The Influence of Social, Economic and Environmental Aspects on the Welfare of Traditional Diamond Mining in Cempaka District, Banjarbaru City, Indonesia

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Abstract

The abundance of natural resources in the form of mining minerals has made traditional diamond mining activities in Cempaka Sub-district a mainstay of Banjarbaru City in improving the welfare of the mining community. In addition, traditional diamond mining is able to contribute to regional PAD, and another added value of traditional diamond mining activities is to become a natural tourist attraction (ecotourism) for foreign and domestic tourists to see diamond mining more closely. This study aims to: (1) Analyze the influence of social aspects on the welfare of traditional diamond miners in Cempaka Sub-district; (2) Analyze the influence of economic aspects on the welfare of traditional diamond miners in Cempaka Sub-district; and (3) Analyze the influence of environmental aspects on the welfare of traditional diamond miners in Cempaka Sub-district.This research uses a Quantitative approach aimed at being able to analyze the influence of Social Aspects on Welfare, Economic Aspects on Welfare, and Environmental Aspects on Welfare in traditional diamond mining communities in a complete and comprehensive manner. The research stages include the Survey Method using Primary and Secondary Data. Primary data is obtained from questionnaire data (questionnaire) of respondents (mining community), while secondary data is obtained from the mining office and related agencies.The research consists of three aspects, including: (1) Research Aspect I which analyzes the influence of Social Aspects on the Welfare of traditional diamond miners in Cempaka Sub-district using respondents in three hamlets namely Ujung Murung, Luka'as, and Pumpung. All 234 households in these three hamlets were taken as samples based on the sample technique with a reachable population. Respondents taken as samples were all households working as miners. The variables observed were the Social Aspects on the Welfare of traditional diamond miners, which were analyzed using the Path Analysis Parametric Statistical approach; (2) Research Aspect II, which analyzed the influence of Economic Aspects on the Welfare of traditional diamond miners in Cempaka Sub-district; and (3) Research Aspect III, which analyzed the influence of Environmental Aspects on the Welfare of traditional diamond miners in Cempaka Sub-district, using the same respondents as in Research Aspect I. The observed variables are selected data from questionnaires filled out by the mining community, which are analyzed using Regression Path Analysis and Scoring. Questionnaires from Social Aspects, Economic Aspects, and Environmental Aspects were used to see the significance of the influence of these three aspects on improving the Welfare of Traditional Diamond Miners.

Keywords: *Social, Economic and Environmental Aspects, Mining, Diamond, Traditional.*

Introduction

The abundance of natural resources, especially mined minerals, has made traditional diamond mining in Cempaka Sub-district a mainstay in improving the welfare of local communities in Banjarbaru City (Akmiyati et al., 2020; Rochgiyanti et al., 2024; Siregar, 2022). It creates jobs for the local community and is an important pillar of the regional economy (Wikipedia, 2024). In addition to contributing significantly to the Regional Original Revenue (PAD), this practice has become an integral part of the local community's life (Jumriani et al., 2023; Kalfas et al., 2024; Liu et al., 2023). However, as awareness of the importance of sustainability increases, more attention is needed to the long-term impacts of this mining on the environment and social welfare (Clifford, 2022; Meutia et al., 2022; Queiroz et al., 2022; J. Zhang et al., 2023).

However, as global attention to sustainability and the socio-economic impacts of mining have grown, concerns have emerged about the long-term impacts of traditional diamond mining (Díaz Paz et al., 2023; Sutriadi et al., 2024; Sutrisno et al., 2024). Although mining has been part of the community's culture for

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generations, the practice is now facing serious challenges, especially in terms of environmental sustainability and social impacts (Ang et al., 2023; Heydari & Osanloo, 2024; Jiménez et al., 2022). Mining activities that are not properly reclaimed have caused significant environmental damage, such as the formation of mining pits and ponds that contaminate groundwater and cause degradation of agricultural land (Gasparinnetti et al., 2024; Mestanza-Ramón et al., 2022; Shao et al., 2023). In addition, government regulations through the environmentally friendly Minerba Law No. 3 of 2020 are often not in line with traditional mining practices carried out by the community (Jong, 2020; Meng et al., 2024), creating conflicts between environmental preservation and the economic needs of local communities (Soemadipradja, 2022).

Previous research has focused more on the economic aspects of diamond mining, but less on the overall social and environmental impacts (Cole & Broadhurst, 2022; Nalule, 2019). This indicates a research gap in understanding how these three aspects influence each other and how they impact the overall welfare of the mining community (Blanco et al., 2023; Mestanza-Ramón et al., 2022). To fill this gap, this research utilizes the Sustainable Livelihoods Framework (SLF) (Scoones, 1998), a theoretical framework developed by Robert Chambers and Gordon Conway (Chambers & Conway, 1991), which emphasizes the importance of a multidimensional approach in evaluating community well-being by considering the balance between economic, social, and environmental assets (Perni & Martínez-Paz, 2023).

Therefore, the purpose of this study is to comprehensively analyze the influence of social, economic, and environmental aspects on the welfare of traditional diamond miners in Cempaka Sub-district. In addition, this study also aims to recommend alternative occupations that can replace traditional diamond mining, in order to improve the welfare of the mining community and reduce negative impacts on the environment.

Research Methods

This research was conducted for 6 months, namely from March to July 2024, the research method is a Quantitative Approach using primary and secondary data sources. Primary data was obtained from questionnaire data filled in by respondents (mining communities), while secondary data was obtained from the mining office and related agencies. The research consists of three aspects, including research aspects I, II and III.

Research Aspect I (Analyzing the influence of social aspects on the welfare of traditional diamond miners in Cempaka Sub-district) used respondents in 3 hamlets including: Ujung murung, luka'as and Pumpung, All the population of 234 households in the three (3) hamlets were taken as samples based on the sample technique with an affordable population (Bisht, 2023). Respondents taken as samples were all households working as traditional diamond miners. The observed variables, namely social aspects of the welfare of traditional diamond miners, were analyzed using the parametric statistical approach of Path Analysis (Faisal Anwar et al., 2024; G et al., 2024).

Research aspect II (Analyzing the influence of economic aspects on the welfare of traditional diamond miners in Cempaka sub-district), and Research aspect III Analyzing the influence of environmental aspects on the welfare of traditional diamond miners in Cempaka sub-district using respondents like research aspect I. The variables observed were selected data from questionnaires filled out by the mining community, analyzed using Path Analysis regression and scoring questionnaires from social aspects, economic aspects and environmental aspects to see the significance of the influence of the three aspects on improving the welfare of traditional diamond miners (Fan et al., 2024; Yang et al., 2024).

Data Analysis

The data analysis used in this study is in line with research conducted Safitri & Sopiana (2023), in the research Analysis of the Potential of Pineapple Farming Business in Efforts to Increase Income and Welfare of Mekarsari Village, Barito Kuala Regency is Quantitative by using statistical analysis, so that the results of data processing can be known level of income and welfare. Meanwhile, research on traditional diamond

mining in Cempaka Subdistrict uses Path Analysis Regression Statistics (Path Analysis) to determine the effect of diamond mining on welfare.

The Nominal Research Data For Research Aspects I, II And III Were Analyzed Using The Multiple Linear Regression Model Approach (Path Analysis).

The regression model of traditional diamond mining research data used is in line with the model used in the research of Yunani et al. (2023), namely the Effect of Education, Age, Gender, Length of Business. Capital and Income Against Business Mobility of Street Vendors in Handil Bakti Barito Kuala Regency by using the SPSS statistical calculation assistance program version 16.0 obtained a significant probability simultaneously is 0.000 <0.1, it can be concluded that simultaneously the variables of Education (X1), Age (X2), Gender (X3), Length of Business (X4), Capital (X5), Income (X6), simultaneously affect Business Mobility (Y).

This multiple regression model is actually a development of multiple linear regression analysis techniques using more than one exogenous independent variable (Jana et al., 2023; Scott & Wang, 2021), Y1, Y2, and Y3 with one endogenous dependent variable Y (Peng et al., 2023) with the following formula:

Initial Fn

$$Y = \frac{X}{n}$$

Equation $Y_1 = \dfrac{X1 + X2 + X3 + X4 + X5 \sum t}{5} \ldots\ldots\ldots(1)$

Equation $Y_2 = \dfrac{X6 + X7 + X8 + X9 \sum t}{4} \ldots\ldots\ldots(2)$

Equation $Y_3 = \dfrac{X10 + X11 + X12 + X13 \sum t}{4} \ldots\ldots\ldots(3)$

Equation $Y = \dfrac{X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X11 + X12 + X13)}{13}$

Design variables, enter data and analyze it with IBM SPSS

Description:

Variable Y1 As An Exogenous Independent Variable Of Social Aspects, Namely :

X_1 = Culture

X_2 = Social Conflict

X_3 = Religion

X_4 = Anthropology

X_5 = Education

Variable Y2 As An Exogenous Independent Variable Of Economic Aspects, Namely :

X_6 = Work Productivity

X_7 = Technology

X_8 = Work

X_9 = Dual Income Pattern

Y3 As An Environmental Exogenous Independent Variable, I.E. :

X_{10} = Mining Resources

X_{11} = Environmental Pollution

X_{12} = Environmental Damage

X_{13} = Rehabilitation

Variable Y The Welfare Level of the Traditional Diamond Mining Community

Y as endogenous dependent variable welfare level of traditional diamond miners (Arif Rachman et al., 2024).

Results and Discussion

Research Aspect I: Analyzing The Influence Of Social Aspects On The Welfare Of Traditional Diamond Miners In Cempaka District)

Research Aspect I uses the feasibility model of F Test, T Test, R, Rs with Regression Path Analysis (Path Analysis) for the influence of Social Aspects (Y1) including Community Culture (X1), Social Conflict (X2), Religion (X3), Community Anthropology (X4), and Community Education (X5) on the Welfare of 234 households of Diamond Miners (Respondents) in 3 hamlets, namely: Ujung Murung, Luka'as, and Pumpung can be seen in the table below:

Table 1. Equation 1 Effect of Social Aspects (Y1) with Welfare (Y)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.556	.111		-14.074	.000
	Culture (X_1)	.152	.033	.163	4.546	.000
	Social Conflict (X_2)	.024	.021	.031	1.152	.251
	Religion (X_3)	.684	.041	.684	16.554	.000
	Anthropology (X_4)	.030	.030	.036	.998	.319
	Education (X_5)	.088	.025	.104	3.571	.000

Data source: Processed Regression Path Analysis Y2 Year 2024.

Table 2. Model Summary of Processed Regression Data Path Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.960a	.922	.921	.14118

Data source: Predictors: (Constant) X1, X2, X3, X4, X5 Path Analysis Year 2024

There is an influence of the miners' Community Culture (X1) based on Regression processed Path Analysis data of 0.152 with Social Aspects (Y2) of 0.741 and Scoring values of 525 (score 5) and 492 (score 4) traditional diamond mining is very large and greatly influenced by the previous community culture which has an impact on their performance as miners, but has not been able and unable to improve Community Welfare (Y) with a value of 0.194.

The results of Regression Path Analysis there is an influence of Social Conflict (X2) of 0.024, while Scoring 258 (score 1) and 102 (score 2) states that traditional diamond mining does not and less cause Social Conflict with miners themselves, non-mining communities, landowners and the Banjarbaru City government with a Y1 value of 0.279. Although it does not cause Social Conflict, it has not and does not affect the improvement of Community Welfare (Y) with a value of 0.194 (Coalition, 2020).

There is an influence of the relationship between the Religious System (X3) and Social Aspects (Y2) based on Regression Path Analysis of 0.684 and Scoring 570 (score 5) and 460 (score 4) view that traditional diamond mining is very large and is greatly influenced by the Religious System of the mining community, but the influence of the relationship between the Religious System and Social Aspects has not and does not have an impact on increasing Welfare (Y) by 0.194. The religious system adopted by the mining community is in line with the research of Yunani et al. (2023), namely: Levelihood and Organizing Dynamics of Pagatan Weaving Activities in Tanah Bumbu Regency in addition to being related to weaving activities, the socio-cultural system of the community in the research location is strongly influenced by Islam (Religion) adopted by the majority of the community. Even mosques function as democratic spaces for solving problems that exist in society.

Based on Regression Path Analysis there is an influence between Community Anthropology (X4) of 0.030 with Social Aspects (Y2) of 0.279 and Scoring values of 570 (score 5) and 460 (score 4) view traditional diamond mining is very large and greatly influenced by Community Anthropology (X4) through social relations between them, although there is an influence of the relationship between Community Anthropology and Social Aspects, but has not been able to improve Community Welfare (Y) by 0.194.

The effect of Community Education (X5) based on Regression Path Analysis is 0.088 with a Social Aspect value (Y1) of 0.279 and Scoring data has a moderate effect of 39 (score 3), less effect of 93 (score 2), and no effect of 186 (score 1). This means that Education (X5) and Social Aspects (Y2) of diamond mining have not had an effect on increasing Community Welfare (Y) by 0.194 on the grounds that becoming a miner does not require a high education, it is enough to learn by yourself from senior miners when mining diamonds and can immediately practice.

Research Aspect II: Analyzing The Influence Of Economic Aspects On The Welfare Of Traditional Diamond Miners In Cempaka Sub-District

Based on the feasibility model of F Test, T Test, R, Rs (see attachment 10) between Economic Aspects (Y2) which include Work Productivity (X6), Technology (X7), Employment (X8), Dual Income Pattern (X9) with Community Welfare (Y) Miners in 3 dukuhs, namely: Ujung Murung, Luka'as, and Ujung Murung can be seen from the Regression of processed Path Analyst data and Scoring in the table below:

Table 3. Equation 2 Effect of Economic Aspects (Y2) with Welfare (Y)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.417	.112		12.697	.000
	Work Productivity (X6)	.005	.120	.006	.041	.967
	Technology (X7)	.108	.113	.138	.960	.338
	Work (X8)	.195	.093	.234	2.100	.037
	Dual Income Pattern (X9	-.225	.104	-.260	-2.174	.031

Data source: Processed Regression Path Analysis Y2 Year 2024

Table 4. Model Summary of Processed Regression Data Path Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.212a	.045	.028	.49308

Data source: Predictors: (Constant) X6, X7, X8, X9 Path Analysis Year 2024

The effect of Work Productivity (X5) based on Regression Path Analysis of 0.005 with Economic Aspects (Y2) of 0.741 and Scoring a moderate effect of 39 (score 3), less effect of 93 (score 2), and no effect of 172 (score 1). This means that the effect of Work Productivity with Economic Aspects has not and does not have a significant effect on Welfare (Y) of 0.194 as evidenced by the fact that until now there have been no traditional diamond miners in the 3 villages who have had the luck of diamond stones with large sizes such as the Trisakti diamond in the 1950s.

The effect of Technology (X7) based on Regression Path Analysis 0.108 with Economic Aspects (Y2) of 0.741 with Scoring medium effect 74 (score 3), less effect 254 (score 2), no effect 132 (score 1). This means that the effect of Technology (X7) 0.108 with Economic Aspects (Y2) of 0.741 has not had a significant effect on Welfare (Y) of 0.194.

The effect of work (X8) based on Regression Path Analysis 0.195 with Economic Aspects (Y2) of 0.741 with a moderate effect scoring of 45 (score 3), less effect of 240 (score 2), no effect on the results obtained by miners of 90 (score 1). This means that Technology with Economic Aspects does not have a significant influence with evidence that even though the work is carried out with enthusiasm from the morning at 08.00-17.30 it has not been able to improve Welfare (Y) with a value of 0.194.

Path Regression Analysis views that the Dual Income Pattern (X9) of 0.225 has an effect on the Economic Aspect (Y2) of 0.741 and Scoring has a moderate effect of 57 (score 3), less effect of 204 (score 2), and no effect on the welfare of miners of 75 (score 1). This means that the effect of Dual Livelihood with Economic Aspects has not had a significant effect with evidence that even though they have other jobs outside of work as diamond miners, they have not been able to increase the Welfare (Y) of miners by 0.194 of the 3 dukuh mining community in Cempaka District. Double Income is another job outside of work as a miner such as: construction laborers, trading agate, parking attendants, Koran teachers etc.

Research Aspect III. Analyzing The Influence Of Environmental Aspects On The Welfare Of Traditional Diamond Miners In Cempaka Sub-District.

Based on the feasibility model of F Test, T Test, R, and Rs (see attachment 10) between Environmental Aspects (Y3) which include Natural Resource Utilization (X10), Environmental Pollution (X11), Environmental Damage (X12), and Post-Mining Rehabilitation (X13) with Community Welfare (Y) of Miners in 3 dukuhs, namely: Ujung Murung, Luka'as, and Ujung Murung with Regression Path Analysis and Scoring data can be seen in the table below:

Table 5. Equation 3 Effect of Environmental Aspects (Y3) with Welfare (Y)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.838	.079		-10.545	.000
	Natural Resources (X10)	.013	.026	.014	.516	.606
	Environmental Pollution (X11)	-.240	.037	-.234	-6.545	.000

Environmental Damage (X12)	.802	.026	.806	30.440	.000
Post-Mining Rehabilitation (X13)	.393	.032	.395	12.170	.000

Data source: Processed Regression Path Analysis Y3 Year 2024

Table 6. Model Summary of Processed Regression Data Path Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.970a	.940	.939	.12250

Data source: Predictors: (Constant) X10, X11, X12, X13 Path Analysis Year 2024

Based on Regression Path Analysis there is an effect of utilization of Mining Natural Resources (X10) of 0.013 with Environmental Aspects (Y3) of 0.06 with Scoring 354 (score 5) and 616 (score 4) view traditional diamond mining is very large and has a big influence on the quality of the environment around traditional diamond mining sites, while the relationship between utilization of Mining Natural Resources and Environmental Aspects (Y3) is not significant with welfare (Y) of 0.194 because it is possible that traditional diamond mining sites experience deposits (diamonds are reduced or difficult to obtain) by the mining community.

Based on Regression Path Analysis, the utilization of mining natural resources (X11) of 0.240 has an effect on Environmental Aspects (Y3) of 0.06 with Scoring that the utilization of natural resources has a very large effect on the onset of environmental pollution of 450 (score 5), and a large effect on environmental damage of 616 (score 4), and the effect of utilization of mining natural resources is not significant with Welfare (Y) of 0.194 because the results of traditional diamond mining are not proportional to the environmental pollution produced.

Environmental Damage (X12) based on Regression Path Analysis of 0.802 has an effect on Environmental Aspects (Y3) of 0.06, and supported by work as a diamond miner has a very large effect on environmental damage of 450 (score 5), and work as a diamond miner has a large effect on environmental damage of 616 (score 4), meaning that there is an effect of environmental damage on environmental aspects that is very significant but has no effect on welfare (Y) of 0.194 in the mining community.

Post-Mining Rehabilitation (X13) based on Regression Path Analysis of 0.393 has an effect on Environmental Aspects (Y3) of 0.06 and Scoring work as a diamond miner has a very large effect on environmental improvement of 450 (score 5), and mining rehabilitation has a large effect on environmental improvement of 616 (score 4), meaning that the effect of Post-Mining Rehabilitation and Environmental Aspects is very significant but has no effect on Welfare (Y) of 0.194 in the mining community of 3 dukuh (Ujung Murung, Luka'as, and Pumpung).

Visibly, due to the open-pit mining above it, the condition of the watershed, especially in Cempaka, is quite alarming. Flooding is often a threat. As a result, when it rains the abundant water discharge can no longer be accommodated, so that the Cempaka watershed is increasingly narrowed after being affected by landslides or soil erosion from the mined land (Macháček et al., 2022; Y. Zhang et al., 2024). On the other hand, in traditional (small-scale) diamond mining, tailings are also generated from the processing plant and diamond processing. Tailings are by-products, residual reagents, and unnecessary mining processing results.

The mining tailings contain many dangerous inert minerals such as quartz, calcite, and various types of aluminosilicates, and sometimes even Arsenic (As), Cadmium (Cd), Mercury (Hg), Lead (Pb), and Cyanide (CN). Some of these metals are heavy metals that are categorized as hazardous and toxic waste (B3) (Lina, 2021). The negative impact of traditional diamond mining is in line with research by Jauhari (2023) in the study Analysis of Chemical Properties of Soil Disposal of Coal Mining CV. Intan Mandiri in Banjar Regency, where coal mining activities with open pit mining methods can have an impact on the depreciation

of the quality of the surrounding environment, one of which has a decrease in the classification of soil chemical properties. The research objective is to analyze soil chemical properties, namely soil pH, C-organic, Nitrogen (N), Phosphorus (P-Total) and Cation Exchange Capacity (CEC) in the disposal area.

The types of environmental damage that occur from the results of respondents' questionnaires are presented in the table below.

Table 7. Respondents' Perceptions of Diamond Mining in Kecamatan Cempaka.

No	Types of Damage	Negative Perception
1.	Soil Damage	The land becomes barren, muddy, less fertile and polluted with diesel fuel and chemical waste used in traditional diamond cutting.
2.	Water pollution	Water becomes turbid, brownish in color, river sedimentation occurs causing siltation, water cannot be used for drinking, washing, and bathing (MCK) water sources.
3.	Air pollution	Air temperature increases due to destruction of vegetation around the mine, dust increases causing symptoms of ARI respiratory and digestive diseases).
4.	Damage to Flora and Fauna	Vegetation is damaged, plant diversity is reduced, rivers disappear completely, fauna are difficult to find, fish in rivers are reduced, land is arid, agricultural land shrinks or disappears, plants disappear, plantations are unproductive.

Description: Processed data from respondent interviews.

The analysis of Table 7 reveals that diamond mining activities in Kecamatan Cempaka have resulted in various forms of environmental damage that significantly impact both ecosystems and the local community's livelihood. Respondents' perceptions indicate four main types of damage: soil degradation, water pollution, air pollution, and damage to flora and fauna. Soil degradation occurs as the land becomes barren, contaminated by chemicals, and loses its fertility, negatively affecting agricultural productivity in the surrounding areas. Water pollution is a serious concern, as water quality deteriorates, making it unsuitable for essential daily needs such as drinking, washing, and bathing. This is caused by sedimentation and contamination from mining activities, leading to turbid water and silted rivers. Furthermore, the loss of vegetation due to mining activities has resulted in increased air temperatures and heightened dust pollution, contributing to health issues such as Acute Respiratory Infections (ARI) among the local population. The damage to flora and fauna is also significant, as mining activities have led to the loss of natural habitats, decreased plant diversity, and a decline in wildlife populations, including fish in rivers.

Overall, diamond mining in Kecamatan Cempaka has severely impacted the environment, affecting the physical condition of soil and water, as well as disturbing air quality and biodiversity. These adverse effects not only threaten the ecological balance of the area but also diminish the quality of life for communities that rely on these natural resources. Therefore, collaborative and coordinated efforts are necessary to mitigate these negative impacts through the implementation of more sustainable mining practices and effective environmental rehabilitation programs.
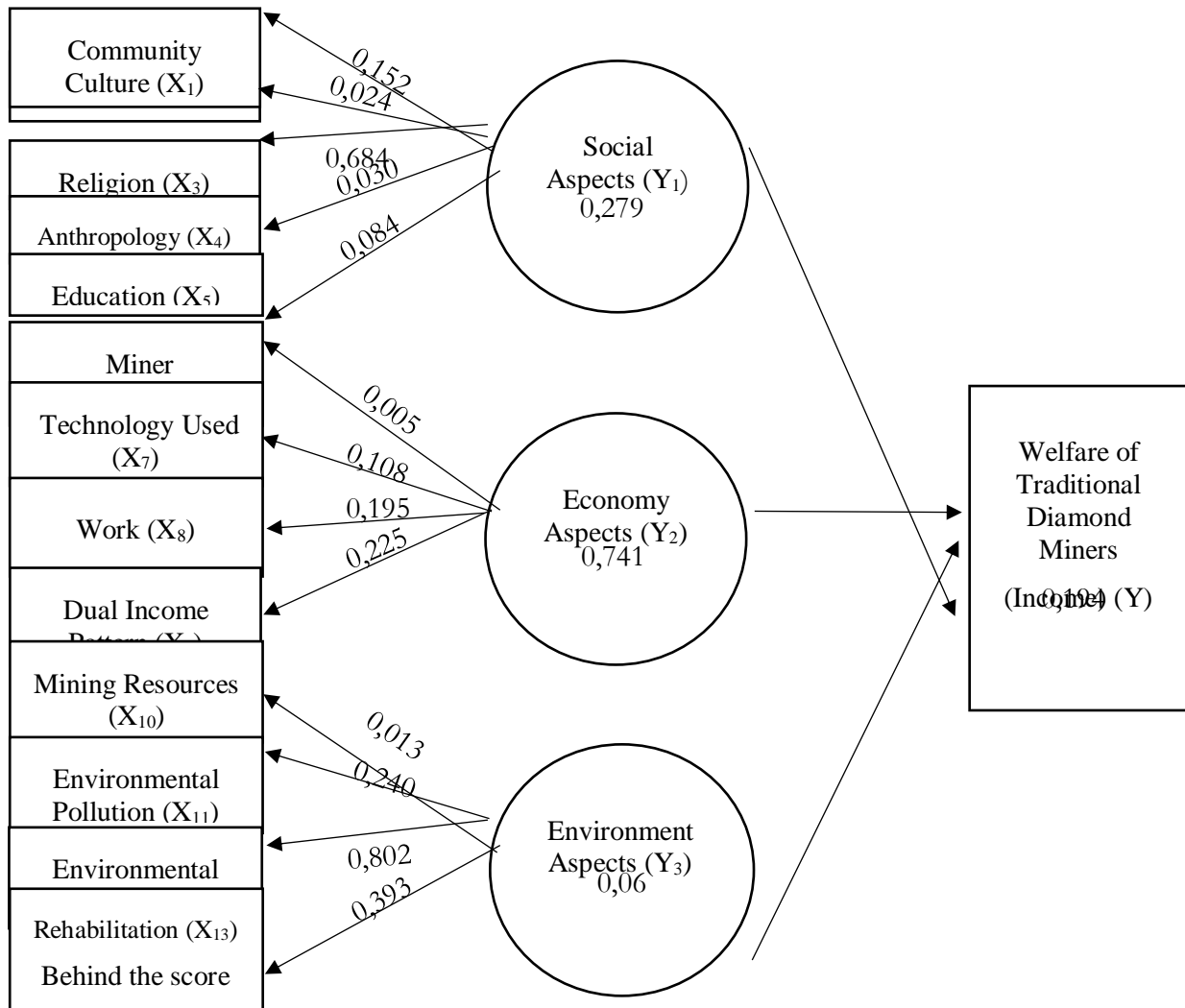
Path Analysis

Figure 1. Path Analysis of Multiple Regression Models

More details about the influence between variables X (1-13) with variables Y (1,2,3) and variable (Y) can be seen in the table below.

Table 8. Coefficient of Regression Path Analysis of Traditional Diamond Mining

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig/Tdk Sig
		B	Std. Error	Beta		
1	(Constant)	-2.561	.127		-20.207	.000
	Culture (X_1)	.064	.032	.069	1.968	.050
	Social Conflict (X_2)	-.018	.021	-.024	-.854	.394 (TS)
	Religion (X_3)	.494	.052	.496	9.494	.000
	Anthropology (X_4)	.142	.025	.171	5.794	.000
	Education (X_5)	-.002	.023	-.002	-.087	.931 (TS)
	Social Aspects (Y_1)	.030	.057	.030	.528	.598 (TS)

Productivity (X$_6$)	-.011	.027	-.015	-.418	.676 (TS)
Technology (X$_7$)	-.009	.024	-.012	-.388	.698 (TS)
Work (X$_8$)	.087	.024	.105	3.645	.000
Dual Income Pattern (X$_9$)	-.034	.023	-.039	-1.489	.138 (TS)
Economy Aspects (Y$_2$)	-.034	.016	-.034	-2.165	.031
Natural Resources (X$_{10}$)	-.091	.028	-.094	-3.221	.001
Environmental Pollution (X$_{11}$)	.198	.037	.193	5.299	.000
Environmental Damage (X$_{12}$)	.780	.055	.781	14.092	.000
Mine Rehabilitation (X$_{13}$)	.158	.041	.159	3.867	.000

Data source: Processed results of Regression Path Analysis Year 2024

Based on research by Safitri & Sopiana (2023) in the Analysis of the Contribution of Mineral and Coal General Mining Revenue Sharing Funds to Balancing Funds, Regional Revenues and Expenditures (Case Study of Mineral and Coal Producing Districts in South Kalimantan Province 2016-2020), where Mineral and Coal General Mining Revenue Sharing which includes landrent and exploration and exploitation fees (royalties) is expected to make a real contribution to the regional economy, especially for the Regency which is the mineral and coal producing area (Setiawan et al., 2021). This is also related to the results of traditional diamond mining in 3 dukuhs, namely Ujung Murung, Luka'as and Pumpung Dukuh in Cempaka Sub-district, which should have an effect on increasing the economic growth of the mining community because mining activities that have been carried out by the community are not carried out by the miners themselves but there are other parties involved (landowners, machine owners, and financiers who bear costs during mining).

Based on Table 8, the Coefficient of Regression Path Analysis of Traditional Diamond Mining Value of 0.598 in Social Aspects is not Significant because traditional diamond mining activities, although positive, do not have a major effect on the welfare of miners. The value of 0.31 (Y2) Significant Economic Aspects in traditional diamond mining activities as evidenced by economic activities that certainly affect the work of miners but in terms of income have not had a major effect on welfare. Based on the processed table data Regression Path analysis there is a hypothesis to answer the research results.

If the Regression <0.05, the relationship between the variables studied is very significant or there is an influence between the variables measured, so the hypothesis is accepted. Based on the table above, the results of Regression Path Analysis said to be Significant can be seen below:

The value of 0.050 (Culture) where there is an influence of traditional diamond mining culture is a hereditary legacy from ancestors or from their predecessors and they just continue the activity (Job).

The value of 0.000 (Religion) suggests that traditional diamond mining is significantly influenced by the religious values of the local community, but has no major effect on the welfare of miners.

The value of 0.000 (Employment) Significantly affects traditional diamond mining activities even though the welfare is less and does not affect the welfare of miners.

The value of 0.000 (Anthropology) has a large effect on traditional diamond mining activities, but Anthropology does not have a large effect on the welfare of mining communities.

Natural Resources (0.001) Significant effect on traditional diamond mining activities, although the natural resources of the mines in Cempaka Sub-district have not had a major effect on the welfare of diamond miners.

Environmental Pollution (0.000) Significant because it has a major effect on the incidence of post-mining environmental damage and this does not have a major effect on the welfare of traditional diamond miners.

Environmental Damage (0.000) is significant in the natural impacts produced after mining and does not have a major effect on miners' welfare.

Post-mining rehabilitation (0.000) Significant because it can restore the environmental impact of diamond mining, but rehabilitation does not have a major effect on improving miners' welfare because rehabilitation is not done or implemented post-mining.

Regression value> 0.05, it can be said that the relationship between variables is not significant, which means that there is no influence between the measured variables or it is negative, which means that there is a relationship between the variables (Positive) between these variables.

The numerical value of 0.394 (Social Conflict) is not Significant because Social Conflict does not have a major effect on diamond mining activities because there is currently no conflict that occurs among miners, but the absence of conflict does not have a major effect on improving welfare.

The value of 0.931 (Education) is not significant because community education does not have a major effect on the welfare of traditional diamond miners.

The value of 0.676 (Work Productivity) is not significant or does not have a large effect on welfare even though Work Productivity positively affects traditional diamond mining activities.

The value of 0.698 (Technology) is not significant because it does not have a major effect on diamond mining results even though technology has a positive effect on traditional diamond mining activities.

The value of 0.138 (Multiple Livelihood Patterns) is not significant on the welfare of traditional diamond miners even though some of the miners have other jobs outside of traditional diamond mining activities.

Alternative Desired Employment Options

The selection of job alternatives only involves the traditional diamond mining community on the grounds that they are directly involved in traditional diamond mining activities covering 3 hamlets, namely Ujung Murung hamlet 80 families, Luka'as hamlet 64 families, and Pumpung hamlet 90 families. The miners were given a list of questions to choose which alternative jobs they wanted according to their expectations and skills. Based on the data that has been selected, it turns out that the miners in the 3 dukuhs choose alternative jobs, as can be seen in the table below:

Table 9. Main Job Alternatives Selected to be Taken by Miners

No	Type of Work	Name of hamlet and number of voters					
		Dukuh Ujung Murung 80 families		Dukuh Luka'as 64 Families		Dukuh Pumpung 90 families	
1	Livestock	KK	%	KK	%	KK	%
	Ducks	63	78,75	53	82,85	66	73,33
	Chicken	64	80	45	70,35	77	85,56
	Cow	47	58,75	34	53,15	43	47,78
	Goat	19	23,75	24	37,5	25	27,78
2	Agriculture	KK	%	KK	%	KK	%
	Rice/Crop	69	86,25	56	87,5	84	93,33
	Vegetables	3	3,75	1	1,55	0	0
	Fruits	43	53,75	42	65,65	76	84,44

3	Fisheries	KK	%	KK	%	KK	%
	Nila	63	78,78	51	79,65	82	91,11
	Gold	5	6,25	1	1,55	0	0
	Patin	52	65	47	73,45	62	68,89
	Gouram	2	2,5	1	1,55	0	0
	Catfish	20	25	26	40,65	36	40
4	Tour	KK	%	KK	%	KK	%
	Mining Object	26	32,5	25	39,05	40	44,44

Source: Processed Research Data Year 2024

The miners in the 3 hamlets of Cempaka Subdistrict who choose alternative jobs with duck farming 182 families (74.89%), chicken farming 186 families (76.54%), cattle farming 124 families (51.02%), and goat farming 68 families (27.98%). For rice/palawija farming 209 households (86.00%), vegetables 4 households (1.64%), fruits 161 households (66.25%). While fisheries businesses such as: tilapia 196 families (80.65%), gold fish 6 families (2.46%), Patin 161 families (66.25%), carp 3 families (1.23%) and catfish KK (4.45%), traditional diamond mining attractions 91 families (37.44%).

Miners tend to prefer chicken farming 186 families 76.54%% due to the assumption that chicken farming activities are easier to implement, many seeds, easy maintenance, can be used for meat, eggs, manure for plant fertilizer, stable prices compared to raising other livestock which are considered more difficult including cattle seeds 124 families (51.02%) and goats 68 families (27.98%) are quite expensive and ducks 182 families (74.89%) need good swamp waters for breeding habitat.

Food crops that miners in the 3 villages want to develop as an alternative choice of replacement work prefer to choose rice crops 209 households (86.00%), because there is an assumption that rice crops are not too affected by traditional diamond mining activities because according to them rice crops can still live well near the mining site as long as the distance between rice fields and diamond mining land is given a barrier so that the former mining water does not flow into the residents' rice fields.

The fruits that 161 families (66.25%) would like to develop are bananas or mangoes because they think these types of plants can grow easily and are not too difficult to maintain and the results are quite profitable to support the economy in addition to livestock activities. Vegetables are not chosen at all because they think that the land in their village is difficult to develop vegetable crops, needs extra care, and vegetable crops usually grow well on fertile and cool land such as on Java Island in their view.

Freshwater fisheries are also an alternative problem-solving for traditional diamond miners and the mining community tends to choose to raise tilapia 196 families (80.65%) and catfish 161 families (66.25%), the mining community tends to choose these types of fish (tilapia and catfish) because these two types of fish include types of fish that are easy to obtain, easy to maintain, easy to find food ingredients, and besides this type of fish can live in all places. Gold fish, carp are not chosen because both types of fish are difficult to develop by them because they are more difficult to maintain and easily stressed and die when the environment and weather change. Meanwhile, catfish are less desirable because of the assumption that catfish live in dirty water. For those who choose that mining areas or former mining areas can be managed into economically valuable tourism land related to the visit of domestic or foreign tourists 91 families (37.44%), visitors can see firsthand traditional diamond mining activities and can even buy and bargain the price of diamonds and aji stones that are sold in several galleries or shops around traditional diamond mining.

Conclusion

Traditional diamond mining activities in the Cempaka Sub-district community (3 dukuh), namely: Ujung Murung, Lokaas and Pumpung hamlets related to the influence of social aspects (Y1) of 0.279 on welfare (Y) of 0.194 which is reviewed from the variables of Culture (X1) of 0.152, Social Conflict (X2) of 0.024,

Religion (X3) of 0.684, Anthropology (X4) of 0.030, and Education (X5) of 0, 088 does not improve welfare (Y) with a weight of 0.194 where all variables do not guarantee the activities of miners for a better economic life (Improved Welfare of the mining community) even though in the Social Aspect mining activities are carried out every day from morning to evening (6 working days).

Traditional diamond mining in Cempaka District in terms of Economic Aspects (Y2) of 0.741 includes: Productivity (X6) of 0.005, Technology (X7) of 0.108, Employment (X8) of 0.195, and Dual Income Patterns (X9) of 0.225 have not affected the improvement of Community Welfare (Y) with a weight of 0.194 that the productivity of diamond mining does not produce many diamond stones in accordance with the expectations and desires of miners so that it has not been able to have a positive impact on improving the economy of traditional diamond mining communities.

Traditional diamond mining in terms of Environmental Aspects (Y3) of 0.06 which includes the variables of Natural Resources (X10) of 0.013, Environmental Pollution (X11) of 0.240, Environmental Damage (X12) of 0.802, and Mine Rehabitation (X13) of 0, 395 has no effect on Welfare (Y) with a weight of 0.194 even though the natural resources of Cempaka Sub-district in 3 villages have been famous from time to time as a diamond producing place with a certain size that can influence everyone to move as a traditional diamond miner. But until now it has not had an effect on improving the welfare of the diamond mining community in 3 villages, namely: Ujung Murung, Luka'as and Pumpung.

The tendency of the mining community to prefer chicken farming 186 households 76.54% because chicken farming activities are easier to carry out, many seeds, easy maintenance, can be used for meat, eggs, manure for plant fertilizer, stable prices compared to raising other livestock. Food crops that are developed prefer rice crops 209 families (86.00%), because rice crops are not too affected by traditional diamond mining activities, as long as the distance between rice fields and diamond mining land is given a barrier so that the water used for mining does not flow into rice fields. The fruits that 161 families (66.25%) want to develop are banana or mango plants because they can grow easily and are not too difficult to maintain and the results are quite profitable to support the economy in addition to livestock activities. Raising tilapia 196 families (80.65%) and catfish 161 families (66.25%), the mining community tends to choose these types of fish (tilapia and catfish) because these two types of fish are easy to obtain, easy to maintain, easy to find food ingredients, and besides this type of fish can live in all places.

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