Model Fitting with Logit Link Function					Goodness-of fit-test			
-2Log Likelihood		Omnibus Test		Pseudo R ²		Chi-square	df.	Sig.
Intercept	Final	Chi-square	df	p-value	Nagelkerke	Pearson	375.856	7 0.451
1602.261	780.023	79.030	7	0.000	0.781	Deviance	393.726	7 0.352

The influence of CSR practices of North Mara Gold Mine on household wellbeing was examined by using Ordinal logistic regression model specifically by using the proportional odds logistic regression technique. The selection of this modal was based on the fact that the Household wellbeing (dependent variable) was a categorical variable indicated by three ordinal indicators such as poor, middle and rich wellbeing. The variables were examined as independent samples in a parametric test with the dependent variable as household wellbeing, whereby a significant contribution was measured at 95% and 99% confidence intervals (i.e., if $p \leq 0.05$ or $p \leq 0.01$; these is significant contribution; if $p > 0.05$ or $p > 0.01$; there is no significant contribution).

Evaluation of the Model Fitness

Evaluation of the model fitness is a crucial step in determining how well an ordinal logistic regression model explains the relationship between independent variables and the dependent variable. It involves assessing how well the model fits the data and whether the predictors (such as CSR practices in this case) significantly influence the outcome. Key methods for evaluating model fitness include likelihood ratio tests, pseudo R-squared values and goodness-of-fit tests, such as Chi-square tests, which help determine if the model provides a valid and reliable representation of the underlying data.

The results presented in Table 3 highlight the overall goodness-of-fit for the OLR model used to assess the influence of CSR practices on the household wellbeing. The -2 Log Likelihood (-2LL) values show a substantial improvement in model fit after including the independent variables. The intercept-only model has a -2LL of 1602.261 while the final model with the CSR predictors (such as employment opportunities, support for income-generating activities, markets for local goods and other services like health, education, and infrastructure) has a significantly lower -2LL of 780.023. This sharp reduction in deviance indicates that the final model provides a much better fit to the data compared to the intercept-only model, which does not include any predictors. The improvement in the model's fit is further confirmed by the Chi-square statistic of 79.030 with a p-value of 0.000, which is below the 5% significance threshold. This suggests that the inclusion of the CSR variables significantly improves the explanatory power of the model and thus, the independent variables (CSR practices) have a meaningful and statistically significant impact on household wellbeing.

Further validation of the model's fit emerged from the Pseudo R-squared (Nagelkerke) value of 0.781, which indicates that 78.1% of the variation in the household wellbeing is explained by the predictors included in the model. This high percentage suggests that the model captures most of the

factors influencing the household wellbeing, and CSR practices play a critical role. The remaining 21.9% of the variation could be attributed to other unobserved factors not included in the study. Additionally, both the Deviance and Pearson chi-square tests show non-significant p-values (0.352 and 0.451, respectively), indicating no significant difference between the observed and predicted outcomes, further suggesting that the model fits the data well. The combination of these findings — significant improvements in deviance, high explanatory power (Pseudo R-squared) and non-significant goodness-of-fit tests — indicates that the model is robust and that the CSR practices have a strong, positive influence on household wellbeing in the study areas.

Ethical Considerations

This study followed ethical research guidelines by making sure that every participant gave their voluntary informed consent to engage in data collection. The researchers took privacy seriously by anonymizing personal details to keep respondents' information safe. They also upheld the principle of non-maleficence, meaning they made sure no one was harmed during the process, all while being mindful of community norms and cultural sensitivities. They also secured formal approval from

local authorities, including the Tarime District Council and village leaders.

Results and Discussion

The study conducted the Ordinal Logistic Regression to establish the influence of CSR practices on the household wellbeing. The Proportional Odds Logistic Regression model was fitted using the Polr Function, which is appropriate for modelling ordinal outcome variables with more than two ordered categories, such as household wellbeing (poor, middle, and rich). The regression analysis produced the regression coefficients, along with their standard errors, Wald test statistics (t-values) and p-values for each explanatory variable. These results help assess the significance and strength of the relationships between CSR practices and household wellbeing. Additionally, the study calculated the residual variance and Akaike Information Criteria (AIC) to evaluate the model fit and ensure the adequacy of the model.

The findings in Table 4 indicate that CSR practices, such as employment provision, support for income-generating activities (IGAs), markets for local goods, health services, education support, water services, and road services influence the household wellbeing.

Table 4: Ordinal Logistic Regression Results

Explanatory Variables	Coefficient Value	Odds Ratio	Standard Error	Wald Test (t-value)	p-value
Provision of Employment	2.121	8.3394	1.058	2.003	0.002*
Support for Income Generating Activities (IGAs)	2.369	10.6867	0.789	3.001	0.001**
Markets for Local Goods	1.856	6.3951	0.589	3.147	0.000***
Support on Health Services	2.812	16.631	0.589	4.773	0.000***
Support on Education	2.567	13.0266	1.197	2.145	0.003*
Support on Water Services	2.666	14.3823	0.826	3.226	0.001**
Support on Road Services	2.631	13.8876	1.321	1.991	0.004*
Intercept (Middle Poor)		-0.241	0.7858	0.309	-0.780
**Intercept (Rich Middle) **		-2.002	0.1350	0.359	-5.568
Model Fit Statistics					Value
Akaike Information Criteria (AIC)					445.7264
Residual Deviance					393.7264
Number of Observations					358

Notes: Significant (*p<0.05, **p<0.01, ***p<0.000)

Ho: CSR practices do not have significant Influence on Household Wellbeing

H1: CSR practices have significant Influence on Household Wellbeing.

Specifically, the odds ratios derived from the coefficients demonstrated the extent to which these practices increase the likelihood of a household being categorized as having higher wellbeing. The Akaike Information Criteria (AIC) of 445.7264 and

the residual deviance of 393.7264 provide additional evidence of the model's good fit. The p-values for all predictors are significant (p < 0.05), indicating that each CSR practice makes a significant contribution

to improving the household wellbeing in the study area.

The results from Ordinal logistic regression model (Table 4) revealed that all seven variables of the CSR had the p-value of less than 0.05 (5%), hence found significant at the 95% Confidence Interval or CI. It is clear that the household wellbeing relates with all the variables entered in the model. This indicates that company support on household income generating activities, education, water, health and road services, provision of markets for local goods and employment are important factors that influence the wellbeing of the households. The findings concur with Ngowi (2015) and Adeyemi *et al.* (2018) who reported that CSR projects had significant contribution to household wellbeing. The sign for each coefficient indicates the magnitude of the effect of the respective independent variable on household wellbeing (given that other variables remain constant); a positive sign indicates a positive relationship while the negative sign is the opposite.

The results provided in Table 4 reflects that, support provided by the mine on education services was significant. The estimated Odds Ratio (OR = 13.03, 95% CI) indicates that for one unit increase in support for education service, the odds of household moving from a lower-level wellbeing category to a higher wellbeing category (from poor to middle or from middle to rich wellbeing) increases by a factor of 13.03, holding all other variables in the model constant. This suggests that education service was crucial to improve the wellbeing level of households in the study area. FGDs reported that the company had been supporting the education sector for nearly two decades (2002-2022). Particularly, one FGD participants reported, "North Mara Company has done a very good job in the education sector by building classrooms, teachers' houses and paying school fees for needy children. Every member in our community is happy about their support in education." (FGD at Nyamwaga ward, 14th April 2022). These findings agree with Rela *et al.* (2020) and Mahenge (2020), who reported that education programs are the common types of companies' CSR services with direct impact to household wellbeing.

Results in Table 4 showed that employment opportunity and markets for local goods were significant positive predictors of household wellbeing (with p-value of less than 0.05). For every one-unit increase of employment opportunity and

markets for local goods, there is a predicted increase of 8.33 and 6.39 respectively in the odds of household being in a higher wellbeing category (assuming all other variables remain constant). During the focus group discussions, the participants reported that employment and market for local goods were opportunities provided by the mine to the people living around it. For instance, one FGD participant reported, "The company had employed people and local companies to work with, at the same time, buying goods from the local people to promote local goods and increase people's incomes" (FGD at Kemambo ward, 12th May 2022). These findings align with those by Boginska *et al.* (2020), who reported that the wages obtained from the mine by local household laborer's enabled them to meet their daily requirements and improve their living standards. Narula *et al.* (2017), Mwakesi *et al.* (2020) and Leuenberger *et al.* (2021) reported similar findings that mine companies improved the wellbeing of communities through creation of formal and informal employment opportunities around the mine.

Moreover, the findings in Table 4 indicate that support provided by the Mine on IGAs, health and water services are associated with higher likelihood of having a positive influence on household wellbeing level (with p-value ≤ 0.05). For every one unit increase of support for IGAs, health and water services there is a predicted increase of 10.68, 16.63 and 14.38 respectively in the log odds of a household moving in a higher wellbeing category, while the effects of other variables in the model were held constant. In all these three variables, the Wald statistics (t-tests) were greater than 3 (Table 4) with p-values less or equal to 0.05, indicating the importance of these predictor variables in the model. It was reported during the focus group discussion that availability of health services and water near the communities was of great importance as it ensured easy access to services and promoted their wellbeing. On this regard one FGD participant from Nyangoto ward reported, "The increase of provision of health services and water supply has reduced expense and time to obtain social services compared to when they were in long distance; the money I saved was used in obtaining household assets" (FGD at Nyangoto ward, 30th April 2022).

These results match with several studies, which demonstrated that household wellbeing is associated with CSR of the mining companies'

support on health, water and education services (Msoka & Mbirigenda, 2015; Gamu & Dauvergne, 2018; Taylor *et al.*, 2018). Kilave (2017) found that mining companies were providing support to local people's business activities and other income generating activities through CSR.

The study established that the company supports on road services was another significant factor that influenced the wellbeing of households in the study area. An increase in company support for road services is associated with an increase in the odds of moving to a higher wellbeing category, as for every one-unit increase of support on road services, there is a predicted increase of 13.88 in the log odds of a household being in a higher wellbeing category. It was reported during the FGD that, "The company constructed roads that have helped in the transportation of my goods easily to the market area; this has made it possible to obtain enough income for the renovation of my house" (FGD at Nyamwaga Ward 8th April 2022). These findings are in agreement with Boginska *et al.* (2020), who reported that community transport

infrastructure influences the level of household well-being.

From the observed significance levels, all the explanatory variables are factors that influence the wellbeing of the households. As a result, the null hypothesis which state that the '*Company's CSR practices do not have a significant Influence on Households' wellbeing*' is rejected, and the alternative hypothesis saying the '*Company's CSR practices have significant Influence on Household Wellbeing*' is upheld.

Structural Equation Model

In Table 5, Structural Equation Modelling (SEM) is a powerful statistical technique that allows for the analysis of complex relationships between observed and latent variables. In this study, SEM enables the assessment of the direct and indirect effects of Corporate Social Responsibility (CSR) practices on the household wellbeing while taking into account the connections among various factors such as employment, health services, and income generation.

Table 5: Structural Equation Modelling (SEM) Results for the Influence of CSR Practices on Household Wellbeing

Path	Estimate	Standard Error (SE)	Critical Ratio (CR)	p-value	Direct Effect	Indirect Effect	Total Effect
CSR Employment → Household Wellbeing	0.452	0.098	4.612	0.000***	0.452	0.000	0.452
CSR Health → Household Wellbeing	0.513	0.112	4.578	0.000***	0.513	0.000	0.513
CSR Education → Household Wellbeing	0.387	0.104	3.718	0.000***	0.387	0.000	0.387
CSR Water → Household Wellbeing	0.328	0.105	3.119	0.002**	0.328	0.000	0.328
CSR Road → Household Wellbeing	0.210	0.115	1.826	0.068	0.210	0.000	0.210
Support for IGA → Household Wellbeing	0.289	0.097	2.978	0.003**	0.289	0.000	0.289
Employment → Income → Household Wellbeing	0.359	0.075	4.780	0.000***	0.000	0.349	0.349
Health → Income → Household Wellbeing	0.325	0.084	3.872	0.000***	0.000	0.319	0.319
Education → Income → Household Wellbeing	0.198	0.073	2.715	0.007**	0.000	0.194	0.194
Indirect Effects via Trust (Latent Variable)	0.246	0.081	3.037	0.002**	0.246	0.000	0.246

By modelling these relationships, SEM provides a deeper understanding of how CSR initiatives influence household wellbeing, both directly and through mediating factors, offering valuable insights into the underlying mechanisms. The findings demonstrate the application of SEM in exploring the impact of CSR practices on household wellbeing,

highlighting both direct and indirect effects. The variables included in this model may encompass employment opportunities, support for income-generating activities (IGAs), educational services, health services, road infrastructure, and water services, with household wellbeing serving as the outcome variable.

The SEM results clearly demonstrate the significant influence that Corporate Social Responsibility (CSR) practices have on the household wellbeing, with both direct and indirect pathways playing a role in this impact. The results pronounce the direct effects for CSR initiatives that focus on employment, health and education. For instance, CSR employment practices exhibit a direct positive effect on the household wellbeing, with an estimate of 0.452 (p-value = 0.000). This suggests that offering local communities job opportunities enhances their overall quality of life. Health services are equally important, as CSR health practices show an estimate of 0.513 (p-value = 0.000), highlighting the critical need for improved healthcare access to boost household wellbeing. Likewise, CSR education initiatives have a direct and positive effect (estimate = 0.387, p-value = 0.000), underscoring the importance of education in uplifting communities and fostering long-term social and economic progress.

These results align with recent research that underscores the direct connection between CSR practices in these areas and enhanced community welfare. For example, Choi and Lee (2023) point out that CSR strategies, particularly those aimed at employment and healthcare, can lead to significant improvements in local living standards by addressing fundamental needs and strengthening community stability. Similarly, McWilliams and Siegel (2022) found that CSR initiatives in employment and health significantly benefit marginalized communities by improving access to essential services and economic opportunities.

Additionally, support for income-generating activities (IGAs), with an estimate of 0.289 (p-value = 0.003), represents another direct effect that illustrates how CSR fosters economic empowerment and provides sustainable livelihood opportunities, further enhancing household wellbeing.

Indirect effects in the model, particularly those mediated by income and a latent variable representing trust, provide additional insight into the mechanisms through which CSR influences household wellbeing. CSR practices related to employment and health, for example, significantly influence income (with estimates of 0.349 and 0.319, respectively), which in turn has a substantial positive effect on household wellbeing. This supports the argument that CSR's role in improving local employment opportunities and healthcare

access does not only yield immediate benefits but also creates long-term improvements by increasing the household income. The latent variable of trust also plays a crucial role, with an indirect effect estimate of 0.246 (p-value = 0.002). This suggests that CSR initiatives help foster trust within the community, which can further amplify their impact on household wellbeing. The role of trust in mediating CSR effects aligns with recent research, such as the work by Choi and Lee (2023), which argues that CSR practices that build trust within the community lead to greater community cohesion and long-term economic benefits. Additionally, Lee *et al.* (2023) found that CSR activities that enhance social capital, particularly trust, positively influence community development and wellbeing, fostering a more resilient and economically secure environment. By improving both tangible services and intangible social capital like trust, CSR initiatives contribute to a more resilient and prosperous community. These results underscore the multi-dimensional nature of CSR's impact on wellbeing, where direct service provision, economic empowerment, and social trust collectively enhance the quality of life for local households.

Conclusions and Recommendations

Conclusions

In conclusion, this study shines a light on how important Corporate Social Responsibility initiatives are for boosting the wellbeing of households in communities around the North Mara Gold Mine. It is clear that weaving CSR into sustainable community development is crucial for building long-term economic stability and improving access to essential social services. For these programs to make a difference, they need to align with specific development needs of the local area. This way, investments in education, healthcare, infrastructure and economic empowerment can lead to lasting improvements in people's lives.

Recommendations

To enhance the effectiveness of CSR initiatives, companies should integrate CSR into their core business strategies rather than viewing it as a mere legal obligation. Strengthening collaboration between mining companies, government authorities and community representatives is essential to align CSR initiatives with local development needs. Active community participation should be encouraged to ensure that CSR programs address actual priorities, fostering ownership and sustainability. Establishing

a robust monitoring and evaluation framework is necessary to assess the impact of CSR initiatives and guide future improvements. Additionally, supporting long-term income-generating activities, such as entrepreneurship programs and vocational training, will help reduce dependency on mining-related employment and contribute to sustainable community development.

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